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LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Workshop on the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

May 4, 2017

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Linda S. Adams
Secretary for Environmental Protection

State Water Resources Control Board

Executive Office

Charles R. Hoppin, Chairman
1001 I Street • Sacramento, California 95814 • (916) 341-5603
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5621 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

JAN 14 2010

To: Interested Persons

NOTICE OF PUBLIC SOLICITATION OF WATER QUALITY DATA AND INFORMATION FOR 2012 CALIFORNIA INTEGRATED REPORT – SURFACE WATER QUALITY ASSESSMENT AND LIST OF IMPAIRED WATERS [Clean Water Act Sections 305(b) and 303(d)]

The State Water Resources Control Board (State Water Board), by way of this Notice, initiates the solicitation period for interested persons to submit data and information regarding water quality conditions in surface waters of California (*please note that groundwater data should not be submitted*). Information gathered will be used for assessing overall surface water quality conditions and identifying impaired waters (waters not meeting water quality standards), for the development of the 2012 California Integrated Report. This Notice contains the contact information for the State Water Board staff, instructions to follow when submitting data and information to the State Water Board, and a form to be completed that should accompany all submitted data and information. Data and information submitted should **not** be limited to only those data sets that show water quality standards being exceeded. Data that show standards **are** being met should also be submitted as they will contribute to a complete understanding of the quality of the State's surface waters. **All submittals must be received by the State Water Board no later than 5:00 p.m., June 30, 2010.**

Background Information: Integrated Report
States are required to develop a report on overall surface water quality and a list of impaired surface waters or water quality limited segments (distinct portions of rivers, streams, lakes, ocean waters, etc.) identifying relevant pollutants/stressors and to submit the information to the United States Environmental Protection Agency (USEPA) every two years. These requirements are contained in the federal Clean Water Act (CWA) Sections 305(b) and 303(d).

CWA section 305(b) requires that States provide an overall water quality condition assessment of surface waters of the State to serve as part of the USEPA National Water Quality Inventory Report to Congress and is used to inform water quality management decisions. This report is referred to as the "Section 305(b) Report on Water Quality", the "Section 305(b) Report", or the "Surface Water Quality Assessment."

CWA section 303(d) requires that States provide lists of water bodies not meeting water quality standards (beneficial uses, water quality objectives/criteria or the State's Antidegradation Policy) and waters that are not expected to meet water quality standards with the implementation of technology-based controls. This list is commonly referred to as the "Section 303(d) List" or the "List of Impaired Waters. All readily available data and information submitted pursuant to this solicitation will be reviewed and assessed using the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Requirements for data and information specified in the Listing Policy — including those for quality control and assurance, temporal and spatial characteristics, and minimum sample sizes — will be followed when the Water Boards review data and information. The Listing Policy may be viewed at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_listing.shtml.

USEPA has final control over what is listed on the Section 303(d) list. As required by federal law, water bodies included on the Section 303(d) List will be scheduled for development of total maximum daily loads (TMDLs). A TMDL is the total maximum daily load(s) of a pollutant that can be discharged daily into a given water body and still ensure the attainment of applicable water quality standards. More information about California's TMDL program is available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/

The State and Regional Water Boards will be developing a California Integrated Report which contains the Section 305(b) Report and Section 303(d) List for California. First, each of the nine Regional Water Quality Control Boards (Regional Water Boards) will develop Regional Integrated Reports. These Regional Integrated Reports will be reviewed and combined by the State Water Board into the California Integrated Report. Data and information submitted to the State Water Board during the current solicitation period will be used in developing the Regional Integrated Reports and the 2012 California Integrated Report. Regional Water Boards and then the State Water Board will send public notice when the 2012 Integrated Report is completed and available for public comments.

2010 California Integrated Report Update
The State Water Board is currently completing the 2010 Integrated Report for California. We plan to submit the Report to USEPA in early 2010. Although completion of the 2010 Integrated Report overlaps the beginning of the 2012 data solicitation, data submitted pursuant to this Notice will not be considered for the 2010 Integrated Report. The 2010 Integrated Report is a combined 2008-2010 report, which was adopted by each Regional Water Board during 2008 and 2009. The State Water Board staff will send a public notice when the 2010 California Integrated Report is completed and available for public comments in spring of 2010. The 2010 Integrated Report includes the data, which was submitted to the Regional Water Boards in February 2006 as a result of the 2008 data solicitation effort.

Scope of Data Submittal
1. Any person including, but not limited to, private citizens, public agencies, local, State, and federal governmental agencies, non-profit organizations, and businesses possessing information regarding the quality of the State's waters may contribute data and information pursuant to this solicitation. The data and information and any supporting (analytical) data such as pH and hardness, need to be submitted in a format that can be readily assessed for listing purposes. **All submittals, to the extent feasible, should be submitted in an electronic format that is PC compatible, preferably Office 2003 or PDF format** (see Enclosure 1 for detailed requirements). Please note that data submitted as part

of the 2010 section 303(d) List update need **not** be submitted.

2. All new available data and information will be considered. A list of the types of data and information that will be considered can be found in section 6.1.1 of the Listing Policy. This list includes receiving water discharger's monitoring and reporting program data. A complete set of any new data that has become available since the end of the previous data solicitation period (December 4, 2005 – February 28, 2006) should be submitted in electronic format (if possible) to the State Water Board staff developing the Integrated Report (see details on who should receive data on following page).

3. Any interested person may request reassessment of a water body on the existing Section 303(d) List. The interested person should:
   a. Describe the reason(s) the listing is inappropriate and clearly state the reason the interested party would come to a different outcome, and;
   b. Provide the data and information necessary, according to the Listing Policy, to enable staff to conduct a complete reassessment.

4. For purposes of this solicitation, "information" includes any documentation that a water body is or is not meeting, or is or is not likely to meet, existing water quality standards (i.e., beneficial uses of water, water quality objectives/criteria, and the State's Anti-degradation Policy as listed in the State's Water Quality Control Plans [Basin Plans], statewide water quality control plans [e.g., the California Ocean Plan], the California Code of Regulations, and pertinent federal laws and regulations).

5. "Data" are considered to be numeric information (i.e., measurements of specific physical, chemical, or biological characteristics in aquatic environments)

6. Data and information provided may pertain to individual water body segments, entire water bodies, or whole watersheds in California.

7. The section 303(d) List and the section 305(b) Report update efforts are not designed, intended, or able to change existing water quality standards. Persons interested in recommending changes to existing water quality standards should contact the appropriate Regional Water Board.

For the 2012 California Integrated Report update, data and information must be submitted to the State Water Board. **All submittals must be received by the State Water Board no later than 5:00 p.m., June 30, 2010. All data and information should be sent to Jeffrey Shu of the State Water Board staff at the following address:**

Jeffrey Shu
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

There are three enclosures to this letter which contain the following information:

- **Enclosure 1** contains detailed information about the requirements for submitting water quality data and information.

- **Enclosure 2** is a map of California showing the locations of each of the nine Regional Water Boards and some of the major water bodies within each Region.

- **Enclosure 3** is the "2012 Integrated Report Data Submittal Information Form". To facilitate processing, a completed copy of this form should accompany each data submittal.

Questions regarding data or information submittals, or about other information included in this Notice, should be directed to the following State Water Board staff: Jeffrey Shu at (916) 323-1308 or JShu@waterboards.ca.gov, or Shakoora Azimi-Gaylon at (916) 341-5508 or SAGaylon@waterboards.ca.gov.

Please bring this Notice to the attention of anyone you believe may be interested in this matter.

Sincerely,

Dorothy Rice

Dorothy Rice
Executive Director

Enclosures

cc: Ms. Alexis Strauss, Director
Water Division (WTR-1)
U.S. Environmental Protection Agency,
Region 9
75 Hawthorne Street
San Francisco, CA 94105

All Regional Water Quality Control Board Executive Officers and
Assistant Executive Officers

Enclosure 1

Data Submittal Requirements:

1. **All submittals, to the extent feasible, should be in electronic format that is PC compatible, preferably in Office 2003 or PDF format.** References to web sites will not be accepted in lieu of actual data submitted.

2. To expedite processing, all data and information to be submitted should include a completed 2012 Integrated Report Data Submittal Information Form (see Enclosure 3) with the following:

   a. Name of person or organization submitting data and information or certifying the completeness and accuracy of the data and information;
   b. Contact information of the person or organization;
   c. Date at which data and information is being submitted to the State Water Board;
   d. Which Regional Water Board the data and information is to be assessed for (see Map in Enclosure 2);
   e. Whether Geographical Information System (GIS) data files (ArcGIS mxd or ArcView shapefiles) are included;
   f. Pollutant categories the submitted data and information pertain to;
   g. Starting and ending dates of when data was collected, or time period which the submitted information represents;
   h. Brief summary of submittal or list of submittal contents of and any instructions required for assessment, which may include:
      i. Definitions for codes or abbreviations used; and
      ii. Whether additional summaries or instructions are attached to the cover sheet or where they are included in the submittal;
   i. Whether electronic or hard copy/paper format is being submitted.

3. To be considered of sufficient quality to be used as a primary line of evidence in assessing water quality attainment, per Listing Policy sections 6.1.2 and 6.1.4, solicited data being submitted should contain the following:

   a. To the extent feasible, all data should be submitted in a compatible digital format i.e. in a SWAMP comparable format http://swamp.mpsl.mlml.calstate.edu/swamp-comparability and ready for assessment;
   b. The name and exact area of the water body and monitoring sites as described in requirement 4.b;
   c. Metadata for the field and lab data, such as:
      i. Data and time of measurements;
      ii. Location of measurements (unique site code, latitude and longitude, and water body name);
      iii. Number of samples;
      iv. Analytes;
      v. Units of measurement;
      vi. Methods and detection limits, and
      vii. Other relevant factors;

d. Supporting or associated analytical data (e.g. hardness data with dissolved metals samples, temperature and pH data with ammonia measurements);
e. A signed copy of the quality assurance procedures including a signed copy of the Quality Assurance Project Plan (QAPP) or equivalent document **must be submitted**. The signature must be from the person who is responsible for quality of the data submitted for this water quality assessment. A hard copy of the QAPP must be submitted if a hard copy of the data is submitted. A QAPP or equivalent document must contain, at a minimum, the following:
    i. Objectives of the study, project, or monitoring program;
    ii. Methods used for sample collection and handling;
    iii. Field and laboratory measurement and analysis;
    iv. Data management, validation, and recordkeeping (including proper chain of custody) procedures;
    v. Quality assurance and quality control requirements;
    vi. A statement certifying the adequacy of the QAPP (plus name of person certifying the document); and
    vii. A description of personnel training.
f. For narrative and qualitative submittals, the submission must:
    i. Describe events or conditions that indicate impacts on water quality;
    ii. Provide linkage between the measurement endpoint (e.g., a study that may have been performed for some other purpose) and the water quality standard of interest;
    iii. Be scientifically defensible;
    iv. Provide analyst's credentials and training;
    v. Be verifiable by the State Water Board or Regional Water Board; and
    vi. Identify the name and exact area of the water body and monitoring sites with details (as described under bullet 3).
g. For photographic documentation, the submission must:
    i. Identify the date and time;
    ii. Identify the name and exact area of the water body and monitoring sites with details (as described in bullet 3);
    iii. Provide a thorough description of photograph(s);
    iv. Describe the spatial and temporal representation of the photographs;
    v. Provide linkage between photograph-represented condition and condition that indicates impacts on water quality;
    vi. Provide photographer's rationale for area photographed and camera settings used; and
    vii. Be verifiable by the State Water Board or Regional Water Board.
h. For data from citizen volunteer water quality monitoring efforts, the submission should include:
    i. The name of the group; and
    ii. An indication of any training in water quality assessment completed by members of the group;

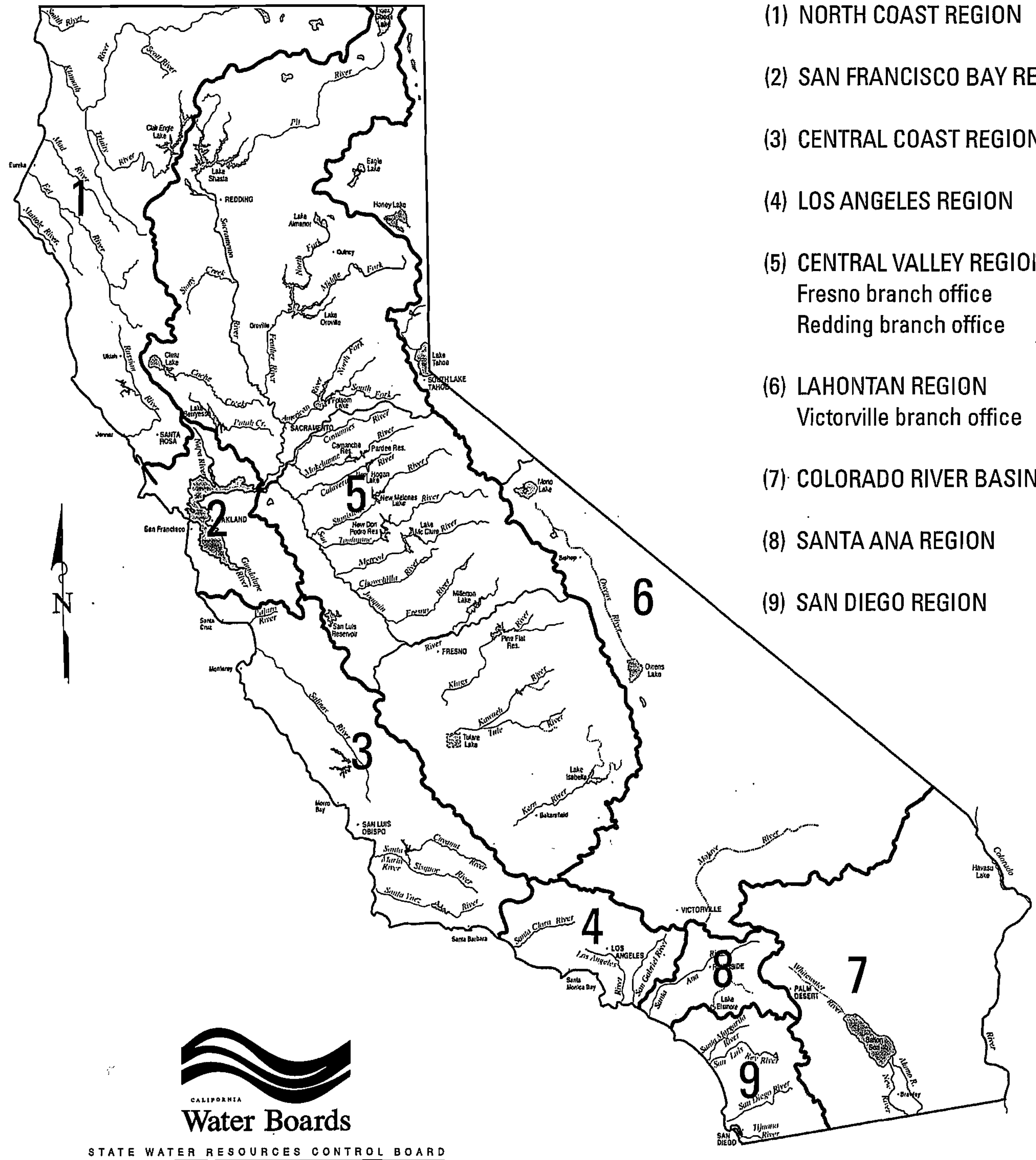
i. Site-specific or project-specific sampling and analysis plan for numeric data should also be available containing the following:
    i. Data quality objectives or requirements of the project;
    ii. A statement that data quality objectives or requirements were achieved;
    iii. Rationale for the selection of sampling sites, water quality parameters, sampling frequency and methods that assure the samples are spatially and temporally representative of the surface water and representative of conditions within the targeted sampling timeframe; and
    iv. Documentation to support the conclusion that results are reproducible.

4. GIS data files should include:

    a. GIS metadata with detail of all parameters of the projection including datum.
    b. The name and exact area of the water body and monitoring sites the information concerns, including either:
        i. Very clear electronic copy of maps indicating the area the information concerns; (e.g., mark sample location on a USGS 7.5 minute topographic quad map along with the quad sheet name); or
        ii. The latitude/longitude of the location.

All new data and information must be received by the close of business at 5:00 p.m. on June 30, 2010.

California Regional Water Quality Control Boards



(1) NORTH COAST REGION

(2) SAN FRANCISCO BAY REGION

(3) CENTRAL COAST REGION

(4) LOS ANGELES REGION

(5) CENTRAL VALLEY REGION
Fresno branch office
Redding branch office

(6) LAHONTAN REGION
Victorville branch office

(7) COLORADO RIVER BASIN REGION

(8) SANTA ANA REGION

(9) SAN DIEGO REGION

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

2012 Integrated Report Data Submittal Information Form

Contact Information			
First Name:		**Last Name:**	
Organization:			
Mailing Address:			
Email:		**Preferred Contact Method:**	
Phone:	(_ _ _) _ _ _ - _ _ _ _	☐ *Email*	☐ *Phone*

Submittal Information			
Submittal Date:	_ _ / _ _ / _ _ _ _		
Region data intended for: (Check all that apply)	☐ *(1) North Coast*	☐ *(2) San Francisco*	☐ *(3) Central Coast*
	☐ *(4) Los Angeles*	☐ *(5) Central Valley*	☐ *(6) Lahontan*
	☐ *(7) Colorado River*	☐ *(8) Santa Ana*	☐ *(9) San Diego*
GIS map layers included:	☐ Yes		
Pollutant Categories: (Check all that apply)	☐ *Hydromodification*	☐ *Other Organics*	☐ *Toxicity*
	☐ *Metals/Metalloids*	☐ *Pathogens*	☐ *Trash*
	☐ *Nuisance*	☐ *Pesticides*	☐ *Miscellaneous*
	☐ *Nutrients*	☐ *Salinity*	
	☐ *Other Inorganics*	☐ *Sediment*	
Time Period Data Collected:	_ _ / _ _ / _ _ _ _ – _ _ / _ _ / _ _ _ _		
Summary of Data (Explanation of data included in submission or instructions on using data.):			
Submittal format:	☐ *Electronic*	☐ *Hard Copy/Paper*	

Internal Use Only (by Water Boards)			
Control #:	_ _ _ _ _ _	**Date Received:**	_ _ / _ _ / _ _ _ _

State Water Resources Control Board

Executive Office

Linda S. Adams
Secretary for
Environmental Protection

Charles R. Hoppin, Chairman
1001 I Street • Sacramento, California 95814 • (916) 341-5603
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5621 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

MAY 2 4 2010

To: Interested Persons

EXTENDED DEADLINE: NOTICE OF PUBLIC SOLICITATION OF WATER QUALITY DATA AND INFORMATION FOR 2012 CALIFORNIA INTEGRATED REPORT – SURFACE WATER QUALITY ASSESSMENT AND LIST OF IMPAIRED WATERS [Clean Water Act Sections 303(d) and 305(b)]

This letter is to notify you that we are extending the deadline for submittal of data for the 2012 California Integrated Report [Clean Water Act Sections 303(d) and 305(b)] to August 30, 2010. The Notice dated January 14, 2010, required data to be submitted no later than June 30, 2010. Today's letter extends this deadline for data submittal until August 30, 2010.

Information regarding the requirements for submitting water quality data and information can be found at the State Water Board website at:
http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/data_solicitation_ir2012v2.pdf

Questions regarding data or information submittals, or about other information included in the Notice, should be directed to Shakoora Azimi-Gaylon at (916) 341-5508 or SAGaylon@waterboards.ca.gov.

Sincerely,

Dorothy Rice

Dorothy Rice
Executive Director

Date: February 12, 2013

Subject: 2012 California Integrated Report [Clean Water Act Sections 303(d) and 305(b)] Update

The State Water Resources Control Board staff, in coordination with Regional Water Quality Control Board's staff and USEPA, has been working to assess the data submitted by all interested parties as part of the Notice of Solicitation dated August 30, 2010. Over 250 individual data sets, covering over 20,000 individual waterbody pollutant combinations and over 150,000 sample points, were received from sources including government agencies, municipalities, environmental groups, citizen groups, and National Pollutant Discharge Elimination System dischargers.

Staff continues to work on the assessment of the data in order to create an accurate and scientifically defensible report. Due to the complex nature of this project, State Water Board staff anticipates that the data assessment work will be completed and available for Regional Board public review by the end of 2013 or early 2014.

We are committed to making the process more efficient so that future reports are completed as timely as possible. If you have any questions, please contact me at nmartorano@waterboards.ca.gov or 916-341-5290.

July 15, 2013

Confirmation of e-mail sent on July 15, 2013

Ms. Jane Diamond, Director
Water Division (WTR-1)
U.S. Environmental Protection Agency,
Region 9
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms. Diamond:

CLEAN WATER ACT SECTIONS 303(d)/305(b) INTEGRATED REPORT PROCESS MOVING FORWARD

On June 14, 2013 the State Water Resource Control Board (State Water Board) management including (Tom Howard, Jon Bishop, and myself) met with U.S. Environmental Protection Agency (U.S. EPA) Division of Water management including (John Kemmerer and yourself), at the bi-monthly coordination meeting. At that meeting several topics were discussed including a list of proposals that State Water Board staff developed to create a more efficient and successful Clean Water Act (CWA) 303(b)/305(b) Integrated Report (Integrated Report) process for California. U.S. EPA representatives examined the proposals and gave verbal concurrence on the strategy moving forward.

The strategy agreed on includes dividing California into thirds by Regional Water Quality Control Board (Regional Water Board) and submitting an Integrated Report for three Regional Water Boards per listing cycle. This allows for the submittal of the Integrated Report in a timelier manner and is a strategy utilized by several other states. Furthermore, the State Water Board would redefine "readily and available data" to include only data submitted into the California Environmental Data Exchange Network (CEDEN). This would reduce considerable loss of time eliminating data of poor quality and allow for more efficient assessments using the highest quality data available that follow the Surface Water Ambient Monitoring Program protocols. In addition, this process would allow for those Regional Water Boards that are "off cycle" to still examine high-priority data and make decisions related directly to Listings and De-listings and submit them for inclusion into the current listing cycle.

The immediate steps moving forward are to announce that the 2012 Integrated Report will consist solely of data submitted for Regional Water Boards 1, 6, and 7, followed by the immediate solicitation for the 2014 listing cycle utilizing the continuous submittal capabilities of

CEDEN. State Water Board staff will also be presenting an Agenda Item for the October State Water Board Meeting that will recommend that the State Water Board action to approve the Integrated Report be delegated to the Executive Director, in order to further expedite submittal to U.S. EPA. Please let us know if you have any questions by Monday, August 9, 2013.

If you have any questions on this subject, you may contact Mr. Nick Martorano, Chief of the Water Quality Assessment Unit at (916) 341-5290 <nmartorano@waterboards.ca.gov>. You may also contact Ms. Joanne Cox, Acting Chief of the TMDL Section, at (916) 341-5552 <jcox@waterboards.ca.gov> or Rik Rasmussen, Acting Assistant Deputy Director, at (916) 341-5549 <rrasmussen@waterboards.ca.gov>.

Sincerely,

Victoria A. Whitney

Victoria A. Whitney, Deputy Director
Division of Water Quality

Sent by e-mail <jdiamond@epa.gov>

cc: (via e-mail)
U.S. Environmental Protection Agency, Region 9
Janet Hashimoto, Manager
Monitoring and Assessment
Water Division (WTR-1)
U.S. Environmental Protection Agency,
Region 9
75 Hawthorne Street
San Francisco, CA 94105
hashimoto.janet@epa.gov

State Water Resources Control Board
Executive Office
Thomas Howard, Executive Director
thoward@waterboards.ca.gov

Jonathan Bishop, Chief Deputy Director
jbishop@waterboards.ca.gov

State Water Resources Control Board

TO: Interested Parties

FROM: Nick Martorano
Chief, Surface Water Quality Assessment Unit
DIVISION OF WATER QUALITY

DATE: November 12, 2013

SUBJECT: CALIFORNIA INTEGRATED REPORT [CLEAN WATER ACT SECTIONS 303(D) AND 305(B)] UPDATE

As announced by email (Feb. 12, 2013) to the California Integrated Report 303(d)/305(b) (Integrated Report) Lyris List (posted at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/cir_update.pdf), the State Water Resources Control Board (State Water Board) staff, in coordination with Regional Water Quality Control Board (Regional Water Board) staff and U.S. EPA, has been assessing the data submitted by all interested parties in response to the Notice of Solicitation dated May 24, 2010. Pursuant to the State Water Board's commitment to making the Integrated Report process more efficient and submittals to U.S. EPA more timely, several strategies have been proposed, discussed, and verbally concurred upon, internally and with U.S. EPA (Letter to U.S. EPA dated July 15, 2013). The strategy includes establishing three groups, each consisting of three Regional Water Boards, and submitting an Integrated Report for one group per listing cycle. This would allow for the submittal of the Integrated Report in a more timely and efficient manner.

Consequently, the 2012 Integrated Report will consist solely of data submitted for Regional Water Boards 1, 6, and 7. The 2014 Integrated Report will consist of data submitted for regions 3, 5, and 9. Finally, the 2016 Integrated Report will consist of data for regions 2, 4, and 8. It is anticipated that the process will allow for those Regional Water Boards that are "off cycle" to still examine high priority data and make decisions related directly to listings and de-listings and submit them for inclusion into the current listing cycle, beginning with the next data solicitation.

Due to the volume of data received during the 2010 data solicitation period, the State Water Board will not solicit additional data until all of the current data is assessed and migrated to the California Water Quality Assessment Database (CALWQA) for Regional Water Board listing and de-listing recommendations. However, data will be accepted into the California Environmental Data Exchange Network (CEDEN) immediately so it can be assessed during future listing cycles. There are four regional CEDEN data centers that can assist with uploading data. Information on the regional data centers can be found online at: http://www.ceden.org/data_centers.shtml.

State Water Board staff is developing additional improvements to the Integrated Report process. State Water Board staff will propose that the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Policy) be amended to accommodate those procedural improvements. In the upcoming months, the proposed Policy amendment will be drafted, made available to the public for review and comment, and brought before the State Water Board for approval. Notices and information concerning the proposed Policy amendment will be posted at: http://www.waterboards.ca.gov/water_issues/programs/#wqassessment and electronically distributed to the Integrated Report Lyris List.

If you have any questions on this subject, you may contact Nick Martorano, Unit Chief of the Water Quality Assessment Unit at (916) 341-5290 (nmartorano@waterboards.ca.gov). You may also contact Rik Rasmussen, Chief of the TMDL Section, at (916) 341-5549 (rrasmussen@waterboards.ca.gov) or your local Regional Water Board.

City of
SANTA CLARITA

23920 Valencia Boulevard • Suite 300 • Santa Clarita, California 91355-2196
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March 2, 2015

Dr. Celine Gallon
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles CA 90013

Dear Dr. Gallon:

Subject: Response to Triennial Review Solicitation – Submitting Organization City of Santa Clarita

This letter is regarding the January 29, 2015, request for data and information on water quality standards in the Los Angeles Region. The City of Santa Clarita and Los Angeles County are embarking on an Enhanced Watershed Management Plan (EWMP) to address many pollutants, including but not limited to zinc and *E. coli* bacteria. This effort will comprehensively address pollutants found in storm water through regional best management practices, green streets, and other types of infiltration best management practices.

Therefore, the City respectfully requests all pollutants remaining on the 303(d) list that anticipate a Total Maximum Daily Load (TMDL) in the future be changed to the category of "being addressed by action other than a TMDL." In this case, the pollutants will be addressed through the action of development and implementation of the EWMP. As part of the EWMP, there was a pollutant prioritization process. Receiving water quality in the Santa Clara River watershed has been characterized based on available data. The characterization process consisted of the following steps:

1. Gathering relevant data and information from numerous sources including, but not limited to, 303(d) listings, WQBELs, RWLs, Surface Water Ambient Monitoring Program (SWAMP), annual reports, established TMDLs, Los Angeles Department of Public Works, and Los Angeles County Sanitation Districts;
2. Defining the EWMP area and identifying the water bodies within the EWMP area and downstream of the area that might be influenced by discharges from the EWMP area;
3. Conducting a data analysis to identify constituents with exceedances of water quality objectives;
4. Compiling water body pollutant combinations with TMDLs from Attachments L and O of the Los Angeles County Stormwater Permit;
5. Compiling 303(d) listings from the 2010 303(d) List; and
6. Comparing the data analysis to the State's Listing Policy.

A concise spreadsheet summary of the data review has been attached. Based on that research, the City requests the following for the upcoming 303(d) List. The affected water quality objectives are listed below.

Affected Waterbodies, Water Quality Objectives, and Suggested Revisions

Santa Clara River Reach 5

Iron meets the criteria for delisting and should be removed from the 303(d) list based on the information attached. For mercury, copper, and TDS, all of these pollutants have been modeled and will be addressed by the development and implementation of the EWMP for the Upper Santa Clara River. Therefore these pollutants should be changed to the category of "being addressed by action other than a TMDL."

Santa Clara River Reach 6

There have not been exceedances in the past five years for Bis-2 Ethylhexyl phthalate, Chlorpyrifos, and Diazinon; based on the information attached, all three should be delisted. In the case of Bis-2 Ethylhexyl phthalate, this was likely a byproduct of the laboratory testing process and not a pollutant found in the samples themselves.

For mercury, selenium, and zinc, all of these pollutants have been modeled and will be addressed by the development and implementation of the EWMP for the Upper Santa Clara River. Therefore, these pollutants should be changed to the category of "being addressed by action other than a TMDL."

Toxicity should be removed from the 303(d) list, as it is a result and not a pollutant.

Santa Clara River Reach 7

For copper, mercury, and cyanide, all of these pollutants have been modeled and will be addressed by the development and implementation of the EWMP for the Upper Santa Clara River. Therefore, these pollutants should be changed to the category of "being addressed by action other than a TMDL."

Changing All Listings to "Being Addressed by Action Other than a TMDL"

The pollutants currently on the 303(d) list which do not have an approved TMDL are iron, chlorpyrifos, copper, diazinon, iron, toxicity, algae, total dissolved solids, benthic macroinvertebrate bioassessments, chlorodibromomethan, DDT, dichlorobromomethane, PCBs, specific conductivity, Bis-2 Ethylhexyl phthalate, specific conductance. For these pollutants, if they remain on the 303(d) list, and any pollutants that might be added during this process, the City requests that all pollutants be in the category of "being addressed by action other than a TMDL," instead of developing TMDLs in the Santa Clara River watershed.

2-2

requests that all pollutants be in the category of "being addressed by action other than a TMDL," instead of developing TMDLs in the Santa Clara River watershed.

Contact Recreation Beneficial Use in the Santa Clara River
The City respectfully requests a re-evaluation of the contact recreation beneficial use for the Santa Clara River – in particular Reaches 5, 6, and 7. For the most part, the Santa Clara River is very dry with no contact recreation or it is extremely dangerous during high flows when people could be in serious danger if they are recreating. The City requests that the Regional Board re-evaluate the beneficial use specific to *E. coli* and other bacteria for the listing. Wet weather bacteria standards and listings should not apply to the Santa Clara River when the contact recreation beneficial use does not exist.

Order of Priority

While we believe all of these requests should be included in the next listing, it is critical that the categorization for all listings that may be scheduled for TMDLs be changed to a category of "being addressed by action other than a TMDL," using the EWMP process. Also, it is critical for delisting to occur so that limited resources are not being mismanaged by addressing a pollutant that no longer poses any threat.

The attached supporting information is a spread sheet summarizing the water quality data found. Also attached is the EWMP that includes a Water Quality Priorities section that summarized the pollutants and findings to be included in the EWMP, due to be submitted to the Regional Water Quality Control Board by June 28, 2015. Please contact me, should you have any questions about the information provided at (661) 255-4337 or by e-mail at tlange@santa-clarita.com.

Sincerely,

Travis Lange
Environmental Services Manager

TL:HLM:ll
S:\ENVSRVCS\NPDES2\303(d) List\2014\Ltr City of Santa Clarita Response to Request Final.doc

Enclosure

cc: Robert Newman, Director of Public Works

From: Serr, Cheryl [mailto:Cheryl.Serr@ventura.org]
Sent: Wednesday, June 10, 2015 12:23 PM
To: Unger, Samuel@Waterboards; Purdy, Renee@Waterboards; Newman, Jenny@Waterboards; WB-RB4-losangeles
Cc: Hubner, Gerhardt; Mutkowska, Ewelina; rigol@ci.fillmore.ca.us; davidb@ci.fillmore.ca.us; Yanez, Brian; mvconsulting1@gmail.com; mlapraik@cilfillmore.ca.us; chernandez@spcity.org; AshliD@lwa.com
Subject: Santa Clara River_Delisting of Ammonia

Mr. Unger:

On behalf of Gerhardt Hubner, Deputy Director of the VC Watershed Protection District, Rigo Landeros, Public Works Director of the City of Fillmore, and Brian Yanez, Public Works Director of the City of Santa Paula, attached is a signed letter requesting delisting of ammonia and demonstration of absence of nitrogen compounds in the Santa Clara River Reach 3.

If you have any questions, please feel free to contact Mr. Hubner at (805) 654-5051.

Respectfully,
Cheryl Serr
Management Assistant
800 S. Victoria Ave.
Ventura, CA 93009-1610
(805) 645-1321

WPD

June 4, 2015

Mr. Sam Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Subject: REASSESSMENT AND DELISTING OF AMMONIA AND ABSENCE OF IMPAIRMENT FOR OTHER NITROGEN COMPOUNDS IN THE SANTA CLARA RIVER REACH 3

Dear Mr. Unger:

The County of Ventura and Cities of Fillmore and Santa Paula appreciate the opportunity to provide the following information to support the reassessment and request for delisting of Santa Clara River Reach 3 for ammonia and to demonstrate the absence of impairments for nitrogen compounds in the Santa Clara River Reach 3, despite the current TMDL. A number of projects have been completed including significant Publicly Owned Treatment Works (POTWs) updates that no longer discharge to the Lower Santa Clara River.

Santa Clara River Reach 3 was placed on the 2002 California Clean Water Act Section 303(d) List of Impaired Waters (303(d) List) for ammonia. Subsequent to the 303(d) listing, the Santa Clara River Nitrogen Compounds TMDL (TMDL) was approved by the Los Angeles Regional Water Quality Control Board on August 7, 2003 and became effective on March 18, 2004 to address the listing. The TMDL also included targets and allocations for nitrate+nitrite as N even though no exceedances of the objectives were observed in the waterbody. The TMDL has been incorporated into the Ventura Countywide Municipal Separate Storm Sewer System (MS4) Permit (NPDES No. CAS004002), adopted in 2010.

Based on the memorandum dated November 12, 2013 related to the California Integrated Report Update, the next integrated report for the Los Angeles Region (4) will be forthcoming in 2016. The data analysis and discussion herein are intended to demonstrate that there is no impairment for any nitrogen compounds within Reach 3. The information can be utilized to support a delisting for ammonia in Reach 3 during the next integrated reporting process. The ammonia delisting discussed herein is a high priority for the Santa Clara River Watershed and we are requesting the analysis and consideration for delisting be included in the 2016 Integrated Report. As specified in the memorandum, the data will be uploaded to the California Environmental Data Exchange Network (CEDEN) to facilitate the evaluation. Additionally, the analysis should support the removal of the TMDL Wasteload Allocations (WLAs) from the upcoming MS4 permit reissuance in 2015.

Available monitoring data collected since the TMDL became effective in 2004 has been reviewed, and the resulting analyses are presented in two parts. Part 1 of this letter presents a review of monitoring data to determine if the reach continues to exceed applicable water quality objectives for ammonia or qualifies for delisting under the 2004 Water Quality Control Policy for Developing California Clean Water Act Section 303(d) List (Listing Policy). In Part 2, a comparison of the nutrient data to numeric targets and MS4 WLAs for ammonia and nitrate plus nitrite nitrogen included in the TMDL is presented. Attachment 1 provides the data to support the conclusions presented in Part 1 and Part 2 of this letter.

PART 1: REASSESSMENT AND DELISTING OF AMMONIA IN SANTA CLARA RIVER REACH 3

Data Used in the Analysis

Water Quality data from April 2004 to December 2014 were collected from the mass emission station ME-SCR, located approximately 2.5 miles upstream of the river crossing at California State Route 118. The data period includes 54 samples and is representative of current conditions. Samples were collected throughout the year at the monitoring location under wet and dry conditions.

Additionally, data collected by the Southern California Stormwater Monitoring Coalition on June 1, 2010 was available for the Santa Clara River station located in Reach 3, located approximately 4 miles upstream of South Mountain Road in Santa Paula. The data was downloaded from the California Environmental Data Exchange Network (CEDEN).

Samples were analyzed for ammonia, pH and temperature according to EPA analytical methods, or using a field meter, as presented in Attachment 1.

Comparison of Data to Water Quality Criteria

Ammonia results were compared to the temperature and pH dependent water quality criteria as established in Table 3-1 and 3-2 of the Water Quality Control Plan for the Los Angeles Basin (Basin Plan). Applicable water quality criteria are shown in Table 1.

Table 1: Water Quality Objectives for Analysis of Santa Clara River Reach 3

Constituent	Units	Objective	Equation
Ammonia as N	mg/L	One-hour Average [a]	$\frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$
		30-day Average [b,c]	$\left(\frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}}\right) * MIN(2.85, 1.45 * 10^{0.028*(25-T)})$

a. One-hour average objective for freshwaters with designated beneficial uses of COLD and MIGR.
b. 30-day average objective for freshwaters subject to the "Early Life Stage Present" condition
c. Temperature units are degrees Celsius

The freshwater one-hour average objective is dependent on pH and fish species (salmonids present or absent), but not temperature. It is assumed that salmonids are present in waters designated in the Basin Plan as COLD or MIGR. Table 2-1 of the Basin Plan designates Santa Clara River Reach 3 as MIGR. The freshwater 30-day average objective is dependent on pH, temperature in degrees Celsius, and the presence or absence of early life stages (ELS) of fish. According to the Basin Plan, Santa Clara River Reach 3 is subject to "ELS Present" conditions year-round.

Comparison of Exceedances to Listing Policy

The number of exceedances shown in Table 2 was compared to the requirements for delisting presented in Section 4 of the Listing Policy. Table 4.1 of the Listing Policy indicates that for toxicants, if the sample size is between 48 and 59, the number of exceedances must be less than or equal to four for the constituent to be considered for delisting.

Table 2: Summary of Objective Exceedances, Data Collected from 2004-2014

	Number of Exceedances		Allowed Maximum Number of Exceedances
	One-hour Average	30-Day Average	
Dry Weather (n = 20)	0	0	4
Wet Weather (n = 35)	0	1	4
Total (n = 55) Allowable Exceedances = 4	0	1	4

As shown in Table 2, there were zero exceedances for the one-hour average objective and one exceedance of the 30-day average objective for the 55 samples analyzed. As a result, the available data collected since 2004 shows that Santa Clara River Reach 3 should be delisted per the 2004 Listing Policy.

Attachment 1 to this letter includes the data used to determine the number of exceedances of the applicable water quality objective.

PART 2: DEMONSTRATION OF COMPLIANCE WITH SANTA CLARA RIVER NITROGEN COMPOUNDS TMDL IN SANTA CLARA RIVER REACH 3

Data Used in the Analysis

Receiving Water Data

Water quality data from April 2004 to December 2014 were collected from the mass emission station ME-SCR, located approximately 2.5 miles upstream of the river crossing at California State Route 118. The data period includes 54 samples and is representative of current conditions. Samples were collected throughout the year at the monitoring location under wet and dry conditions.

Additionally, data collected by the Southern California Stormwater Monitoring Coalition on June 1, 2010 was available for the Santa Clara River station located in Reach 3, located approximately 4 miles upstream of South Mountain Road in Santa Paula. The data was downloaded from the California Environmental Data Exchange Network (CEDEN).

Samples were analyzed for ammonia, nitrate nitrogen and nitrite nitrogen according to EPA analytical methods, as presented in Attachment 1.

Outfall Data

Water quality data from October 2010 to December 2014 were collected from the major outfall stations MO-SPA and MO-FIL, discharging to Santa Clara River Reach 3. The data period includes 19 samples from MO-FIL and 17 samples from MO-SPA, and is representative of current conditions. Samples were collected throughout the year at the monitoring locations under wet and dry conditions.

Samples were analyzed for ammonia, nitrate nitrogen and nitrite nitrogen according to EPA analytical methods. Analytical methods are included in Attachment 1.

Comparison of Data to TMDL Water Quality Criteria

Ammonia and nitrate plus nitrite nitrogen results from ME-SCR were compared to TMDL numeric targets for Santa Clara River Reach 3 below Santa Paula. Results from MO-FIL and MO-SPA were compared to WLAs for permitted MS4 discharges to Reach 3. These targets and allocations are summarized in Table 3.

Table 3: Santa Clara River Reach 3 Nitrogen Compounds TMDL Targets and MS4 WLAs

Constituent	Value	
Numeric Target		
Ammonia as N [a, b]	One-hour average	2.2 mg/L
	30-day average	1.7 mg/L
Nitrate plus Nitrite as N	30-day average	4.5 mg/L
MS4 Wasteload Allocations		
Ammonia as N	One-hour average	4.2 mg/L
	30-day average	2.0 mg/L
Nitrate plus Nitrite as N	30-day average	8.1 mg/L

a. Shall not exceed more than once every three years on average (California Regional Water Quality Control Board, Los Angeles Region. *Santa Clara River, Total Maximum Daily Loads for Nitrogen Compounds, Staff Report.* June 16, 2003).
b. Targets for Reach 3 below Santa Paula were used for this analysis as they are more conservative than targets at and above Santa Paula.

The number of exceedances of applicable TMDL targets and allocations shown in Table 4 is presented in Table 4 and Table 5.

As shown in Table 4, there was one exceedance out of 55 samples for the 30-day average ammonia objective, and zero exceedances for the one-hour average ammonia objective. There were three exceedances of the 30-day average objective for nitrate plus nitrite nitrogen. The wet weather exceedances of the 30-day average objectives for ammonia and nitrate plus nitrite nitrogen were based on only one sample within the 30 day period, and are not representative of 30-day average conditions.

The TMDL includes numeric targets for nitrate plus nitrite nitrogen in Reach 3, though Reach 3 is not listed on the 303(d) list for nitrate plus nitrite nitrogen. Table 3.2 of the Listing Policy indicates that for conventionals and other constituents, if the sample size is between 55 and 60, the number of exceedances must be less than or equal to 10 for the constituent to be listed on the 303(d) List. There have been only three exceedances of the TMDL target of 4.5 mg/L for nitrate plus nitrite nitrogen. Of note, the TMDL target is more conservative than the Basin Plan objective for nitrate plus nitrogen in Reach 3 (5 mg/L) because it includes a margin of safety. Based on the analysis presented in Table 4, Reach 3 does not meet the requirements in the Listing Policy to include nitrate plus nitrite nitrogen on the 303(d) list and is not considered to be impaired.

Table 4: Summary of TMDL Target Exceedances at ME-SCR, Data collected 2004-2014

Constituent	Number of Samples	Number of Exceedances	
Ammonia as N		One-hour average	30-day average
Dry Weather	20	0	0
Wet Weather	35	1	1
Total	55	1	1
Nitrate plus Nitrite as N		30-day average	
Dry Weather	20	0	
Wet Weather	35	3	
Total	55	3	

As shown in Table 5, there were zero exceedances for the ammonia and nitrate plus nitrite WLAs at MO-FIL. There was one exceedance of the 30-day average ammonia objective at MO-SPA, and zero exceedances of the one-hour average ammonia WLA and the 30-day average nitrate plus nitrite nitrogen WLA. The wet weather exceedance of the 30-day average objective at MO-SPA for ammonia was based on only one sample for the 30 day period, and is not representative of 30-day average conditions. Based on data collected in the receiving water, which met TMDL targets, the exceedance of the 30 day WLA for ammonia at MO-SPA did not cause an exceedance in the receiving waters. The exceedance occurred on December 8, 2013, and receiving water exceedances for ammonia occurred in 2007.

Table 5: Summary of TMDL WLA Exceedances at MO-SPA and MO-FIL, Data collected 2010-2014

Site	Constituent	Number of Samples	Number of Exceedances	
MO-FIL	**Ammonia as N**		One-hour average	30-day average
	Dry Weather	4	0	0
	Wet Weather	15	0	0
	Total	19	0	0
	Nitrate plus Nitrite as N		30-day average	
	Dry Weather	4	0	
	Wet Weather	14	0	
	Total	18	0	
MO-SPA	**Ammonia as N**		One-hour average	30-day average
	Dry Weather	2	0	0
	Wet Weather	15	0	1
	Total	17	0	1
	Nitrate plus Nitrite as N		30-day average	
	Dry Weather	2	0	
	Wet Weather	15	0	
	Total	17	0	

The Ventura Countywide MS4 Permit requires that County of Ventura and Cities of Fillmore and Santa Paula implement best management practices (BMPs) to achieve the WLAs listed in Table 3. Based on the analysis presented in Table 5, WLAs are being met and are not contributing to exceedances of TMDL numeric targets or Basin Plan objectives in the receiving water. Current BMPs appear to be sufficient to meet permit WLAs, and WLAs should be considered for removal from the permit during the upcoming permit cycle.

Attachment 1 to this letter includes the data used to determine the number of exceedances of the applicable water quality objective.

Thank you for your time and consideration of our request for delisting Santa Clara River Reach 3 for ammonia. We will be happy to meet and discuss this request at your convenience. We are looking forward to a written response to this request.

If you have any questions, please contact Gerhardt Hubner at (805) 654-5051.

Sincerely,

Gerhardt Hubner, Deputy Director Ventura County Watershed Protection District	Rigo Landeros, Public Works Director City of Fillmore	Brian Yanez, Public Works Director City of Santa Paula

CC: Renee Purdy, Los Angeles Regional Water Quality Control Board
Jenny Newman, Los Angeles Regional Water Quality Control Board
Tully Clifford, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Caesar Hernandez, City of Santa Paula

Attachment 1: Data to Support Delisting and Impairment Evaluation

Site:	ME-SCR: Mass Emission station
Program:	VCWPD NPDES Stormwater Monitoring Program
Latitude:	34.29917
Longitude:	-119.10722

Site:	MO-FIL: Major Outfall
Program:	VCWPD NPDES Stormwater Monitoring Program
Latitude:	34.404586
Longitude:	-118.930686

Site:	MO-SPA: Major Outfall
Program:	VCWPD NPDES Stormwater Monitoring Program
Latitude:	34.348608
Longitude:	-119.055506

Site:	403S05247: Santa Clara River
Program:	Southern California Stormwater Monitoring Coalition (data obtained through CEDEN)
Latitude:	34.369316
Longitude:	-118.9873886

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	ME-SCR	2003/04-4	4/14/2004	Grab	pH	7.7	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2003/04-4	4/14/2004	Grab	pH	7.92	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2003/04-4	4/14/2004	Grab	Temperature	16.2	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2003/04-4	4/14/2004	Grab	Ammonia as N	0.5	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2003/04-5	5/27/2004	Grab	pH	7.9	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2003/04-5	5/27/2004	Grab	Temperature	18.2	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2003/04-5	5/27/2004	Grab	Ammonia as N	0.51	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2003/04-6	6/14/2004	Grab	pH	8.3	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2003/04-6	6/14/2004	Grab	Temperature	19.8	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2003/04-6	6/14/2004	Grab	Ammonia as N	0.05	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2004/05-1	10/17/2004	Grab	pH	7.4	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2004/05-1	10/17/2004	Grab	Temperature	18.2	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2004/05-1	10/17/2004	Grab	Ammonia as N	0.5	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2004/05-2	10/27/2004	Grab	pH	7.46	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2004/05-2	10/27/2004	Grab	Temperature	12.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2004/05-2	10/27/2004	Grab	Ammonia as N	0.21	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2004/05-3	12/5/2004	Grab	pH	8	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2004/05-3	12/5/2004	Grab	Temperature	11.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2004/05-3	12/5/2004	Grab	Ammonia as N	0.75	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2004/05-4	1/8/2005	Grab	pH	7.71	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2004/05-4	1/8/2005	Grab	Temperature	9.7	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2004/05-4	1/8/2005	Grab	Ammonia as N	0.03	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2004/05-5	5/3/2005	Grab	pH	8.3	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2004/05-5	5/3/2005	Grab	Temperature	18	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2004/05-5	5/3/2005	Grab	Ammonia as N	0.08	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2004/05-6	6/22/2005	Grab	pH	8.31	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2004/05-6	6/22/2005	Grab	Temperature	20.3	°C	Field Meter		0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	ME-SCR	2004/05-6	6/22/2005	Grab	Ammonia as N	0.01	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2005/06-1	10/17/2005	Grab	pH	8.25	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2005/06-1	10/17/2005	Grab	Temperature	17.4	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2005/06-1	10/17/2005	Grab	Ammonia as N	0.1	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2005/06-2	11/9/2005	Grab	pH	8.2	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2005/06-2	11/9/2005	Grab	Temperature	16.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2005/06-2	11/9/2005	Grab	Ammonia as N	0.06	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2005/06-3	2/19/2006	Grab	pH	8.3	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2005/06-3	2/19/2006	Grab	Temperature	9.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2005/06-3	2/19/2006	Grab	Ammonia as N	0.06	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2005/06-4	2/27/2006	Grab	pH	7.7	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2005/06-4	2/27/2006	Grab	Temperature	11.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2005/06-4	2/27/2006	Grab	Ammonia as N	0.25	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2005/06-5	5/31/2006	Grab	pH	8.3	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2005/06-5	5/31/2006	Grab	Temperature	24	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2005/06-5	5/31/2006	Grab	Ammonia as N	0.03	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2005/06-6	6/13/2006	Grab	pH	8.3	pH Units	EPA 150.1		0.01	VCWPD
Dry	ME-SCR	2005/06-6	6/13/2006	Grab	pH	8.16	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2005/06-6	6/13/2006	Grab	Temperature	24.4	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2005/06-6	6/13/2006	Grab	Ammonia as N	0.04	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2006/07-1	12/10/2006	Grab	pH	8	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2006/07-1	12/10/2006	Grab	pH	8.19	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2006/07-1	12/10/2006	Grab	Temperature	13.2	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2006/07-1	12/10/2006	Grab	Ammonia as N	0.43	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2006/07-2	1/27/2007	Grab	pH	8.02	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2006/07-2	1/27/2007	Grab	Temperature	13.3	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2006/07-2	1/27/2007	Grab	Ammonia as N	0.72	mg/L	SM 4500-NH3 F	0.01		VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2006/07-3	2/22/2007	Grab	pH	8.2	pH Units	EPA 150.1		0.01	VCWPD
Wet	ME-SCR	2006/07-3	2/22/2007	Grab	Temperature	15.6	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2006/07-3	2/22/2007	Grab	Ammonia as N	0.2	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2006/07-4	4/20/2007	Grab	pH	8	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2006/07-4	4/20/2007	Grab	pH	7.6	pH Units	SM 4500-H+ B		0.1	VCWPD
Wet	ME-SCR	2006/07-4	4/20/2007	Grab	Temperature	14.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2006/07-4	4/20/2007	Grab	Ammonia as N	0.58	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2006/07-5	5/15/2007	Grab	pH	8.3	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2006/07-5	5/15/2007	Grab	pH	8.2	pH Units	SM 4500-H+ B		0.1	VCWPD
Dry	ME-SCR	2006/07-5	5/15/2007	Grab	Temperature	17.7	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2006/07-5	5/15/2007	Grab	Ammonia as N	0.3	mg/L	SM 4500-NH3 F	0.01		VCWPD
Dry	ME-SCR	2006/07-6	6/12/2007	Grab	pH	8.2	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2006/07-6	6/12/2007	Grab	pH	8.2	pH Units	SM 4500-H+ B		0.1	VCWPD
Dry	ME-SCR	2006/07-6	6/12/2007	Grab	Temperature	25.6	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2006/07-6	6/12/2007	Grab	Ammonia as N	0.22	mg/L	SM 4500-NH3 F	0.01		VCWPD
Wet	ME-SCR	2007/08-1	9/22/2007	Grab	pH	7.9	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2007/08-1	9/22/2007	Grab	pH	8	pH Units	SM 4500-H+ B		0.1	VCWPD
Wet	ME-SCR	2007/08-1	9/22/2007	Grab	Temperature	19.6	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2007/08-1	9/22/2007	Grab	Ammonia as N	0.03	mg/L	SM 4500-NH3 F	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-2	12/18/2007	Grab	pH	7.1	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2007/08-2	12/18/2007	Grab	pH	7.9	pH Units	SM 4500-H+ B		0.1	VCWPD
Wet	ME-SCR	2007/08-2	12/18/2007	Grab	Temperature	14.2	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2007/08-2	12/18/2007	Grab	Ammonia as N	13.5	mg/L	SM 4500-NH3 F	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-3	1/23/2008	Grab	pH	6.2	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2007/08-3	1/23/2008	Grab	pH	8	pH Units	SM 4500-H+ B		0.1	VCWPD
Wet	ME-SCR	2007/08-3	1/23/2008	Grab	Temperature	9.7	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2007/08-3	1/23/2008	Grab	Ammonia as N	0.45	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	ME-SCR	2007/08-4	4/18/2008	Grab	pH	8.1	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2007/08-4	4/18/2008	Grab	pH	8.1	pH Units	SM 4500-H+ B		0.1	VCWPD
Dry	ME-SCR	2007/08-4	4/18/2008	Grab	Temperature	16.5	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2007/08-4	4/18/2008	Grab	Ammonia as N	0.11	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Dry	ME-SCR	2007/08-5	5/21/2008	Grab	pH	8.21	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2007/08-5	5/21/2008	Grab	pH	8.3	pH Units	SM 4500-H+ B		0.1	VCWPD
Dry	ME-SCR	2007/08-5	5/21/2008	Grab	Temperature	24.1	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2007/08-5	5/21/2008	Grab	Ammonia as N	0.21	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Dry	ME-SCR	2007/08-6	6/12/2008	Grab	pH	8.06	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2007/08-6	6/12/2008	Grab	pH	8.4	pH Units	SM 4500-H+ B		0.1	VCWPD
Dry	ME-SCR	2007/08-6	6/12/2008	Grab	Temperature	26.2	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2007/08-6	6/12/2008	Grab	Ammonia as N	0.16	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Grab	pH	8.04	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Grab	pH	7.9	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Grab	Temperature	15.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Grab	Ammonia as N	0.4	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Wet	ME-SCR	2008/09-2	12/15/2008	Grab	pH	7.78	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2008/09-2	12/15/2008	Grab	pH	7.5	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2008/09-2	12/15/2008	Grab	Temperature	11.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2008/09-2	12/15/2008	Grab	Ammonia as N	0.08	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Wet	ME-SCR	2008/09-3	2/6/2009	Grab	pH	7.78	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2008/09-3	2/6/2009	Grab	pH	8.1	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2008/09-3	2/6/2009	Grab	Temperature	14.2	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2008/09-3	2/6/2009	Grab	Ammonia as N	0.91	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Wet	ME-SCR	2008/09-4	3/4/2009	Grab	pH	8.27	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2008/09-4	3/4/2009	Grab	pH	8.1	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2008/09-4	3/4/2009	Grab	Temperature	16.3	°C	Field Meter		0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2008/09-4	3/4/2009	Grab	Ammonia as N	0.24	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Dry	ME-SCR	2008/09-5	4/20/2009	Grab	pH	8.42	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2008/09-5	4/20/2009	Grab	pH	8.2	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Dry	ME-SCR	2008/09-5	4/20/2009	Grab	Temperature	18.3	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2008/09-5	4/20/2009	Grab	Ammonia as N	0.09	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Dry	ME-SCR	2008/09-6	6/22/2009	Grab	pH	7.88	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2008/09-6	6/22/2009	Grab	pH	7.9	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Dry	ME-SCR	2008/09-6	6/22/2009	Grab	Temperature	16.2	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2008/09-6	6/22/2009	Grab	Ammonia as N	0.8	mg/L	SM 4500-NH3 F	0.03	0.03	VCWPD
Wet	ME-SCR	2009/10-1	10/13/2009	Grab	pH	7.62	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2009/10-1	10/13/2009	Grab	pH	7.66	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2009/10-1	10/13/2009	Grab	Temperature	17.6	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2009/10-1	10/14/2009	Composite	Ammonia as N	0.34	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2009/10-2	12/7/2009	Grab	pH	7.8	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2009/10-2	12/7/2009	Grab	pH	7.78	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2009/10-2	12/7/2009	Grab	Temperature	12.3	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2009/10-2	12/8/2009	Composite	Ammonia as N	0.71	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2009/10-3A	2/20/2010	Grab	pH	8.19	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2009/10-3A	2/20/2010	Grab	pH	8.18	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2009/10-3A	2/20/2010	Grab	Temperature	11.1	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2009/10-3A	2/22/2010	Composite	Ammonia as N	0.22	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	ME-SCR	2009/10-4	3/17/2010	Grab	pH	8.17	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2009/10-4	3/17/2010	Grab	pH	8.01	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Dry	ME-SCR	2009/10-4	3/17/2010	Grab	Temperature	12	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2009/10-4	3/18/2010	Composite	Ammonia as N	0.32	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2010/11-1	10/6/2010	Grab	pH	7.91	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2010/11-1	10/6/2010	Grab	Temperature	16.7	°C	Field Meter		0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2010/11-1	10/7/2010	Composite	Ammonia as N	0.24	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2010/11-2	10/30/2010	Grab	pH	8.21	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2010/11-2	10/30/2010	Grab	Temperature	15.4	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2010/11-2	10/31/2010	Composite	Ammonia as N	ND	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2010/11-4	2/16/2011	Grab	pH	8.05	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2010/11-4	2/16/2011	Grab	Temperature	13.7	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2010/11-4	2/17/2011	Composite	Ammonia as N	0.2	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	ME-SCR	2010/11-5	4/28/2011	Grab	pH	8.13	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2010/11-5	4/28/2011	Grab	Temperature	16.1	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2010/11-5	4/28/2011	Composite	Ammonia as N	0.063	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2011/12-1	10/5/2011	Grab	pH	7.5	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2011/12-1	10/5/2011	Grab	Temperature	16.6	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2011/12-1	10/6/2011	Composite	Ammonia as N	0.14	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2011/12-2	1/21/2012	Grab	pH	8.2	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2011/12-2	1/21/2012	Grab	Temperature	13.4	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2011/12-2	1/21/2012	Composite	Ammonia as N	0.22	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2011/12-3	3/17/2012	Grab	pH	8.1	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2011/12-3	3/17/2012	Grab	Temperature	13.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2011/12-3	3/18/2012	Composite	pH	7.78	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	ME-SCR	2011/12-3	3/18/2012	Composite	Ammonia as N	0.9	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	ME-SCR	2011/12-4	5/22/2012	Grab	pH	8.19	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2011/12-4	5/22/2012	Grab	Temperature	17.2	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2011/12-4	5/22/2012	Composite	Ammonia as N	0.048	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2012/13-2	11/17/2012	Grab	pH	8.23	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2012/13-2	11/17/2012	Grab	Temperature	16.2	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2012/13-2	11/18/2012	Composite	Ammonia as N	0.13	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2012/13-3	2/19/2013	Grab	pH	8.06	pH Units	Field Meter		0.01	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2012/13-3	2/19/2013	Grab	Temperature	13.6	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2012/13-3	2/20/2013	Composite	Ammonia as N	ND	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2012/13-4	3/8/2013	Grab	pH	8.06	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2012/13-4	3/8/2013	Grab	Temperature	14.5	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2012/13-4	3/8/2013	Composite	Ammonia as N	0.59	mg/L	EPA 350.1	0.096	0.2	VCWPD
Dry	ME-SCR	2012/13-5	4/23/2013	Grab	pH	8.17	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2012/13-5	4/23/2013	Grab	Temperature	18	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2012/13-5	4/23/2013	Composite	Ammonia as N	ND	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2013/14-1	12/7/2013	Grab	pH	7.88	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2013/14-1	12/7/2013	Grab	Temperature	10.4	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2013/14-1	12/8/2013	Composite	Ammonia as N	0.13	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2013/14-2	2/6/2014	Grab	pH	7.99	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2013/14-2	2/6/2014	Grab	Temperature	12.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2013/14-2	2/7/2014	Composite	Ammonia as N	0.087	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2013/14-3	2/27/2014	Grab	pH	7.65	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2013/14-3	2/27/2014	Grab	Temperature	13.8	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2013/14-3	2/28/2014	Composite	Ammonia as N	0.71	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	ME-SCR	2013/14-4	4/23/2014	Grab	pH	7.94	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	2013/14-4	4/23/2014	Grab	Temperature	18	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2013/14-4	4/23/2014	Composite	Ammonia as N	ND	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	ME-SCR	2014/15-3	12/12/2014	Grab	pH	7.69	pH Units	Field Meter		0.01	VCWPD
Wet	ME-SCR	2014/15-3	12/12/2014	Grab	Temperature	18.9	°C	Field Meter		0.1	VCWPD
Wet	ME-SCR	2014/15-3	12/12/2014	Composite	Ammonia as N	1	mg/L	EPA 350.1	0.19	0.4	VCWPD
Dry	ME-SCR	SSA-01	1/29/2014	Grab	pH	7.66	pH Units	Field Meter		0.01	VCWPD
Dry	ME-SCR	SSA-01	1/29/2014	Grab	Temperature	11.1	°C	Field Meter		0.1	VCWPD
Dry	ME-SCR	2003/04-4	4/15/2004	Composite	Nitrate as N	0.49	mg/L	SM 4500-NO3 E	0.02		VCWPD
Dry	ME-SCR	2003/04-4	4/15/2004	Composite	Nitrite as N	0.11	mg/L	SM 4500-NO2 B	0.02		VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	ME-SCR	2003/04-5	5/28/2004	Composite	Nitrate as N	0.35	mg/L	SM 4500-NO3 E	0.02		VCWPD
Dry	ME-SCR	2003/04-5	5/28/2004	Composite	Nitrite as N	0.14	mg/L	SM 4500-NO2 B	0.02		VCWPD
Dry	ME-SCR	2003/04-6	6/15/2004	Composite	Nitrate as N	0.31	mg/L	SM 4500-NO3 E	0.02		VCWPD
Dry	ME-SCR	2003/04-6	6/15/2004	Composite	Nitrite as N	0.16	mg/L	SM 4500-NO2 B	0.02		VCWPD
Wet	ME-SCR	2004/05-1	10/19/2004	Composite	Nitrate as N	1.8	mg/L	SM 4500-NO3 E	0.02		VCWPD
Wet	ME-SCR	2004/05-1	10/19/2004	Composite	Nitrite as N	0.18	mg/L	SM 4500-NO2 B	0.02		VCWPD
Wet	ME-SCR	2004/05-2	10/28/2004	Composite	Nitrate as N	1.42	mg/L	SM 4500-NO3 E	0.02		VCWPD
Wet	ME-SCR	2004/05-2	10/28/2004	Composite	Nitrite as N	ND	mg/L	SM 4500-NO2 B	0.02		VCWPD
Wet	ME-SCR	2004/05-3	12/6/2004	Composite	Nitrate as N	1.99	mg/L	SM 4500-NO3 E	0.02		VCWPD
Wet	ME-SCR	2004/05-3	12/6/2004	Composite	Nitrite as N	0.08	mg/L	SM 4500-NO2 B	0.02		VCWPD
Wet	ME-SCR	2004/05-4	1/9/2005	Composite	Nitrate as N	4.8	mg/L	SM 4500-NO3 E	0.02		VCWPD
Wet	ME-SCR	2004/05-4	1/9/2005	Composite	Nitrite as N	0.19	mg/L	SM 4500-NO2 B	0.02		VCWPD
Dry	ME-SCR	2004/05-5	5/4/2005	Composite	Nitrate as N	1.3	mg/L	EPA 300.0	0.02		VCWPD
Dry	ME-SCR	2004/05-5	5/4/2005	Composite	Nitrite as N	ND	mg/L	EPA 300.0	0.02		VCWPD
Dry	ME-SCR	2004/05-6	6/23/2005	Composite	Nitrate as N	1.36	mg/L	EPA 300.0	0.02		VCWPD
Dry	ME-SCR	2004/05-6	6/23/2005	Composite	Nitrite as N	0.37	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-1	10/19/2005	Composite	Nitrate as N	1.69	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-1	10/19/2005	Composite	Nitrite as N	0.164	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-2	11/10/2005	Composite	Nitrate as N	1.88	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-2	11/10/2005	Composite	Nitrite as N	0.03	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-3	2/21/2006	Composite	Nitrate as N	2.35	mg/L	EPA 300.0	0.02		VCWPD
Wet	ME-SCR	2005/06-3	2/21/2006	Composite	Nitrite as N	0.27	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2005/06-4	3/1/2006	Composite	Nitrate as N	1.93	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2005/06-4	3/1/2006	Composite	Nitrite as N	0.28	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2005/06-5	6/1/2006	Composite	Nitrate as N	0.84	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2005/06-5	6/1/2006	Composite	Nitrite as N	0.03	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2005/06-6	6/14/2006	Composite	Nitrate as N	2.03	mg/L	EPA 300.0	0.01		VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	ME-SCR	2005/06-6	6/14/2006	Composite	Nitrite as N	0.08	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-1	12/11/2006	Composite	Nitrate as N	2.6	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-1	12/11/2006	Composite	Nitrite as N	0.02	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2006/07-2	1/29/2007	Composite	Nitrate as N	2.46	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-2	1/29/2007	Composite	Nitrite as N	0.1	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-3	2/23/2007	Composite	Nitrate as N	1.8	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-3	2/23/2007	Composite	Nitrite as N	0.06	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-4	4/21/2007	Composite	Nitrate as N	1.86	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2006/07-4	4/21/2007	Composite	Nitrite as N	ND	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2006/07-5	5/16/2007	Composite	Nitrate as N	2.77	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2006/07-5	5/16/2007	Composite	Nitrite as N	0.56	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2006/07-6	6/13/2007	Composite	Nitrate as N	1.53	mg/L	EPA 300.0	0.01		VCWPD
Dry	ME-SCR	2006/07-6	6/13/2007	Composite	Nitrite as N	0.12	mg/L	EPA 300.0	0.01		VCWPD
Wet	ME-SCR	2007/08-1	9/24/2007	Composite	Nitrate as N	ND	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-1	9/24/2007	Composite	Nitrite as N	ND	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-2	12/20/2007	Composite	Nitrate as N	0.8	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-2	12/20/2007	Composite	Nitrite as N	ND	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-3	1/24/2008	Composite	Nitrate as N	1.68	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2007/08-3	1/24/2008	Composite	Nitrite as N	0.13	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-4	4/18/2008	Composite	Nitrate as N	1.01	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-4	4/18/2008	Composite	Nitrite as N	0.1	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-5	5/22/2008	Composite	Nitrate as N	1.09	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-5	5/22/2008	Composite	Nitrite as N	0.15	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-6	6/13/2008	Composite	Nitrate as N	0.98	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2007/08-6	6/13/2008	Composite	Nitrite as N	0.15	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Composite	Nitrate as N	2.17	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-1	11/26/2008	Composite	Nitrite as N	0.12	mg/L	EPA 300.0	0.01	0.05	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2008/09-2	12/16/2008	Composite	Nitrate as N	2.894	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-2	12/16/2008	Composite	Nitrite as N	0.118	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-3	2/7/2009	Composite	Nitrate as N	1.75	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-3	2/7/2009	Composite	Nitrite as N	0.11	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-4	3/5/2009	Composite	Nitrate as N	1.19	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2008/09-4	3/5/2009	Composite	Nitrite as N	0.07	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2008/09-5	4/21/2009	Composite	Nitrate as N	1.63	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2008/09-5	4/21/2009	Composite	Nitrite as N	0.11	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2008/09-6	6/23/2009	Composite	Nitrate as N	1.8	mg/L	EPA 300.0	0.01	0.05	VCWPD
Dry	ME-SCR	2008/09-6	6/23/2009	Composite	Nitrite as N	0.42	mg/L	EPA 300.0	0.01	0.05	VCWPD
Wet	ME-SCR	2009/10-1	10/14/2009	Composite	Nitrate + Nitrite as N	2.1	mg/L	EPA 353.2	0.033	0.1	VCWPD
Wet	ME-SCR	2009/10-2	12/8/2009	Composite	Nitrate + Nitrite as N	2.7	mg/L	EPA 353.2	0.033	0.1	VCWPD
Wet	ME-SCR	2009/10-3A	2/22/2010	Composite	Nitrate + Nitrite as N	1	mg/L	EPA 353.2	0.033	0.1	VCWPD
Dry	ME-SCR	2009/10-4	3/18/2010	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.033	0.1	VCWPD
Wet	ME-SCR	2010/11-1	10/7/2010	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2010/11-2	10/31/2010	Composite	Nitrate + Nitrite as N	0.22	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2010/11-4	2/17/2011	Composite	Nitrate + Nitrite as N	1.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	ME-SCR	2010/11-5	4/28/2011	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2011/12-1	10/6/2011	Composite	Nitrate + Nitrite as N	1.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2011/12-2	1/21/2012	Composite	Nitrate + Nitrite as N	1.7	mg/L	EPA 353.2	0.01	0.1	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	ME-SCR	2011/12-3	3/18/2012	Composite	Nitrate + Nitrite as N	1.8	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	ME-SCR	2011/12-4	5/22/2012	Composite	Nitrate + Nitrite as N	1.3	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2012/13-2	11/18/2012	Composite	Nitrate + Nitrite as N	1.8	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2012/13-3	2/20/2013	Composite	Nitrate + Nitrite as N	1.5	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2012/13-4	3/8/2013	Composite	Nitrate + Nitrite as N	1.8	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	ME-SCR	2012/13-5	4/23/2013	Composite	Nitrate + Nitrite as N	1.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2013/14-1	12/8/2013	Composite	Nitrate + Nitrite as N	1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2013/14-2	2/7/2014	Composite	Nitrate + Nitrite as N	0.17	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2013/14-3	2/28/2014	Composite	Nitrate + Nitrite as N	4.6	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	ME-SCR	2013/14-4	4/23/2014	Composite	Nitrate + Nitrite as N	0.68	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	ME-SCR	2014/15-3	12/12/2014	Composite	Nitrate + Nitrite as N	8.9	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2010/11-1	10/6/2010	Grab	pH	7.85	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2010/11-1	10/6/2010	Grab	Temperature	17.4	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2010/11-1	10/7/2010	Composite	Ammonia as N	0.57	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2010/11-2	10/30/2010	Grab	pH	7.55	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2010/11-2	10/30/2010	Grab	Temperature	15.3	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2010/11-2	10/31/2010	Composite	Ammonia as N	0.33	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2010/11-4	2/16/2011	Grab	Temperature	14.4	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2010/11-4	2/17/2011	Composite	Ammonia as N	0.19	mg/L	EPA 350.1	0.048	0.1	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	MO-FIL	2010/11-5	4/28/2011	Grab	pH	7.83	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2010/11-5	4/28/2011	Grab	Temperature	16.7	°C	Field Meter		0.1	VCWPD
Dry	MO-FIL	2010/11-5	4/28/2011	Composite	Ammonia as N	0.17	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2011/12-1	10/5/2011	Grab	pH	7.2	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2011/12-1	10/5/2011	Grab	Temperature	18.9	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2011/12-1	10/6/2011	Composite	Ammonia as N	0.35	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2011/12-2	1/21/2012	Grab	pH	7.54	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2011/12-2	1/21/2012	Grab	Temperature	16.2	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2011/12-2	1/21/2012	Composite	Ammonia as N	0.42	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2011/12-3	3/17/2012	Grab	pH	7.6	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2011/12-3	3/17/2012	Grab	Temperature	16.3	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2011/12-3	3/18/2012	Composite	pH	7.23	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD
Wet	MO-FIL	2011/12-3	3/18/2012	Composite	Ammonia as N	0.34	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2011/12-4	5/22/2012	Grab	pH	8.04	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2011/12-4	5/22/2012	Grab	Temperature	18.8	°C	Field Meter		0.1	VCWPD
Dry	MO-FIL	2011/12-4	5/22/2012	Composite	Ammonia as N	0.21	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2011-DRY	8/17/2011	Grab	pH	7.73	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2011-DRY	8/17/2011	Grab	Temperature	19.7	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2012/13-2	11/17/2012	Grab	pH	7.62	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2012/13-2	11/17/2012	Grab	Temperature	16	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2012/13-2	11/18/2012	Composite	Ammonia as N	0.55	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2012/13-3	2/19/2013	Grab	Temperature	16	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2012/13-3	2/19/2013	Grab	pH	7.74	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2012/13-3	2/20/2013	Composite	Ammonia as N	0.49	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2012/13-4	3/7/2013	Grab	pH	7.9	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2012/13-4	3/7/2013	Grab	Temperature	15	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2012/13-4	3/8/2013	Composite	Ammonia as N	0.34	mg/L	EPA 350.1	0.048	0.1	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	MO-FIL	2012/13-5	4/23/2013	Grab	pH	7.37	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2012/13-5	4/23/2013	Grab	Temperature	17.7	°C	Field Meter		0.1	VCWPD
Dry	MO-FIL	2012/13-5	4/23/2013	Composite	Ammonia as N	0.42	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2012-DRY	8/15/2012	Grab	pH	7.81	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2012-DRY	8/15/2012	Grab	Temperature	21.1	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2013/14-1	12/7/2013	Composite	pH	8.1	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2013/14-1	12/7/2013	Composite	Temperature	11.1	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2013/14-1	12/8/2013	Composite	Ammonia as N	0.68	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2013/14-2	2/6/2014	Grab	pH	7.81	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2013/14-2	2/6/2014	Grab	Temperature	15.5	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2013/14-2	2/7/2014	Composite	Ammonia as N	0.83	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2013/14-3	2/27/2014	Grab	pH	7.7	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2013/14-3	2/27/2014	Grab	Temperature	14.5	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2013/14-3	2/28/2014	Composite	Ammonia as N	0.84	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2013/14-4	4/23/2014	Grab	pH	8.3	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2013/14-4	4/23/2014	Grab	Temperature	17.6	°C	Field Meter		0.1	VCWPD
Dry	MO-FIL	2013/14-4	4/23/2014	Composite	Ammonia as N	0.42	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2013-DRY	8/12/2013	Grab	pH	7.54	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2013-DRY	8/12/2013	Grab	Temperature	21	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2014/15-1	10/31/2014	Grab	pH	7.63	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2014/15-1	10/31/2014	Grab	Temperature	17.8	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2014/15-1	11/1/2014	Composite	Ammonia as N	0.66	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2014/15-2	12/2/2014	Grab	pH	7.2	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2014/15-2	12/2/2014	Grab	Temperature	15	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2014/15-2	12/3/2014	Composite	Ammonia as N	0.25	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-FIL	2014/15-3	12/12/2014	Grab	pH	7.77	pH Units	Field Meter		0.01	VCWPD
Wet	MO-FIL	2014/15-3	12/12/2014	Grab	Temperature	17	°C	Field Meter		0.1	VCWPD

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Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	MO-FIL	2014/15-3	12/12/2014	Composite	Ammonia as N	0.16	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-FIL	2014-DRY	8/5/2014	Grab	pH	8.31	pH Units	Field Meter		0.01	VCWPD
Dry	MO-FIL	2014-DRY	8/5/2014	Grab	Temperature	21	°C	Field Meter		0.1	VCWPD
Wet	MO-FIL	2010/11-1	10/7/2010	Composite	Nitrate + Nitrite as N	1.2	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2010/11-2	10/31/2010	Composite	Nitrate + Nitrite as N	0.67	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2010/11-4	2/17/2011	Composite	Nitrate + Nitrite as N	0.68	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	MO-FIL	2010/11-5	4/28/2011	Composite	Nitrate + Nitrite as N	1.3	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2011/12-1	10/6/2011	Composite	Nitrate + Nitrite as N	1.3	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2011/12-2	1/21/2012	Composite	Nitrate + Nitrite as N	1.3	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2011/12-3	3/18/2012	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	MO-FIL	2011/12-4	5/22/2012	Composite	Nitrate + Nitrite as N	2.5	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2012/13-2	11/18/2012	Composite	Nitrate + Nitrite as N	1.6	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2012/13-3	2/20/2013	Composite	Nitrate + Nitrite as N	2	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2012/13-4	3/8/2013	Composite	Nitrate + Nitrite as N	1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	MO-FIL	2012/13-5	4/23/2013	Composite	Nitrate + Nitrite as N	2.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2013/14-2	2/7/2014	Composite	Nitrate + Nitrite as N	1.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2013/14-3	2/28/2014	Composite	Nitrate + Nitrite as N	1.3	mg/L	EPA 353.2	0.01	0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Dry	MO-FIL	2013/14-4	4/23/2014	Composite	Nitrate + Nitrite as N	2.6	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2014/15-1	11/1/2014	Composite	Nitrate + Nitrite as N	2.8	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2014/15-2	12/3/2014	Composite	Nitrate + Nitrite as N	2	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-FIL	2014/15-3	12/12/2014	Composite	Nitrate + Nitrite as N	0.86	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2010/11-1	10/6/2010	Grab	Temperature	16.1	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2010/11-1	10/6/2010	Grab	pH	7.41	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2010/11-1	10/7/2010	Composite	Ammonia as N	1.3	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2010/11-2	10/30/2010	Grab	pH	7.51	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2010/11-2	10/30/2010	Grab	Temperature	14.8	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2010/11-2	10/30/2010	Composite	Ammonia as N	0.57	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2010/11-4	2/16/2011	Grab	Temperature	13.5	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2010/11-4	2/17/2011	Composite	Ammonia as N	0.31	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-SPA	2010/11-5	4/28/2011	Grab	pH	8.31	pH Units	Field Meter		0.01	VCWPD
Dry	MO-SPA	2010/11-5	4/28/2011	Grab	Temperature	15.2	°C	Field Meter		0.1	VCWPD
Dry	MO-SPA	2010/11-5	4/28/2011	Composite	Ammonia as N	ND	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2011/12-1	10/5/2011	Grab	pH	7.3	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2011/12-1	10/5/2011	Grab	Temperature	17.6	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2011/12-1	10/5/2011	Composite	Ammonia as N	0.81	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2011/12-2	1/21/2012	Grab	pH	7.38	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2011/12-2	1/21/2012	Grab	Temperature	14.1	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2011/12-2	1/21/2012	Composite	Ammonia as N	1	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2011/12-3	3/17/2012	Grab	pH	7.4	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2011/12-3	3/17/2012	Grab	Temperature	14.6	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2011/12-3	3/18/2012	Composite	pH	7.19	pH Units	SM 4500-H+ B	0.1	0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	MO-SPA	2011/12-3	3/18/2012	Composite	Ammonia as N	0.56	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2012/13-2	11/17/2012	Grab	pH	7.42	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2012/13-2	11/17/2012	Grab	Temperature	15.2	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2012/13-2	11/18/2012	Composite	Ammonia as N	1.9	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2012/13-3	2/19/2013	Grab	pH	7.68	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2012/13-3	2/19/2013	Grab	Temperature	12.3	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2012/13-3	2/20/2013	Composite	Ammonia as N	1.4	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2012/13-4	3/7/2013	Grab	pH	7.24	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2012/13-4	3/7/2013	Grab	Temperature	14.8	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2012/13-4	3/8/2013	Composite	Ammonia as N	0.76	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2013/14-1	12/7/2013	Grab	pH	7.16	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2013/14-1	12/7/2013	Grab	Temperature	9.4	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2013/14-1	12/8/2013	Composite	Ammonia as N	2.7	mg/L	EPA 350.1	0.19	0.4	VCWPD
Wet	MO-SPA	2013/14-2	2/6/2014	Grab	pH	7.81	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2013/14-2	2/6/2014	Grab	Temperature	15.5	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2013/14-2	2/7/2014	Composite	Ammonia as N	1.3	mg/L	EPA 350.1	0.096	0.2	VCWPD
Wet	MO-SPA	2013/14-3	2/27/2014	Grab	pH	7.13	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2013/14-3	2/27/2014	Grab	Temperature	14.3	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2013/14-3	2/28/2014	Composite	Ammonia as N	0.64	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-SPA	2013/14-4	4/23/2014	Composite	Ammonia as N	0.4	mg/L	EPA 350.1	0.048	0.1	VCWPD
Dry	MO-SPA	2013-DRY	8/13/2013	Grab	pH	8.2	pH Units	Field Meter		0.01	VCWPD
Dry	MO-SPA	2013-DRY	8/13/2013	Grab	Temperature	18.9	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2014/15-1	11/1/2014	Composite	Ammonia as N	1.8	mg/L	EPA 350.1	0.096	0.2	VCWPD
Wet	MO-SPA	2014/15-2	12/2/2014	Grab	Temperature	14.7	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2014/15-2	12/2/2014	Grab	pH	6.26	pH Units	Field Meter		0.01	VCWPD
Wet	MO-SPA	2014/15-2	12/3/2014	Composite	Ammonia as N	0.25	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2014/15-3	12/12/2014	Grab	pH	7.49	pH Units	Field Meter		0.01	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	MO-SPA	2014/15-3	12/12/2014	Grab	Temperature	16.3	°C	Field Meter		0.1	VCWPD
Wet	MO-SPA	2014/15-3	12/12/2014	Composite	Ammonia as N	0.26	mg/L	EPA 350.1	0.048	0.1	VCWPD
Wet	MO-SPA	2010/11-1	10/7/2010	Composite	Nitrate + Nitrite as N	1.4	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2010/11-2	10/30/2010	Composite	Nitrate + Nitrite as N	1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2010/11-4	2/17/2011	Composite	Nitrate + Nitrite as N	0.6	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	MO-SPA	2010/11-5	4/28/2011	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2011/12-1	10/5/2011	Composite	Nitrate + Nitrite as N	1.8	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2011/12-2	1/21/2012	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2011/12-3	3/18/2012	Composite	Nitrate + Nitrite as N	0.6	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2012/13-2	11/18/2012	Composite	Nitrate + Nitrite as N	2.3	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2012/13-3	2/20/2013	Composite	Nitrate + Nitrite as N	1.2	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2012/13-4	3/8/2013	Composite	Nitrate + Nitrite as N	0.81	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2013/14-1	12/8/2013	Composite	Nitrate + Nitrite as N	1.7	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2013/14-2	2/7/2014	Composite	Nitrate + Nitrite as N	1.9	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2013/14-3	2/28/2014	Composite	Nitrate + Nitrite as N	1.1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Dry	MO-SPA	2013/14-4	4/23/2014	Composite	Nitrate + Nitrite as N	2.3	mg/L	EPA 353.2	0.01	0.1	VCWPD

Attachment 1: Data to Support Delisting and Impairment Evaluation

Event Type	Site	VCWPD Event ID	Sample Date	Sample Method	Constituent	Result	Units	Method	MDL	RL	Source
Wet	MO-SPA	2014/15-1	11/1/2014	Composite	Nitrate + Nitrite as N	2.9	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2014/15-2	12/3/2014	Composite	Nitrate + Nitrite as N	1	mg/L	EPA 353.2	0.01	0.1	VCWPD
Wet	MO-SPA	2014/15-3	12/12/2014	Composite	Nitrate + Nitrite as N	0.78	mg/L	EPA 353.2	0.01	0.1	VCWPD
*	403S05247	n/a	6/1/2010	Grab	Ammonia as N	ND	mg/L	SM 4500-NH3 H v21	0.01	0.02	CEDEN
*	403S05247	n/a	6/1/2010	Grab	pH	8.38	pH Units	Field Meter			CEDEN
*	403S05247	n/a	6/1/2010	Grab	Temperature	22.62	°C	Field Meter			CEDEN
*	403S05247	n/a	6/1/2010	Grab	Nitrate as N	0.25	mg/L	SM 4500-NO3 I v21	0.005	0.01	CEDEN
*	403S05247	n/a	6/1/2010	Grab	Nitrite as N	0.0042	mg/L	SM 4500-NO2 B v20	0.002	0.005	CEDEN

* Assumed to be dry weather samples based on weather data from CIMIS station #198 in Santa Paula

From:	Mutkowska, Ewelina
To:	Zhu, Jun@Waterboards
Cc:	Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Subject:	RE: Santa Clara River_Delisting of Ammonia
Date:	Monday, February 29, 2016 10:20:30 AM
Attachments:	image001.jpg

I requested the Excel files and will forward to you as soon as I receive it. Best, Ewelina

From: Zhu, Jun@Waterboards [mailto:Jun.Zhu@waterboards.ca.gov]
Sent: Monday, February 29, 2016 10:19 AM
To: Mutkowska, Ewelina <Ewelina.Mutkowska@ventura.org>
Cc: Nye, LB@Waterboards <LB.Nye@waterboards.ca.gov>; Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov>
Subject: RE: Santa Clara River_Delisting of Ammonia

Thanks, Ewelina. Yes, an Excel would be much more desirable and it would be much easier for us to check how the consultants did their work.

Thank you very much.

Jun

Jun Zhu, Ph.D.
TMDL & Standards Unit
California Environmental Protection Agency
Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013, USA
Tel: (213) 576-6681
Fax: (213) 576-6686
Email: jzhu@waterboards.ca.gov
Web: www.waterboards.ca.gov/losangeles

From: Mutkowska, Ewelina [mailto:Ewelina.Mutkowska@ventura.org]
Sent: Monday, February 29, 2016 10:17 AM
To: Zhu, Jun@Waterboards
Cc: Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Subject: RE: Santa Clara River_Delisting of Ammonia

Jun,

I have MS Word file handy… if this doesn't work, please let me know and I will request an Excel from our consultant.

Ewelina

Ewelina Mutkowska
Stormwater Program Manager
County of Ventura Public Works Agency
(805) 645-1382
Fax (805) 654-3350
ewelina.mutkowska@ventura.org

From: Zhu, Jun@Waterboards [mailto:Jun.Zhu@waterboards.ca.gov]
Sent: Monday, February 29, 2016 10:08 AM
To: Mutkowska, Ewelina <Ewelina.Mutkowska@ventura.org>
Cc: Nye, LB@Waterboards <LB.Nye@waterboards.ca.gov>; Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov>
Subject: FW: Santa Clara River_Delisting of Ammonia

Good morning Ewelina,

A recent request for delisting was forwarded to me and I was wondering if it is possible for me to get the data in the Excel format that was used to support the request for delisting as listed in the letter (attached). Please also include any calculations in the spreadsheet used to determine the concentrations of Ammonia found in Santa Clara River Reach 3.

Thank you very much.

Jun

Jun Zhu, Ph.D.
TMDL & Standards Unit
California Environmental Protection Agency
Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013, USA
Tel: (213) 576-6681
Fax: (213) 576-6686
Email: jzhu@waterboards.ca.gov
Web: www.waterboards.ca.gov/losangeles

From: Newman, Jenny@Waterboards
Sent: Monday, October 05, 2015 10:29 AM
To: Zhu, Jun@Waterboards; Wang, Kangshi@Waterboards
Subject: FW: Santa Clara River_Delisting of Ammonia

I'm not sure what to do with this info. Do you guys or does State Board have a filing system for these types of requests?

Jenny

From: Newman, Jenny@Waterboards
Sent: Wednesday, August 26, 2015 5:58 PM
To: Newman, Jenny@Waterboards
Subject: FW: Santa Clara River_Delisting of Ammonia

From: Serr, Cheryl [mailto:Cheryl.Serr@ventura.org]
Sent: Wednesday, June 10, 2015 12:23 PM
To: Unger, Samuel@Waterboards; Purdy, Renee@Waterboards; Newman, Jenny@Waterboards; WB-RB4-losangeles
Cc: Hubner, Gerhardt; Mutkowska, Ewelina; rigol@ci.fillmore.ca.us; davidb@ci.fillmore.ca.us; Yanez, Brian; mvconsulting1@gmail.com; mlapraik@cilfillmore.ca.us; chernandez@spcity.org; AshliD@lwa.com
Subject: Santa Clara River_Delisting of Ammonia

Mr. Unger:

On behalf of Gerhardt Hubner, Deputy Director of the VC Watershed Protection District, Rigo Landeros, Public Works Director of the City of Fillmore, and Brian Yanez, Public Works Director of the City of Santa Paula, attached is a signed letter requesting delisting of ammonia and demonstration of absence of nitrogen compounds in the Santa Clara River Reach 3.

If you have any questions, please feel free to contact Mr. Hubner at (805) 654-5051.

Respectfully,
Cheryl Serr
Management Assistant
800 S. Victoria Ave.
Ventura, CA 93009-1610
(805) 645-1321

WPD

From:	Mutkowska, Ewelina
To:	Zhu, Jun@Waterboards
Cc:	Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Subject:	RE: Santa Clara River_Delisting of Ammonia
Date:	Tuesday, March 08, 2016 4:05:58 PM
Attachments:	Reach 3 Ammonia Delisting Data.xlsx

Jun,

Per your request, attached is excel spreadsheet with data supporting our request for delisting of ammonia/nitrogen for Santa Clara River Reach 3.

If you have any questions or need additional information, please let me know.

Best, Ewelina

Ewelina Mutkowska
Stormwater Program Manager
County of Ventura Public Works Agency
(805) 645-1382
Fax (805) 654-3350
ewelina.mutkowska@ventura.org

From: Zhu, Jun@Waterboards [mailto:Jun.Zhu@waterboards.ca.gov]
Sent: Monday, February 29, 2016 10:08 AM
To: Mutkowska, Ewelina <Ewelina.Mutkowska@ventura.org>
Cc: Nye, LB@Waterboards <LB.Nye@waterboards.ca.gov>; Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov>
Subject: FW: Santa Clara River_Delisting of Ammonia

Good morning Ewelina,

A recent request for delisting was forwarded to me and I was wondering if it is possible for me to get the data in the Excel format that was used to support the request for delisting as listed in the letter (attached). Please also include any calculations in the spreadsheet used to determine the concentrations of Ammonia found in Santa Clara River Reach 3.

Thank you very much.

Jun

Jun Zhu, Ph.D.
TMDL & Standards Unit
California Environmental Protection Agency

Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013, USA
Tel: (213) 576-6681
Fax: (213) 576-6686
Email: jzhu@waterboards.ca.gov
Web: www.waterboards.ca.gov/losangeles

CD Contains:

Data Supporting Delisting of Ammonia/Nitrogen for Santa Clara River Reach 3

From:	Westfall, Josh
To:	Zhu, Jun@Waterboards
Subject:	RE: Request for Clarification - Proposed Updates to the 303(d) List
Date:	Friday, February 10, 2017 10:17:36 AM
Attachments:	image001.png

I hope this is my final need for clarification.

It appears that Rio Hondo Reach 2, toxicity, should also be in Appendix A. Is this correct?

From: Westfall, Josh
Sent: Friday, February 10, 2017 10:01 AM
To: 'Zhu, Jun@Waterboards'
Subject: RE: Request for Clarification - Proposed Updates to the 303(d) List

Jun,

Thank you for your time; your explanation was extremely helpful. Could you take a look at San Jose Creek Reach 1 (SG Confluence to Temple St.)? Appendix A does not show this as being recommended for a new listing, but it is listed as a new listing in Appendix G.

Josh

From: Zhu, Jun@Waterboards [mailto:Jun.Zhu@waterboards.ca.gov]
Sent: Thursday, February 09, 2017 4:25 PM
To: Westfall, Josh; Nye, LB@Waterboards
Cc: Markle, Phil; Munakata, Naoko
Subject: RE: Request for Clarification - Proposed Updates to the 303(d) List

Hi Josh,

I left a voice message around 3 pm today. Basically, there is no conflict between Appendix A and Appendix G because Appendix A only tracks changes made to the previous 303(d) list. Since Coyote Creek Zinc was already delisted in the previous listing cycle and remains delisted in the current listing cycle, no “new listing” or “new delisting” was made for it in Appendix A. But, the delisting decisions (previous and current) are reflected in Appendix G.

Hope this helps. Let me know if you have any questions.

Jun

Jun Zhu, Ph.D.
TMDL & Standards Unit
California Environmental Protection Agency
Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200

Los Angeles, CA 90013, USA
Tel: (213) 576-6681
Fax: (213) 576-6686
Email: jzhu@waterboards.ca.gov
Web: www.waterboards.ca.gov/losangeles

From: Westfall, Josh [mailto:jwestfall@lacsd.org]
Sent: Thursday, February 09, 2017 12:30 PM
To: Zhu, Jun@Waterboards; Nye, LB@Waterboards
Cc: Markle, Phil; Munakata, Naoko
Subject: Request for Clarification - Proposed Updates to the 303(d) List

Hi Dr. Zhu,
We have noticed some apparent conflict between documents released yesterday regarding the proposed revisions to the 303(d) list for the Los Angeles Region. Specifically, the table of proposed updates (Appendix A) does not match the Fact Sheets summary (Appendix G). For example, three different source documents (Appendix A, Appendix G "New or Revised Fact Sheets" Summary, Appendix G Coyote Creek Zinc Supporting Information). Please advise as to which source should be followed. Thank you.

Table 1. Coyote Creek New Delistings, by Source Document

Appendix A	Fact Sheet Summary	Fact Sheet
Ammonia	Zinc	Zinc
Lead		Lead
		Ammonia

JOSHUA D. WESTFALL, BCES | Environmental Scientist | Reuse & Compliance Section | 562.908.4288 x2815
SANITATION DISTRICTS OF LOS ANGELES COUNTY | 1955 Workman Mill Rd. Whittier, CA 90601
Converting Waste Into Resources | www.LACSD.org

From:	jweiner.venturacoastkeeper@gmail.com
To:	Wang, Kangshi@Waterboards
Cc:	Zhu, Jun@Waterboards; Nye, LB@Waterboards
Subject:	Re: VCK 303(d) Data 7 of X Fwd: Ormond lagoon water quality analysis results
Date:	Monday, March 6, 2017 9:05:16 PM
Attachments:	image001.jpg ~WRD000.jpg

Dear Kangshi,

Thank you for confirming receipt. Before we submit comments, can we schedule a call in the next week to discuss what the Regional Board learned about what happened to our submission?

Best of Regards,

Jason

On Mon, Mar 6, 2017 at 3:14 PM, Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov> wrote:

> Dear Jason,
>
> I have received seven emails from you. Please also make sure to address an official letter to us following the requirement in the attached letter by 5:00 pm on March 30, 2017. We will respond your comments and concerns. Thank you.
>
> Kangshi (Kenny) Wang, Ph.D.
>
> Water Resources Control Engineer
>
> Regional Water Quality Control Board, Los Angeles Region
>
> 320 W. 4th Street, Suite 200
>
> Los Angeles, CA 90013
>
> Phone: (213) 576-6780
>
> **From:** jweiner.venturacoastkeeper@gmail.com [mailto:jweiner.venturacoastkeeper@gmail.com]

On Behalf Of Jason Weiner
Sent: Monday, March 6, 2017 1:01 PM
To: Zhu, Jun@Waterboards <Jun.Zhu@waterboards.ca.gov>; Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov>
Subject: Fwd: VCK 303(d) Data 7 of X Fwd: Ormond lagoon water quality analysis results

Dear Kangshi,

Real good talking with you this morning and thanks for your time, work, and assistance with this matter. Attached in the next 7 emails is Wishtoyo Foundation's and our Ventura Coastkeeper Program's August 30, 2010 303(d) submission to the State Water Resources Control Board. Please confirm receipt of each of these emails, and that the Regional Board will be corresponding with the SWRCB as soon as possible to determine what happened to our data/submission and why the Draft 2016 Section 303(d) and 305(b) Integrated Report for public review does not contain any proposed update/listings based on our August 30, 2010 submission.

This is email 7 of X.

My very best,

Jason

---------- Forwarded message ----------
From: **Jason Weiner** <jweiner.venturacoastkeeper@wishtoyo.org>
Date: Tue, Aug 31, 2010 at 12:19 AM
Subject: VCK 303(d) Data 7 of X Fwd: Ormond lagoon water quality analysis results
To: jshu@waterboards.ca.gov

---------- Forwarded message ----------
From: <Praskins.Wayne@epamail.epa.gov>
Date: Mon, Aug 30, 2010 at 3:12 PM
Subject: Re: Ormond lagoon water quality analysis results
To: jweiner.venturacoastkeeper@wishtoyo.org
Cc: JSHU@waterboards.ca.gov

Jason -

As requested, attached are preliminary results of water quality analyses completed by EPA and its contractors in Nov 2009 as part of our investigations at the Halaco Superfund site in Oxnard, CA. You indicated that you may submit these data to the State or Regional Board in connection with the CWA 303(d) program. The results are for metals and general chemistry (which includes nitrate); we did not analyze for pesticides or other nutrients. The samples were collected after a significant storm, and may reflect dilution from rainfall.

Sampling locations include the lower portion of the Oxnard Industrial Drain (OID), the lagoon into which the OID drains (LAG), the J St Drain which also feeds the lagoon (JSD), the ditch south of the Halaco waste pile (WMU), the Hueneme Drain (HUD), and the ocean (OCE).

As I explained on the phone, the results have not been fully reviewed or validated and are subject to change. Note that many of the results have preliminary data qualifiers such as "J" (estimated value) and/or "U" (not detected).

For approximate sample locations and explanation of other abbreviations, see the 9/01/09 Field Sampling Plan (available on EPA's website at http://www.epa.gov/region9/halaco under the heading "Technical Documents").

The results are as follows.

Metals
MY5H56
MY5H57
MY5LR6
MY5LR7

Nitrate

9322A

We also sampled surface water in 2/10, but those samples were collected when the beach berm had breached and reflect mixing of fresh and seawater. Please email or call with any questions.

Wayne Praskins
Project Manager
USEPA Superfund Program
75 Hawthorne Street
San Francisco, CA 94105

(415) 972-3181

From: "Jason" <jweiner.venturacoastkeeper@wishtoyo.org>
To: Wayne Praskins/R9/USEPA/US@EPA
Date: 08/24/2010 08:56 AM
Subject: Ormond lagoon water quality analysis results
Sent by: Jason Weiner <jweiner.venturacoastkeeper@gmail.com>

Dear Wayne,

Hope all is well. I'm working on a 303d water quality project for the Ormond Beach Wetlands Lagoon and was wondering if you had any water column or sediment pesticides, metals, or other data you could share with Ventura Coastkeeper.

Thanks and Best of Regards,

Jason
Sent from my Verizon Wireless BlackBerry

--
Jason A. Weiner
Associate Director & Staff Attorney
Ventura Coastkeeper

3875-A Telegraph Road, #423
Ventura, CA 93003

Office: (805) 658-1120
Cell: (805) 823-3301
Fax: (805) 258- 5135
jweiner.venturacoastkeeper@wishtoyo.org

--

Jason A. Weiner | General Counsel, Water Initiative Director

Wishtoyo Foundation & Ventura Coastkeeper

9452 Telephone Rd. #432

Ventura, CA 93004

T: 805.823.3301 | F: 805.258.5107

jweiner.venturacoastkeeper@wishtoyo.org

www.wishtoyo.org

Image removed by sender.

Wishtoyo's Water Initiative Page

Wishtoyo's Chumash Village Page

--

Jason A. Weiner | General Counsel, Water Initiative Director
Wishtoyo Foundation & Ventura Coastkeeper
9452 Telephone Rd. #432
Ventura, CA 93004
T: 805.823.3301 | F: 805.258.5107
jweiner.venturacoastkeeper@wishtoyo.org
www.wishtoyo.org

Wishtoyo's Water Initiative Page

Wishtoyo's Chumash Village Page

CD Contains:

Ventura Coastkeeper Water Quality Data and Information for 2012 California Integrated Report [Clean Water Act Sections 305(b) and 303(d)]

Wang, Kangshi@Waterboards

From:	Markle, Phil <PMarkle@lacsd.org>
Sent:	Wednesday, March 22, 2017 12:06 PM
To:	Zhu, Jun@Waterboards
Cc:	Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Subject:	RE: Meeting Tomorrow

Certainly, and thank you for the time and all your efforts.

List of attendees:

Ann Heil, Division Engineer
Naoko Munakata, Supervising Engineer
Phil Markle, Senior Environmental Scientist
Josh Westfall, Environmental Scientist

PHILIP MARKLE BCES | Environmental Scientist | Monitoring Section | 562.908.4288 x2808
SANITATION DISTRICTS OF LOS ANGELES COUNTY | 1955 Workman Mill Road, Whittier, CA 90601
Converting Waste Into Resources | www.LACSD.org

From: Zhu, Jun@Waterboards [mailto:Jun.Zhu@waterboards.ca.gov]
Sent: Wednesday, March 22, 2017 12:02 PM
To: Markle, Phil
Cc: Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Subject: RE: Meeting Tomorrow

Hi Phil,

Thanks again for meeting with us today.

For our administrative record keeping purposes, could you please provide a list of the names and titles of all meeting attendees from your agency?

Thank you very much.

Jun

Jun Zhu, Ph.D.
TMDL & Standards Unit
California Environmental Protection Agency
Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013, USA
Tel: (213) 576-6681
Fax: (213) 576-6686
Email: jzhu@waterboards.ca.gov
Web: www.waterboards.ca.gov/losangeles

From: Markle, Phil [mailto:PMarkle@lacsd.org]
Sent: Tuesday, March 21, 2017 10:55 AM
To: Zhu, Jun@Waterboards; Nye, LB@Waterboards; Wang, Kangshi@Waterboards
Cc: Munakata, Naoko; Heil, Ann; Westfall, Josh
Subject: Meeting Tomorrow

Thank you again for discussing with us and agreeing to meet. We will be there at 10:00 and I don't think it will take more than hour. Jun will be sending me a map of the reach delineations and we will bring our handouts to make sure we using the same reach designations.

See you tomorrow.

Phil

PHILIP MARKLE BCES | Environmental Scientist | Monitoring Section | 562.908.4288 x2808
SANITATION DISTRICTS OF LOS ANGELES COUNTY | 1955 Workman Mill Road, Whittier, CA 90601
Converting Waste Into Resources | www.LACSD.org

Wang, Kangshi@Waterboards

From:	Jason Weiner <jweiner.venturacoastkeeper@gmail.com>
Sent:	Thursday, March 23, 2017 4:49 PM
To:	Wang, Kangshi@Waterboards
Cc:	Jason Weiner; Zhu, Jun@Waterboards; Nye, LB@Waterboards
Subject:	Re: Meeting with RB staff at 3 pm at LARWQCB's office on March 23, 2017

Thanks so much Kangshi, Jun, and LB! Greatly appreciate this, and our meeting.

My best,

Jason

On Mar 23, 2017, at 4:34 PM, Wang, Kangshi@Waterboards <Kangshi.Wang@waterboards.ca.gov> wrote:

> Hi Jason,
>
> We are glad to meet you at our office. We will respond your comments and concerns when we receive your official letter by deadline (March 30, 2017 by 5 p.m. PDT)regarding the 303(d) list of impaired waterbodies mentioned in your letter (dated August 30, 2010). Attached is the summary of these listings. In addition, the State Water Board listing policy is also attached.
>
> Wish you have a nice and safe trip to Africa.
>
> Sincerely,
>
> Kangshi (Kenny) Wang, Ph.D.
> Water Resources Control Engineer
> Regional Water Quality Control Board, Los Angeles Region
> 320 W. 4th Street, Suite 200
> Los Angeles, CA 90013
> Phone: (213) 576-6780
>
> <These are the listings VCK specifically asked for_1.docx>
> <State Board Listing Policy_2015.pdf>

Wang, Kangshi@Waterboards

Subject:	FW: Meeting with City of LA Sanitation Bureau, comments on 303(d)
Location:	Los Angeles River Conference Room
Start:	Thu 5/18/2017 12:00 PM
End:	Thu 5/18/2017 1:00 PM
Show Time As:	Tentative
Recurrence:	(none)
Meeting Status:	Not yet responded
Organizer:	Zhu, Jun@Waterboards

-----Original Appointment-----
From: Zhu, Jun@Waterboards
Sent: Wednesday, May 10, 2017 10:57 AM
To: Zhu, Jun@Waterboards; Purdy, Renee@Waterboards; Nye, LB@Waterboards (LB.Nye@waterboards.ca.gov)
Subject: Meeting with City of LA Sanitation Bureau, comments on 303(d)
When: Thursday, May 18, 2017 12:00 PM-1:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Los Angeles River Conference Room

Hi Renee and LB,

Chris Minton from Larry Walker called this morning and he would like to set up a meeting for us and the LA City Sanitation Bureau to go over some of their comments on our 303(d) list. I checked your calendars and told him this meeting schedule would work.

The external meeting attendees are:

- Shahram Kharaghani (LASAN Watershed Protection Division)
- Jon Ball (LASAN Watershed Protection Division)
- Hassan Rad (LASAN Regulatory Affairs Division)
- Steve Nakaido (LASAN Regulatory Affairs Division)
- Chris Minton (Larry Walker Associates)

I booked the LA River Conference Room and will get a laptop and projector just in case.

Hope this schedule works for you.

Jun

CALIFORNIA
Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriguez
Secretary for
Environmental Protection

Los Angeles Regional Water Quality Control Board

NOTICE OF HEARING AND OPPORTUNITY TO COMMENT

To: Interested Persons

From: Renee Purdy, Section Chief RAP
Regional Programs

Date: February 8, 2017

Subject: Notice of Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report

The California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) will hold a public hearing to consider proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region (303(d) list) on April 6, 2017.

The Los Angeles Water Board is expected to take formal action on proposed revisions to the 303(d) list and to hear further information on water quality assessments in the Los Angeles Region per Clean Water Act Section 305(b). Proposed revisions to the 303(d) list, supporting documentation, and a tentative Board Resolution, are available on the Los Angeles Water Board's website at:
http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring water quality. Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of the state's surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress. Under CWA Section 303 (d), states are required to review, makes changes as necessary, and submit to the USEPA a list identifying water bodies not meeting water quality standards and identifying the water quality parameter (i.e., pollutant) not being met (303(d) list). Placement on this list generally triggers development of a pollution control plan called a total maximum daily load (TMDL) for each water body/pollutant pair on the list.

California reports the 305(b) water quality assessment and the 303(d) list of impaired waters in a single report called the Integrated Report. The Los Angeles Water Board is responsible for developing the 2016 Integrated Report for waters within the Los Angeles Region of California.

Pursuant to section 6.2 of the "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," waterbodies which make up the 303(d) list are subject to public review and approval by the Los Angeles Water Board. Other assessed waterbodies in the Integrated Report are provided to the public and to the Los Angeles Water Board as additional waterbody information.

Following adoption of the 303(d) list by the Los Angeles Water Board, the 2016 Integrated Report will be transmitted to the State Water Resources Control Board (State Water Board), where it will be considered by the State Water Board in combination with other Regional Water Boards' Integrated Reports.

The California 303(d) list will require final approval by USEPA. If USEPA determines that changes are needed to the submitted report they will initiate further public review before finalizing and publishing the report.

I. HEARING DATE AND LOCATION

The Los Angeles Water Board will hold a public hearing to consider the proposed revisions to the 303(d) list. The Los Angeles Water Board is expected to take formal action. The Los Angeles Water Board is scheduled to consider this matter at its regularly scheduled board meeting on:

Date: Thursday, April 6, 2017
Time: 9:00 a.m.
Place: City of Simi Valley
Council Chambers
2929 Tapo Canyon Road
Simi Valley, CA 93063

Please check the Los Angeles Water Board's website (http://www.waterboards.ca.gov/losangeles/) for the most up-to-date public hearing date and location as they are subject to change.

II. AVAILABILITY OF DOCUMENTS

The tentative resolution, proposed 303(d) list changes and supporting documentation are available on the Los Angeles Water Board's website at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

These documents are also available for inspection and copying between the hours of 8:00 a.m. and 4:30 p.m. at the following address:

California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Arrangements for reviewing the documents at the Los Angeles Water Board offices may be made by calling the Los Angeles Water Board at (213) 576-6600. Comments and responses to comments and other subsequent relevant documents will be available online as they are generated.

III. PUBLIC COMMENTS AND SUBMITTAL OF EVIDENCE

Persons wishing to comment on the tentative resolution, proposed 303(d) list changes and supporting documentation, or submit evidence for the Los Angeles Water Board to consider, are invited to submit them in writing.

To be evaluated and responded to by Los Angeles Water Board staff, included in the Los Angeles Water Board's agenda binder, and fully considered by the Los Angeles Water Board members in advance of the hearing, all written comments and evidence must be *received* by the Los Angeles Water Board no later than **5:00 p.m. on March 9, 2017**. Written comments submitted untimely will not be accepted or responded to by the Los Angeles Water Board. Failure to comply with these requirements is grounds for the Los Angeles Water Board to refuse to admit the proposed written comment or evidence into the administrative record.

Interested persons are encouraged to submit comments electronically and in Microsoft Word format. Send comments by e-mail to: losangeles@waterboards.ca.gov. Please indicate in the subject line, **"Comment Letter – Revisions to the Los Angeles Region 303(d) list."** Written comments sent by mail should be addressed to:

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Interested persons are also invited to attend the hearing and present oral comments. Oral comments should, to the extent possible, summarize written comments. Time limitations on oral comments will be imposed. At the discretion of the Los Angeles Water Board Chair, oral comments may be limited to three minutes each, depending on the number of persons wishing to be heard. Interested persons requesting more than three minutes should contact Los Angeles Water Board staff, as provided in Section V. below, no later than 5:00 p.m. on March 9, 2017 to state how much time they believe is necessary for their oral comments.

IV. FUTURE REVIEW BY STATE WATER BOARD

To request the State Water Resources Control Board (State Water Board) or Executive Director of the State Water Board review specific listing recommendations approved by the Los Angeles Water Board, the request must be submitted to the State Water Board within 30 days after the Los Angeles Water Board approval. Such requests may be submitted electronically, in pdf text format (if less than 15 megabytes in total size), to the Clerk to the State Water Board via email at commentletters@waterboards.ca.gov. If the file is greater than 15 megabytes in total size, then the comment letter may be submitted by fax at (916) 341-5620.

Written comment letters to the State Water Board may also be mailed to:

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Please also indicate in the subject line, "**Request for Review – Regional 303(d) Listing recommendations.**"

The State Water Board, when considering approval of a Regional Water Board's approval of a 303(d) list, may refuse to accept any comments that were not timely raised before the Regional Water Board. Therefore, interested persons are strongly encouraged to make all comments on this proposed action to the Los Angeles Water Board before or during the public hearing.

V. LOS ANGELES WATER BOARD STAFF CONTACTS

For additional information regarding these proposed actions, please contact Dr. Jun Zhu at Jun.Zhu@waterboards.ca.gov or (213) 576-6681 or Dr. L.B. Nye, at LB.Nye@waterboards.ca.gov or at (213) 576-6785.

Lyris Name: 303(d)
2/8/17

DATEJOINED_	EMAILADDR_	FULLNAME_
1/18/2002 0:00	marym@water.ca.gov	Mary M. Miller
2/3/2002 0:00	javiergcardenas@hotmail.com	Javier G. Cardenas
5/23/2002 0:00	sgreen@lacsd.org	Sharon Green
6/20/2002 0:00	patrick.covert@valero.com	Patrick M. Covert
7/17/2002 0:00	lgallardo@waterboards.ca.gov	Laura Gallardo
8/1/2002 0:00	collins-6666@msn.com	J. Roger Collins
8/5/2002 0:00	robert_wu@dot.ca.gov	Bob Wu
8/6/2002 0:00	gary.wortham@tetratech.com	Gary Wortham
8/6/2002 0:00	ian@fuscoe.com	Ian Adam
10/6/2002 0:00	wtgrandin@aol.com	Wayne Grandin
2/20/2003 0:00	rhawkins@earthlink.net	Robert C. Hawkins
4/22/2003 0:00	vconway@lacsd.org	Victoria O. Conway
6/11/2003 0:00	hmerenda@santa-clarita.com	Heather Merenda
8/18/2003 0:00	ocramer@santa-clarita.com	Oliver Cramer
10/30/2003 0:00	kathleen.enve@verizon.net	Kathleen Mcgowan
4/2/2004 13:13	llarsen@rbf.com	Laura Larsen
8/18/2004 15:31	jccarmody2002@yahoo.com	John Carmody
8/26/2004 12:56	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
11/19/2004 10:52	srojas@newhall.com	Sam Rojas
12/1/2004 14:54	JEndicott@aei-casc.com	Jeff Endicott
12/2/2004 15:22	kwong@semprautilities.com	Karen Wong
1/6/2005 15:15	tbilezikjian@rbf.com	Tanya Bilezikjian
2/28/2005 9:05	earl.lapensee@rcslade.com	Earl LaPensee
2/28/2005 10:16	kris@scap1.org	Kris Whisenhunt
2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 14:01	arigg@pvestates.org	Allan Rigg
2/28/2005 14:44	jhuff@wpinc.com	John Huff
2/28/2005 16:05	JVALENTINE@CITYOFPASADENA.NET	Jim Valentine
2/28/2005 16:10	sarinamoraleschoate@santafesprings.org	Sarina Morales-Choate
2/28/2005 21:25	calcropdoc@yahoo.com	David Holden
3/1/2005 7:20	cinciong@ladpw.org	Carrie Inciong
3/1/2005 9:35	dliu@environcorp.com	David Liu
3/1/2005 9:35	winter@theriverproject.org	Melanie Winter
3/1/2005 9:59	blwilliams@ci.ventura.ca.us	Robert L. Williams
3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson
3/1/2005 11:07	bmichaelis@ci.san-dimas.ca.us	Blaine Michaelis
3/1/2005 11:45	MLansdell@ci.gardena.ca.us	Mitchell Lansdell
3/1/2005 14:49	biniguez@bellflower.org	Bernardo Iniguez
3/1/2005 15:07	jranells@ci.la-verne.ca.us	JR Ranells
3/2/2005 9:44	susanstark10@sbcglobal.net	Susan Stark
3/2/2005 9:47	Ronald.Sheets@OjaiSan.org	Ronald Sheets
3/2/2005 12:01	bottorffm@verizon.net	Ron Bottorff
3/2/2005 13:42	dlippman@lvmwd.com	david lippman
3/2/2005 16:00	hashimoto.janet@epa.gov	Janet Hashimoto
3/2/2005 16:36	lbehjan@simiValley.org	Laura Behjan
3/2/2005 16:53	jhunter@jlha.net	John Hunter

3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling
3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/3/2005 13:11	stuber.robyn@epa.gov	Robyn A. Stuber
3/3/2005 15:51	fleming.terrence@epa.gov	Terrence Fleming
3/4/2005 6:57	RKUBOMO@ladpw.org	Rod Kubomoto
3/4/2005 11:50	rmontevideo@rutan.com	Richard Montevideo
3/4/2005 14:24	dburhenn@burhenngest.com	Dave Burhenn
3/4/2005 14:59	mrnolan@socal.rr.com	Nolan Farkas
3/7/2005 8:36	steve.granade@navy.mil	Steve Granade
3/7/2005 11:28	sbroten@icfconsulting.com	Scott Broten
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder
3/8/2005 7:43	lance.baroldi@claytonindustries.com	Lance Baroldi
3/8/2005 10:51	jreinhardt@lvmwd.com	Jeff Reinhardt
3/9/2005 10:45	ghildeb@ladpw.org	Gary Hildebrand
3/10/2005 10:12	DLaff@ladpw.org	Daniel J. Lafferty
3/22/2005 10:27	ysim@ladpw.org	Sim, Youn
3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/29/2005 16:00	fddryden@juno.com	Franklin D. Dryden
4/4/2005 7:39	rorton@lvmwd.com	Randal Orton
4/5/2005 8:39	csjoberg@ladpw.org	Carl W. Sjoberg
4/14/2005 12:52	jtruhan@mwdh2o.com	Joyce T. Clark
4/28/2005 13:15	kozelka.peter@epa.gov	Peter Kozelka
5/16/2005 7:40	jwoolf@rainforrent.com	Joel Woolf
6/8/2005 15:05	lwlarios@hotmail.com	Lisa Larios
6/28/2005 16:14	masood.choudhury@verizon.com	Masood Choudhury
7/13/2005 13:30	jjensen@waterboards.ca.gov	Joanna Jensen
7/21/2005 9:10	jnewman@waterboards.ca.gov	Jenny Newman
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/23/2005 9:12	dnarrieta@aol.com	David Arrieta
9/26/2005 23:43	fkrieger@msn.com	Fred Krieger
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
10/19/2005 14:39	mike@wspa.org	Mike Wang
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
11/17/2005 11:20	bbax@lacsd.org	Beth Bax
12/17/2005 8:28	aheil@lacsd.org	Ann Heil
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
1/24/2006 16:50	jtopel@waterboards.ca.gov	Jack Topel
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
2/21/2006 13:29	MichaelM@lwa.com	Michael Marson
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers

4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/12/2006 12:46	tmoorhouse@cleanlake.com	Thomas Moorhouse
4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
4/19/2006 4:26	annadbrat@yahoo.com	A Bee
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
4/28/2006 8:51	richard.a.haimann@mwhglobal.com	Richard Haimann
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
6/14/2006 9:30	kthompson@mail.wqa.org	Kelley Thompson
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
6/19/2006 15:58	jodi.l.clifford@usace.army.mil	Jodi Clifford
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/11/2006 10:00	hmaloney@ci.monrovia.ca.us	Heather Maloney
7/17/2006 13:22	jpereira@ladpw.org	Jason Pereira
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
7/24/2006 11:31	kkatona@lacbos.org	Karly Katona
8/15/2006 15:07	cmitchell@mbcnet.net	Charles T. Mitchell
9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
9/26/2006 13:49	rnf92679@yahoo.com	Raul N. Fernandez
9/26/2006 23:35	kimo@pukashell.net	A. Kimo Morris Ph.D.
10/4/2006 15:48	lnye@waterboards.ca.gov	L. B. Nye
10/6/2006 11:32	jbell@mwdh2o.com	Janet Bell
11/28/2006 13:07	koletty@usc.edu	Stephen Koletty PhD
11/29/2006 11:09	neal.shapiro@smgov.net	Neal Shapiro
1/5/2007 11:53	engrnish@aol.com	David Nishimura
1/12/2007 8:20	cm_consulting@comcast.net	Cliff Moriyama
1/16/2007 8:05	gvillarreal@rbf.com	Gian Villarreal
2/12/2007 10:18	laurie_solis@urscorp.com	laurie solis
2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
2/13/2007 9:57	deana@aquabiocleanup.com	Deana Vitela
4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
4/5/2007 16:20	justin@calcattlemen.org	Justin Oldfield
4/12/2007 11:02	sschales@ladpw.org	T Scott Schales
4/13/2007 16:56	jfordyce@waterboards.ca.gov	Jennifer Fordyce
6/22/2007 18:29	hgest@burhenngest.com	Howard Gest
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/23/2007 10:43	tgaur@smbaykeeper.org	Tatiana K. Gaur
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
8/31/2007 16:17	lilysbaldwin@chevron.com	Lily S. Baldwin
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9/12/2007 11:09	FGuerrero@lacsd.org	Francisco Guerrero
9/19/2007 22:15	arlene.hopkins@gmail.com	arlene hopkins
10/4/2007 13:28	george.ellis@cox.net	George Ellis
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12/19/2007 11:15	Hassan.Rad@lacity.org	Hassan rad
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1/28/2008 11:54	amys@lwa.com	Amy Storm
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3/10/2008 14:27	matthew_gorman@yahoo.com	Matthew Gorman
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4/9/2008 8:27	dhock@rmcwater.com	Dawn Hock
4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/18/2008 13:18	sallycoleman@vrsd.com	Sally Coleman
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/9/2008 8:51	chrism@lwa.com	Chris Minton
5/23/2008 6:00	william_rea@yahoo.com	William John Rea Jr.
6/5/2008 11:06	hwylie1@hotmail.com	Heather Wylie
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7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
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9/23/2008 10:39	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
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4/21/2011 14:56	fdelorenzo@lacsd.org	Frank DeLorenzo
4/22/2011 6:18	mohsen.dkhili@dnr.mo.gov	Mohsen Dkhili
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/21/2012 15:07	Hyginus.Mmeje@Lacity.org	Hyginus Mmeje
1/3/2013 7:48	atwater.richard@gmail.com	Richard Atwater
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
1/11/2013 15:04	george.watland@sierraclub.org	George Watland
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/16/2013 16:16	kpease@healthebay.org	Katherine Pease
1/22/2013 8:04	mbenavides@dpw.lacounty.gov	Marcela Benavides
1/23/2013 8:41	asheldon@malibucity.org	Andrew Sheldon
1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/26/2013 10:24	info@pooprintswest.com	kevin sharpton
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
1/29/2013 16:03	mbw61@aol.com	Mike Williams
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
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4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
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1/17/2014 23:04	michael.taraszki@amec.com	Michael Taraszki
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
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1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
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10/19/2005 14:39	mike@wspa.org	Mike Wang
10/26/2005 11:05	vlhaller@aol.com	Verne Haller
11/17/2005 11:20	bbax@lacsd.org	Beth Bax
12/17/2005 8:28	aheil@lacsd.org	Ann Heil
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
5/4/2006 10:49	waynefishback@yahoo.com	Wayne Fishback
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
6/21/2006 10:36	Lynnepl1@juno.com	Lynne Plabeck
7/5/2006 18:34	mercadojanet@sbcglobal.net	Janet Mercado
7/10/2006 15:14	ca3@imsinfo.com	Kimberly JOhnson
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
7/24/2006 11:31	kkatona@lacbos.org	Karly Katona
9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
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10/4/2006 15:48	lnye@waterboards.ca.gov	L. B. Nye
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12/19/2006 10:11	asteele@lacsd.org	Alex Steele
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9/3/2010 12:22	hjgarcia@farmerjohn.com	Hector J. Garcia
9/7/2010 14:00	dohertysean@mac.com	Sean Doherty
9/9/2010 15:25	acruz@ci.burbank.ca.us	Alvin Cruz
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9/27/2010 15:04	miguel@urbansemillas.com	Miguel Luna
9/27/2010 15:08	chad_hymel@yahoo.com	Chad Hymel
9/27/2010 15:08	walt.young@mrca.ca.gov	Walt Young
9/27/2010 15:09	sbacklar@folar.org	Shelly Backlar
9/27/2010 15:10	jburns84@hotmail.com	Jim Burns
9/27/2010 15:10	jeffreytipton@aol.com	Jeffrey Tipton
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10/19/2010 8:33	dmorone@gdandb.com	Danielle K. Morone
11/9/2010 15:38	wrlindinc@aol.com	Wes Lind
11/9/2010 15:47	martinagarnier@gmail.com	Martin Garnier
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11/9/2010 16:59	srojas@newhall.com	Sam Rojas
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
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11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
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11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
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11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/20/2012 16:02	betsye@lwa.com	Betsy Elzufon
1/3/2013 7:48	atwater.richard@gmail.com	Richard Atwater
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
1/9/2013 10:12	ccarreon@ecokai.com	Carlos Carreon
1/9/2013 10:43	jnfireball@yahoo.com	Jane E. Nelson

1/11/2013 15:04	george.watland@sierraclub.org	George Watland
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/21/2013 18:02	melissa@malibutimes.com	Melissa Caskey
1/22/2013 8:04	mbenavides@dpw.lacounty.gov	Marcela Benavides
1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
4/17/2013 12:40	bbondy@calleguas.com	Bryan Bondy
4/24/2013 20:58	christiankiillkkaa@gmail.com	Christian Kiillkkaa
4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
4/29/2013 13:26	shokoufe.marashi@lacity.org	Shokoufe Marashi
5/1/2013 7:20	kelly.hahs@ventura.org	Kelly Hahs
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
6/3/2013 15:33	Cy.Oggins@slc.ca.gov	
6/3/2013 15:33	Jennifer.Lucchesi@slc.ca.gov	
6/26/2013 9:32	kkwan@semprautilities.com	Karen Kwan
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
7/2/2013 12:25	blake@watershedhealth.org	Blake Whittington
7/9/2013 12:44	dpelser@cityofwhittier.org	David A. Pelser
8/21/2013 11:58	deborah.deets@lacity.org	deborah deets
9/10/2013 9:49	ehorn@kcmgroup.net	Erika Horn
9/22/2013 9:50	RCB@jmbm.com	Rebecca Couch Barnhardt
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
10/2/2013 12:23	emmanuel.riclet@gmail.com	Emmanuel Riclet
10/7/2013 16:53	dmoore@environcorp.com	David Moore
10/13/2013 22:00	alan.cade@aol.com	Alan Cade
10/19/2013 8:17	jon.green@ch2m.com	Jonathan M Green
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/12/2013 16:35	jzhu@waterboards.ca.gov	Jun Zhu
11/15/2013 14:40	Barbara.J.McDonnell@mwhglobal.com	Barbara McDonnell
11/18/2013 17:19	mpassanisi@dpw.lacounty.gov	Mercedes Passanisi
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1/6/2014 10:41	afigueroa@norwalkca.gov	Adriana Figueroa
1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/14/2014 16:29	fred@soundpathtech.com	Fred C. DeMetz Sr.
3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
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4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
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5/29/2014 11:29	george.muehleck@urs.com	George Muehleck
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11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
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10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
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11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
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11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/19/2015 15:49	jbryson@soundearthinc.com	James Bryson
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin.	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 9:50	anthony.brown@aquilogic.com	anthony brown
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/25/2016 11:00	charles.herbertson@culvercity.org	Charles D. Herbertson
3/11/2016 8:09	yckim@cpp.edu	Young Kim
3/18/2016 13:38	aaron.s.miller@water.ca.gov	Aaron Miller
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
3/21/2016 7:09	croldan@elmonteca.gov	Cesar Roldan
3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/7/2016 15:54	susan.fears@dtsc.ca.gov	susan fears
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
4/29/2016 9:20	chris.beegan@waterboards.ca.gov	chris beegan
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/10/2016 17:10	114rockwell@gmail.com	A. J. Ursic Jr.
5/17/2016 8:17	mpropersi@mwdh2o.com	Miluska Propersi

5/20/2016 8:16	steven.webb@waterboards.ca.gov	Steven Webb
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
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6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/5/2016 16:04	woonhoek@usc.edu	Woonhoe Kim
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
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8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
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1/23/2017 16:12	adriell@lwa.com	Adriel Leon
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2/28/2005 16:05	JVALENTINE@CITYOFPASADENA.NET	Jim Valentine
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3/2/2005 12:01	bottorffm@verizon.net	Ron Bottorff
3/2/2005 13:42	dlippman@lvmwd.com	david lippman
3/2/2005 16:36	lbehjan@simiValley.org	Laura Behjan
3/2/2005 16:53	jhunter@jlha.net	John Hunter
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7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/23/2007 10:43	tgaur@smbaykeeper.org	Tatiana K. Gaur
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10/9/2007 9:38	Anngadfly@aol.com	Ann Cantrell
10/15/2007 8:09	nmartorano@waterboards.ca.gov	Nicholas Martorano
10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
11/19/2007 14:17	rmanwill@toaks.org	Ron Manwill
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin
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4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/17/2008 16:32	sma@waterboards.ca.gov	Sue Ma
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7/2/2008 16:02	amercado@consensusp.com	Abraham Mercado
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
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8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/23/2008 10:49	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
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3/11/2014 10:03	ashmitas@sccwrp.org	Ashmita Sengupta

3/27/2014 16:16	clai@waterboards.ca.gov	Ching-Piau Lai
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 16:32	gperson@ccp.csus.edu	Grace Person
4/27/2014 7:59	mikeri@ci.salinas.ca.us	Michael Ricker
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/27/2014 16:55	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/29/2014 11:29	george.muehleck@urs.com	George Muehleck
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/5/2014 11:56	ariana@capca.com	Ariana Zamora
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
9/12/2014 16:03	melissa.gunter@waterboards.ca.gov	Melissa Gunter
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
9/30/2014 14:28	pete.osmolovsky@waterboards.ca.gov	Peter Osmolovsky
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/21/2014 23:49	rsurles1@sbcglobal.net	Rhonda M Surles
11/6/2014 9:33	emily@watershedhealth.org	Dr Emily Daniels
11/11/2014 16:35	bjatkins@atkinsenvironmental.com	B. J. Atkins
11/14/2014 10:01	jgamble@lvmwd.com	Jacqy Gamble
11/18/2014 7:06	bob.sun@ladwp.com	Bob Sun
11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
12/2/2014 8:20	mark.ching@ladwp.com	Mark Ching
12/2/2014 9:23	pamalbers@sbcglobal.net	Pamela Albers
12/12/2014 13:42	tmoorhouse@cleanlake.com	Tom Moorhouse
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/19/2015 9:44	croncw@cdmsmith.com	charles cron
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
1/29/2015 15:57	serge.haddad@ladwp.com	Serge Haddad
1/30/2015 9:07	abraham.razon@lacity.org	Abraham Razon
2/2/2015 9:00	stephen.opot@lacity.org	Stephen Opot
2/2/2015 12:48	samick@rma.org	Sarah Amick
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo

3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 7:08	greg.reed@ladwp.com	Greg Reed LADWP
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/17/2015 15:15	mark.cady@cdfa.ca.gov	Mark Cady
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/25/2015 13:13	sue@wspa.org	Sue Gornick
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/1/2015 14:50	laura@houstonmagnani.com	Laura Cottrell
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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7/29/2015 9:34	Charlie.yu@lacity.org	Charlie Yu
7/29/2015 9:34	einnes@dpw.lacounty.gov	Emiko Innes
7/29/2015 9:36	Lgaboudian@lacsd.org	Lysa Gabooudian
7/29/2015 9:36	zora.baharians@lacity.org	Zora Baharians
8/17/2015 9:40	mtlopez@mwdh2o.com	Maria Lopez
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
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9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
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10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
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11/5/2015 8:39	john.cobb.hamilton@LaCity.org	John Hamilton
11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
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12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
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4/11/2016 18:10	Jennifer.Fordyce@waterboards.ca.gov	Jennifer Fordyce
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5/20/2016 8:16	steven.webb@waterboards.ca.gov	Steven Webb
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7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
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1/8/2017 9:23	edm@malibuonline.com	Eugene Donald Michael
1/16/2017 9:27	sbeck@mbcnet.net	Shane Beck
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
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1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson

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8/26/2004 12:56	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
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8/3/2005 14:08	spaulsen@flowscience.com	Susan Paulsen
8/3/2005 14:09	kens@sccwrp.org	Ken Schiff
8/3/2005 14:09	sbarragan@ci.san-dimas.ca.us	Steve Barragan
8/3/2005 14:11	cinciong@ladpw.org	Carrie Inciong
8/3/2005 14:11	fwu@ladpw.org	Frank Wu
8/3/2005 14:11	ocramer@santa-clarita.com	Oliver Cramer
8/3/2005 14:13	mgold@healthebay.org	Mark Gold
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8/3/2005 14:15	jnewman@waterboards.ca.gov	Jenny Newman
8/3/2005 14:16	vconway@lacsd.org	Vickie Conway
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8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp
9/23/2005 9:12	dnarrieta@aol.com	David Arrieta
9/26/2005 12:55	kwong@semprautilities.com	Karen Wong
9/26/2005 23:43	fkrieger@msn.com	Fred Krieger
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
10/14/2005 10:17	susanstark10@sbcglobal.net	Susan Stark
10/19/2005 14:39	mike@wspa.org	Mike Wang
10/19/2005 16:26	jerrod.j.newlander@boeing.com	Jerrod Newlander
10/21/2005 9:13	llarsen@rbf.com	laura larsen
10/25/2005 8:02	ggearheart@waterboards.ca.gov	Greg Gearheart
11/4/2005 12:06	info@smcca.org	George Wolfberg
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/11/2006 20:09	g.wolfberg@verizon.net	George Wolfberg
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4/19/2006 4:26	annadbrat@yahoo.com	A Bee
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
4/28/2006 8:51	richard.a.haimann@mwhglobal.com	Richard Haimann
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
6/1/2006 8:25	csaylan@earthlink.net	charles saylan
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
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9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
9/26/2006 13:49	rnf92679@yahoo.com	Raul N. Fernandez
10/4/2006 15:48	lnye@waterboards.ca.gov	L. B. Nye
10/18/2006 22:21	rguttenberg@jma-ca.com	Richard Guttenberg
1/5/2007 11:53	engrnish@aol.com	David Nishimura
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1/16/2007 8:05	gvillarreal@rbf.com	Gian Villarreal
2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
4/5/2007 16:20	justin@calcattlemen.org	Justin Oldfield
4/12/2007 11:02	sschales@ladpw.org	T Scott Schales
4/13/2007 16:56	jfordyce@waterboards.ca.gov	Jennifer Fordyce
6/22/2007 18:29	hgest@burhenngest.com	Howard Gest
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/10/2007 13:58	imnmnm@yahoo.com	Michele McGarry
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
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10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
12/5/2007 12:43	mas.dojiri@lacity.org	Masahiro Dojiri
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin
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4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/7/2008 6:42	dduncan@santa-clarita.com	Dan Duncan
5/9/2008 8:51	chrism@lwa.com	Chris Minton
6/5/2008 11:06	hwylie1@hotmail.com	Heather Wylie
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
8/13/2008 11:37	rsinger@uscgcaptain.com	Robert Singer
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9/23/2008 11:02	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/9/2008 10:35	dleachman@lacsd.org	Debra Leachman
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3/11/2009 10:00	tweiland@lacsd.org	Thomas E. Weiland
4/2/2009 9:58	sarahd@nautilusenvironmental.com	Sarah Douglass
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6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
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11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/12/2010 10:25	jfutoran@parks.ca.gov	John Futoran
11/14/2010 13:00	scott@fireconsult.net	SCOTT FRANKLIN
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
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1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
1/18/2011 13:37	bbax@lacsd.org	Beth Bax
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3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
4/5/2005 8:39	csjoberg@ladpw.org	Carl W. Sjoberg
4/5/2005 9:52	fchin@ladpw.org	Frank Chin
4/14/2005 12:52	jtruhan@mwdh2o.com	Joyce T. Clark
4/28/2005 13:15	kozelka.peter@epa.gov	Peter Kozelka
6/16/2005 14:26	mlauffer@waterboards.ca.gov	Michael Lauffer
9/24/2005 15:30	belascodave@sbcglobal.net	David Belasco
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
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1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
1/26/2006 7:28	rorton@lvmwd.com	Dr. Randal Orton
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 20:09	g.wolfberg@verizon.net	George Wolfberg
4/12/2006 12:46	tmoorhouse@cleanlake.com	Thomas Moorhouse
4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
4/19/2006 10:54	laurson.nancy@epa.gov	Nancy Laurson
4/21/2006 14:38	ssriboonlue@pirnie.com	Sarina Sriboonlue
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
4/28/2006 8:51	richard.a.haimann@mwhglobal.com	Richard Haimann
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7/17/2006 13:22	jpereira@ladpw.org	Jason Pereira
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3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
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4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
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6/21/2010 10:10	karenc@lwa.com	Karen Cowan
7/8/2010 10:07	dn@davidnahai.com	David Nahai
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10/4/2010 9:18	kjames@healthebay.org	Kirsten James
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11/9/2010 15:18	dxjones@semprautilities.com	
11/9/2010 15:38	wrlindinc@aol.com	Wes Lind
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4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
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7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
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2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
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4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
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4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
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12/26/2013 9:55	antonia.graham@polb.com	Antonia Castro-Graham
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/27/2014 18:18	richard@haimann.com	Richard Haimann

2/7/2014 11:11	larrykoch0516@yahoo.com	Larry Koch
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
4/27/2014 7:59	mikeri@ci.salinas.ca.us	Michael Ricker
5/13/2014 9:07	flopez@harris-assoc.com	Frank Lopez
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/16/2014 11:48	alan.cade@aol.com	Alan Cade
6/25/2014 14:04	erojas@wrd.org	Esther Rojas
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/17/2014 12:55	SGallant@ci.monrovia.ca.us	Sharon Gallant
7/17/2014 20:11	garzamourino@att.net	Rosa Garza-Mourino
7/24/2014 9:59	hicksbr@wlac.edu	bruce Hicks
8/12/2014 10:07	mtse@beverlyhills.org	Michelle Tse
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/3/2014 15:31	shilpa.gupta@ladwp.com	Shilpa Gupta
9/11/2014 10:57	bdietrick@rmcwater.com	Brian Dietrick
9/16/2014 9:47	jcarlin@fullerton.edu	Joe Carlin
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9/22/2014 12:32	allysonc42@outlook.com	Allyson Bakboychuk
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/10/2014 16:07	leftonk@metro.net	Kyle Lefton
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
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2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/17/2015 16:31	vgrossman@wishtoyo.org	Valarie Grossman
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 10:58	maa65993@csun.edu	Mike Antos
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
3/31/2015 16:52	bponton@bh.lacounty.gov	Brenda Ponton
4/15/2015 15:09	Elena@usgvmwd.org	Elena Layugan
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/22/2015 8:16	Myrna.Pietri@lacity.org	Myrna Pietri
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/20/2015 9:34	lmustafa@ci.claremont.ca.us	Loretta Mustafa
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
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6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/6/2015 8:51	apartie@jlha.net	Alison Partie
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
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12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 7:50	Hamid.Tadayon@lacity.org	Hamid Tadayon
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6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
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7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
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9/7/2016 15:56	nancy@farmbureauvc.com	Nancy Broschart
9/7/2016 15:59	zoe.carlson@ventura.org	Zoe Carlson
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
9/9/2016 13:21	ghooper@mnwd.com	GREGG HOOPER
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10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/19/2016 11:38	rmacnamara@hswri.org	Ruairi MacNamara
11/7/2016 11:34	dana.brown@ngem.com	Dana R. Brown
11/10/2016 8:41	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 9:02	laplante@pcl.com	Lisa Plante
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson

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7/6/2009 11:29	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/10/2015 13:01	rcendejas@ovs.org	Robert Cendejas
2/11/2015 14:55	teaguecaitlyn@gmail.com	Caitlyn Teague
2/12/2015 10:41	denis@horster.com	Denis Murrin
2/12/2015 16:05	mary_bergen1@roadrunner.com	Mary Bergen
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/17/2015 9:40	mtlopez@mwdh2o.com	Maria Lopez
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/18/2015 8:37	edith.hannigan@bof.ca.gov	Edith Hannigan
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/22/2016 11:43	amanda.hall@sen.ca.gov	Amanda Hall
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 7:50	Hamid.Tadayon@lacity.org	Hamid Tadayon
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/23/2016 8:42	michael.partain@vmsinc.org	Michael E. Partain

5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 15:12	DianaE@lwa.com	Diana Engle
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
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8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/30/2016 14:36	glen.osterhage@waterboards.ca.gov	Glen Osterhage
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
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10/5/2000 0:00	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
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4/16/2002 0:00	kruffell@lacsd.org	Kristen Ruffell
8/15/2002 0:00	robert_wu@dot.ca.gov	Bob Wu
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3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/4/2005 6:57	RKUBOMO@ladpw.org	Rod Kubomoto
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9/19/2007 22:15	arlene.hopkins@gmail.com	arlene hopkins
10/9/2007 9:38	Anngadfly@aol.com	Ann Cantrell
12/13/2007 16:07	cynthia_gabaldon@urscorp.com	Cynthia Gabaldon
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin

2/11/2008 9:09	amcmillian@fuscoe.com	April McMillian
2/28/2008 17:33	dparkinson@geosyntec.com	David Parkinson
3/24/2008 14:26	jchien@parks.lacounty.gov	Jui Ing chien
4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/17/2008 16:32	sma@waterboards.ca.gov	Sue Ma
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/5/2008 11:07	s.gasca@pcrnet.com	Stephanie Gasca
5/7/2008 6:42	dduncan@santa-clarita.com	Dan Duncan
5/9/2008 8:51	chrism@lwa.com	Chris Minton
6/5/2008 11:06	hwylie1@hotmail.com	Heather Wylie
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
8/5/2008 8:27	chiggins@mines.edu	Christopher Higgins
8/12/2008 7:43	jane@jlstormwater.com	Jane Ledford
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8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
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9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
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10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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12/23/2008 15:59	ahenderson@biasc.org	Andrew Henderson
1/7/2009 16:36	courtney@wreassoc.net	Courtney Davis Nichols
1/21/2009 11:57	mharrison@diamondwest.net	Mike Harrison
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2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
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2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
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3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
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7/20/2009 16:47	jnewman@waterboards.ca.gov	Jenny Newman
7/28/2009 10:38	damon.wing@ventura.org	Damon Wing
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7/31/2009 16:32	tstein@coxcastle.com	Tamar C. Stein
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6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
7/6/2015 8:51	apartie@jlha.net	Alison Partie
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
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7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/17/2015 9:40	mtlopez@mwdh2o.com	Maria Lopez
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
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2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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11/10/2011 10:16	epi@riousa.com	David Light
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10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 11:35	gary@parkwater.com	Gary R. Lynch
11/7/2011 13:43	Tom.Anderson@bodycote.com	
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 11:54	nrccgcm@gmail.com	J. Ryan Bentley
11/10/2011 9:40	tajenkins@sgvwater.com	Thomas A. Jenkins
11/10/2011 10:16	epi@riousa.com	David Light
11/11/2011 7:40	hawthornenursery@yahoo.com	Kei Nakai
11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/15/2011 15:20	srigg@ci.vernon.ca.us	Scott Rigg

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11/21/2011 7:03	jbaiocco@dpw.lacounty.gov	Joseph Baiocco
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/22/2011 12:00	jhunter@jlha.net	john Hunter
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas
12/1/2011 15:36	danielle.sakai@bbklaw.com	Danielle Sakai
12/6/2011 21:20	michael.mooradian@ecobilitycorp.com	Michael Mooradian
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/15/2011 14:30	kathy.knight@verizon.net	Kathy Knight
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/18/2011 9:59	dodger93277@yahoo.com	Daniel Galbraith
12/27/2011 9:08	johnnym@agrx.com	John Morse
12/29/2011 11:05	Ppeuron@forestlawn.com	Peter Peuron
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
1/12/2012 14:50	kgraves@schmitzandassociates.net	Kris Graves
1/17/2012 14:58	srapoport@waterboards.ca.gov	Shana Rapoport
1/26/2012 9:38	econard@petrodiamond.com	Eric Conard
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/22/2012 16:20	kaying_lee@ci.pomona.ca.us	Kaying Lee
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
2/28/2012 8:46	bdouglas@naturalsystemsutilities.com	Bruce Douglas
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/23/2012 9:49	ghildeb@dpw.lacounty.gov	Gary Hildebrand
4/23/2012 9:50	fwu@dpw.lacounty.gov	Frank Wu
4/23/2012 10:26	lhm28843@sbcglobal.net	Lisa H. Mador
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
5/8/2012 8:21	michael.wochnick@calrecycle.ca.gov	Michael Wochnick
5/9/2012 8:28	dgould@stormwaterusa.com	Derek A. Gould
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/29/2012 10:22	carellano@ci.vernon.ca.us	Claudia Arellano
6/4/2012 13:11	Valerie.Aguirre@waterboards.ca.gov	Valerie Aguirre
6/6/2012 23:06	egkim@berkeley.edu	Esther G. Kim
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7/4/2012 11:03	razzip1@aol.com	Paul V. Ferrazzi
7/4/2012 13:20	justin.dutmers@honeywell.com	Justin Dutmers
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/24/2012 14:44	prasmussen@waterboards.ca.gov	Paula Rasmussen
7/24/2012 19:24	naomistone@mugenkioku.com	Naomi Stone
7/27/2012 11:11	thammond@haleyaldrich.com	Travis Hammond
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
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8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
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9/14/2012 12:10	dburhenn@burhenngest.com	David Burhenn
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9/27/2012 12:21	frank.brommen@verizon.net	Frank Brommenschenkel
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/17/2012 12:06	dmcalister@eaglereef.net	David McAlister
10/20/2012 22:20	RossS.Heckmann@gmail.com	Ross S. Heckmann
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10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/13/2012 12:16	betsye@lwa.com	Betsy Elzufon
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
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1/8/2013 15:53	John.capoccia@gmail.com	John Capoccia
1/11/2013 15:04	george.watland@sierraclub.org	George Watland
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/21/2013 18:02	melissa@malibutimes.com	Melissa Caskey
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
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3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
3/29/2013 16:02	randerson@rjreng.com	Robert W. Anderson
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2/12/2014 8:48	ssanchez@newhall.com	Sandy Sanchez
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
3/14/2014 16:29	fred@soundpathtech.com	Fred C. DeMetz Sr.
3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
3/27/2014 18:03	sgeorge@stefangeorge.com	Sande George
3/27/2014 18:04	lauren@stefangeorge.com	Lauren De Valencia
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 16:32	gperson@ccp.csus.edu	Grace Person
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/23/2014 10:46	kboyer@crimsonbak.com	Kristine Boyer
5/27/2014 16:54	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
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7/15/2014 7:15	rchavez@ci.monrovia.ca.us	Ruth Chavez
7/24/2014 14:22	Akrieger@simivalley.org	Alan Lee Krieger
7/24/2014 18:10	ryandavyes@gmail.com	Ryan Davyes Troughton
8/11/2014 12:57	rbeltran@glendaleca.gov	Rick Bletran
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
9/22/2014 14:47	nghirelli@rwglaw.com	Nicholas Ghirelli
10/8/2014 16:37	eugeneungermann@gmail.com	Eugene Ungermann
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/16/2014 13:39	apaxton@resourceslegacyfund.org	Alexandra Paxton
11/18/2014 7:06	bob.sun@ladwp.com	Bob Sun
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
12/18/2014 16:13	justin@mcadvise.com	Justin Mahramas
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/6/2015 20:11	susan.damron@ca.rr.com	Susan Damron
1/19/2015 9:44	croncw@cdmsmith.com	charles cron
1/26/2015 15:26	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
2/2/2015 12:48	samick@rma.org	Sarah Amick
2/4/2015 12:58	jlaudencia@rsrcorp.com	Jun Laudencia
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/12/2015 8:15	Erum.Razzak@waterboards.ca.gov	Erum Razzak
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/16/2015 16:00	mbelen.bernal@gmail.com	Belen Bernal
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
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4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/16/2015 18:09	simon.wick@matchpointinc.us	Simon Wick
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/18/2015 16:37	cindyzhang@singtaola.com	Cindy Zhang
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4/28/2015 10:29	vivian.marquez@lacity.org	Vivian Marquez
4/29/2015 12:23	kmarkarian@lcf.ca.gov	Kris Markarian
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass

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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
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6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/2/2015 10:07	chris.speelman@gerdau.com	Chris Speelman
7/6/2015 16:41	thunguyen@dpw.lacounty.gov	Thuan Nguyen
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
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2/19/2016 9:50	anthony.brown@aquilogic.com	anthony brown
2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 7:51	kevin@kjservices.net	kevin sales
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3/4/2016 14:45	domingo.orosco@lacity.org	Domingo Orosco
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3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
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4/7/2016 15:54	susan.fears@dtsc.ca.gov	susan fears
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2/26/2007 10:31	april@fuscoe.com	April McMillian
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3/6/2007 8:05	tfung@dot.ca.gov	Tom Fung
3/14/2007 16:53	krubin@ladwp.com	Katherine Rubin
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6/7/2007 15:03	league@usc.edu	Brian League
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2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 11:12	lorettac@ci.irwindale.ca.us	Loretta Corpis
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2/28/2005 14:44	jhuff@wpinc.com	John Huff
2/28/2005 16:10	sarinamoraleschoate@santafesprings.org	Sarina Morales-Choate
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6/14/2011 12:27	bkussatz@senecaco.com	Blaine Kussatz
6/15/2011 16:54	drew.beck@psomas.com	Drew Beck
6/15/2011 17:04	jholtz@quinncompany.com	James Holtz
6/17/2011 10:34	jreeve@newportpower.com	James Reeve
6/27/2011 16:42	jason.burke@ventura.org	Jason Burke
6/29/2011 9:59	wcaffrey@vandermostconsulting.com	wade caffrey
8/4/2011 8:42	jbrown@malibucity.org	Jennifer Brown
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
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8/24/2011 13:35	toddfpeterson@gmail.com	todd f peterson
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
8/29/2011 14:09	Julie_Carver@ci.pomona.ca.us	Julie Carver
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9/1/2011 14:20	stephen.edward@viasystems.com	
9/7/2011 15:35	vtashjian@ellispaint.com	Veeken Tashjian
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2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
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1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/21/2016 16:31	chuckwhiteconsulting@gmail.com	Chuck White
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/1/2016 21:37	mpena@kleinfelder.com	Melissa Pena
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 8:57	jbrickey@jlha.net	Jillian Brickey
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2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/10/2016 16:45	odette.alsen@eichleay.com	Odette Alsen
3/17/2016 8:00	colette.monell@atcassociates.com	Colette Monell
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4/12/2016 12:27	sean.conlan@longbeach.gov	Sean Conlan
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7/6/2015 10:17	jescajed@dpw.lacounty.gov	Jose Luis Escajeda
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
8/11/2015 10:14	ddizio@mortonsalt.com	Daniel DiZio
8/18/2015 17:11	jacqueline.mcmillen@altaenviron.com	Jacqueline McMillen
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/29/2015 9:04	fdelorenzo@lacsd.org	Frank J DeLorenzo
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/9/2015 15:41	sseivright@calcima.org	Suzanne Seivright
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/17/2015 11:36	haskell.daniel@epa.gov	Daniel Haskell
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/2/2016 12:52	dstimson@glendaleca.gov	Dave Stimson
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
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3/2/2016 15:56	hugh.marley@waterboards.ca.gov	Hugh Marley
3/17/2016 8:00	colette.monell@atcassociates.com	Colette Monell
3/23/2016 11:49	abakarian@elcapenv.com	Ara Bakarian
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
4/29/2016 9:20	chris.beegan@waterboards.ca.gov	chris beegan
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5/10/2016 16:16	rebecca.christmann@waterboards.ca.	Rebecca Christmann
5/20/2016 9:50	fguerrero@lacsd.org	Francisco Guerrero
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
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8/1/2016 11:42	simoneevett@lacsd.org	Simone Evett
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12/30/2016 13:49	angineh.shahnazarian@waterboards.c	Angineh Shahnazarian
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7/6/2009 13:07	James.Destefano@ci.diamond-bar.ca.us	James DeStefano
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12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
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1/12/2010 8:06	pcmsusa@hotmail.com	Raymond Wells PhD
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
1/18/2010 9:55	alfonso.nunez@erm.com	Alfonso Nunez
1/20/2010 8:49	jnelson@cc-eng.com	Joshua Nelson
1/25/2010 15:41	iridgeway@waterboards.ca.gov	Ivar Ridgeway
2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
2/27/2010 15:59	pmglick@gmail.com	Peter Glick
3/9/2010 9:28	nascarjws@yahoo.com	John Schwartz
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3/16/2010 8:24	hmerenda@santa-clarita.com	Heather Merenda
3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
3/23/2010 11:19	tony.pepe@csun.edu	Tony Pepe
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4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/19/2010 9:55	llough@bbinfrastructureinc.com	Lynn Lough
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
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5/26/2010 8:55	morton.price@lacity.org	Morton Price
5/27/2010 11:33	symeon.finch@orco.com	Symeon Finch
6/3/2010 12:43	blosey@rbf.com	Brad Losey
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6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
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7/29/2010 9:03	langford.book@ladwp.com	Langford Book
8/2/2010 9:32	robert.skands@pardeehomes.com	Robert Skands
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11/16/2011 8:03	brai@cityofinglewood.org	Bamehwar Rai
11/16/2011 8:39	NOENEGRETE@SANTAFESPRINGS.ORG	Noe Negrete
11/16/2011 8:40	denise_reyna@ci.pomona.ca.us	Denise Reyna
11/16/2011 8:41	joskoui@downeyca.org	John Oskoui
11/16/2011 8:42	harbogast@cerritos.us	Hal Arbogast
11/16/2011 8:43	RYee@DiamondBarCA.Gov	Rick Yee
11/16/2011 8:44	mkolbenschlag@aei-casc.com	Michael Kolbenschlag
11/16/2011 8:45	LLanger@localgovlaw.com	Lauren Langer
11/16/2011 8:45	cwebster@comptoncity.org	Carolyn Webster
11/16/2011 8:46	croldan@elmonteca.gov	Cesar Roldan
11/16/2011 8:46	swalker@cityofpasadena.net	Stephen Walker
11/16/2011 8:47	dgilbertson@rkagroup.com	David Gilbertson
11/16/2011 8:54	rick.valte@smgov.net	Rick Valte
11/16/2011 9:00	kevin@kjservices.net	Kevin Sales
11/16/2011 9:01	ddolphin@cityofalhambra.org	David Dolphin
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11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
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12/1/2011 15:37	danielle.sakai@bbklaw.com	Danielle Sakai
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/13/2011 11:08	sean.j.dunn@damco.com	Sean Dunn
12/20/2011 17:23	bpgibson@ucla.edu	Baylor Gibson
12/22/2011 16:15	klinker@anaheim.net	Keith Linker
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
12/29/2011 11:05	Ppeuron@forestlawn.com	Peter Peuron
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2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
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12/31/2013 9:54	teri.madia@cdcr.ca.gov	Teri Madia
1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
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1/28/2014 7:39	quinonez_joseph@montebello.k12.ca.us	Joseph Quinonez
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2/7/2014 14:05	kehrlich@elkinskalt.com	Ken Ehrlich
2/12/2014 8:20	ssanchez@newhall.com	Sandy Sanchez
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
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4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
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6/12/2014 11:14	jariley@amgen.com	James Riley
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7/6/2015 10:17	jescajed@dpw.lacounty.gov	Jose Luis Escajeda
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
7/18/2015 14:07	mackerman@hpca.gov	Michael Ackerman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/23/2015 12:44	rlewis@paramountcity.com	R L
7/25/2015 18:46	rebecca.andrews@bbklaw.com	Rebecca
8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/18/2015 17:11	jacqueline.mcmillen@altaenviron.com	Jacqueline McMillen

8/18/2015 19:05	diana.mahmud@gmail.com	Diana Mahmud
8/26/2015 8:11	rmanwill@toaks.org	Ron Manwill
8/31/2015 13:08	sal@ebaplanning.com	Salvador Lopez Jr.
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
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9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
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10/5/2015 7:41	mcunningham@ced.us.com	Mike Cunningham
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/9/2015 15:41	sseivright@calcima.org	Suzanne Seivright
10/13/2015 9:00	lcyrus@cityofalhambra.org	Latoya Cyrus
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/20/2015 8:07	mbarcelo@ci.walnut.ca.us	Melissa Barcelo
10/27/2015 12:08	katelynn.rathbun@gmail.com	Kate Rathbun
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11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
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12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
1/14/2010 14:32	stormwatercentral@gmail.com	Anna Hensley
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3/16/2010 8:24	hmerenda@santa-clarita.com	Heather Merenda
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3/30/2010 13:34	cbeam@jdtplaw.com	
4/1/2010 10:47	jzane@padreinc.com	Jeffrey Zane
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4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
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5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
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1/8/2012 22:25	andorra13@gmail.com	Noelle Burkey
1/30/2012 17:41	98people@roadrunner.com	felicia schoenewald
2/4/2012 17:13	john@gretherfarming.com	John M. Grether
2/9/2012 12:40	sschuyler@biasc.org	steven schuyler
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/17/2012 11:53	katharine.moore@sen.ca.gov	Katharine Moore
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 8:50	shawn.hagerty@bbklaw.com	Shawn Hagerty
3/9/2012 13:00	jweiner.venturacoastkeeper@wishtoyo.org	Jason Weiner
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/5/2012 17:06	meinerscanary@matilijasustainability.org	Elizabeth Anne von Gunten
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
4/23/2012 20:12	chrism@lwa.com	chris minton

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5/9/2012 8:28	dgould@stormwaterusa.com	Derek A. Gould
5/25/2012 11:26	lorraine@ovlc.org	Lorraine Walter
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5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
6/12/2012 11:32	Fresh@freshcreek.com	wallytrnka
6/12/2012 19:28	roche20@earthlink.net	WILLIAM ROCHE
6/15/2012 13:49	sandym@lwa.com	Sandy Mathews
6/18/2012 10:09	bvillalobos@geoscience-water.com	Brian Villalobos
6/20/2012 10:37	jtruhan@mwdh2o.com	Joyce Clark
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
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7/18/2012 11:01	jacquicyoung@yahoo.com	Jacqueline C Young
7/18/2012 14:05	russ.baggerly65@gmail.com	Russ Baggerly
7/20/2012 15:25	ncox@parks.ca.gov	Nat Cox
7/21/2012 16:48	ffederico@ioes.ucla.edu	Felicia Federico
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11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
12/3/2012 13:43	kotch@reynolds-group.com	Frank Kotch
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2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/19/2013 12:07	tiina.couture@aecom.com	Tiina Couture
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
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6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
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7/9/2015 15:59	jennifer.lindquist@csuci.edu	Jennifer Lindquist
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8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
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10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 5:21	hschillinger@torrentresources.com	Hal Schillinger
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/17/2015 11:36	haskell.daniel@epa.gov	Daniel Haskell
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12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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12/29/2015 14:48	aaron.williams@ventura.org	aaron williams
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
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5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
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5/4/2006 13:02	wall5592@hotmail.com	Edwin T. Wall
5/4/2006 13:06	mvanoni@sbcglobal.net	Mary Vanoni
5/4/2006 13:07	tom.pecht@verizon.net	Tom Pecht
5/4/2006 13:08	micmar@aol.com	Mary McGrath
5/4/2006 13:09	rroadmann@aol.com	Mike Conroy
5/4/2006 13:09	swordfsh@aol.com	John Farrell
5/4/2006 13:10	dannypereira@riofarms.com	Danny Pereira
5/4/2006 13:12	elainesomis@msn.com	Elaine Cavalotto
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5/4/2006 13:14	jaferro@aol.com	John Ferro
5/4/2006 13:16	swabie@aol.com	John Elrod
5/4/2006 13:28	nosethomas@aol.com	Tom Nose
5/4/2006 13:30	susanj@solimarfarms.com	Susan Josue
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
5/9/2006 15:07	wdarlington@soilandplantlaboratory.com	William Darlington
5/15/2006 15:56	rovinco@aol.com	Corky Roche Roche Vineyard Consulting
5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson
6/21/2006 10:36	Lynnepl1@juno.com	Lynne Plabeck
6/21/2006 10:39	Steve.sligh@disney.com	Steve Sligh
6/21/2006 10:40	exec@lacfb.org	Laura Blank
6/21/2006 10:47	abcnursery@sbcglobal.net	Eric Yonemura
6/21/2006 10:48	aynursery@aol.com	Hugo Ayon
6/21/2006 10:57	sempervirensbotanico@earthlink.net	John Low
6/21/2006 11:00	dixons@colorspot.com	Dixon Suzuki
6/21/2006 11:02	Bill.Levalley@coloramanursery.com	Bill LeValley

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7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
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9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
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10/26/2006 16:48	john@greenwoodgarden.com	john Schustra
11/27/2006 14:53	jon.chase@mac.com	Jonathan Chase
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1/16/2007 8:05	gvillarreal@rbf.com	Gian Villarreal
3/6/2007 8:05	tfung@dot.ca.gov	Tom Fung
4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
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5/30/2007 21:16	saeedtabatabaeepour@yahoo.com	Saeed Tabatabaeepour
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/23/2007 10:43	tgaur@smbaykeeper.org	Tatiana K. Gaur
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
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9/19/2007 22:15	arlene.hopkins@gmail.com	arlene hopkins
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3/14/2008 10:14	dhock@rmcwater.com	Dawn Hock
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5/9/2008 8:51	chrism@lwa.com	Chris Minton
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8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/23/2008 11:14	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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12/8/2008 18:01	cabrera-stagno.valentina@epa.gov	Valentina Cabrera
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
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4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/13/2010 15:03	tech@normbrown.com	Norm Brown
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11/17/2011 16:20	richg@countypipeline.com	Richard Gallimore
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11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
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12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/18/2011 9:59	dodger93277@yahoo.com	Daniel Galbraith
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
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3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
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3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
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4/5/2016 12:11	Joemamabush@netzero.com	Joe Bell
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3/10/2011 10:39	kemmerer.john@epa.gov	John Kemmerer
3/23/2011 11:22	rwang@dpw.lacounty.gov	Ruby Wang
4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
4/28/2011 10:48	kjohnston@santamonicabay.org	Karina Johnston
4/28/2011 15:50	r.appy@cox.net	Ralph Appy
5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
5/6/2011 8:10	kevarts@rbf.com	Kevin Evarts
5/12/2011 22:58	cyanda@gmail.com	Catherine Yanda
6/7/2011 20:38	jfries@counsel.lacounty.gov	Judith Fries
6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
6/11/2011 22:09	humanhealthrisk@gmail.com	Daniel K. Lee
6/21/2011 14:05	Hopet@lwa.com	Hope Taylor
6/29/2011 9:59	wcaffrey@vandermostconsulting.com	wade caffrey
8/19/2011 12:06	renee.purdy@waterboards.ca.gov	Renee Purdy
8/22/2011 10:40	lskutecki@brwncald.com	Lisa Skutecki
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
9/8/2011 15:06	mary.welch@pgenv.com	Mary Welch
9/11/2011 18:15	tweybright@gmail.com	Teague Weybright
9/16/2011 9:48	ply@wrd.org	Phuong Ly
10/5/2011 10:04	ctyrrell@rmcwater.com	Catherine Tyrrell
10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/5/2011 20:04	neilandeb@aol.com	Neil Dipprey
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/8/2011 9:25	jozettem99@aol.com	Jo McKie
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11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/21/2011 18:26	wensch9@msn.com	Wendy Schaal
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas

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1/17/2012 14:58	srapoport@waterboards.ca.gov	Shana Rapoport
2/2/2012 15:01	aklecha@semprautilities.com	Anthony Klecha
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
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4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
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5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
6/5/2012 14:16	kosta.kaporis@lacity.org	Kosta Kaporis
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/6/2012 16:51	sperlstein@weho.org	Sharon Perlstein
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6/11/2012 11:36	vijay.desai@lacity.org	Vijay Desai
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10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
11/20/2012 16:15	gtakayesu@honolulu.gov	Gerald Takayesu
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12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
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1/9/2013 10:12	ccarreon@ecokai.com	Carlos Carreon
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/16/2013 16:16	kpease@healthebay.org	Katherine Pease
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
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12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
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1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
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1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
2/10/2015 16:15	gkomjakraphan@dpw.lacounty.gov	Grace Komjakraphan
2/10/2015 21:02	emiller@mbcnet.net	Eric Miller
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo

3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/2/2015 16:27	Alan.Silver@va.gov	Alan SIlver
4/2/2015 16:28	gmarks@ehs.ucla.edu	Gillian Marks
4/3/2015 10:28	publicaffairs.spl@usace.army.mil	
4/3/2015 10:33	George@la-equestriancenter.com	
4/3/2015 10:34	egregory@sangabrielcc.com	
4/3/2015 10:34	gm@arcadiagc.com	
4/3/2015 10:34	sagolfcrse@aol.com	
4/3/2015 19:44	ADLN.MTEKLLCcf@gmail.com	Project Coordinator
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5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
6/9/2015 14:47	kevin.han@ladwp.com	Kevin Han
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
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6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/16/2015 14:19	sylvia_peterson@fmi.com	Sylvia Peterson
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
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12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
6/1/2005 11:37	blizmo1@aol.com	Elizabeth Zlotnik
7/13/2005 13:29	jjensen@waterboards.ca.gov	Joanna Jensen
7/21/2005 9:10	jnewman@waterboards.ca.gov	Jenny Newman
8/9/2005 19:51	sgreen@lacsd.org	Sharon N. Green
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/19/2005 14:39	mike@wspa.org	Mike Wang
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
12/17/2005 8:28	aheil@lacsd.org	Ann Heil
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
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2/15/2006 16:17	kjames@healthebay.org	Kirsten James
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3/30/2006 17:02	sunger@waterboards.ca.gov	Sam Unger
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4/28/2006 10:26	pvcwd.agwater@verizon.net	Michael Miller
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9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
9/23/2008 11:18	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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2/17/2016 11:03	acondelli@simivalley.org	Alex Condelli
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/29/2016 7:39	ASexton@simivalley.org	Al Sexton
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/20/2016 15:55	shiri.klima@oxnard.org	Shiri Klima
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
1/26/2017 12:18	david.laak@ventura.org	David Laak
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson

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3/9/2005 10:45	ghildeb@ladpw.org	Gary Hildebrand
9/23/2008 11:21	Rosie.Villar@waterboards.ca.gov	Rosie Villar
2/14/2012 9:44	catalinakayaks@sbcglobal.net	Wet Spot Rentals - Catalina Kayak Adventures
2/14/2012 9:45	eric@catalinadiverssupply.com	Eric Mahan op. mgr, Catalina Divers Supply
2/14/2012 11:35	renee.purdy@waterboards.ca.gov	Renee Purdy
2/14/2012 11:39	ehmail@ph.lacounty.gov	LA Co. Dept. of Public Health General Mail
2/14/2012 11:56	kjames@healthebay.org	Kirsten James
2/14/2012 11:58	ngarrison@nrdc.org	Noah garrison
2/14/2012 12:00	tgaur@nrdc.org	Tatiana Gaur
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3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
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10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
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2/5/2013 15:55	cory.jones@ghd.com	Cory Jones
2/7/2013 10:06	mharrison@diamondwest.net	Mike Harrison
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2/24/2014 10:57	trevor.currie@ladwp.com	Trevor Currie
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4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
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5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
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6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
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11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
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5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
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6/22/2015 11:09	djensen@ph.lacounty.gov	David Jensen
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
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6/30/2015 13:55	deborah.brandes@waterboards.ca.go	Deborah Brandes
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
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9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/29/2015 14:48	aaron.williams@ventura.org	aaron williams
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
3/14/2016 10:40	mpena@kleinfelder.com	Melissa Pena
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/4/2016 12:05	ryan.baron@bbklaw.com	Ryan Baron
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
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1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
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3/21/2011 16:01	AJirik@portla.org	Andrew Jirik
3/21/2011 16:01	Arms@polb.com	Matt Arms
3/21/2011 16:01	Arthur.T.Shak@spl01.usace.army.mil	Arthur T. Shak
3/21/2011 16:01	Cameron@polb.com	Rick Cameron
3/21/2011 16:01	Charlie.yu@lacity.org	Charlie Yu
3/21/2011 16:01	Chien_pei_Yu@dot.ca.gov	Chien-perm Yu
3/21/2011 16:01	David.cannon@everestconsultants.com	David Cannon
3/21/2011 16:01	FWU@ladpw.org	Frank Wu
3/21/2011 16:01	Frank.Wu@usace.army.mil	Frank Wu
3/21/2011 16:01	Kozelka.Peter@epa.gov	Peter Kozelka
3/21/2011 16:01	Lisa.carlson@lacity.org	Lisa Carlson
3/21/2011 16:01	Robert_wu@dot.ca.gov	Bob Wu
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3/21/2011 16:01	dwalsh@portla.org	D. Walsh
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3/21/2011 16:01	ysim@ladpw.org	Youn Sim
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11/18/2011 12:43	kfarfsing@cityofsignalhill.org	Kenneth Farfsing
11/22/2011 12:00	jhunter@jlha.net	john Hunter
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5/29/2012 8:09	dion.coluso@lacity.org	Dion Coluso
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10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
12/8/2008 18:01	cabrera-stagno.valentina@epa.gov	Valentina Cabrera
12/9/2008 18:36	oceanguy02@yahoo.com	Chuck Cleeves
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
12/18/2008 8:09	nisheeth.kakarala@gmail.com	Nisheeth Kakarala
12/31/2008 14:43	DWPierce@chevron.com	David W. Pierce
1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
1/19/2009 18:15	michael.a.beasley@boeing.com	Michael Beasley
1/26/2009 14:07	ajirik@portla.org	Andrew Jirik
2/6/2009 9:13	ihshanhsu.yeh@lacity.org	Yvonne Yeh
2/17/2009 9:48	shemyra_powers@kindermorgan.com	Shemyra Powers
2/25/2009 7:32	alasso@dpw.lacounty.gov	Aracely Lasso
3/2/2009 11:26	kbrophy@gswater.com	Katherine Brophy
3/11/2009 12:21	tobymoore@gswater.com	Toby Moore
3/18/2009 15:53	lesliejdaigle@aol.com	Leslie Daigle
4/6/2009 19:07	janswift@live.com	jan andrew swift
4/7/2009 6:53	bruceheyman@cox.net	Bruce Heyman
4/15/2009 13:22	christa@nautilusenvironmental.com	Christa Zacharias
5/6/2009 18:08	sndworsky@gmail.com	Susan Dworsky
5/27/2009 12:47	sadie.iverson.az@gmail.com	Sadie Iverson
5/28/2009 18:07	dboggs@craworld.com	Dave Boggs
6/9/2009 10:25	rdalfarra@sespeconsulting.com	Rob DalFarra
6/21/2009 14:31	rljenk4979@earthlink.net	Richard L. Jenkins
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11/9/2009 6:26	collins-6666@msn.com	J. Roger Collins
12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
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3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
4/2/2010 17:04	gail.m.campos@usace.army.mil	Gail Campos
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4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
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10/24/2012 8:43	carellano@ci.vernon.ca.us	Claudia Arellano
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall

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1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
2/14/2013 11:53	rbeste@torranceca.gov	Robert Beste
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
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6/6/2013 9:11	amelgoza-mendez@semprautilities.com	Adriana Melgoza-Mendez
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11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
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2/7/2014 5:16	mike.mccollough@sbcglobal.net	Mike McCollough
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2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
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3/2/2016 12:47	sbishop@lacsd.org	Shannon Bishop

3/14/2016 10:40	mpena@kleinfelder.com	Melissa Pena
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/25/2016 15:06	wwinter@dpw.lacounty.gov	Bill Winter
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/6/2016 16:51	algrajeda@dpw.lacounty.gov	Alberto Grajeda
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/2/2016 10:44	tstorrer@lssh-law.com	Thomas Storrer
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11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
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12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
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11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
1/21/2014 15:08	websupport@waterboards.ca.gov	WebSupport
8/10/2016 15:15	astroduo@hotmail.com	Astro Duo
8/10/2016 15:15	sands.linda@hotmail.com	Linda Sands
8/10/2016 15:16	d_gottas@yahoo.com	Debbie Gottas
8/10/2016 15:16	jimhotchkiss@yahoo.com	Jim Hotchkiss
8/10/2016 15:17	TerriGordon1@gmail.com	Terri Gordon
8/10/2016 15:17	daehms@verizon.net	Debbie Ehms
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10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
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10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
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11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
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5/21/2007 15:08	peterson@polb.com	Lee Peterson
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6/22/2007 18:29	hgest@burhenngest.com	Howard Gest
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/8/2007 14:09	bogorman@gswater.com	Brandy OGorman
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12/5/2007 12:43	mas.dojiri@lacity.org	Masahiro Dojiri
12/19/2007 11:15	Hassan.Rad@lacity.org	Hassan rad
1/28/2008 11:54	amys@lwa.com	Amy Storm
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3/4/2008 13:58	cmeeker@cityofalhambra.org	Claudine Meeker
3/10/2008 14:27	matthew_gorman@yahoo.com	Matthew Gorman
3/14/2008 10:14	dhock@rmcwater.com	Dawn Hock
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4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/9/2008 8:51	chrism@lwa.com	Chris Minton
5/23/2008 6:00	william_rea@yahoo.com	William John Rea Jr.
6/12/2008 4:40	GlennBaileySFV@yahoo.com	Glenn Bailey
6/12/2008 8:14	hugo.bermudez@nassco.com	Bermudez, Hugo
6/18/2008 12:23	hagop.bedikian@yahoo.com	Hagop Bedikian
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/14/2008 10:47	samantha.yu@ladwp.com	Samantha Yu
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12/31/2008 14:43	DWPierce@chevron.com	David W. Pierce
1/10/2009 11:09	wlaton@aol.com	William Laton
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4/6/2009 19:07	janswift@live.com	jan andrew swift
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6/3/2009 14:11	ecamster@yahoo.com	Camie Pickett
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6/19/2009 9:10	kevin@g4grp.com	kevin p. garrity
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10/28/2009 14:20	rsoto@ci.vernon.ca.us	Rafael Soto
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12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
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2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
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5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
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11/23/2010 16:58	scott@fireconsult.net	SCOTT FRANKLIN
12/13/2010 9:01	sanghera@anchorqea.com	Shelly Anghera
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12/23/2010 20:27	info@ecokai.com	Jim Burton
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1/24/2011 11:30	vhevener@ci.arcadia.ca.us	Vanessa Hevener
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/18/2015 14:07	mackerman@hpca.gov	Michael Ackerman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/31/2015 3:46	michaelgarabedian@earthlink.net	Michael Garabediann
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9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/8/2010 11:55	martinagarnier@gmail.com	Martin Garnier
10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett
11/9/2010 15:35	rrozz@parks.ca.gov	Richard Rozzelle
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 5:47	wlaton@earthforensics.com	Richard Laton
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 13:00	scott@fireconsult.net	SCOTT FRANKLIN
11/14/2010 20:29	davidw20003@yahoo.com	David Warren
12/23/2010 20:27	info@ecokai.com	Jim Burton
1/2/2011 21:30	omegawds@aol.com	omega d. woods
1/4/2011 13:31	meeker.lara@gmail.com	Lara Meeker
1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
2/15/2011 10:36	s.guldimann@gmail.com	Suzanne Guldimann
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
3/8/2011 0:37	rwpgilljr@yahoo.com	Richard William Gill Jr.
3/9/2011 15:14	sanghera@anchorqea.com	Shelly Anghera
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4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
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8/4/2011 8:42	jbrown@malibucity.org	Jennifer Brown
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11/14/2011 14:29	rick.bush@noaa.gov	Rick Bush
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12/5/2011 8:01	sherid@roadrunner.com	Sheri Determan
12/6/2011 11:05	nhastings@surfrider.org	Nancy Hastings
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12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
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7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
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1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
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1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
2/10/2015 16:15	gkomjakraphan@dpw.lacounty.gov	Grace Komjakraphan
2/25/2015 22:48	sabrshirley@yahoo.com	Elliott M. Benson
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
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3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
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4/10/2015 15:43	hoconnell@mnsengineers.com	Heather O'Connell
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
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5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
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5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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1/4/2006 11:50	mbearzi@earthlink.net	Dr. Maddalena Bearzi
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson

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6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
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2/12/2007 10:18	laurie_solis@urscorp.com	laurie solis
2/13/2007 9:57	deana@aquabiocleanup.com	Deana Vitela
3/6/2007 8:05	tfung@dot.ca.gov	Tom Fung
4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
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8/24/2007 14:47	huffamoose2k@yahoo.com	Casey Huffman
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9/19/2007 22:15	arlene.hopkins@gmail.com	arlene hopkins
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7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
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9/23/2008 11:23	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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12/8/2008 18:01	cabrera-stagno.valentina@epa.gov	Valentina Cabrera
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/9/2015 14:47	kevin.han@ladwp.com	Kevin Han
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
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6/17/2015 21:33	plauzoles@me.com	Lucien (Lu) Plauzoles
6/19/2015 7:23	darryl.guenther@lacity.org	Darryl Guenther
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/25/2015 17:11	matthewbeltran123@yahoo.com	Matthew Beltran
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
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6/6/2013 9:11	amelgoza-mendez@semprautilities.com	Adriana Melgoza-Mendez
6/10/2013 8:27	vaday@flowscience.com	Vada Yoon
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
7/31/2013 14:22	pshellenbarger@healthebay.org	Peter Shellenbarger
8/2/2013 7:16	davidthomas@vrsd.com	David F. Thomas
8/2/2013 7:18	andyhovey@vrsd.com	Andy Hovey
9/23/2013 9:38	james.dana@cpsagu.com	James T. Dana
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/28/2013 14:26	mhogan@awattorneys.com	Miles Hogan
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/20/2013 7:42	pete.osmolovsky@waterboards.ca.gov	Peter Osmolovsky
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/4/2013 9:21	msimon@counsel.lacounty.gov	Michael Simon
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/21/2014 14:49	Betsy.Malone@rbf.com	Betsy Malone
1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/24/2014 10:57	trevor.currie@ladwp.com	Trevor Currie
3/7/2014 9:22	bh94940@yahoo.com	John Raulph
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
7/8/2014 11:05	jerry.hidalgo@mrca.ca.gov	Jerry Hidalgo
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
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9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
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11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
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7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
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8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/11/2008 10:09	lin.cindy@epa.gov	Cindy Lin
9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
9/23/2008 11:26	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
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5/6/2009 9:11	john@farmbureauvc.com	John Krist
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4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
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2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 8:57	jbrickey@jlha.net	Jillian Brickey
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough

2/27/2016 15:24	tcherry@ci.monrovia.ca.us	Tina Cherry
2/29/2016 6:45	ssullivan@ci.monrovia.ca.us	Sean Sullivan
2/29/2016 8:57	lgorecki@bellflower.org	Len Gorecki
3/2/2016 12:47	sbishop@lacsd.org	Shannon Bishop
3/14/2016 10:40	mpena@kleinfelder.com	Melissa Pena
3/21/2016 7:09	croldan@elmonteca.gov	Cesar Roldan
3/30/2016 11:04	Steven.Sander@calrecycle.ca.gov	Steven P Sander
4/7/2016 15:54	susan.fears@dtsc.ca.gov	susan fears
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/9/2016 12:55	sandilp@centralbasin.org	Sandi Linares-Plimpton
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/27/2016 9:25	jmacias@vcwd.org	Jandy Macias
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/7/2016 8:41	tom.dolan@aecom.com	Tom Dolan
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/5/2016 16:04	woonhoek@usc.edu	Woonhoe Kim
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
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3/11/2009 10:00	tweiland@lacsd.org	Thomas E. Weiland
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5/27/2009 12:47	sadie.iverson.az@gmail.com	Sadie Iverson
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6/30/2009 13:22	mbiedebach@sespeconsulting.com	mike biedebach
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9/25/2009 11:09	ann.laduca@tetratech.com	Ann LaDuca
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/7/2010 11:24	collins-6666@msn.com	J. Roger Collins
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
1/14/2010 14:32	stormwatercentral@gmail.com	Anna Hensley

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2/16/2010 7:19	chien_pei_yu@dot.ca.gov	Chien-pei Mark Yu
3/3/2010 15:27	jg@stateside.com	Jessica Gilmore
4/1/2010 10:47	jzane@padreinc.com	Jeffrey Zane
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4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:45	selimeren@gmail.com	SELIM EREN
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6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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9/30/2011 9:38	david@sws-inc.com	David Nixon
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5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/30/2012 13:01	MeredithClement@kennedyjenks.com	Meredith Clement
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/1/2012 18:03	bdepoto@yahoo.com	Bill DePoto
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/20/2012 15:25	ncox@parks.ca.gov	Nat Cox
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
8/13/2012 19:23	fmcchesney@waterboards.ca.gov	Frances McChesney
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
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9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/8/2012 15:11	Dan.Askenaizer@WQTS.com	Dan Askenaizer
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
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6/8/2016 10:06	TerriGordon1@gmail.com	Terri Gordon
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1/15/2008 13:42	tgrant@dpw.lacounty.gov	Terri Grant
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin
3/14/2008 10:14	dhock@rmcwater.com	Dawn Hock
4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/9/2008 8:51	chrism@lwa.com	Chris Minton
5/23/2008 6:00	william_rea@yahoo.com	William John Rea Jr.
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/17/2008 9:48	maricela1977@yahoo.com	Maricela Gomez
7/17/2008 10:34	heyrunt@yahoo.com	Linda Porta
7/18/2008 10:38	brent.a.smith@amec.com	Brent Smith
8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
8/13/2008 11:37	rsinger@uscgcaptain.com	Robert Singer
9/11/2008 10:09	lin.cindy@epa.gov	Cindy Lin
9/23/2008 11:31	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/9/2008 10:35	dleachman@lacsd.org	Debra Leachman
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
12/6/2008 12:49	rfields68@aol.com	Robert Fields
12/8/2008 18:01	cabrera-stagno.valentina@epa.gov	Valentina Cabrera
12/9/2008 18:36	oceanguy02@yahoo.com	Chuck Cleeves
12/11/2008 12:05	terrabellalandscape@gmail.com	Paula Henson
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
12/18/2008 8:10	nisheeth.kakarala@gmail.com	Nisheeth Kakarala
12/22/2008 7:06	pholland@dpw.lacounty.gov	Patrick Holland
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2/25/2009 7:32	alasso@dpw.lacounty.gov	Aracely Lasso
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12/21/2011 10:21	eddie_isaacs@dot.ca.gov	Eddie Isaacs
12/27/2011 16:31	mayorlutz@gmail.com	Mary Ann Lutz
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2/6/2012 11:02	Ana.Alvarez@ocpw.ocgov.com	Ana Alvarez
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 8:54	caroline@lawyersforcleanwater.com	Caroline Koch
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4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
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6/5/2012 14:16	kosta.kaporis@lacity.org	Kosta Kaporis
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7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
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3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
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7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
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6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/25/2015 17:11	matthewbeltran123@yahoo.com	Matthew Beltran
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6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
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1/17/2012 14:58	srapoport@waterboards.ca.gov	Shana Rapoport
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/27/2012 11:26	dlevenson@ampleoil.com	Donald G. Levenson
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:33	rhino0026@yahoo.com	John Parent
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado

3/27/2012 8:54	caroline@lawyersforcleanwater.com	Caroline Koch
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
4/5/2012 17:06	meinerscanary@matilijasustainability.org	Elizabeth Anne von Gunten
4/6/2012 13:45	boutwin@waterboards.ca.gov	Brandi Outwin-Beals
4/9/2012 9:32	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
5/3/2012 17:09	Acousticlynne@gmail.com	Lynne Peterson
5/17/2012 16:36	k.london.haldeman@gmail.com	Katie Haldeman
5/25/2012 11:26	lorraine@ovlc.org	Lorraine Walter
5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/30/2012 13:01	MeredithClement@kennedyjenks.com	Meredith Clement
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
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7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
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9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
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11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
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12/28/2012 10:45	dornl@sacsewer.com	linda dorn
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1/12/2013 15:27	davert85@hotmail.com	David Boyer
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3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
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6/12/2013 16:42	crholguin@yahoo.com	Claudia Holguin
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9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
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10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/20/2013 7:42	pete.osmolovsky@waterboards.ca.gov	Peter Osmolovsky
11/25/2013 10:57	jennad@sbck.org	Jenna Driscoll
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
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10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
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1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
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2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 11:13	jon.lefevre@jmsmucker.com	Jonathan LeFevre
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
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4/21/2015 21:29	rkampalath@healthebay.org	Rita Kampalath
4/28/2015 6:38	craig.hoover@fda.hhs.gov	Craig Hoover
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7/28/2015 16:21	syreeta.steele@ventura.org	Syreeta Steele
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10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
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11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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1/17/2016 16:12	katlh9@gmail.com	Katherine Hunt
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/9/2016 13:29	jeffrey.sanchez@waterboards.ca.gov	Jeff Sanchez
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
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2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/19/2016 10:54	lnichols@cabrilloedc.org	
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/5/2016 16:44	Gerhardt@sslocsd.us	Gerhardt Hubner
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/26/2016 8:50	sawyer.rob@icloud.com	Rob Sawyer
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
9/8/2016 9:36	lhlampara@aeraenergy.com	Louise Lampara
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
12/8/2016 11:17	sjepsen@dudek.com	Steve Jepsen
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:11	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour

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State Of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. R17-XXX

April 6, 2017

T E N T A T I V E

Approval of Recommendations for the Federal Clean Water Act (CWA) Section 303(d) List

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region finds that:

3. Section 303(d) of the CWA and Title 40, Code of Federal Regulations Section 130.7 require states to develop and submit to the U.S. Environmental Protection Agency (U.S. EPA) for approval a list of water bodies for which water quality standards (beneficial uses and water quality objectives) are not attained, or are not expected to be attained, with the implementation of certain technology-based controls. This list is commonly referred to as the "303(d) List" or the "List of Impaired Waters."

2. Section 305(b) of the CWA requires states to monitor, assess and submit biennially to the U.S. EPA a report assessing statewide surface water quality.

3. The California Integrated Report includes the requirements of CWA Section 305(b) and Section 303(d).

4. The 303(d) List must include a description of the pollutants causing impairment and a completion date for prioritizing the development of a Total Maximum Daily Load (TMDL) for each pollutant.

5. Only the 303(d) List portion of the California Integrated Report requires approval by the State Water Resources Control Board (State Water Board) and the U.S. EPA. Neither agency approves the 305(b) Report portion of the California Integrated Report.

6. The process for developing and approving the 303(d) List, including requests for review of specific listing recommendations by a Regional Water Quality Control Board is outlined in the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy).

7. Upon approval, the Los Angeles Water Board's recommended 303(d) List will be submitted to the State Water Board and compiled into a statewide 303(d) List. The

statewide 303(d) List is subject to the approval of the State Water Board and the U.S. EPA.

8. In accordance with sections 6.2 and 6.3 of the Listing Policy, before the Executive Director of the State Water Board or the State Water Board approves the California section 303(d) List, the State Water Board shall provide advance notice and opportunity for public comment. Public comment will be limited to listing recommendations that are timely requested for review pursuant to section 6.2 of the Listing Policy unless the Executive Director or the State Water Board elects to consider recommendations on other waters. To request that the State Water Board or Executive Director review specific listing recommendations approved by a Regional Water Board, the request must be submitted to the State Water Board within 30 days after the Regional Water Board approval.

9. In January of 2010, the State Water Board solicited water quality data from the public with a formal "Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report," which was sent to interested persons subscribed to the State Water Board's Integrated Report e-mail distribution list. In addition, the Los Angeles Water Board sent the notice to persons subscribed to the Los Angeles Water Board's Basin Plan Amendments and TMDL e-mail distribution lists.

10. In developing the 2016 Integrated Report for CWA Section 305(b) and the Section 303(d) List, the Los Angeles Water Board considered all readily available data and information submitted to the State Water Board during the State Water Board data solicitation period of January 14, 2010 to August 30, 2010.

11. After reviewing all relevant evidence submitted, Los Angeles Water Board staff has:

    - For 305(b), made overall beneficial use support ratings for the water bodies that have been assessed for this 2016 assessment cycle. Categories 1, 2, 3, 4, and 5 of the Los Angeles Water Board's Integrated Report reflect the outcome of the overall use support ratings.

    - For 303(d), made recommendations to add, remove or change the 2016 CWA Section 303(d) List of Impaired Waters for the Los Angeles Water Board's 2016 Integrated Report. The 303(d) List is reflected in Categories 4a, 4b, and 5 of the Integrated Report.

12. On February 8, 2017, the Los Angeles Water Board provided public notice of the 2016 Integrated Report for the Los Angeles Region and a 30-day comment period; issued a Notice of Hearing to interested persons; and published notice of the 2016 Integrated Report and the hearing in the Los Angeles Times and Ventura County Star.

13. Los Angeles Water Board staff responded in writing to the written comments received during the public comment period and revised staff's recommendations for additions, deletions, and changes to the 303(d) List, the supporting 2016 Integrated Report, and water body fact sheets as appropriate.

14. No action is required by the Los Angeles Water Board for staff's assessment of non-impaired water bodies under Section 305(b).

15. On April 6, 2017, the Los Angeles Water Board held a Public Hearing to consider and approve the recommendations for the 303(d) List. The Los Angeles Water Board considered all evidence provided by Los Angeles Water Board staff and the public.

THEREFORE BE IT RESOLVED THAT:

1. The Los Angeles Water Board hereby approves the recommendations for the 2016 303(d) List for the Los Angeles Region.

2. The Executive Officer is to transmit the Los Angeles Water Board's proposed recommendations for the 2016 Integrated Report with its supporting information and evidence including approved revisions, to the State Water Board for its consideration and incorporation into the final 2016 California Integrated Report.

I, Samuel Unger, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 6, 2017.

____
Samuel Unger
Executive Officer

TENTATIVE

LOS ANGELES REGIONAL
WATER QUALITY CONTROL BOARD

2016 CLEAN WATER ACT
SECTIONS 305(b) AND 303(d)
INTEGRATED REPORT
FOR THE LOS ANGELES REGION

STAFF REPORT

February 2017

Table of Contents

List of Tables

List of Appendices

List of Acronyms and Abbreviations

Basin Plan	Water Quality Control Plan: Los Angeles Region
BPTCP	Bay Protection and Toxic Cleanup Program
BMI	Benthic Macro Invertebrates
CalWQA	California Water Quality Assessment (database)
CCC	Criteria Continuous Concentration
CCR	California Code of Regulations
CDPH	California Department of Public Health
CFR	Code of Federal Regulations
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act
ºC	degrees Celsius
ºF	degrees Fahrenheit
FED	Functional Equivalent Document
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DFW	Department of Fish and Wildlife, formerly Department of Fish and Game (DFG)
DO	Dissolved oxygen
dw	dry weight
ERM	Effects Range Median
HCH	Hexachlorocyclohexane
HSA	Hydrologic Sub Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILRP	Irrigated Lands Regulatory Program
IR	Integrated Report
kg	kilogram(s)
Listing Policy	Water Quality Control Policy for Developing California's Section 303(d) List
LOE	Line of Evidence
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	milligrams per kilogram (parts per million)
mg/L	milligrams per liter (parts per million)
µg/g	micrograms per gram (parts per million)
µg/L	micrograms per liter (parts per billion)
MTBE	Methyl tertiary-butyl ether
MTRL	Maximum Tissue Residue Level
NAS	National Academy of Sciences
ng/g	nanograms per gram (parts per billion)
ng/L	nanograms per liter (parts per trillion)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

NTU	Nephelometric Turbidity Unit
oc	organic carbon
OEHHA	Office of Environmental Health Hazard Assessment
PAH	Polynuclear aromatic hydrocarbon
PBDE	Polybrominated diphenyl ethers
PCB	Polychlorinated biphenyl
PEL	Probable Effects Level
pg/L	picograms per liter
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBI	Relative Benthic Index
RL	Reporting Level
SCCWRP	Southern California Water Research Project
SMWP	State Mussel Watch Program
SQG	Sediment quality guideline
SWAMP	Surface Water Ambient Monitoring Program
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSMP	Toxic Substance Monitoring Program
TSS	Total Suspended Solids
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirement
WQO	Water quality objective
WQS	Water quality standard
ww	wet weight

1. Introduction

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring water quality. Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress. Under CWA Section 303(d), states are required to review, makes changes as necessary, and submit to the USEPA a list identifying waterbodies not meeting water quality standards and identifying the water quality parameter (i.e., pollutant) not being met (303(d) list). Placement on this list generally triggers development of a pollution control plan called a total maximum daily load (TMDL) for each waterbody/pollutant pair on the list.

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is responsible for developing and adopting the 2016 Integrated Report for waters within the Los Angeles Region of California. Following adoption by the Los Angeles Water Board, the 2016 Integrated Report will be transmitted to the State Water Resources Control Board (State Water Board), where it will be considered by the State Water Board in combination with other Regional Water Board Integrated Reports.

The purpose of this staff report is to describe the assessment process (the procedures used by the State Water Board and Los Angeles Water Board staff to analyze data and information), provide a report of surface water quality in the Los Angeles Region as required by CWA Section 305(b), and provide Los Angeles Water Board staff recommendations for additions, deletions, and changes to the California CWA Section 303(d) List.

The results of the staff analysis are presented as staff recommendations in the form of fact sheets that contain a decision and supporting lines of evidence for each water body/pollutant pair assessed. A summary of staff recommendations can be found in Section 4. The fact sheets are available in Appendix G of this Staff Report.

2. Legal Requirements and Policy

This section provides a summary of the federal and state legal requirements and applicable policies for the 2016 Integrated Report.

2.1 Federal Requirements

2.1.1 CWA Section 303(d) – Impaired Waters

Section 303(d) of the Clean Water Act requires states to identify waters that do not meet applicable water quality standards after the application of certain technology-based controls.[1] The Section 303(d) List must include a description of the pollutants causing the violation of water quality standards (40 CFR §130.7(b)(iii)(4)) and a priority ranking of the water quality limited segments, taking into account the severity of the pollution and the uses to be made of the waters.

Water quality standards include the designated beneficial uses of a waterbody, the adopted water quality objectives to protect those uses (numeric and narrative), and the State's Antidegradation Policy (State Water Board Resolution No. 68-16) (SWRCB 1968).

Federal regulation defines a "water quality limited segment" as "any segment [of a surface waterbody] where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after application of technology-based effluent limitations required by CWA Sections 301(b) or 306" (40 CFR 130.2(j)).

States are required to review the Section 303(d) List in even-numbered years, make changes as necessary, and submit the list to the USEPA for approval. A TMDL is generally developed for a water quality limited segment. A TMDL is the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources, and natural background (40 CFR 130.2(i)).

2.1.2 CWA Section 305(b) – Water Quality Assessment

Under CWA Section 305(b), states are required to report biennially to the USEPA on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress.

2.1.3 The Integrated Report and Waterbody Categories

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements.

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping

[1] Technology-based controls are defined in CWA Section 301. They include effluent limits (primary and secondary treatment requirements) for industrial discharges and discharges from publically owned treatment works.

categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments are evaluated for at least one of six "core" beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation.

Table 1. Integrated Report Categories

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.
4	At least one beneficial use is not supported but TMDL is not needed.
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame..
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.
5	At least one beneficial use is not supported and a TMDL is needed.

A waterbody will often have multiple pollutants impairing multiple beneficial uses. In these cases, when the waterbody has TMDLs for all the impaired uses, the waterbody is placed in category 4a; when the waterbody is lacking a TMDL for at least one impairment, the waterbody is placed in category 5.

2.2 California Requirements

On September 30, 2004, the State Water Board adopted the "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," also known as the Listing Policy (SWRCB 2004a) in accordance with California Water Code Section 13191.3(a). The Listing Policy identifies the process by which the State Water Board and the Regional Water Quality Control Boards will comply with the listing requirements of CWA Section 303(d). The Listing Policy became effective in December 2004. Justification of each portion of the Listing Policy is presented in the Final Functional Equivalent Document (SWRCB, 2004b) that was developed to support the provisions of the Listing Policy.

The objective of the Listing Policy is to establish a standardized approach for developing California's Section 303(d) List with the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters. TMDLs will generally be developed as needed for the waters identified under the provisions of the Listing Policy.

The Listing Policy outlines a "weight of evidence" approach that provides the rules for making decisions based upon different kinds of data, an approach for analyzing data statistically, and requirements for data quality, data quantity, and the administration of the listing process. Decision rules for listing and delisting are provided for chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisance such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities. The Listing Policy also requires that situation specific weight of evidence listing or delisting factors be used if available information indicates water quality standards are attained or not attained and the other decision rules do not support listing or delisting.

The Listing Policy also provides direction related to:

- The definition of readily available data and information.
- Administration of the listing process including data solicitation and fact sheet preparation.
- Interpretation of narrative water quality objectives using numeric evaluation guidelines.
- Data quality assessments.
- Data quantity assessments including waterbody specific information, data spatial and temporal representation, aggregation of data by reach/area, quantitation of chemical concentrations, evaluation of data consistent with the expression of water quality objectives or criteria, binomial model statistical evaluation, evaluation of bioassessment data, and evaluation of temperature data.

The Listing Policy requires that *all* surface waters that do not meet water quality standards be placed on the Section 303(d) List. The Policy also states that the California 303(d) List includes (1) waters still requiring a TMDL under Category 5, and (2) waters where the water quality limited segment is being addressed under Category 4. Waterbodies in the "Water Quality Limited Segments Being Addressed" category must meet either of the following conditions:

1. A TMDL has been approved by USEPA and is expected to result in full attainment of the standard within a reasonable, specified time frame (Category 4a).

2. It has been determined that an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame (Category 4b).

Waterbodies that are impaired by a non-pollutant source (Category 4c) do not require a TMDL and the State Water Board, in accordance with the Listing Policy, does not consider waters in Category 4c as a part of the 303(d) List. This means that, for California, waters that fall into the Integrated Report Categories 4a, 4b, and 5 are considered part of the California 303(d) List. The USEPA considers Category 5 waterbodies as the only category that constitutes the 303(d) List.

2.3 TMDL Scheduling

In conformance with Section 5 of the Listing Policy, a TMDL completion schedule date is required for all waterbody-pollutant combinations placed on the 303(d) List. Water Board staff relied on guidance from the USEPA (1997), which states that "schedules should be expeditious and normally extend from eight to thirteen years in length, but could be shorter or slightly longer depending on State-specific factors." Therefore, the timeline for completing TMDLs for waterbodies listed for the first time as part of the 2016 Integrated Report is estimated to be no longer than thirteen years, which equates to an estimated completion date of 2029. Expected TMDL completion dates are proposed by Los Angeles Water Board staff in the fact sheets of this report (Appendix G).

2.4 2010 303(d) List of Impaired Waters

The 2010 303(d) list was adopted by the Los Angeles Water Board on July 16, 2009, in Resolution No. R09-004; adopted by the State Water Board on August 4, 2010, in Resolution No. 2010-0040; and approved by the USEPA on October 11, 2011. The 2010 list included data submitted through February 28, 2007. The 2010 303(d) list is the most recent list which included updates from the Los Angeles Region.

2.5 Changes to California's Integrated Report 303(d) and 305(b) Process

In February 2013, the State Water Board announced a new strategy for the development of the State's Integrated Report including establishing three groups of Regional Water Boards and submitting an Integrated Report for one group per listing cycle (i.e. every two years). This strategy was formally described in an *Integrated Report Update Memo* in November 2013 (SWRCB, 2013). The Listing Policy was amended to reflect this and other changes on February 3, 2015.

Therefore, the 2012 Integrated Report consisted of data submitted for the North Coast Regional Water Quality Control Board (Region 1), the Lahontan Regional Water Quality Control Board (Region 6), and the Colorado River Basin Regional Water Quality Control Board (Region 7). On July 30, 2015, the USEPA issued its final decision this update to the 303(d) list and this 2012 303(d) list replaced the 2010 303(d) list as California's current 303(d) list.

The Central Coast Regional Water Quality Control Board (Region 3), the Central Valley Regional Water Quality Control Board (Region 5), and the San Diego Regional Water Quality Control Board (Region 9) recently approved Integrated Reports including a 303(d) list for their respective regions. Region 9 approved its 303(d) list in October 2016 and Regions 3 and 5 approved their 303(d) lists in December 2016. These updates to the 303(d) list were to be approved by the State Water Board as the 2014 303(d) list.
The 2016 Integrated Report will consist of data for the San Francisco Bay Regional Water Quality Control Board (Region 2), the Los Angeles Water Board (Region 4), and the Santa Ana Regional Water Quality Control Board (Region 8). Each of these Regions is expected to approve

their lists by April 2017. Until the 2014 and 2016 303(d) list updates are approved by the USEPA, the current list is the 2012 303(d) list.

Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed. Each of the 2012, 2014 and 2016 303(d) lists have assessed only data from the 2010 data solicitation.

In addition, changes to the procedures included in the February 2015 amendment to the Listing Policy, included a requirement that all data be submitted to the California Environmental Data Exchange Database (CEDEN); this change will significantly improve the efficiency of the listing and delisting process so that even with regional updates only once every six years, California will have a more comprehensive assessment and 303(d) list than in the past. The CEDEN website has a new page dedicated to the 303(d) list: http://www.ceden.org/303d_list.shtml.

The data solicitation for the 2018 303(d) list was released on November 3, 2016. The 2018 303(d) list will address Regions 1, 6, and 7.

The Los Angeles Water Board will develop its next Integrated Report, including an updated 303(d) list, in 2022. Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021.

2.6 Public Review and Board Approval of the 2016 303(d) List

Pursuant to section 6.2 of the Listing Policy, waterbodies listed in Category 4a, 4b, or 5, which make up the 303(d) list, are subject to public review and approval by the Los Angeles Water Board. Waterbodies listed in Categories 1, 2, 3, or 4c are provided to the public and to the Los Angeles Water Board as additional waterbody information. All categories will be submitted to the State Water Board for inclusion into the California Integrated Report. Once compiled, the State Water Board will provide public notice of the California Integrated Report for additional public review prior to approval by the State Water Board, as outlined in section 6.3 of the Listing Policy. Waterbodies in Categories 4a, 4b, and 5 will be considered for inclusion in the California 303(d) list.

It is anticipated that the State Water Board will approve the 2014 list updates of Regional 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017.

The California 303(d) list will require final approval by USEPA. If USEPA determines that changes are needed to the submitted report they will initiate further public review before finalizing and publishing the report.

3. Development of the 2016 Los Angeles Region 303(d) List

This section provides a review of the data analysis for the Los Angeles Region's 2016 Integrated Report.

3.1 Data Solicitation for the 2016 303(d) List

In January of 2010, the State Water Board solicited data from the public with a formal "Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report" (Notice), which was sent to interested persons subscribed to the State Water Board's Integrated Report e-mail distribution list. In addition, the Los Angeles Water Board sent the notice to persons subscribed to the Los Angeles Water Board's Basin Plan Amendments and TMDL e-mail distribution lists. Data used as part of the 2016 Integrated Report were received through August 30, 2010. Data sources include government agencies, municipalities, environmental groups, citizen groups, receiving water data from the National Pollutant Discharge Elimination System (NPDES) dischargers and data collected by the Regional and State Water Boards under the Surface Water Ambient Monitoring Program (SWAMP).

All data and information submitted are available as part of the electronic administrative record (Appendix H). Data and information pertaining to specific waterbody-pollutant assessments are provided in the fact sheets (Appendix G) and link directly to the administrative record.

3.2 Data Processing and Analysis

All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report. However, only high-quality data supported by a Quality Assurance Project Plan was used to make determinations of water quality standards attainment. In the absence of quality assurance documentation, data is used only as supporting evidence and is not the basis of a listing decision.

Fact sheets and overall beneficial use support determinations were developed in the California Water Quality Assessment (CalWQA) database. Lines of evidence (LOE) summarize: water quality data, information pertaining to where and when the water quality monitoring took place, the pollutant sampled, the beneficial use affected, the water quality objective or guideline protective of the beneficial use, the number of samples collected, and how many samples exceeded the objective or guideline. Potential sources are identified in fact sheets in some cases, otherwise, the potential source was marked "Source Unknown".

Data were aggregated by waterbody segment following the requirements of Section 6.1.5.4 of the Listing Policy, and assessments were performed on the individual segments. Waterbodies were segmented to account for hydrologic features.

Spatial and temporal representation of data was assessed using the requirements and guidance of the Listing Policy. The available data were used to represent concentrations during the averaging period associated with the particular pollutant and water quality objective, as required by Section 6.1.5.6 of the Listing Policy. For example, if only one data point was available during a 4-day period, it was used to represent the four-day average concentration for that period.

Following data assessment, Los Angeles Water Board staff determined whether or not the waterbody was attaining relevant water quality standards. Decision recommendations were completed to summarize all relevant LOEs for a waterbody-pollutant combination and, based on the statistical evaluation described in the Listing Policy, to state if the exceedances of water quality standards constituted an impairment of a beneficial use and, thus, necessitated a 303(d) listing.

3.3 Water Quality Standards Used in the Data Assessment

Beneficial uses for waters in the Los Angeles Region are identified in Table 2-1, 2.1a and 2.3 of the Los Angeles Regional Water Quality Control Plan (Basin Plan).

Water Board staff assessed data using regulatory limits when available. The most common regulatory limits used include water quality objectives in the Basin Plan or any statewide Water Quality Control Plans applicable to the waterbody, including objectives for toxic chemicals promulgated by the USEPA under the California Toxics Rule (40 CFR §131.38). When numeric regulatory limits were not available, evaluation guidelines were considered to interpret narrative water quality objectives. Evaluation guidelines are selected in conformance with section 6.1.3 of the Listing Policy.

3.4 Determination of Beneficial Use Support and Integrated Report Categories

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments were evaluated for at least one of six “core” beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation. For each core beneficial use associated with each waterbody segment, a rating of fully supporting, not supporting, or insufficient information was assigned based on the assessment of readily available data and information.

Table 2. Los Angeles Integrated Report Waterbody Categories, 2016 303(d) List

Category	**Description**	**Waterbody Segments**
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.	**34**
2	There is insufficient information to determine beneficial use support.	**56**
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.	**15**
4	At least one beneficial use is not supported but TMDL is not needed.	
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.	**74**
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.	**0**
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.	**0**
5	At least one beneficial use is not supported and a TMDL is needed.	**140**
Total waterbodies assessed		**319**

Detailed Category Reports can be found in Appendices B-F.

Pursuant to Section 2 of the Listing Policy, waterbodies remain in Category 5 until all 303(d)-listed pollutants are addressed by USEPA-approved TMDLs or by another regulatory program that is expected to result in the reasonable attainment of the water quality standards, at which point the waterbody will be placed into Category 4a or 4b. Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant but rather caused by pollution, such as flow alteration or habitat alteration. Waterbodies placed in Category 4c are not included as part of the 303(d) list and do not require the development of a TMDL.

Waterbody-pollutant combinations listed in Category 5 (Appendix B) show the TMDL requirement status. If a “TMDL is still needed” for the waterbody-pollutant combination, the TMDL requirement status is labeled 5A. If the waterbody-pollutant combination is “being addressed by a USEPA approved TMDL”, the TMDL requirement status is labeled 5B. If the waterbody-pollutant combination is “being addressed by an action other than a TMDL”, the TMDL requirement status is labeled 5C. These labels were created for internal tracking and are not Integrated Report sub-categories required by the USEPA.

4. Proposed Changes to the Section 303(d) List

While, due to the changes to the 303(d) process described in Section 2.5, data review was restricted to data collected prior to September 2010, a significant number of changes to the Los Angeles Region's 303(d) list are proposed. The 200 proposed new listings include:

- Additional PCB and pesticide listings arising from California's Surface Water Ambient Monitoring Program (SWAMP) water quality sampling conducted in 2009 focusing on lakes and reservoirs. For example, staff has proposed new listings for Castaic Lake (PCBs), Pyramid Lake (chlordane, dieldrin, DDT and PCBs) and Echo Park Lake (dieldrin).

- Additional pesticide and other pollutant listings in Ventura County waters draining agricultural lands including the Santa Clara Drain, Tapo Canyon, Wheeler Canyon and Boulder Cove, arising from the Ventura County Agricultural Irrigated Lands Group water quality monitoring.

- Additional toxicity listings in the Los Angeles River arising from water quality sampling conducted the City of Los Angeles' Bureau of Sanitation, required pursuant to the City's NPDES permits.

- Various other proposed listings arising from special studies or ongoing water quality monitoring programs.

Most of the proposed new listings are new waterbody segment-pollutant combinations where a TMDL will be needed. These waterbodies would then be in Category 5. However, several of the proposed new listings identify additional impairments in watersheds already being addressed by a TMDL for that pollutant. For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 and the proposed chlordane, DDE and DDD listings in Hondo Barranca are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL. In addition, the proposed Los Angeles River Reach 3 indicator bacteria listing is already being addressed by the Los Angeles River Bacteria TMDL. These waterbodies would then be in Category 4a unless another waterbody pollutant combination requires a TMDL such that the waterbody would remain in Category 5.

The proposed 40 delistings include:

- Several proposed delistings for indicator bacteria at Santa Monica Beaches, including Abalone Cove Beach, Bluff Cove Beach, Outer Cabrillo Beach, Manhattan Beach and Hermosa Beach. It is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved.

- Various other proposed delistings arising from special studies or ongoing water quality monitoring programs.

In a number of cases, in both fresh and marine waters, listings for "coliform bacteria" were renamed "indicator bacteria" based on USEPA's recommendation and for statewide consistency.

In addition, because 21 TMDLs including 252 listings, have gone into effect since the development of the 2010 303(d) list, a number of Category changes are proposed to change waterbody-pollutant combinations from "requiring a TMDL" (Category 5A) to "being addressed by a USEPA approved TMDL" (Category 5B or, if all waterbody-pollutant combinations have been addressed for that waterbody, Category 4a).

For detailed information on proposed changes, refer to the waterbody-pollutant "fact sheets" in Appendix G.

As discussed in Section 2.6, it is anticipated that the State Water Board will approve the 2014 list updates of Regions 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017. Table 3, below, shows the 303(d) list changes approved by Regional Water Boards 3, 5 and 9 and the 303(d) list changes proposed, at this time, for approval by the staff of Regional Water Boards 2, 4, and 8.

Table 3. Summary of 2014 and 2016 Changes to the California 2012 303(d) List

2014-2016 INTEGRATED REPORT						
REGION	2012 303(d) LIST	2014 and 2016 303(d) List proposed changes				
	Total 303(d) Listings (Categories 4a, 4b and 5)	Regional Water Board 303(d) Listing Recommendations		Miscellaneous Changes*		Total proposed 303(d) Listings (Categories 4a, 4b and 5)
		New Listings	New Delisting	Resulting in Listings	Resulting in Delistings	
1	159	0	0	0	0	159
2	333	42	8	0	6	361
3	712	269	48	0	23	910
4	823	200	40	0	0	983
5	730	269	45	0	0	954
6	155	0	0	0	0	155
7	68	0	0	0	0	68
8	132	33	13	0	0	152
9	445	244	14	0	0	675
Totals	3557	1057	168	0	29	4417

*Miscellaneous changes include adjustments to the 303 (d) list when waterbody reaches are combined or split resulting in a decrease or increase in the number of listings.

5. References

For a complete list of references used in all the assessment fact sheets, see Appendix H.

SWRCB. (2004a). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (amended February 3, 2015). Sacramento, CA.

SWRCB. (2004b). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, Final Functional Equivalent Document*. Sacramento, CA.

SWRCB. (2013). *California Integrated Report [Clean Water Act Sections 303(d) and 305(b)] Update* (Memorandum dated November 12, 2013). Sacramento, CA.

U.S. EPA. (2001). *2002 Integrated Water Quality Monitoring and Assessment Report Guidance* (Memorandum dated November 19, 2001). Washington, D.C.

U.S. EPA. (2015). *Information Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Report and Listing Decisions* (Memorandum dated August 13, 2015). Washington, D.C.

Date: 02/08/17

2016 INTEGRATED REPORT
SUMMARY OF REGIONAL BOARD RECOMMENDED CHANGES TO THE 2012 303(d) LIST
(includes Categories 4a, 4b, and 5)

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Abalone Cove Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Alamitos Bay	Indicator Bacteria				
		Oxygen, Dissolved	Y			
4	Alhambra Wash	Ammonia	Y			
		Benthic Community Effects	Y			
4	Aliso Canyon Wash	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Alondria Park Lake	PCBs (Polychlorinated biphenyls)	Y			
4	Amarillo Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	Benthic Community Effects	Y			
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Artesia-Norwalk Drain	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Arundell Barranca (Ventura County)	Indicator Bacteria	Y			
4	Ashland Avenue Drain	Indicator Bacteria			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Organic Enrichment/Low Dissolved Oxygen				
		Toxicity				
4	Avalon Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Balboa Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
4	Ballona Creek	Benthic Community Effects	Y			
		~~Cadmium~~		Y		
		ChemA				
		Chlordane				
		Copper				
		Cyanide				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria			Y	
		Lead				
		PCBs (Polychlorinated biphenyls)			Y	
		~~Selenium~~		Y		
		Silver			Y	
		Toxicity				
		Trash				
		Viruses (enteric)				
		~~Zinc~~		Y		
		pH				
4	Ballona Creek Estuary	Cadmium				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Indicator Bacteria			Y	
		Lead			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)			Y	
		Silver				
		Toxicity			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Zinc			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Ballona Creek Wetlands	Exotic Vegetation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Habitat alterations				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Hydromodification				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Reduced Tidal Flushing				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Bell Creek	Indicator Bacteria			Y	
4	Big Rock Beach	Coliform Bacteria			Y	
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bluff Cove Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Boulder Creek (Ventura County)	Bifenthrin	Y			
		Chlordane	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Toxicity	Y			
4	Brown Barranca/Long Canyon	Nitrate and Nitrite				
4	Bull Creek	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bull Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
4	Burbank Western Channel	Ammonia				
		Cadmium				
		Copper				
		Cyanide				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Lead				
		Scum/Foam-unnatural				
		Selenium				
		Taste and odor				
		Trash				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Cabrillo Beach (Outer)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Chlordane (tissue)				
		Copper				
		DDT (tissue & sediment)				
		Dieldrin				
		Endosulfan (tissue)				
		Mercury				
		Nickel				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene				
		Toxicity			Y	
		Zinc				
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA				
		Chlordane			Y	
		Copper				
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Dimethoate	Y			
		Endosulfan			Y	
		Indicator Bacteria				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Specific Conductivity	Y			
		Total Dissolved Solids	Y			
		Toxaphene			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxicity				
		Trash				
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria	Y			
		Mercury	Y			
		Nitrate and Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Total Dissolved Solids				
		Toxaphene				
		Trash				
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	Ammonia	Y			
		Bifenthrin	Y			
		Boron				
		ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chloride	Y			
		Chlorpyrifos (tissue)			Y	
		Cypermethrin	Y			
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Fecal Coliform			Y	
		Malathion	Y			
		Mercury	Y			
		Nitrate as Nitrate (NO3)				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls) (tissue)				
		Permethrin	Y			
		Sedimentation/Siltation				
		Selenium				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Specific Conductivity	Y			
		Sulfates	Y			
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	
		Total Dissolved Solids	Y			
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chlorpyrifos (tissue)				
		DDT (tissue & sediment)				
		Dacthal (sediment)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (sediment)				
		Diazinon				
		Dieldrin				
		Indicator Bacteria			Y	
		Nitrate and Nitrite				
		Nitrate as Nitrate (NO3)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Boron				
		Chloride				
		Chlorpyrifos				
		Diazinon				
		Indicator Bacteria				
		Organophosphorus Pesticides				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	Boron				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (Dichlorodiphenyltrichloroethane)				
		Diazinon				
		Dieldrin				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue)				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue)				
		Nitrate as Nitrate (NO3)				
		Nitrogen, Nitrate				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Nitrogen, Nitrite	Y			
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		~~Chlordane~~		Y		
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		~~Endosulfan (tissue)~~		Y		
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Nitrogen, Nitrite				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	~~Ammonia~~		Y	Y	
		Chlordane (tissue)				
		Chlorpyrifos	Y			
		DDT (tissue)			Y	
		Diazinon	Y			
		Dieldrin				
		Malathion	Y			
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		DDT (tissue)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Canada Larga (Ventura River Watershed)	Indicator Bacteria			Y	
		Oxygen, Dissolved			Y	
		Total Dissolved Solids				
4	Carbon Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Casitas, Lake	Mercury				
4	Castaic Lagoon	PCBs (Polychlorinated biphenyls)	Y			
4	Castaic Lake	Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Castlerock Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Channel Islands Harbor	Lead			Y	
		Zinc			Y	
4	Channel Islands Harbor Beach	Indicator Bacteria			Y	
4	Colorado Lagoon	Chlordane			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin			Y	
		Indicator Bacteria				
		Lead			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)			Y	
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	
4	Compton Creek	Benthic Community Effects			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		Iron	Y			
		Lead				
		Trash				
		Zinc	Y			
		pH				
4	Coyote Creek	Abnormal Fish Histology (Lesions)				
		~~Ammonia~~		Y		
		Copper, Dissolved				
		Diazinon				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron	Y			
		~~Lead~~		Y		
		Malathion	Y			
		Toxicity				
		Zinc				
		pH				
4	Coyote Creek, North Fork	Indicator Bacteria				
		Selenium				
4	Crystal Lake	Organic Enrichment/Low Dissolved Oxygen				
4	Dan Blocker Memorial (Coral) Beach	Indicator Bacteria			Y	
4	Dockweiler Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Dominguez Channel (lined portion above Vermont Ave)	Aldrin				
		Ammonia				
		Benthic Community Effects	Y			
		ChemA				
		Chlordane				
		Chromium			Y	
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				
		~~Diazinon~~		Y		TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Aldrin				
		Ammonia				
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		ChemA				
		Chlordane (tissue)				
		Chromium (total)				
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (tissue & sediment)				
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Zinc (sediment)~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Oxygen, Dissolved				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Dry Canyon Creek	Indicator Bacteria			Y	
		Selenium, Total				
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	Y			
		ChemA			Y	
		Chlordane				
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene				
		Toxicity				
4	Echo Park Lake	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane	Y			
		~~Copper~~		Y		
		Dieldrin	Y			
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	El Dorado Lakes	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (tissue)				
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Elderberry Forebay	Dieldrin	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Elizabeth Lake	Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
		Trash				
		pH				
4	Ellsworth Barranca	Chlorpyrifos	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
4	Escondido Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Flat Rock Point Beach Area	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	Boron				
		Chlordane	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Sulfates				
		Total Dissolved Solids				
4	Hermosa Beach	~~Indicator Bacteria~~		Y	Y	
4	Hobie Beach (Channel Islands Harbor)	Indicator Bacteria			Y	
4	Honda Barranca	Bifenthrin				
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
4	Hopper Creek	Sulfates				
		Total Dissolved Solids				
4	Inspiration Point Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	J Street Drain (Ventura County)	Trash	Y			
4	Javon Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	La Costa Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	La Vista Drain (Ventura County)	Chlordane	Y			
		Chlorpyrifos	Y			
		Copper	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		Indicator Bacteria	Y			
		Mercury	Y			
4	Lake Calabasas	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Hughes	Algae				
		Eutrophic				
		Fish Kills				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Odor				
		Trash				
4	Lake Lindero	Algae				
		Chloride				
		Eutrophic				
		Odor				
		Selenium				
		Specific Conductivity				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Sherwood	Algae				
		~~Ammonia~~		Y	Y	
		Eutrophic				
		Mercury (tissue)				
		~~Organic Enrichment/Low Dissolved Oxygen~~		Y	Y	
4	Las Flores Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Tunas Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Virgenes Creek	Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Organic Enrichment/Low Dissolved Oxygen			Y	
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Legg Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				
		pH				
4	Leo Carillo Beach (South of County Line)	~~Indicator Bacteria~~		Y	Y	
4	Lincoln Park Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 1	Algae				
		Benthic Community Effects				
		Indicator Bacteria			Y	
		Invasive Species				
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 2 (Above Lake)	Algae				
		Indicator Bacteria			Y	
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Beach City Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Cabrillo Marina	Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Consolidated Slip	2-Methylnaphthalene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Cadmium (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nickel				
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls) (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Fish Harbor	Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dibenz[a,h]anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Beach Closures				
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				
4	Los Angeles River Estuary (Queensway Bay)	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Lead (sediment)				
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	
		Trash				
		Zinc				
4	Los Angeles River Reach 1 (Estuary to Carson Street)	Aluminum				
		Ammonia				
		Cadmium				
		Copper, Dissolved				
		Cyanide				
		Diazinon				
		Indicator Bacteria			Y	
		Lead				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Trash				
		Zinc, Dissolved				
		pH				
4	Los Angeles River Reach 2 (Carson to Figueroa Street)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Ammonia			Y	
		Benthic Community Effects	Y			
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria	Y			
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Temperature, water	Y			
		Trash				
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	~~Ammonia~~		Y	Y	
		Benthic Community Effects	Y			
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 5 (within Sepulveda Basin)	Ammonia			Y	
		Copper				
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	1,1-Dichloroethylene (DCE)/ Vinylidene Chloride				
		Copper	Y			
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Tetrachloroethylene/PCE				
		Toxicity	Y			
		Trichloroethylene/TCE				
4	Los Angeles/Long Beach Inner Harbor	Beach Closures				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benthic Community Effects				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
4	Los Cerritos Channel	Ammonia				
		Bis(2ethylhexyl)phthalate (DEHP)				
		Chlordane (sediment)				
		Copper				
		Indicator Bacteria			Y	
		Lead				
		Trash				
		Zinc				
		pH				
4	Los Sauces Creek	Selenium	Y			
4	Lunada Bay Beach	Beach Closures				
		Indicator Bacteria				
4	Machado Lake (Harbor Park Lake)	Algae				
		Ammonia				
		ChemA (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				
		DDT (tissue)				
		Dieldrin (tissue)				
		Eutrophic				
		Odor				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Trash				
4	Madranio Canyon	Benthic Community Effects	Y			
		Copper	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Selenium	Y			
4	Malaga Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Malibou Lake	Algae				
		Dieldrin	Y			
		Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
4	Malibu Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
4	Malibu Creek	Benthic Community Effects			Y	
		Fish Barriers (Fish Passage)				
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Sulfates				
		Toxicity				
		Trash				
4	Malibu Lagoon	Benthic Community Effects				
		Eutrophic				
		Indicator Bacteria			Y	
		Swimming Restrictions				
		Viruses (enteric)				
		pH				
4	Malibu Lagoon Beach (Surfrider)	Beach Closures				
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Manhattan Beach	~~Indicator Bacteria~~		Y	Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Marina del Rey Harbor - Back Basins	Chlordane			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Copper			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin			Y	
		Indicator Bacteria				
		Lead			Y	
		Oxygen, Dissolved	Y			
		PCBs (Polychlorinated biphenyls)			Y	
		Toxicity			Y	
		Zinc			Y	
4	Marina del Rey Harbor Beach	Indicator Bacteria			Y	
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	Fish Barriers (Fish Passage)				
4	Matilija Creek Reach 2 (Above Reservoir)	Fish Barriers (Fish Passage)				
4	Matilija Reservoir	Fish Barriers (Fish Passage)				
4	McCoy Canyon Creek	Indicator Bacteria			Y	
		Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium, Total				
4	McGrath Beach	Indicator Bacteria			Y	
4	McGrath Lake	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (sediment)				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	McGrath Lake Agricultural Drain	Bifenthrin	Y			
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Toxaphene	Y			
4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	Algae				
		Benthic Community Effects	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 2 (Abv Confl. with Lindero)	Algae				
		Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	Nitrate and Nitrite				
4	Monrovia Canyon Creek	Lead				
4	Munz Lake	Eutrophic				
		Trash				
4	Nicholas Canyon Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ormond Beach	Indicator Bacteria				
4	Padre Juan Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	Palo Comado Creek	Indicator Bacteria			Y	
4	Palo Verde Shoreline Park Beach	Pathogens				
		Pesticides				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Paradise Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peck Road Park Lake	Chlordane (tissue)				
		DDT (tissue)				
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peninsula Beach	Indicator Bacteria				
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	Chloride				
		Toxicity	Y			
		pH				
4	Point Dume Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Fermin Park Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Mugu Beach	Indicator Bacteria	Y			
4	Point Vicente Beach	Beach Closures				
		Indicator Bacteria				
4	Pole Creek (trib to Santa Clara River Reach 3)	Sulfates				
		Total Dissolved Solids				
4	Port Hueneme Beach Park	Indicator Bacteria	Y			
4	Port Hueneme Harbor (Back Basins)	Arsenic	Y			
		Cadmium	Y			
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)	Y			
		PCBs (Polychlorinated biphenyls)			Y	
4	Port Hueneme Pier	PCBs (Polychlorinated biphenyls)				
4	Portuguese Bend Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Potrero Canyon Creek	Oxygen, Dissolved	Y			
4	Promenade Park Beach	~~Indicator Bacteria~~		Y	Y	
4	Puddingstone Reservoir	Chlordane			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Mercury			Y	
		Organic Enrichment/Low Dissolved Oxygen				
		PCBs (Polychlorinated biphenyls)			Y	
4	Puente Creek	Indicator Bacteria			Y	
		Selenium				
4	Puerco Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Pyramid Lake	Chlordane	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Redondo Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Resort Point Beach	Beach Closures				
		Indicator Bacteria				
4	Rincon Beach	Indicator Bacteria				
4	Rincon Parkway Beach	Indicator Bacteria	Y			
4	Rio De Santa Clara/Oxnard Drain No. 3	ChemA (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Specific Conductivity	Y			
		Sulfates	Y			
		Toxaphene (tissue)				
		Toxicity			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Toxicity				
		Trash				
		Zinc				
		pH				
4	Rio Hondo Reach 2 (At Spreading Grounds)	Ammonia				
		Coliform Bacteria				
		Cyanide				
		Indicator Bacteria	Y			
		Iron	Y			
		Oxygen, Dissolved	Y			
4	Robert H. Meyer Memorial Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Rocky Point Beach	Beach Closures				
4	Royal Palms Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	San Antonio Creek (Tributary to Ventura River Reach 4)	Indicator Bacteria				
		Nitrogen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	San Buenaventura Beach	Indicator Bacteria				
4	San Gabriel River Estuary	Abnormal Fish Histology (Lesions)				
		Copper				
		Dioxin				
		Indicator Bacteria	Y			
		Nickel				
		Oxygen, Dissolved				
		Toxicity	Y			
4	San Gabriel River Reach 1 (Estuary to Firestone)	Abnormal Fish Histology (Lesions)				
		Excess Algal Growth				
		~~Indicator Bacteria~~		Y	Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Temperature, water	Y			
		Toxicity				
		pH				
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	Copper				
		Cyanide				
		~~Indicator Bacteria~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Temperature, water	Y			
		Zinc				
4	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Gabriel River, East Fork	Benthic Community Effects	Y			
		Trash				
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	Ammonia				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Total Dissolved Solids				
		Toxicity				
		pH				
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Pedro Bay Near/Off Shore Zones	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium			Y	
		Copper			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	
		Zinc			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Santa Clara Drain (Ventura County)	Chlordane	Y			
		Chlorpyrifos	Y			
		Cypermethrin	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrogen, Nitrate	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
4	Santa Clara River Estuary	Ammonia	Y			
		ChemA				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
		pH	Y			
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	Toxicity				
		Trash	Y			
		pH	Y			
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	Ammonia			Y	
		Chlordane	Y			
		Chloride				
		Chlorpyrifos	Y			
		Cyfluthrin	Y			
		Cypermethrin	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Indicator Bacteria	Y			
		Mercury	Y			
		Selenium	Y			
		Total Dissolved Solids				
		Toxicity				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	Ammonia			Y	
		Benthic Community Effects	Y		Y	
		Chloride				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron				
		Nitrate and Nitrite				
		Toxicity	Y			
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	Ammonia				
		Chloride				
		Chlorpyrifos				
		Copper				
		Diazinon				
		~~Indicator Bacteria~~		Y	Y	
		Iron				
		Temperature, water	Y			
		Toxicity				
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	Boron				
		Specific Conductance				
		Sulfates				
		Total Dissolved Solids				
4	Santa Fe Dam Park Lake	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Bay Offshore/Nearshore	Arsenic	Y			
		Chlordane				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	
		Trash			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Beach	Indicator Bacteria			Y	
4	Santa Monica Canyon	Indicator Bacteria				
		Lead				
4	Sawpit Creek	Bis(2ethylhexyl)phthalate (DEHP)				
		~~Indicator Bacteria~~		Y	Y	
4	Sea Level Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Sepulveda Canyon	~~Ammonia~~		Y	Y	
		Copper				
		Indicator Bacteria				
		Lead				
		Selenium				
		Zinc				
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	Chloride				
		pH				
4	Solstice Canyon Creek	Invasive Species				
4	South San Jose Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
		pH	Y			
4	Stokes Creek	Indicator Bacteria			Y	
4	Surfers Point at Seaside	Indicator Bacteria				
4	Tapo Canyon	Chlordane	Y			
		Chloride	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		Malathion	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxicity	Y			
4	Timber Canyon	Chlorpyrifos	Y			
4	Topanga Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Topanga Canyon Creek	Lead				
4	Torrance Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Torrance Carson Channel	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Torrey Canyon Creek	Nitrate and Nitrite				
4	Trancas Beach (Broad Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Triunfo Canyon Creek Reach 1	Benthic Community Effects	Y			
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Triunfo Canyon Creek Reach 2	Benthic Community Effects				
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Tujunga Wash (LA River to Hansen Dam)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Venice Beach	Indicator Bacteria			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Ventura Harbor: Ventura Keys	Arsenic	Y			
		Cadmium	Y			
		Chlordane	Y			
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Indicator Bacteria	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Ventura Marina Jetties	DDT (Dichlorodiphenyltrichloroethane)				
		PCBs (Polychlorinated biphenyls)				
4	Ventura River Estuary	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Trash				
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Algae				
		Benthic Community Effects	Y			
		Temperature, water	Y			
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Benthic Community Effects	Y			
		Indicator Bacteria				
		Mercury	Y			
		~~Pumping~~		Y		
		Toxicity	Y			
		Water Diversion				
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	Benthic Community Effects	Y			
		Pumping				
		Temperature, water	Y			
		Water Diversion				
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Verdugo Wash Reach 2 (Above Verdugo Road)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash				
4	Walnut Creek Wash (Drains from Puddingstone Res)	Benthic Community Effects				
		~~Indicator Bacteria~~		Y		
		Toxicity				
		pH				
4	Westlake Lake	Algae				
		Ammonia				
		Eutrophic				
		Lead				
		Organic Enrichment/Low Dissolved Oxygen				
4	Wheeler Canyon/Todd Barranca	Chlordane	Y			
		Cypermethrin	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Specific Conductivity	Y			
		Sulfates				
		Total Dissolved Solids				
		Toxaphene	Y			
		Toxicity	Y			
4	Whites Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Wildlife Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
4	Will Rogers Beach	Indicator Bacteria			Y	
4	Wilmington Drain	Ammonia				
		Copper				
		Indicator Bacteria			Y	
		~~Lead~~		Y		
4	Zuma Beach (Westward Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

2016 CALIFORNIA 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS*

Category 5 criteria: 1) A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

** TMDL requirement status definitions for listed pollutants are: A= TMDL still required, B= being addressed by USEPA approved TMDL, C= being addressed by action other than a TMDL, ALT= being addressed by USEPA approved TMDL alternative

*** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date, B= Date USEPA approved TMDL, and C= Completion date for action other than a TMDL

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• POLLUTANT ◦ POTENTIAL SOURCES *Relevant Notes*	ESTIMATED AREA ASSESSED	FIRST YEAR LISTED	TMDL REQUIREMENT STATUS**	DATE***
4	Alamitos Bay	Bay & Harbor	40512000 / 18070104	• Indicator Bacteria ◦ Source Unknown	328 Acres	2006	5A	2019
				• Oxygen, Dissolved ◦ Source Unknown	328 Acres	2014	5A	2027
4	Alhambra Wash	River & Stream	40531000 / 18070105	• Ammonia ◦ Other	6.9 Miles	2014	5A	2027
				• Benthic Community Effects ◦ Source Unknown	6.9 Miles	2014	5A	2027
4	Alondria Park Lake	Lake & Reservoir	40512000 / 18070104	• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8 Acres	2014	5A	2027
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	River & Stream	40515010 / 18070104	• Benthic Community Effects ◦ Source Unknown	5.2 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Source Unknown	5.2 Miles	2014	5B	2012
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	5.2 Miles	2002	5B	2008
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	River & Stream	40515010 / 18070104	• Benthic Community Effects ◦ Source Unknown	4.4 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	4.4 Miles	2014	5B	2012
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	4.4 Miles	1996	5B	2008
4	Artesia-Norwalk Drain	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	2.5 Miles	2010	5B	2016
				• Selenium				

				Source Unknown	2.5 Miles	2010	5A	2021
4	Arundell Barranca (Ventura County)	River & Stream	40311000 / 18070103	Indicator Bacteria Source Unknown	4.9 Miles	2014	5A	2027
4	Balboa Lake	Lake & Reservoir	40521000 / 18070105	Ammonia Source Unknown	27 Acres	2014	5A	2027
				Oxygen, Dissolved Source Unknown	27 Acres	2014	5A	2027
				Toxicity Source Unknown	27 Acres	2014	5A	2027
4	Ballona Creek	River & Stream	40513000 / 18070104	Benthic Community Effects Source Unknown	6.5 Miles	2014	5A	2027
				Copper Source Unknown	6.5 Miles	1800	5B	2005
				Cyanide Source Unknown	6.5 Miles	1996	5A	2019
				Indicator Bacteria Nonpoint Source Point Source	6.5 Miles	2014	5B	2007
				Lead Source Unknown	6.5 Miles	2002	5B	2005
				Toxicity Source Unknown	6.5 Miles	1996	5B	2005
				Trash Source Unknown	6.5 Miles	1996	5B	2001
				Viruses (enteric) Nonpoint Source Point Source	6.5 Miles	1996	5B	2007
4	Boulder Creek (Ventura County)	River & Stream	40331000 / 18070102	Bifenthrin Source Unknown	6.5 Miles	2014	5A	2027
				Chlordane Source Unknown	6.5 Miles	2014	5A	2027
				Nitrogen, Nitrate Other	6.5 Miles	2014	5A	2027
				Specific Conductivity Source Unknown	6.5 Miles	2014	5A	2027
				Toxicity Source Unknown	6.5 Miles	2014	5A	2027
4	Bull Creek (Los Angeles County)	River & Stream	40521000 / 18070105	Ammonia Source Unknown	6.5 Miles	2014	5A	2027
				Toxicity Source Unknown	6.5 Miles	2014	5A	2027

4	Burbank Western Channel	River & Stream	40521000 / 18070105	• Copper ∘ Source Unknown	13 Miles	2006	5B	2005
				• Cyanide ∘ Source Unknown	13 Miles	2006	5A	2019
				• Indicator Bacteria ∘ Source Unknown	13 Miles	2010	5B	2012
				• Lead ∘ Source Unknown	13 Miles	2006	5B	2005
				• Selenium ∘ Source Unknown	13 Miles	2010	5A	2021
				• Trash ∘ Nonpoint Source ∘ Surface Runoff ∘ Urban Runoff/Storm Sewers	13 Miles	1996	5B	2008
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	River & Stream	40312000 / 18070103	• Ammonia ∘ Nonpoint Source ∘ Point Source	4.3 Miles	1996	5B	2003
				• ChemA ∘ Agriculture-storm runoff *Historical use of pesticides and lubricants.*	4.3 Miles	2014	5B	2006
				• Chlordane ∘ Source Unknown	4.3 Miles	1800	5B	2007
				• Copper ∘ Nonpoint Source	4.3 Miles	2014	5B	2007
				• DDD (Dichlorodiphenyldichloroethane) ∘ Nonpoint Source	4.3 Miles	2014	5B	2005
				• DDE (Dichlorodiphenyldichloroethylene) ∘ Nonpoint Source	4.3 Miles	2014	5B	2005
				• DDT (Dichlorodiphenyltrichloroethane) ∘ Nonpoint Source	4.3 Miles	1996	5B	2005
				• Dieldrin ∘ Source Unknown	4.3 Miles	2006	5B	2006
				• Dimethoate ∘ Source Unknown	4.3 Miles	2014	5A	2027
				• Endosulfan ∘ Agriculture-storm runoff	4.3 Miles	1988	5B	2006
				• Indicator Bacteria ∘ Source Unknown *Area affected is at the mouth of the creek.*	4.3 Miles	2014	5A	2006

				• Nitrogen ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2002	5B	2003
				• Nitrogen, Nitrate ◦ Source Unknown	4.3 Miles	2014	5B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2014	5B	2005
				• Sedimentation/Siltation ◦ Source Unknown	4.3 Miles	2002	5A	2005
				• Specific Conductivity ◦ Source Unknown	4.3 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	4.3 Miles	2014	5A	2027
				• Toxaphene ◦ Nonpoint Source	4.3 Miles	1800	5B	2005
				• Toxicity ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2014	5B	2005
				• Trash ◦ Source Unknown	4.3 Miles	2010	5A	2021
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	River & Stream	40312000 / 18070103	• Ammonia ◦ Source Unknown	3.5 Miles	1996	5B	2003
				• Chlordane ◦ Source Unknown	3.5 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3.5 Miles	2002	5B	2008
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	3.5 Miles	1996	5B	2006
				• Dieldrin ◦ Source Unknown	3.5 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	3.5 Miles	2014	5A	2027
				• Mercury ◦ Source Unknown	3.5 Miles	2014	5A	2027

				• Nitrate and Nitrite ∘ Nonpoint Source ∘ Point Source	3.5 Miles	1996	5B	2003
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	3.5 Miles	1996	5B	2006
				• Sedimentation/Siltation ∘ Source Unknown	3.5 Miles	2002	5A	2015
				• Total Dissolved Solids ∘ Atmospheric Deposition ∘ Domestic Use of Ground Water ∘ Groundwater Loadings ∘ Irrigated Crop Production ∘ Major Municipal Point Source-dry weather discharge ∘ Surface Runoff	3.5 Miles	2002	5B	2008
				• Toxaphene ∘ Source Unknown	3.5 Miles	1988	5B	2019
				• Trash ∘ Source Unknown	3.5 Miles	2010	5A	2021
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	River & Stream	40311000 / 18070103	• Ammonia ∘ Source Unknown	7.2 Miles	2014	5B	2003
				• Bifenthrin ∘ Source Unknown	7.2 Miles	2014	5A	2027
				• ChemA (tissue) ∘ Agriculture-storm runoff *Historical use of pesticides and lubricants.*	7.2 Miles	1996	5B	2006
				• Chloride ∘ Source Unknown	7.2 Miles	2014	5B	2008
				• Cyfluthrin ∘ Source Unknown	7.2 Miles	2014	5A	2027
				• Cypermethrin ∘ Source Unknown	7.2 Miles	2014	5A	2027
				• Diazinon ∘ Source Unknown	7.2 Miles	2006	5B	2006
				• Dieldrin (tissue) ∘ Nonpoint Source	7.2 Miles	2006	5B	2005
				• Endosulfan (tissue & sediment) ∘ Agriculture-storm runoff	7.2 Miles	2006	5B	2006
				• Malathion ∘ Source Unknown	7.2 Miles	2014	5A	2027

				• Mercury ◦ Source Unknown	7.2 Miles	2014	5A	2027

				• Nitrate as Nitrate (NO3)
				  ◦ Nonpoint Source
				  ◦ Point Source
					7.2 Miles	1996	5B	2003

				• Nitrogen ◦ Nonpoint Source	7.2 Miles	2002	5B	2003
				• Nitrogen, Nitrate ◦ Source Unknown	7.2 Miles	2014	5B	2003
				• Permethrin ◦ Source Unknown	7.2 Miles	2014	5A	2027
				• Sedimentation/Siltation ◦ Source Unknown	7.2 Miles	2002	5A	2015
				• Selenium ◦ Nonpoint Source	7.2 Miles	2002	5B	2007
				• Specific Conductivity ◦ Source Unknown	7.2 Miles	2014	5A	2027
				• Sulfates ◦ Source Unknown	7.2 Miles	2002	5A	2027
				• Total DDT (sum of 4,4'- and 2,4'-isomers of DDT, DDE, and DDD) ◦ Source Unknown	7.2 Miles	2014	5B	2005
				• Total Dissolved Solids ◦ Source Unknown	7.2 Miles	2002	5A	2027
				• Toxicity ◦ Source Unknown	7.2 Miles	1996	5B	2005

				• Trash
				  ◦ Agriculture-storm runoff
				  ◦ Recreational and Tourism Activities (non-boating)
				  ◦ Urban Runoff/Storm Sewers
					7.2 Miles	2002	5B	2008

4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	River & Stream	40311000 / 18070103	• ChemA (tissue) ◦ Agriculture-storm runoff	4.3 Miles	1996	5B	2006
				• Diazinon ◦ Source Unknown	4.3 Miles	2006	5B	2006
				• Nitrogen ◦ Nonpoint Source	4.3 Miles	2002	5B	2003
				• Sedimentation/Siltation ◦ Source Unknown	4.3 Miles	2002	5A	2005
				• Toxicity ◦ Nonpoint Source	4.3 Miles	1996	5B	2006

				• Trash
				  ◦ Agriculture-storm runoff
				  ◦ Recreational and Tourism
					4.3 Miles	2002	5B	2008

				Activities (non-boating) ◦ Urban Runoff/Storm Sewers				
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	River & Stream	40362000 / 18070103	• Ammonia ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003
				• Chlordane ◦ Source Unknown	15 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	15 Miles	2002	5B	2008
				• Chlorpyrifos ◦ Source Unknown	15 Miles	2006	5B	2006
				• Diazinon ◦ Source Unknown	15 Miles	2006	5B	2006
				• Dieldrin ◦ Source Unknown	15 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	15 Miles	2014	5A	2027
				• Nitrate and Nitrite ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003
				• Nitrate as Nitrate (NO3) ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003
				• Sedimentation/Siltation ◦ Source Unknown	15 Miles	2002	5A	2005
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	15 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point	15 Miles	2002	5B	2008

				Source-dry weather discharge ◦ Surface Runoff				
				• Toxicity ◦ Source Unknown	15 Miles	1996	5B	2006
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	River & Stream	40367000 / 18070103	• Ammonia ◦ Nonpoint Source ◦ Point Source	14 Miles	1996	5B	2003
				• Boron ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				• Chlorpyrifos ◦ Source Unknown	14 Miles	2006	5B	2006
				• Diazinon ◦ Source Unknown	14 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	14 Miles	2002	5A	2019
				• Organophosphorus Pesticides ◦ Agriculture ◦ Municipal Point Sources	14 Miles	1996	5B	2006
				• Sedimentation/Siltation ◦ Source Unknown	14 Miles	2002	5A	2006
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition	14 Miles	2002	5B	2008

				- Domestic Use of Ground Water - Groundwater Loadings - Irrigated Crop Production - Major Municipal Point Source-dry weather discharge - Surface Runoff				
				• Toxicity ◦ Source Unknown	14 Miles	1996	5B	2006
				• Trash ◦ Source Unknown	14 Miles	2010	5A	2021
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	River & Stream	40366000 / 18070103	• Boron ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Chlordane ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Chlorpyrifos ◦ Source Unknown	7.2 Miles	2006	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Diazinon ◦ Source Unknown	7.2 Miles	2002	5B	2006
				• Dieldrin ◦ Source Unknown	7.2 Miles	2006	5B	2006
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Sedimentation/Siltation ◦ Source Unknown	7.2 Miles	2002	5A	2015
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings	7.2 Miles	2002	5B	2008

				∘ Irrigated Crop Production ∘ Major Municipal Point Source-dry weather discharge ∘ Surface Runoff				
				• Total Dissolved Solids ∘ Atmospheric Deposition ∘ Domestic Use of Ground Water ∘ Groundwater Loadings ∘ Irrigated Crop Production ∘ Major Municipal Point Source-dry weather discharge ∘ Surface Runoff	7.2 Miles	2002	5B	2008
				• Toxaphene ∘ Source Unknown	7.2 Miles	1988	5B	2006
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	River & Stream	40312000 / 18070103	• ChemA (tissue) ∘ Agriculture-storm runoff	1.7 Miles	1996	5B	2006
				• Chlorpyrifos ∘ Source Unknown	1.7 Miles	2006	5B	2006
				• Diazinon ∘ Source Unknown	1.7 Miles	2006	5B	2006
				• Indicator Bacteria ∘ Source Unknown	1.7 Miles	2014	5A	2027
				• Nitrate as Nitrate (NO3) ∘ Nonpoint Source ∘ Point Source	1.7 Miles	1996	5B	2003
				• Nitrogen, Nitrate ∘ Nonpoint Source ∘ Point Source	1.7 Miles	1996	5B	2003
				• Nitrogen, Nitrite ∘ Source Unknown	1.7 Miles	2014	5A	2027
				• Sulfates ∘ Source Unknown	1.7 Miles	2002	5B	2008
				• Total Dissolved Solids ∘ Atmospheric Deposition ∘ Domestic Use of Ground Water ∘ Groundwater Loadings ∘ Major Municipal Point Source-dry weather discharge ∘ Surface Runoff	1.7 Miles	2002	5B	2008
				• Toxicity ∘ Source Unknown	1.7 Miles	1996	5B	2006
				• Trash	1.7 Miles	2010	5A	2021

				- Source Unknown				

4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	River & Stream	40363000 / 18070103	- Ammonia
				  - Nonpoint Source
				  - Point Source
					6.2 Miles	1996	5B	2003

				- ChemA (tissue) - Agriculture-storm runoff	6.2 Miles	1996	5B	2006
				- Chlordane - Source Unknown	6.2 Miles	1996	5B	2006

				- Chloride
				  - Atmospheric Deposition
				  - Domestic Use of Ground Water
				  - Groundwater Loadings
				  - Irrigated Crop Production
				  - Major Municipal Point Source-dry weather discharge
				  - Surface Runoff
					6.2 Miles	2002	5B	2008

				- Chlorpyrifos - Source Unknown	6.2 Miles	2006	5B	2006
				- Diazinon - Source Unknown	6.2 Miles	2006	5B	2006
				- Dieldrin - Source Unknown	6.2 Miles	2006	5B	2006
				- Indicator Bacteria - Source Unknown	6.2 Miles	2010	5A	2019
				- PCBs (Polychlorinated biphenyls) - Source Unknown	6.2 Miles	1996	5B	2006
				- Sulfates - Source Unknown	6.2 Miles	2002	5B	2008
				- Total Dissolved Solids - Source Unknown	6.2 Miles	2002	5B	2008

				- Toxicity
				  - Nonpoint Source
				  - Point Source
					6.2 Miles	1996	5B	2006

				- Trash - Source Unknown	6.2 Miles	2010	5A	2021

4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	River & Stream	40364000 / 18070103	- Ammonia
				  - Nonpoint Source
				  - Point Source
					3 Miles	1996	5B	2003

• ChemA (tissue) ◦ Agriculture-storm runoff	3 Miles	1996	5B	2006
• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3 Miles	2002	5B	2008
• Chlorpyrifos ◦ Source Unknown	3 Miles	2006	5B	2006
• Diazinon ◦ Source Unknown	3 Miles	2006	5B	2006
• Dieldrin ◦ Source Unknown	3 Miles	2006	5B	2006
• Indicator Bacteria ◦ Source Unknown	3 Miles	2014	5A	2027
• Nitrogen, Nitrite ◦ Nonpoint Source ◦ Point Source	3 Miles	1996	5B	2003
• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	3 Miles	1996	5B	2006
• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3 Miles	2002	5B	2008
• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3 Miles	2002	5B	2008
• Toxaphene (tissue & sediment) ◦ Nonpoint Source	3 Miles	1988	5B	2006
• Toxicity ◦ Nonpoint Source ◦ Point Source	3 Miles	1996	5B	2010
• Trash ◦ Source Unknown	3 Miles	2010	5A	2021

4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	River & Stream	40365000 / 18070103	• Ammonia
				  ◦ Nonpoint Source
				  ◦ Point Source
					8.7 Miles	1996	5B	2003

				• ChemA (tissue) ◦ Agriculture-storm runoff	8.7 Miles	1996	5B	2006
				• Chlordane ◦ Source Unknown	8.7 Miles	1996	5B	2006
				• Dieldrin ◦ Source Unknown	8.7 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	8.7 Miles	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8.7 Miles	1996	5B	2006

				• Sedimentation/Siltation
				  ◦ Agriculture
				  ◦ Natural Sources
					8.7 Miles	2002	5A	2005

				• Sulfates
				  ◦ Atmospheric Deposition
				  ◦ Domestic Use of Ground Water
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry weather discharge
				  ◦ Surface Runoff
					8.7 Miles	2002	5B	2008

				• Total Dissolved Solids
				  ◦ Atmospheric Deposition
				  ◦ Domestic Use of Ground Water
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry weather discharge
				  ◦ Surface Runoff
					8.7 Miles	2002	5B	2008

				• Toxicity
				  ◦ Nonpoint Source
				  ◦ Point Source
					8.7 Miles	1996	5B	2005

4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	River & Stream	40364000 / 18070103	• Chlordane (tissue) ◦ Nonpoint Source	5.5 Miles	1996	5B	2006
				• Chlorpyrifos ◦ Source Unknown	5.5 Miles	2014	5A	2027
				• Diazinon	5.5 Miles	2014	5A	2027

				- Source Unknown				
				- Dieldrin - Source Unknown	5.5 Miles	2006	5B	2006
				- Malathion - Source Unknown	5.5 Miles	2014	5A	2027
				- PCBs (Polychlorinated biphenyls) - Source Unknown	5.5 Miles	1996	5B	2006

				- Sulfates
				  - Atmospheric Deposition
				  - Domestic Use of Ground Water
				  - Groundwater Loadings
				  - Irrigated Crop Production
				  - Major Municipal Point Source-dry weather discharge
				  - Surface Runoff
					5.5 Miles	2002	5B	2008

				- Temperature, water - Source Unknown	5.5 Miles	2014	5A	2027

				- Total Dissolved Solids
				  - Atmospheric Deposition
				  - Domestic Use of Ground Water
				  - Groundwater Loadings
				  - Irrigated Crop Production
				  - Major Municipal Point Source-dry weather discharge
				  - Surface Runoff
					5.5 Miles	2002	5B	2008

				- Toxaphene - Source Unknown	5.5 Miles	1988	5B	2006
4	Canada Larga (Ventura River Watershed)	River & Stream	40210010 / 18070103	- Indicator Bacteria - Source Unknown *Horse stables, land use, cattle, and wildlife may be sources.*	8 Miles	2014	5A	2027
				- Oxygen, Dissolved - Source Unknown	8 Miles	2014	5B	2013
				- Total Dissolved Solids - Source Unknown	8 Miles	2010	5A	2021

4	Casitas, Lake	Lake & Reservoir	40220032 / 18070101	- Mercury
				  - Natural Sources
				  - Source Unknown
					2069 Acres	2010	5A	2021

4	Castaic Lagoon	Lake & Reservoir	40351000 / 18070102	- PCBs (Polychlorinated biphenyls) - Source Unknown	183 Acres	2014	5A	2027
4	Castaic Lake	Lake & Reservoir	40351000 / 18070102	- Mercury - Source Unknown	2282 Acres	2010	5A	2027
				- PCBs (Polychlorinated biphenyls)				

				◦ Source Unknown	2282 Acres	2014	5A	2027
4	Colorado Lagoon	Wetland, Tidal	40512000 / 18070104	• Chlordane ◦ Source Unknown	13 Acres	2014	5B	2011
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	13 Acres	2014	5B	2011
				• Dieldrin ◦ Source Unknown	13 Acres	2014	5B	2011
				• Indicator Bacteria ◦ Source Unknown	13 Acres	2006	5A	2019
				• Lead ◦ Source Unknown	13 Acres	2014	5B	2011
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Source Unknown	13 Acres	2014	5B	2011
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	13 Acres	2014	5B	2011
				• Toxicity ◦ Source Unknown	13 Acres	2014	5B	2011
				• Zinc ◦ Source Unknown	13 Acres	2014	5B	2011
4	Compton Creek	River & Stream	40515010 / 18070104	• Benthic Community Effects ◦ Source Unknown	8.5 Miles	2014	5A	2021
				• Copper ◦ Source Unknown	8.5 Miles	1996	5B	2008
				• Indicator Bacteria ◦ Source Unknown	8.5 Miles	2014	5A	2009
				• Iron ◦ Source Unknown	8.5 Miles	2014	5A	2027
				• Lead ◦ Source Unknown	8.5 Miles	1996	5B	2005
				• Trash ◦ Nonpoint Source	8.5 Miles	2006	5B	2008
				• Zinc ◦ Source Unknown	8.5 Miles	2014	5B	2008
				• pH ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5B	2004
4	Coyote Creek	River & Stream	40515010 / 18070104	• Diazinon ◦ Source Unknown	13 Miles	2006	5A	2019
				• Indicator Bacteria ◦ Source Unknown	13 Miles	1996	5B	2016

				• Iron ◦ Source Unknown	13 Miles	2014	5A	2027
				• Malathion ◦ Source Unknown	13 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	13 Miles	2002	5A	2008
				• pH ◦ Source Unknown	13 Miles	2006	5A	2019
4	Coyote Creek, North Fork	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	5 Miles	2010	5B	2016
				• Selenium ◦ Source Unknown	5 Miles	2010	5A	2021
4	Crystal Lake	Lake & Reservoir	40543000 / 18070106	• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	3.7 Acres	1998	5A	2019
4	Dominguez Channel (lined portion above Vermont Ave)	River & Stream	40351000 / 18070104	• Ammonia ◦ Source Unknown	6.7 Miles	1996	5A	2019
				• Benthic Community Effects ◦ Source Unknown	6.7 Miles	2014	5A	2027
				• Copper ◦ Source Unknown	6.7 Miles	1996	5B	2012
				• Indicator Bacteria ◦ Source Unknown	6.7 Miles	2006	5A	2027
				• Lead ◦ Source Unknown	6.7 Miles	1800	5B	2012
				• Toxicity ◦ Source Unknown	6.7 Miles	2010	5B	2012
				• Zinc ◦ Source Unknown	6.7 Miles	1800	5B	2012
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Estuary	40512000 / 18070104	• Ammonia ◦ Source Unknown	140 Acres	1996	5A	2019
				• Benthic Community Effects ◦ Source Unknown	140 Acres	1996	5A	2019
				• Benzo(a)anthracene ◦ Agriculture-storm runoff	140 Acres	2006	5B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	140 Acres	1996	5B	2012

				• Chrysene (C1-C4) ◦ Source Unknown	140 Acres	2006	5B	2012
				• Copper ◦ Other	140 Acres	2014	5B	2012
				• Indicator Bacteria ◦ Source Unknown	140 Acres	2014	5A	2007
				• Lead ◦ Source Unknown	140 Acres	1800	5B	2012

				• PCBs (Polychlorinated biphenyls)
				  ◦ Agriculture
				  ◦ Agriculture-animal
				  ◦ Agriculture-grazing
					140 Acres	1996	5B	2012

				• Phenanthrene ◦ Source Unknown	140 Acres	2006	5B	2012
				• Pyrene ◦ Source Unknown	140 Acres	2006	5B	2012
				• Toxicity ◦ Source Unknown	140 Acres	2014	5B	2012
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Bay & Harbor	40512000 / 18070104	• Copper ◦ Source Unknown	83 Acres	2014	5A	2027
				• Oxygen, Dissolved ◦ Source Unknown	83 Acres	2014	5A	2027
4	Dry Canyon Creek	River & Stream	40521000 / 18070104	• Indicator Bacteria ◦ Source Unknown	3.9 Miles	2014	5A	2027
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	River & Stream	40311000 / 18070103	• Bifenthrin ◦ Source Unknown	12 Miles	2014	5A	2027
				• ChemA ◦ Nonpoint Source	12 Miles	2014	5B	2006
				• Chlordane ◦ Source Unknown	12 Miles	1800	5B	2006
				• Chlorpyrifos ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDT	12 Miles	1800	5B	2006

				(Dichlorodiphenyltrichloroethane) ◦ Source Unknown				
				• Nitrogen ◦ Nonpoint Source	12 Miles	1996	5B	2003
				• Nitrogen, Nitrate ◦ Source Unknown	12 Miles	2014	5B	2009
				• Specific Conductivity ◦ Source Unknown	12 Miles	2014	5A	2027
				• Sulfates ◦ Source Unknown	12 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	12 Miles	2014	5A	2027
				• Toxaphene ◦ Source Unknown	12 Miles	1800	5B	2006
				• Toxicity ◦ Nonpoint Source	12 Miles	1996	5B	2005
4	Elderberry Forebay	Lake & Reservoir	40351000 / 18070102	• Dieldrin ◦ Source Unknown	464 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	464 Acres	2014	5A	2027
4	Elizabeth Lake	Lake & Reservoir	40351000 / 18070102	• Eutrophic ◦ Source Unknown	123 Acres	1996	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	123 Acres	1998	5A	2019
				• Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	123 Acres	1996	5B	2008
				• pH ◦ Source Unknown	123 Acres	1996	5A	2019
4	Ellsworth Barranca	River & Stream	40321000 / 18070103	• Chlorpyrifos ◦ Source Unknown	10 Miles	2014	5A	2027
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	10 Miles	2014	5A	2030
4	Honda Barranca	River & Stream	40361000 / 18070103	• Bifenthrin ◦ Source Unknown	5.7 Miles	2014	5A	2027
				• Chlordane ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• Chlorpyrifos ◦ Source Unknown	5.7 Miles	2014	5B	2006

				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	5.7 Miles	2014	5A	2027
4	Hopper Creek	River & Stream	40341000 / 18070102	• Sulfates ◦ Source Unknown	13 Miles	2002	5A	2015
				• Total Dissolved Solids ◦ Source Unknown	13 Miles	2220	5A	2019
4	J Street Drain (Ventura County)	River & Stream	40311000 / 18070103	• Trash ◦ Source Unknown	2.3 Miles	2014	5A	2027
4	Javon Canyon	River & Stream	40100011 / 18070101	• Benthic Community Effects ◦ Source Unknown	0.9 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	0.9 Miles	2014	5A	2027
4	La Vista Drain (Ventura County)	River & Stream	40361000 / 18070103	• Chlordane ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• Chlorpyrifos ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• Copper ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	1.2 Miles	2014	5A	2027
				• Mercury ◦ Source Unknown	1.2 Miles	2014	5A	2027
4	Lake Hughes	Lake & Reservoir	40351000 / 18070102	• Algae ◦ Source Unknown	21 Acres	1996	5A	2019
				• Eutrophic ◦ Source Unknown	21 Acres	1996	5A	2019

				Fish Kills ◦ Source Unknown	21 Acres	1996	5A	2019
				• **Odor** ◦ Source Unknown	21 Acres	1996	5A	2019
				• **Trash** ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	21 Acres	1996	5B	2008
4	Lake Lindero	Lake & Reservoir	40423000 / 18070104	• **Algae** ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1996	5B	2003
				• **Chloride** ◦ Source Unknown	15 Acres	1996	5A	2019
				• **Eutrophic** ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1996	5B	2003
				• **Odor** ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1996	5B	2003
				• **Selenium** ◦ Source Unknown	15 Acres	1996	5A	2019
				• **Specific Conductivity** ◦ Source Unknown	15 Acres	1996	5A	2019
				• **Trash** ◦ Source Unknown	15 Acres	1996	5B	2008

4	Las Virgenes Creek	River & Stream	40422010 / 18070104	<u>Benthic Community Effects</u> ◦ Source Unknown	12 Miles	2014	5A	2021
				• <u>Indicator Bacteria</u> ◦ Nonpoint Source	12 Miles	2014	5B	2005
				• <u>Invasive Species</u> ◦ Source Unknown	12 Miles	2010	5A	2021
				• <u>Nutrients (Algae)</u> ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	12 Miles	1998	5B	2003
				• <u>Organic Enrichment/Low Dissolved Oxygen</u> ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	12 Miles	1996	5B	2003
				• <u>Scum/Foam-unnatural</u> ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	12 Miles	1996	5B	2003
				• <u>Sedimentation/Siltation</u> ◦ Source Unknown	12 Miles	2002	5B	2013
				• <u>Selenium</u> ◦ Source Unknown	12 Miles	1996	5A	2019
				• <u>Trash</u> ◦ Source Unknown	12 Miles	1996	5B	2008
4	Legg Lake	Lake & Reservoir	40531000 / 18070105	• <u>Ammonia</u> ◦ Source Unknown	25 Acres	1996	5B	2012
				• <u>Copper</u> ◦ Source Unknown	25 Acres	1996	5B	2012

				• **DDT (Dichlorodiphenyltrichloroethane)** ○ Source Unknown	25 Acres	2014	5A	2027
				• **Lead** ○ Source Unknown	25 Acres	1996	5B	2012
				• **Odor** ○ Source Unknown	25 Acres	1996	5B	2012
				• **PCBs (Polychlorinated biphenyls)** ○ Source Unknown	25 Acres	2014	5A	2027

				• **Trash**
				  ○ Agriculture-storm runoff
				  ○ Recreational and Tourism Activities (non-boating)
				  ○ Urban Runoff/Storm Sewers
					25 Acres	1996	5B	2008

				• **pH** ○ Source Unknown	25 Acres	1996	5A	2019
4	Lincoln Park Lake	Lake & Reservoir	40515010 / 18070104	• **Ammonia** ○ Source Unknown	3.8 Acres	1996	5B	2012
				• **Eutrophic** ○ Source Unknown	3.8 Acres	1996	5B	2012
				• **Lead** ○ Source Unknown	3.8 Acres	1996	5B	2012
				• **Odor** ○ Source Unknown	3.8 Acres	1996	5B	2012
				• **Organic Enrichment/Low Dissolved Oxygen** ○ Source Unknown	3.8 Acres	1998	5B	2012
				• **PCBs (Polychlorinated biphenyls)** ○ Source Unknown	3.8 Acres	2014	5A	2027
				• **Trash** ○ Source Unknown	3.8 Acres	1996	5B	2012

4	Lindero Creek Reach 1	River & Stream	40423000 / 18070104	• **Algae**
				  ○ Agriculture-animal
				  ○ Atmospheric Deposition
				  ○ Golf course activities
				  ○ Groundwater Loadings
				  ○ Irrigated Crop Production
				  ○ Major Municipal Point Source-dry and/or wet weather discharge
				  ○ Onsite Wastewater Systems (Septic Tanks)
				  ○ Urban Runoff/Storm Sewers
					3 Miles	1996	5B	2003

				• **Benthic Community Effects** ○ Source Unknown	3 Miles	2014	5A	2021
				• **Indicator Bacteria** ○ Nonpoint Source	3 Miles	2014	5B	2006

				Invasive Species ◦ Source Unknown	3 Miles	2010	5A	2021
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	3 Miles	1996	5B	2003
				• Selenium ◦ Source Unknown	3 Miles	1996	5A	2019
				• Trash ◦ Source Unknown	3 Miles	1996	5B	2008
4	Lindero Creek Reach 2 (Above Lake)	River & Stream	40425000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	4.5 Miles	1998	5B	2003
				• Indicator Bacteria ◦ Source Unknown	4.5 Miles	2014	5B	2006
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	4.5 Miles	1998	5B	2003
				• Selenium ◦ Source Unknown	4.5 Miles	1998	5A	2019
				• Trash ◦ Source Unknown	4.5 Miles	1998	5B	2008
4	Los Angeles Harbor - Consolidated Slip	Bay & Harbor	40512000 / 18070104	• 2-Methylnaphthalene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Benthic Community Effects ◦ Source Unknown	36 Acres	1998	5A	2019

				• Benzo(a)anthracene ◦ Source Unknown	36 Acres	1998	5B	2012
				This listing was made by USEPA for 2006.				
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	36 Acres	1998	5B	2012
				• Chromium ◦ Source Unknown	36 Acres	2014	5B	2012
				• Chrysene (C1-C4) ◦ Source Unknown	36 Acres	1998	5B	2012
				• Dieldrin ◦ Source Unknown	36 Acres	1998	5B	2012
				• Phenanthrene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Pyrene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Toxicity ◦ Source Unknown	36 Acres	2014	5B	2012
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Bay & Harbor	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	82 Acres	1998	5A	2019
				Fish Consumption Advisory for DDT.				
				• Indicator Bacteria ◦ Source Unknown	82 Acres	1998	5B	2004
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	82 Acres	1998	5A	2019
				Fish Consumption Advisory for PCBs.				
4	Los Angeles River Estuary (Queensway Bay)	Estuary	40512000 / 18070104	• Chlordane ◦ Source Unknown	207 Acres	1800	5B	2012
				• Copper ◦ Source Unknown	207 Acres	2014	5B	2012
				• Toxicity ◦ Source Unknown	207 Acres	2014	5A	2019

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					207 Acres	2006	5B	2008

4	Los Angeles River Reach 1 (Estuary to Carson Street)	River & Stream	40512000 / 18070104	• Ammonia
				  ◦ Nonpoint Source
				  ◦ Point Source
					3.4 Miles	2002	5B	2004

				• Cadmium ◦ Source Unknown	3.4 Miles	2002	5B	2005

				• Cyanide ◦ Source Unknown	3.4 Miles	2006	5A	2019
				• Diazinon ◦ Source Unknown	3.4 Miles	2006	5A	2019
				• Indicator Bacteria ◦ Source Unknown	3.4 Miles	2014	5B	2003

				• Lead
				  ◦ Nonpoint Source
				  ◦ Point Source
					3.4 Miles	1996	5B	2005

				• Nutrients (Algae)
				  ◦ Nonpoint Source
				  ◦ Point Source
					3.4 Miles	1998	5B	2004

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					3.4 Miles	2006	5B	2008

				• pH
				  ◦ Nonpoint Source
				  ◦ Point Source
					3.4 Miles	1996	5B	2003

4	Los Angeles River Reach 2 (Carson to Figueroa Street)	River & Stream	40515010 / 18070104	• Ammonia
				  ◦ Nonpoint Source
				  ◦ Point Source
					19 Miles	1996	5B	2004

				• Copper ◦ Source Unknown	19 Miles	2006	5B	2005
				• Indicator Bacteria ◦ Source Unknown	19 Miles	2014	5B	2012

				• Lead
				  ◦ Nonpoint Source
				  ◦ Point Source
					19 Miles	1996	5B	2005

				• Nutrients (Algae)
				  ◦ Nonpoint Source
				  ◦ Point Source
					19 Miles	1996	5B	2004

				• Oil ◦ Source Unknown	19 Miles	1996	5A	2019

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					19 Miles	1996	5B	2008

4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	River & Stream	40521000 / 18070104	• Ammonia
				  ◦ Nonpoint Source
				  ◦ Point Source
					7.9 Miles	1996	5B	2004

				• Benthic Community Effects ◦ Source Unknown	7.9 Miles	2014	5A	2027
				• Copper ◦ Source Unknown	7.9 Miles	2006	5B	2008
				• Indicator Bacteria				

				Source Unknown	7.9 Miles	2014	5B	2012
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	7.9 Miles	1996	5B	2004
				• Temperature, water ◦ Source Unknown	7.9 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	7.9 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	7.9 Miles	1996	5B	2008
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	River & Stream	40521000 / 18070105	• Benthic Community Effects ◦ Source Unknown	11 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	11 Miles	2014	5A	2019
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	11 Miles	1996	5B	2004
				• Toxicity ◦ Source Unknown	11 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	11 Miles	1996	5B	2008
4	Los Angeles River Reach 5 (within Sepulveda Basin)	River & Stream	40521000 / 18070105	• Ammonia ◦ Source Unknown	1.9 Miles	1996	5B	2004
				• Copper ◦ Source Unknown	1.9 Miles	2006	5B	2005
				• Lead ◦ Source Unknown	1.9 Miles	2006	5B	2005
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	1.9 Miles	1996	5B	2004
				• Oil ◦ Source Unknown	1.9 Miles	1996	5A	2019
				• Toxicity ◦ Source Unknown	1.9 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	1.9 Miles	1996	5B	2008

4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	River & Stream	40521000 / 18070105	• Copper ◦ Source Unknown	7 Miles	2014	5B	2008
				• Indicator Bacteria ◦ Source Unknown	7 Miles	2014	5B	2012
				• Selenium ◦ Source Unknown	7 Miles	1992	5B	2005
				• Toxicity ◦ Source Unknown	7 Miles	2014	5A	2027
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	Bay & Harbor	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	4042 Acres	1988	5B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	4042 Acres	1988	5B	2012
				• Toxicity ◦ Source Unknown	4042 Acres	2014	5A	2008
4	Los Cerritos Channel	Wetland, Tidal	40515010 / 18070104	• Ammonia ◦ Source Unknown	30 Acres	2002	5A	2015
				• Bis(2ethylhexyl)phthalate (DEHP) ◦ Source Unknown	30 Acres	2006	5A	2019
				• Copper ◦ Source Unknown	30 Acres	2002	5A	2019
				• Indicator Bacteria ◦ Source Unknown	30 Acres	2014	5A	2019
				• Lead ◦ Source Unknown	30 Acres	2002	5A	2019
				• Trash ◦ Source Unknown	30 Acres	2006	5A	2019
				• Zinc ◦ Source Unknown	30 Acres	2002	5A	2019
				• pH ◦ Source Unknown	30 Acres	2014	5A	2021
4	Los Sauces Creek	River & Stream	40100010 / 18070101	• Selenium ◦ Source Unknown	2.8 Miles	2014	5A	2027

4	Machado Lake (Harbor Park Lake)	Lake & Reservoir	40512000 / 18070104	• Algae
				  ◦ Atmospheric Deposition
				  ◦ Highway/Road/Bridge Runoff
				  ◦ Internal Nutrient Cycling (primarily lakes)
				  ◦ Urban Runoff--Industrial Permitted
				  ◦ Urban Runoff/Storm Sewers
					45 Acres	1996	5B	2009

				• Ammonia
				  ◦ Atmospheric Deposition
				  ◦ Highway/Road/Bridge Runoff
				  ◦ Internal Nutrient Cycling (primarily lakes)
				  ◦ Urban Runoff--Industrial Permitted
				  ◦ Urban Runoff/Storm Sewers
					45 Acres	1996	5B	2009

				• ChemA (tissue) ◦ Source Unknown	45 Acres	1996	5B	2012

				• Eutrophic
				  ◦ Atmospheric Deposition
				  ◦ Highway/Road/Bridge Runoff
				  ◦ Internal Nutrient Cycling (primarily lakes)
				  ◦ Urban Runoff--Industrial Permitted
				  ◦ Urban Runoff/Storm Sewers
					45 Acres	1992	5B	2009

				• Odor
				  ◦ Atmospheric Deposition
				  ◦ Highway/Road/Bridge Runoff
				  ◦ Internal Nutrient Cycling (primarily lakes)
				  ◦ Urban Runoff--Industrial Permitted
				  ◦ Urban Runoff/Storm Sewers
					45 Acres	1996	5B	2009

				• Trash
				  ◦ Agriculture-storm runoff
				  ◦ Recreational and Tourism Activities (non-boating)
				  ◦ Urban Runoff/Storm Sewers
					45 Acres	1996	5B	2008

4	Madranio Canyon	River & Stream	40100010 / 18070101	• Benthic Community Effects ◦ Source Unknown	3.8 Miles	2014	5A	2027
				• Copper ◦ Source Unknown	3.8 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	3.8 Miles	2014	5A	2027

4	Malibou Lake	Lake & Reservoir	40424000 / 18070104	• Algae
				  ◦ Agriculture-animal
				  ◦ Atmospheric Deposition
				  ◦ Golf course activities
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
				  ◦ Urban Runoff/Storm Sewers
					40 Acres	1996	5B	2003

				• Dieldrin ◦ Source Unknown	40 Acres	2014	5A	2027
				• Eutrophic ◦ Agriculture-animal	40 Acres	1996	5B	2003

				◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Organic Enrichment/Low Dissolved Oxygen ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	40 Acres	1998	5B	2003
4	Malibu Creek	River & Stream	40421000 / 18070104	• Benthic Community Effects ◦ Source Unknown	11 Miles	2014	5A	2021
				• Fish Barriers (Fish Passage) ◦ Source Unknown	11 Miles	1996	5A	2019
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	11 Miles	2014	5B	2002
				• Invasive Species ◦ Source Unknown	11 Miles	2010	5A	2021
				• Nutrients (Algae) ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Nonpoint Source ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	11 Miles	1996	5B	2003
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	11 Miles	1996	5B	2003

				• <u>Sedimentation/Siltation</u> ◦ Source Unknown	11 Miles	2002	5B	2013
				• <u>Selenium</u> ◦ Source Unknown	11 Miles	2006	5A	2019
				• <u>Sulfates</u> ◦ Source Unknown	11 Miles	2006	5A	2019
				• <u>Toxicity</u> ◦ Source Unknown	11 Miles	2010	5A	2027
				• <u>Trash</u> ◦ Nonpoint Source	11 Miles	1996	5B	2009
4	Malibu Lagoon	Estuary	40421000 / 18070104	• <u>Benthic Community Effects</u> ◦ Source Unknown	15 Acres	1998	5A	2011
				• <u>Eutrophic</u> ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2003
				• <u>Indicator Bacteria</u> ◦ Nonpoint Source ◦ Point Source	15 Acres	2014	5B	2006
				• <u>Swimming Restrictions</u> ◦ Agriculture-animal ◦ Illicit Connections/Illegal Hook-ups/Dry Weather Flows ◦ Natural Sources ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Spills ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2006
				• <u>Viruses (enteric)</u> ◦ Agriculture-animal ◦ Illicit Connections/Illegal Hook-ups/Dry Weather Flows ◦ Natural Sources ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Spills ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2006
				• <u>pH</u> ◦ Source Unknown	15 Acres	2002	5A	2006
				Possible sources might be septic systems, storm drains, and birds.				
4	Marina del Rey	Bay &	40517000 /	• <u>Chlordane</u>	391 Acres	2014	5B	2005

	Harbor - Back Basins	Harbor	18070104	◦ Nonpoint Source				
				• Copper ◦ Source Unknown	391 Acres	1800	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *A USEPA-approved TMDL has made a finding of non-impairment for this pollutant.*	391 Acres	1800	5A	2005
				• Dieldrin ◦ Source Unknown *A USEPA-approved TMDL has made a finding of non-impairment for this pollutant.*	391 Acres	1800	5A	2005
				• Indicator Bacteria ◦ Nonpoint Source	391 Acres	2006	5B	2004
				• Lead ◦ Nonpoint Source	391 Acres	2014	5B	2006
				• Oxygen, Dissolved ◦ Source Unknown	391 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Nonpoint Source *Historical use of pesticides, storm water runoff/aerial deposition from urban areas. Shellfish harvesting advisory for PCBs in tissue.*	391 Acres	2014	5B	2006
				• Toxicity ◦ Nonpoint Source	391 Acres	2014	5B	2005
				• Zinc ◦ Nonpoint Source	391 Acres	2014	5B	2006
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	River & Stream	40220012 / 18070101	• Fish Barriers (Fish Passage) ◦ Source Unknown	0.63 Miles	1996	5A	2019
4	Matilija Creek Reach 2 (Above Reservoir)	River & Stream	40220010 / 18070101	• Fish Barriers (Fish Passage) ◦ Dam Construction	15 Miles	1996	5A	2019
4	Matilija Reservoir	Lake & Reservoir	40220012 / 18070101	• Fish Barriers (Fish Passage) ◦ Source Unknown	121 Acres	1996	5A	2019
4	McCoy Canyon Creek	River & Stream	40521000 / 18070104	• Indicator Bacteria ◦ Source Unknown	4 Miles	2014	5A	2027
				• Nitrate ◦ Source Unknown	4 Miles	2002	5B	2003
				• Nitrogen, Nitrate ◦ Source Unknown	4 Miles	2002	5B	2003
4	McGrath Lake	Lake & Reservoir	40311000 / 18070103	• Chlordane ◦ Source Unknown	20 Acres	2014	5B	2011

				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	20 Acres	2014	5B	2011
				• Indicator Bacteria ◦ Source Unknown	20 Acres	2014	5A	2027
				• Toxicity ◦ Source Unknown	20 Acres	2014	5B	2011
4	McGrath Lake Agricultural Drain	River & Stream	40311000 / 18070103	• Bifenthrin ◦ Source Unknown	0.57 Miles	2014	5A	2027
				• Chlordane ◦ Source Unknown	0.57 Miles	2014	5B	2011
				• Chlorpyrifos ◦ Source Unknown	0.57 Miles	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.57 Miles	2014	5B	2011
				• Toxaphene ◦ Source Unknown	0.57 Miles	2014	5A	2027
4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	River & Stream	40424000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	2.6 Miles	1996	5B	2003
				• Benthic Community Effects ◦ Source Unknown	2.6 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Nonpoint Source	2.6 Miles	2014	5B	2006
				• Sedimentation/Siltation ◦ Source Unknown	2.6 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	2.6 Miles	1996	5A	2027
				• Trash ◦ Source Unknown	2.6 Miles	1996	5B	2008
4	Medea Creek Reach 2 (Abv Confl. with Lindero)	River & Stream	40423000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet	5.4 Miles	1996	5B	2003

				weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Benthic Community Effects ◦ Source Unknown	5.4 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Nonpoint Source	5.4 Miles	2014	5B	2006
				• Invasive Species ◦ Source Unknown	5.4 Miles	2010	5A	2021
				• Sedimentation/Siltation ◦ Source Unknown	5.4 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	5.4 Miles	1996	5A	2019
				• Trash ◦ Source Unknown	5.4 Miles	1996	5B	2008
4	Munz Lake	Lake & Reservoir	40351000 / 18070102	• Eutrophic ◦ Source Unknown	6.6 Acres	1996	5A	2019
				• Trash ◦ Agriculture-storm runoff ◦ Nonpoint Source ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	6.6 Acres	1996	5B	2008
4	Ormond Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Source Unknown	3.1 Miles	2002	5A	2027
4	Padre Juan Canyon	River & Stream	40100011 / 18070101	• Benthic Community Effects ◦ Source Unknown	1.9 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	1.9 Miles	2014	5A	2027
4	Peninsula Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Source Unknown *Area affected is beach area north of South Jetty.*	0.15 Miles	2002	5A	2019
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	River & Stream	40342000 / 18070102	• Chloride ◦ Source Unknown	67 Miles	2006	5A	2019
				• Toxicity ◦ Source Unknown	67 Miles	2014	5A	2027
				• pH ◦ Source Unknown	67 Miles	2002	5A	2019

4	Point Mugu Beach	Coastal & Bay Shoreline	40311000 / 18070104	• Indicator Bacteria ∘ Other	0.36 Miles	2010	5A	2027
4	Pole Creek (trib to Santa Clara River Reach 3)	River & Stream	40331000 / 18070102	• Sulfates ∘ Source Unknown	9 Miles	2002	5A	2019
				• Total Dissolved Solids ∘ Source Unknown	9 Miles	2002	5A	2019
4	Port Hueneme Beach Park	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ∘ Other	1.2 Miles	2010	5A	2027
4	Port Hueneme Harbor (Back Basins)	Bay & Harbor	40311000 / 18070103	• Arsenic ∘ Source Unknown	65 Acres	2014	5A	2027
				• Cadmium ∘ Source Unknown	65 Acres	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	65 Acres	2014	5C	
				• Dieldrin ∘ Source Unknown	65 Acres	2014	5A	2027
				• PAHs (Polycyclic Aromatic Hydrocarbons) ∘ Source Unknown	65 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	65 Acres	2014	5C	
4	Port Hueneme Pier	Coastal & Bay Shoreline	40311000 / 18070103	• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	0.33 Miles	2006	5A	2019
4	Potrero Canyon Creek	River & Stream	40425000 / 18070104	• Oxygen, Dissolved ∘ Source Unknown	0.95 Miles	2014	5A	2027
4	Puddingstone Reservoir	Lake & Reservoir	40552000 / 18070106	• Chlordane ∘ Source Unknown	243 Acres	2014	5A	2019
				• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	243 Acres	2014	5A	2019
				• Mercury ∘ Source Unknown	243 Acres	2014	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ∘ Source Unknown	243 Acres	1996	5A	2019
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	243 Acres	2014	5A	2019

4	Puente Creek	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	5.8 Miles	2010	5A	2027
				• Selenium ◦ Source Unknown	5.8 Miles	2010	5A	2021
4	Pyramid Lake	Lake & Reservoir	40342000 / 18070102	• Chlordane ◦ Source Unknown	1483 Acres	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1483 Acres	2014	5A	2027
				• Dieldrin ◦ Source Unknown	1483 Acres	2014	5A	2027
				• Mercury ◦ Source Unknown	1483 Acres	2010	5A	2021
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1483 Acres	2014	5A	2027
4	Rincon Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Indicator Bacteria ◦ Source Unknown	0.38 Miles	2002	5A	2015
				Area affected is 50 yards south of mouth of Rincon Creek.				
4	Rincon Parkway Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Indicator Bacteria ◦ Source Unknown	0.03 Miles	2014	5A	2027
4	Rio De Santa Clara/Oxnard Drain No. 3	River & Stream	40311000 / 18070103	• ChemA (tissue) ◦ Source Unknown	1.9 Miles	1996	5B	2011
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• Nitrogen ◦ Major Municipal Point Source-dry and/or wet weather discharge	1.9 Miles	1996	5B	2003
				• Nitrogen, Nitrate ◦ Source Unknown	1.9 Miles	2014	5B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• Specific Conductivity ◦ Source Unknown	1.9 Miles	2014	5A	2027
				• Sulfates ◦ Source Unknown	1.9 Miles	2014	5A	2027

				• Total Dissolved Solids ∘ Source Unknown	1.9 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	1.9 Miles	2014	5A	2019
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	River & Stream	40515010 / 18070104	• Copper ∘ Nonpoint Source ∘ Point Source	4.6 Miles	1996	5B	2005
				• Indicator Bacteria ∘ Source Unknown	4.6 Miles	2014	5B	2012
				• Lead ∘ Nonpoint Source ∘ Point Source	4.6 Miles	1996	5B	2005
				• Toxicity ∘ Source Unknown	4.6 Miles	2010	5A	2021
				• Trash ∘ Nonpoint Source ∘ Surface Runoff ∘ Urban Runoff/Storm Sewers	4.6 Miles	1996	5B	2008
				• Zinc ∘ Nonpoint Source ∘ Point Source	4.6 Miles	1996	5B	2005
				• pH ∘ Nonpoint Source ∘ Point Source	4.6 Miles	1996	5B	2004
4	Rio Hondo Reach 2 (At Spreading Grounds)	River & Stream	40515010 / 18070104	• Coliform Bacteria ∘ Source Unknown	4.9 Miles	1996	5A	2009
				• Cyanide ∘ Source Unknown	4.9 Miles	2010	5A	2021
				• Indicator Bacteria ∘ Source Unknown	4.9 Miles	2014	5B	2012
				• Iron ∘ Source Unknown	4.9 Miles	2014	5A	2027
				• Oxygen, Dissolved ∘ Source Unknown	4.9 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	4.9 Miles	2014	5A	2027
4	San Antonio Creek (Tributary to Ventura River Reach 4)	River & Stream	40220023 / 18070101	• Indicator Bacteria ∘ Source Unknown	9.8 Miles	2010	5A	2021
				• Nitrogen ∘ Source Unknown	9.8 Miles	2002	5B	2013
				• Total Dissolved Solids ∘ Source Unknown	9.8 Miles	2010	5A	2023

4	San Buenaventura Beach	Coastal & Bay Shoreline	40210000 / 18070103	• Indicator Bacteria ◦ Source Unknown	1.8 Miles	1800	5A	2015
				This listing includes the area of San Buenaventura Beach at San Jon Rd.				
4	San Gabriel River Estuary	River & Stream	40516000 / 18070104	• Copper ◦ Source Unknown	3.4 Miles	1996	5B	2007
				• Dioxin ◦ Source Unknown	3.4 Miles	2010	5A	2021
				• Indicator Bacteria ◦ Source Unknown	3.4 Miles	2014	5B	2016
				• Nickel ◦ Source Unknown	3.4 Miles	2010	5A	2021
				• Oxygen, Dissolved ◦ Source Unknown	3.4 Miles	2010	5A	2021
				• Toxicity ◦ Source Unknown	3.4 Miles	2014	5A	2027
4	San Gabriel River Reach 1 (Estuary to Firestone)	River & Stream	40515010 / 18070104	• Temperature, water ◦ Source Unknown	6.4 Miles	2014	5A	2027
				• pH ◦ Source Unknown	6.4 Miles	1996	5A	2009
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	River & Stream	40515010 / 18070104	• Cyanide ◦ Source Unknown	12 Miles	2010	5A	2021
				• Lead ◦ Nonpoint Source ◦ Point Source	12 Miles	1996	5B	2007
				• Temperature, water ◦ Source Unknown	12 Miles	2014	5A	2027
4	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	River & Stream	40531000 / 18070104	• Indicator Bacteria ◦ Source Unknown	7.2 Miles	2010	5B	2016
				• Toxicity ◦ Source Unknown	7.2 Miles	2014	5A	2027
4	San Gabriel River, East Fork	River & Stream	40543000 / 18070106	• Benthic Community Effects ◦ Source Unknown	5.9 Miles	2014	5A	2029
				• Trash ◦ Nonpoint Source	5.9 Miles	1996	5B	2000
4	San Jose Creek	River &	40531000 /	• Ammonia	2.7 Miles	1996	5C	

	Reach 1 (SG Confluence to Temple St.)	Stream	18070105	Nonpoint Source ◦ Point Source				
				• Indicator Bacteria ◦ Source Unknown	2.7 Miles	2014	5B	2016
				• Temperature, water ◦ Source Unknown	2.7 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	2.7 Miles	2010	5A	2021
				• Toxicity ◦ Source Unknown	2.7 Miles	1996	5A	2019
				• pH ◦ Source Unknown	2.7 Miles	2010	5A	2021
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	River & Stream	40531000 / 18070106	• Indicator Bacteria ◦ Source Unknown	17 Miles	2014	5B	2016
				• Toxicity ◦ Source Unknown	17 Miles	2014	5A	2027
4	San Pedro Bay Near/Off Shore Zones	Bay & Harbor	40512000 / 18070104	• Chlordane ◦ Source Unknown	8173 Acres	2006	5B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8173 Acres	1996	5B	2012
				• Total DDT (sum of 4,4'- and 2,4'-isomers of DDT, DDE, and DDD) ◦ Source Unknown	8173 Acres	2014	5B	2012
				• Toxicity ◦ Source Unknown	8173 Acres	2014	5A	2009
4	Santa Clara Drain (Ventura County)	River & Stream	40311000 / 18070103	• Chlordane ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Chlorpyrifos ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Cypermethrin ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	2.4 Miles	2014	5A	2012
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Nitrogen, Nitrate	2.4 Miles	2014	5A	2027

				Source Unknown				
				• Specific Conductivity ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Sulfates ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	2.4 Miles	2014	5A	2027
				• Toxaphene ◦ Source Unknown	2.4 Miles	2014	5A	2027
4	Santa Clara River Estuary	Estuary	40311000 / 18070103	• Ammonia ◦ Source Unknown	49 Acres	2014	5A	2027
				• ChemA ◦ Source Unknown	49 Acres	1998	5B	2011
				• Indicator Bacteria ◦ Source Unknown	49 Acres	2014	5B	2012
				• Nitrogen, Nitrate ◦ Source Unknown	49 Acres	2010	5B	2004
				• Toxaphene ◦ Source Unknown	49 Acres	1998	5B	2011
				• Toxicity ◦ Source Unknown	49 Acres	2010	5A	2019
				• pH ◦ Source Unknown	49 Acres	2014	5A	2027
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	River & Stream	40311000 / 18070103	• Oxygen, Dissolved ◦ Source Unknown	10 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	10 Miles	2006	5A	2019
				• Trash ◦ Source Unknown	10 Miles	2014	5A	2027
				• pH ◦ Source Unknown	10 Miles	2014	5A	2027
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	River & Stream	40331000 / 18070103	• Ammonia ◦ Source Unknown	31 Miles	2002	5B	2004
				• Chlordane ◦ Source Unknown	31 Miles	2014	5A	2027

				• Chloride
				  ◦ Nonpoint Source
				  ◦ Point Source
					31 Miles	2002	5A	2027

				• Chlorpyrifos ◦ Source Unknown	31 Miles	2014	5A	2027

				• Cyfluthrin ◦ Source Unknown	31 Miles	2014	5A	2027
				• Cypermethrin ◦ Source Unknown	31 Miles	2014	5A	2027
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	31 Miles	2014	5A	2027
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	31 Miles	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	31 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	31 Miles	2014	5B	2012
				• Mercury ◦ Source Unknown	31 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	31 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	31 Miles	2002	5A	2015
				• Toxicity ◦ Source Unknown	31 Miles	2010	5A	2021
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	River & Stream	40351000 / 18070102	• Benthic Community Effects ◦ Source Unknown	9.4 Miles	2014	5A	2029

				• Chloride
				  ◦ Nonpoint Source
				  ◦ Point Source
					9.4 Miles	2006	5B	2005

				• Indicator Bacteria ◦ Source Unknown	9.4 Miles	2014	5B	2012
				• Iron ◦ Source Unknown	9.4 Miles	2010	5A	2021
				• Toxicity ◦ Source Unknown	9.4 Miles	2014	5A	2027

4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	River & Stream	40351000 / 18070102	• Chloride
				  ◦ Nonpoint Source
				  ◦ Point Source
					5.2 Miles	1998	5B	2005

				Chloride was relisted by USEPA in 2002.				
				• **Chlorpyrifos** ∘ **Source Unknown**	**5.2 Miles**	**2006**	**5A**	**2019**
				• **Copper** ∘ **Source Unknown**	**5.2 Miles**	**2010**	**5A**	**2021**
				• **Diazinon** ∘ **Source Unknown**	**5.2 Miles**	**2006**	**5A**	**2019**
				• **Iron** ∘ **Source Unknown**	**5.2 Miles**	**2010**	**5A**	**2021**
				• **Temperature, water** ∘ **Source Unknown**	**5.2 Miles**	**2014**	**5A**	**2027**
				• **Toxicity** ∘ **Source Unknown**	**5.2 Miles**	**2006**	**5A**	**2019**
4	**Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**	**River & Stream**	**40341000 / 18070102**	• **Boron** ∘ **Source Unknown**	**6.2 Miles**	**2006**	**5A**	**2019**
				• **Specific Conductance** ∘ **Source Unknown**	**6.2 Miles**	**2010**	**5A**	**2021**
				• **Sulfates** ∘ **Source Unknown**	**6.2 Miles**	**2006**	**5A**	**2019**
				• **Total Dissolved Solids** ∘ **Source Unknown**	**6.2 Miles**	**2010**	**5A**	**2021**
4	**Santa Fe Dam Park Lake**	**Lake & Reservoir**	**40531000 / 18070105**	• **Copper** ∘ **Source Unknown**	**20 Acres**	**1996**	**5B**	**2012**
				• **Lead** ∘ **Source Unknown**	**20 Acres**	**1996**	**5B**	**2012**
				• **PCBs (Polychlorinated biphenyls)** ∘ **Source Unknown**	**20 Acres**	**2014**	**5A**	**2027**
				• **pH** ∘ **Source Unknown**	**20 Acres**	**1996**	**5B**	**2012**
4	**Santa Monica Bay Offshore/Nearshore**	**Bay & Harbor**	**40513000 / 18070104**	• **Arsenic** ∘ **Source Unknown**	**146645 Acres**	**2014**	**5A**	**2027**
				• **DDT (Dichlorodiphenyltrichloroethane)** ∘ **Source Unknown**	**146645 Acres**	**2014**	**5B**	**2012**
				• **Mercury** ∘ **Source Unknown**	**146645 Acres**	**2014**	**5A**	**2027**
				• **PCBs (Polychlorinated biphenyls)** ∘ **Source Unknown**	**146645 Acres**	**1800**	**5B**	**2012**

				• Toxicity ∘ Source Unknown	146645 Acres	2014	5A	2019
				• Trash ∘ Source Unknown	146645 Acres	2014	5B	2012
4	Santa Monica Canyon	River & Stream	40513000 / 18070104	• Indicator Bacteria ∘ Nonpoint Source	2.7 Miles	1996	5B	2003
				• Lead ∘ Source Unknown	2.7 Miles	1996	5A	2019
4	Sawpit Creek	River & Stream	40531000 / 18070105	• Bis(2ethylhexyl)phthalate (DEHP) ∘ Source Unknown	3.9 Miles	2006	5A	2019
				• Indicator Bacteria ∘ Source Unknown	3.9 Miles	2014	5A	2027
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	River & Stream	40332020 / 18070102	• Chloride ∘ Source Unknown	54 Miles	2006	5A	2019
				• pH ∘ Source Unknown	54 Miles	2006	5A	2019
4	Solstice Canyon Creek	River & Stream	40432000 / 18070104	• Invasive Species ∘ Source Unknown	4.8 Miles	2010	5A	2021
4	South San Jose Creek (Los Angeles County)	River & Stream	40551000 / 18070106	• Ammonia ∘ Source Unknown	3.3 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	3.3 Miles	2014	5A	2027
				• pH ∘ Source Unknown	3.3 Miles	2014	5A	2027
4	Surfers Point at Seaside	Coastal & Bay Shoreline	40210000 / 18070101	• Indicator Bacteria ∘ Source Unknown *Area affected is the end of the access path via a wooden gate.*	0.4 Miles	2002	5A	2015
4	Tapo Canyon	River & Stream	40341000 / 18070103	• Chlordane ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Chloride ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• DDD (Dichlorodiphenyldichloroethane) ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• DDE (Dichlorodiphenyldichloroethylene) ∘ Source Unknown	4.1 Miles	2014	5A	2027

				• Malathion ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Nitrogen, Nitrate ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Specific Conductivity ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Sulfates ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Total Dissolved Solids ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	4.1 Miles	2014	5A	2027
4	Timber Canyon	River & Stream	40331000 / 18070102	• Chlorpyrifos ∘ Source Unknown	5.4 Miles	2014	5A	2027
4	Topanga Canyon Creek	River & Stream	40411000 / 18070104	• Lead ∘ Source Unknown	8.6 Miles	1996	5A	2019
4	Torrance Carson Channel	River & Stream	40512000 / 18070104	• Copper ∘ Source Unknown	3.4 Miles	1996	5B	2012
				• Indicator Bacteria ∘ Source Unknown	3.4 Miles	2014	5A	2007
				• Lead ∘ Source Unknown	3.4 Miles	1996	5B	2012
4	Triunfo Canyon Creek Reach 1	River & Stream	40424000 / 18070104	• Benthic Community Effects ∘ Source Unknown	2.5 Miles	2014	5A	2029
				• Lead ∘ Source Unknown	2.5 Miles	1996	5A	2019
				• Mercury ∘ Source Unknown	2.5 Miles	1996	5A	2019
				• Sedimentation/Siltation ∘ Source Unknown	2.5 Miles	2002	5A	2019
4	Triunfo Canyon Creek Reach 2	River & Stream	40424000 / 18070104	• Benthic Community Effects ∘ Source Unknown	3.3 Miles	2014	5A	2021
				• Lead ∘ Source Unknown	3.3 Miles	1996	5A	2019
				• Mercury ∘ Source Unknown	3.3 Miles	1996	5A	2019
				• Sedimentation/Siltation ∘ Source Unknown	3.3 Miles	2002	5A	2019
4	Ventura Harbor:	Bay &	40311000 /	• Arsenic ∘ Source Unknown	179 Acres	2014	5A	2027

	Ventura Keys	Harbor	18070103					
				Cadmium ◦ Source Unknown	179 Acres	2014	5A	2027
				Chlordane ◦ Source Unknown	179 Acres	2014	5A	2027
				Coliform Bacteria ◦ Source Unknown	179 Acres	1996	5A	2019
				DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	179 Acres	2014	5A	2027
				Dieldrin ◦ Source Unknown	179 Acres	2014	5A	2027
				Indicator Bacteria ◦ Source Unknown	179 Acres	2014	5A	2027
				PCBs (Polychlorinated biphenyls) ◦ Source Unknown	179 Acres	2014	5A	2027
4	Ventura Marina Jetties	Coastal & Bay Shoreline	40311000 / 18070103	**DDT (Dichlorodiphenyltrichloroethane)** ◦ Source Unknown	0.69 Miles	2006	5A	2019
				PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.69 Miles	2006	5A	2019
4	Ventura River Estuary	River & Stream	40210011 / 18070101	**Algae** ◦ Source Unknown	0.2 Miles	1998	5B	2013
				Eutrophic ◦ Source Unknown	0.2 Miles	1998	5B	2013
				Indicator Bacteria ◦ Source Unknown *Stables and horse property may be the sources.*	0.2 Miles	2014	5A	2019
				Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	0.2 Miles	1998	5B	2008
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	River & Stream	40210011 / 18070101	**Algae** ◦ Source Unknown	4.5 Miles	1996	5A	2019
				Benthic Community Effects ◦ Source Unknown	4.5 Miles	2014	5A	2029
				Temperature, water ◦ Source Unknown	4.5 Miles	2014	5A	2027
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/	River & Stream	40210011 / 18070101	**Benthic Community Effects** ◦ Source Unknown	2.8 Miles	2014	5A	2029

	Coyote Cr)							
				• Indicator Bacteria ◦ Source Unknown	2.8 Miles	2010	5A	2021
				• Mercury ◦ Source Unknown	2.8 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	2.8 Miles	2014	5A	2027
				• Water Diversion ◦ Source Unknown	2.8 Miles	1996	5A	2019
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	River & Stream	40220021 / 18070101	• Benthic Community Effects ◦ Source Unknown	19 Miles	2014	5A	2029
				• Pumping ◦ Source Unknown	19 Miles	1996	5A	2019
				• Temperature, water ◦ Source Unknown	19 Miles	2014	5A	2027
				• Water Diversion ◦ Source Unknown	19 Miles	1996	5A	2019
4	Walnut Creek Wash (Drains from Puddingstone Res)	River & Stream	40531000 / 18070106	• Benthic Community Effects ◦ Source Unknown	12 Miles	2014	5A	2012
				• Indicator Bacteria ◦ Source Unknown	12 Miles	2010	5A	2027
				• pH ◦ Source Unknown	12 Miles	1996	5A	2007

4	Westlake Lake	Lake & Reservoir	40425000 / 18070104	• Algae
				  ◦ Agriculture-animal
				  ◦ Atmospheric Deposition
				  ◦ Golf course activities
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
				  ◦ Urban Runoff/Storm Sewers
					119 Acres	1996	5B	2003

				• Ammonia
				  ◦ Agriculture-animal
				  ◦ Atmospheric Deposition
				  ◦ Golf course activities
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
				  ◦ Urban Runoff/Storm Sewers
					119 Acres	1996	5B	2003

				• Eutrophic ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	119 Acres	1996	5B	2003
				• Lead ◦ Source Unknown	119 Acres	1996	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	119 Acres	1996	5B	2003
4	Wheeler Canyon/Todd Barranca	River & Stream	40321000 / 18070102	• Chlordane ◦ Source Unknown	10 Miles	2014	5A	2027
				• Cypermethrin ◦ Source Unknown	10 Miles	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	10 Miles	2014	5A	2027
				• Nitrate and Nitrite ◦ Nonpoint Source	10 Miles	1998	5B	2004
				• Specific Conductivity ◦ Source Unknown	10 Miles	2014	5A	2027
				• Sulfates ◦ Source Unknown	10 Miles	2002	5A	2019
				• Total Dissolved Solids ◦ Source Unknown	10 Miles	2002	5A	2019
				• Toxaphene ◦ Source Unknown	10 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	10 Miles	2014	5A	2027
4	Wildlife Lake	Lake & Reservoir	40521000 / 18070105	• Ammonia ◦ Source Unknown	15 Acres	2014	5A	2027
				• Oxygen, Dissolved				

				◦ Source Unknown	15 Acres	2014	5A	2027
4	Wilmington Drain	River & Stream	40342000 / 18070104	• Copper ◦ Source Unknown	0.56 Miles	1996	5A	2019
				• Indicator Bacteria ◦ Source Unknown	0.56 Miles	2014	5A	2007
				• Zinc ◦ Source Unknown	0.56 Miles	2014	5A	2027

2016 CALIFORNIA LIST OF WATER QUALITY LIMITED SEGMENTS
BEING ADDRESSED BY USEPA APPROVED TMDLS

Category 4A Criteria: 1) A water segment where ALL its 303(d) listings are being addressed; and 2) at least one of those listings is being addressed by a USEPA approved TMDL.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

** "Addressed By" is defined as: B = Being addressed by USEPA approved TMDL and C = Being addressed by action(s) other than a TMDL

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• POLLUTANT ◦ POTENTIAL SOURCES *Relevant Notes*	ESTIMATED AREA ASSESSED	FIRST YEAR LISTED	ADDRESSED BY**	USEPA TMDL APPROVAL DATE
4	Abalone Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	2014	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	1998	B	2012
4	Aliso Canyon Wash	River & Stream	40521000 / 18070105	• Copper ◦ Source Unknown	10 Miles	1996	B	2008
				• Indicator Bacteria ◦ Source Unknown	10 Miles	2014	B	2012
				• Selenium ◦ Nonpoint Source	10 Miles	1996	B	2005
4	Amarillo Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	0.64 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.64 Miles	1998	B	2012
4	Avalon Beach	Coastal & Bay Shoreline	40511000 / 18070107	• Indicator Bacteria ◦ Source Unknown	0.67 Miles	2002	B	2014
4	Ballona Creek Estuary	River & Stream	40513000 / 18070104	• Cadmium ◦ Source Unknown	2.3 Miles	1992	B	2005
				• Chlordane ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• Copper ◦ Source Unknown	2.3 Miles	1992	B	2005
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Nonpoint Source	2.3 Miles	2014	B	2005

				◦ Point Source				
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2007
				• Lead ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• PCBs (Polychlorinated biphenyls) ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• Silver ◦ Source Unknown	2.3 Miles	1992	B	2005
				• Toxicity ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2010	B	2005
				• Zinc ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
4	Ballona Creek Wetlands	Wetland, Tidal	40517000 / 18070104	• Exotic Vegetation ◦ Source Unknown	289 Acres	1996	B	2012
				• Habitat alterations ◦ Source Unknown	289 Acres	1996	B	2012
				• Hydromodification ◦ Source Unknown	289 Acres	1996	B	2012
				• Reduced Tidal Flushing ◦ Source Unknown	289 Acres	1996	B	2012
				• Trash ◦ Nonpoint Source	289 Acres	1996	B	2019
4	Bell Creek	River & Stream	40521000 / 18070104	• Indicator Bacteria ◦ Source Unknown	8.9 Miles	2014	B	2012
4	Big Rock Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	0.74 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.74 Miles	1998	B	2012
				• DDT				

4	Bluff Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	(Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.55 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.55 Miles	1998	B	2012
4	Brown Barranca/Long Canyon	River & Stream	40321000 / 18070103	• Nitrate and Nitrite ◦ Agriculture-storm runoff ◦ Atmospheric Deposition ◦ Groundwater Loadings ◦ Groundwater Withdrawal ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks)	2.6 Miles	1998	B	2004
4	Bull Creek	River & Stream	40521000 / 18070105	• Indicator Bacteria ◦ Source Unknown	2.3 Miles	2010	B	2012
4	Cabrillo Beach (Outer)	Coastal & Bay Shoreline	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.58 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.58 Miles	1998	B	2012
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Estuary	40311000 / 18070103	• Chlordane (tissue) ◦ Nonpoint Source	344 Acres	1992	B	2005
				• Copper ◦ Nonpoint Source ◦ Point Source	344 Acres	1996	B	2007
				• DDT (tissue & sediment) ◦ Nonpoint Source	344 Acres	1992	B	2005
				• Dieldrin ◦ Source Unknown	344 Acres	2006	B	2006
				• Endosulfan (tissue) ◦ Agriculture-storm runoff	344 Acres	2006	B	2006
				• Mercury ◦ Nonpoint Source ◦ Point Source	344 Acres	1996	B	2007
				• Nickel ◦ Nonpoint Source ◦ Point Source	344 Acres	1996	B	2007
				• Nitrogen ◦ Nonpoint Source ◦ Point Source	344 Acres	1996	B	2003

				• **PCBs (Polychlorinated biphenyls) (tissue)** ◦ Nonpoint Source ◦ Point Source	344 Acres	1996	B	2005
				• **Sedimentation/Siltation** ◦ Agriculture ◦ Natural Sources	344 Acres	1992	B	2007
				• **Toxaphene** ◦ Source Unknown	344 Acres	2006	B	2006
				• **Toxicity** ◦ Nonpoint Source ◦ Point Source	344 Acres	2014	B	2005
				• **Zinc** ◦ Source Unknown	344 Acres	1996	B	2007
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	River & Stream	40368000 / 18070104	• **Ammonia** ◦ Nonpoint Source ◦ Point Source	17 Miles	1996	B	2003
				• **ChemA (tissue)** ◦ Agriculture-storm runoff	17 Miles	1996	B	2006
				• **Chlordane** ◦ Source Unknown	17 Miles	1996	B	2006
				• **Chloride** ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	17 Miles	2002	B	2008
				• **Dieldrin** ◦ Source Unknown	17 Miles	2006	B	2006
				• **PCBs (Polychlorinated biphenyls)** ◦ Source Unknown	17 Miles	1996	B	2006
				• **Sulfates** ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather	17 Miles	2002	B	2008

				discharge ◦ Surface Runoff				
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	17 Miles	2002	B	2008
				• Toxicity ◦ Nonpoint Source ◦ Point Source	17 Miles	1996	B	2006
4	Carbon Beach	Coastal & Bay Shoreline	40416000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.5 Miles	1998	B	2012
				• Indicator Bacteria ◦ Source Unknown	1.5 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	1.5 Miles	1998	B	2012
4	Castlerock Beach	Coastal & Bay Shoreline	40513000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.21 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	0.21 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.21 Miles	1998	B	2012
4	Channel Islands Harbor Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Major Municipal Point Source-wet weather discharge ◦ Natural Sources ◦ Unknown Nonpoint Source	0.03 Miles	2002	B	2008
4	Dan Blocker Memorial (Coral) Beach	Coastal & Bay Shoreline	40431000 / 18070104	• Indicator Bacteria ◦ Source Unknown	2.1 Miles	2014	B	2002
4	Dockweiler Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	4.6 Miles	1998	B	2003
4	Echo Park	Lake &	40515010 /	• Algae ◦ Source Unknown	13 Acres	1996	B	2012

	Lake	Reservoir	18070104					
				• Ammonia ∘ Source Unknown	13 Acres	1996	B	2012
				• Chlordane ∘ Source Unknown	13 Acres	2014	B	2012
				• Dieldrin ∘ Source Unknown	13 Acres	2014	B	2012
				• Eutrophic ∘ Source Unknown	13 Acres	1996	B	2012
				• Odor ∘ Source Unknown	13 Acres	1996	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	13 Acres	2014	B	2012
				• Trash ∘ Source Unknown	13 Acres	1996	B	2012
				• pH ∘ Source Unknown	13 Acres	1996	B	2012
4	El Dorado Lakes	Lake & Reservoir	40515010 / 18070104	• Algae ∘ Source Unknown	31 Acres	1996	B	2012
				• Ammonia ∘ Source Unknown	31 Acres	1996	B	2012
				• Copper ∘ Source Unknown	31 Acres	1996	B	2012
				• Eutrophic ∘ Source Unknown	31 Acres	1996	B	2012
				• Lead ∘ Source Unknown	31 Acres	1996	B	2012
				• pH ∘ Source Unknown	31 Acres	1996	B	2012
4	Escondido Beach	Coastal & Bay Shoreline	40434000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	1.2 Miles	1998	B	2012
				• Indicator Bacteria ∘ Nonpoint Source	1.2 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	1.2 Miles	1998	B	2012
4	Flat Rock Point Beach Area	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	0.11 Miles	1998	B	2012
				• Indicator Bacteria ∘ Nonpoint Source	0.11 Miles	1998	B	2003

				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.11 Miles	1998	B	2012
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	River & Stream	40362000 / 18070103	• Boron ◦ Other	6.7 Miles	1998	B	2008
				• Chlordane ◦ Source Unknown	6.7 Miles	2014	B	2006
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	6.7 Miles	2014	B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	6.7 Miles	2014	B	2006
				• Nitrate and Nitrite ◦ Nonpoint Source	6.7 Miles	1998	B	2003
				• Sulfates ◦ Other	6.7 Miles	1998	B	2006
				• Total Dissolved Solids ◦ Other	6.7 Miles	1998	B	2006
4	Hobie Beach (Channel Islands Harbor)	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Natural Sources ◦ Nonpoint Source ◦ Urban Runoff/Storm Sewers	0.1 Miles	2002	B	2008
4	Inspiration Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.14 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.14 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.14 Miles	1998	B	2012
4	La Costa Beach	Coastal & Bay Shoreline	40416000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	0.74 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.74 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.74 Miles	1998	B	2012

4	Lake Calabasas	Lake & Reservoir	40521000 / 18070105	• Ammonia ◦ Source Unknown	18 Acres	1996	B	2012
				• Eutrophic ◦ Source Unknown	18 Acres	1996	B	2012
				• Odor ◦ Source Unknown	18 Acres	1996	B	2012
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	18 Acres	1998	B	2012
				• pH ◦ Source Unknown	18 Acres	1996	B	2012

4	Lake Sherwood	Lake & Reservoir	40426000 / 18070104	• Algae
				  ◦ Agriculture-animal
				  ◦ Golf course activities
					135 Acres	1996	B	2003

				• Eutrophic
				  ◦ Agriculture-animal
				  ◦ Golf course activities
					135 Acres	1996	B	2003

				• Mercury (tissue) ◦ Source Unknown	135 Acres	1996	B	2012
4	Las Flores Beach	Coastal & Bay Shoreline	40415000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.1 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	1998	B	2012
4	Las Tunas Beach	Coastal & Bay Shoreline	40412000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.2 Miles	1998	B	2012
				• Indicator Bacteria ◦ Source Unknown	1.2 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.2 Miles	1998	B	2012
4	Long Beach City Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Indicator Bacteria ◦ Source Unknown *This listing includes the beach area at 3rd pl., 5th pl., 10th pl., 16th pl., 36th pl., 72nd pl., Coronado ave., Molino ave., and the east side and west side of Belmont Pier.*	4.7 Miles	2006	B	2012
4	Long Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.7 Miles	1998	B	2012

				PCBs (Polychlorinated biphenyls) Source Unknown	0.7 Miles	1998	B	2012
4	Los Angeles Harbor - Cabrillo Marina	Bay & Harbor	40512000 / 18070104	Benzo(a)pyrene (3,4-Benzopyrene -7-d) Source Unknown	77 Acres	2010	B	2012
				DDT (Dichlorodiphenyltrichloroethane) Source Unknown	77 Acres	1998	B	2012
				PCBs (Polychlorinated biphenyls) Source Unknown	77 Acres	1998	B	2012
4	Los Angeles Harbor - Fish Harbor	Bay & Harbor	40518000 / 18070104	Benzo(a)anthracene Source Unknown	91 Acres	1998	B	2012
				Benzo(a)pyrene (3,4-Benzopyrene -7-d) Source Unknown	91 Acres	1998	B	2012
				Chlordane Source Unknown	91 Acres	1998	B	2012
				Chrysene (C1-C4) Source Unknown	91 Acres	1998	B	2012
				Copper Source Unknown	91 Acres	1998	B	2012
				DDT (Dichlorodiphenyltrichloroethane) Source Unknown	91 Acres	1998	B	2012
				Dibenz[a,h]anthracene Source Unknown	91 Acres	1998	B	2012
				Lead Source Unknown	91 Acres	1998	B	2016
				Mercury Source Unknown	91 Acres	1998	B	2012
				PAHs (Polycyclic Aromatic Hydrocarbons) Source Unknown	91 Acres	1998	B	2012
				PCBs (Polychlorinated biphenyls) Source Unknown	91 Acres	1998	B	2012
				Phenanthrene Source Unknown	91 Acres	1998	B	2012
				Pyrene Source Unknown	91 Acres	1998	B	2012
				Toxicity Source Unknown	91 Acres	2014	B	2013

				• Zinc ∘ Source Unknown	91 Acres	1998	B	2012
4	Los Angeles/Long Beach Inner Harbor	Bay & Harbor	40518000 / 18070104	• Beach Closures ∘ Source Unknown	3003 Acres	1998	B	2005
				• Benthic Community Effects ∘ Source Unknown	3003 Acres	1998	B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ∘ Source Unknown	3003 Acres	2010	B	2012
				• Chrysene (C1-C4) ∘ Source Unknown	3003 Acres	2010	B	2012
				• Copper ∘ Source Unknown	3003 Acres	1998	B	2012
				• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	3003 Acres	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	3003 Acres	1998	B	2012
				• Toxicity ∘ Source Unknown	3003 Acres	2014	B	2012
4	Lunada Bay Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ∘ Nonpoint Source	0.63 Miles	1998	B	2003
4	Malaga Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	0.39 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	0.39 Miles	1998	B	2012
4	Malibu Beach	Coastal & Bay Shoreline	40421000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	0.77 Miles	1998	B	2012
				• Indicator Bacteria ∘ Source Unknown	0.77 Miles	1998	B	2003
4	Malibu Lagoon Beach (Surfrider)	Coastal & Bay Shoreline	40421000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown *Fish Consumption Advisory for DDT.*	1 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	1 Miles	1998	B	2012

4	Marina del Rey Harbor Beach	Coastal & Bay Shoreline	40517000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.29 Miles	1998	B	2004
4	McGrath Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Nonpoint Source	1.7 Miles	2014	B	2003

4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	River & Stream	40351000 / 18070102	• Nitrate and Nitrite
				  ◦ Agriculture-storm runoff
				  ◦ Atmospheric Deposition
				  ◦ Groundwater Loadings
				  ◦ Groundwater Withdrawal
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
					8.1 Miles	1998	B	2004

4	Monrovia Canyon Creek	River & Stream	40531000 / 18070105	• Lead ◦ Nonpoint Source	3.4 Miles	1996	B	2005
4	Nicholas Canyon Beach	Coastal & Bay Shoreline	40444000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.7 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Palo Comado Creek	River & Stream	40423000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	6.8 Miles	2014	B	2006
4	Palo Verde Shoreline Park Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Pathogens ◦ Nonpoint Source	0.24 Miles	1998	B	2003
				• Pesticides ◦ Source Unknown	0.24 Miles	1998	B	2012
4	Paradise Cove Beach	Coastal & Bay Shoreline	40435000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.7 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.7 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Peck Road Park Lake	Lake & Reservoir	40531000 / 18070105	• Chlordane (tissue) ◦ Source Unknown	103 Acres	1996	B	2012
				• DDT (tissue) ◦ Source Unknown	103 Acres	1996	B	2012

				• Lead ∘ Source Unknown	103 Acres	1996	B	2012
				• Odor ∘ Source Unknown	103 Acres	1996	B	2012
				• Organic Enrichment/Low Dissolved Oxygen ∘ Source Unknown	103 Acres	1996	B	2012
				• Trash ∘ Source Unknown	103 Acres	1996	B	2012
4	Point Dume Beach	Coastal & Bay Shoreline	40435000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	2.5 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	2.5 Miles	1996	B	2012
4	Point Fermin Park Beach	Coastal & Bay Shoreline	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	1.6 Miles	1996	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	1.6 Miles	1998	B	2012
4	Point Vicente Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ∘ Nonpoint Source	0.63 Miles	1994	B	2003
4	Portuguese Bend Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown *Fish Consumption Advisory for DDT.*	1.4 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	1.4 Miles	1998	B	2012
4	Puerco Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	0.5 Miles	1998	B	2012
				• Indicator Bacteria ∘ Nonpoint Source	0.5 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	0.5 Miles	1998	B	2012
4	Redondo Beach	Coastal & Bay Shoreline	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	1.5 Miles	1998	B	2012
				• Indicator Bacteria ∘ Nonpoint Source	1.5 Miles	2014	B	2003

				PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.5 Miles	1998	B	2012
4	Resort Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.15 Miles	1998	B	2003
4	Robert H. Meyer Memorial Beach	Coastal & Bay Shoreline	40441000 / 18070104	• Beach Closures ◦ Major Municipal Point Source-dry and/or wet weather discharge	1.2 Miles	1998	B	2003
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.2 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.2 Miles	1998	B	2012
4	Royal Palms Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	1998	B	2012
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	River & Stream	40351000 / 18070102	• Indicator Bacteria ◦ Source Unknown	21 Miles	2014	B	2012
4	Santa Monica Beach	Coastal & Bay Shoreline	40513000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	3 Miles	1998	B	2003
4	Sea Level Beach	Coastal & Bay Shoreline	40441000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.21 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.21 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.21 Miles	1998	B	2012
4	Sepulveda Canyon	River & Stream	40513000 / 18070104	• Copper ◦ Source Unknown	0.83 Miles	2006	B	2005
				• Indicator Bacteria				

				◦ Nonpoint Source	0.83 Miles	1996	B	2003
				• **Lead** ◦ Nonpoint Source	0.83 Miles	1996	B	2005
				• **Selenium** ◦ Source Unknown	0.83 Miles	2006	B	2005
				• **Zinc** ◦ Source Unknown	0.83 Miles	2006	B	2005
4	Stokes Creek	River & Stream	40422020 / 18070104	• **Indicator Bacteria** ◦ Nonpoint Source	4.7 Miles	2014	B	2006
4	Topanga Beach	Coastal & Bay Shoreline	40413000 / 18070104	• **DDT (Dichlorodiphenyltrichloroethane)** ◦ Source Unknown	2.5 Miles	1998	B	2012
				• **Indicator Bacteria** ◦ Nonpoint Source	2.5 Miles	2014	B	2003
				• **PCBs (Polychlorinated biphenyls)** ◦ Source Unknown	2.5 Miles	1998	B	2012
4	Torrance Beach	Coastal & Bay Shoreline	40512000 / 18070104	• **Indicator Bacteria** ◦ Nonpoint Source	1.1 Miles	2014	B	2003
4	Torrey Canyon Creek	River & Stream	40341000 / 18070103	• **Nitrate and Nitrite** ◦ Nonpoint Source	1.7 Miles	1998	B	2004
4	Trancas Beach (Broad Beach)	Coastal & Bay Shoreline	40437000 / 18070104	• **DDT (Dichlorodiphenyltrichloroethane)** ◦ Source Unknown	1.7 Miles	1998	B	2012
				• **Indicator Bacteria** ◦ Nonpoint Source	1.7 Miles	2014	B	2003
				• **PCBs (Polychlorinated biphenyls)** ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Tujunga Wash (LA River to Hansen Dam)	River & Stream	40521000 / 18070105	• **Ammonia** ◦ Nonpoint Source	9.7 Miles	1996	B	2004
				• **Copper** ◦ Nonpoint Source	9.7 Miles	1996	B	2005
				• **Indicator Bacteria** ◦ Source Unknown	9.7 Miles	2014	B	2012
				• **Trash** ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	9.7 Miles	1996	B	2008

4	Venice Beach	Coastal & Bay Shoreline	40513000 / 18070104	Indicator Bacteria ◦ Nonpoint Source	2.5 Miles	2006	B	2003
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	River & Stream	40521000 / 18070105	• Copper ◦ Source Unknown	2 Miles	2010	B	2008
				• Indicator Bacteria ◦ Source Unknown	2 Miles	2014	B	2012
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	2 Miles	1996	B	2008
4	Verdugo Wash Reach 2 (Above Verdugo Road)	River & Stream	40524000 / 18070105	• Indicator Bacteria ◦ Source Unknown	7.6 Miles	2014	B	2012
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	7.6 Miles	1996	B	2008
4	Whites Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	2006	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.1 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	2006	B	2012
4	Will Rogers Beach	Coastal & Bay Shoreline	40513000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	3 Miles	2006	B	2003
4	Zuma Beach (Westward Beach)	Coastal & Bay Shoreline	40436000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.6 Miles	2006	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.6 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.6 Miles	2006	B	2012

2016 CALIFORNIA WATERS WITH INSUFFICIENT INFORMATION TO ASSESS BENEFICIAL USE SUPPORT BUT SOME USES MAY BE POTENTIALLY THREATENED

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 3 Criteria: A water with water quality information that is insufficient to determine an appropriate decision recommendation, but the available data and information that does exist indicates beneficial uses may be potentially threatened.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ◦ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	**Cold Creek (Los Angeles County)**	**River & Stream**	**40421000 / 18070104**	• **Drinking Water Supply** ◦ ***Municipal & Domestic Supply*** **Sulfates** • **Aquatic Life Support** ◦ ***Cold Freshwater Habitat*** **Benthic Community Effects, Invasive Species, Oxygen, Dissolved, pH**	**0.85 Miles**
4	**Cold Creek, unnamed tributary along Dry Canyon Cold Creek Road (Los Angeles County)**	**River & Stream**	**40421000 / 18070104**	• **Secondary Contact** ◦ ***Non-Contact Recreation*** **pH** • **Swimming** ◦ ***Water Contact Recreation*** **pH** • **Drinking Water Supply** ◦ ***Municipal & Domestic Supply*** **Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH** • **Aquatic Life Support** ◦ ***Fish Spawning*** **Oxygen, Dissolved** ◦ ***Cold Freshwater Habitat***	**2.5 Miles**

				Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	Lachusa Canyon Creek	River & Stream	40442000 / 18070104	• Drinking Water Supply ◦ *Municipal & Domestic Supply* Sulfates • Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	2.9 Miles
4	Las Virgenes Creek, East	River & Stream	40422010 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Marine Habitat* Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc, pH ◦ *Estuarine Habitat*	2 Miles

- Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc
  - *Fish Spawning*
    Ammonia, Oxygen, Dissolved
  - *Cold Freshwater Habitat*
    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Temperature, water, Toxicity, Zinc, pH
- Fish Consumption
  - *Commercial or recreational collection of fish, shellfish, or organisms*
    Manganese, Nickel, Selenium

4	Rose Valley Creek	River & Stream	40332020 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Marine Habitat* Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead ,	2.6 Miles

				Nickel, Permethrin, Selenium, Silver, Zinc, pH ◦ *Estuarine Habitat* Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Manganese, Nickel, Selenium	
4	San Gabriel River Reach 4 (Morris Dam to Ramona Blvd)	River & Stream	40531000 / 18070106	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	16 Miles
4	San Gabriel River, West Fork	River & Stream	40543000 / 18070106	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Nitrogen, Nitrite, Sulfates • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Ammonia, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH ◦ *Marine Habitat* pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat*	9.3 Miles

				Alkalinity as CaCO3, Ammonia, Benthic Community Effects, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH	

4	San Jose Creek, unnamed tributary at Rose Hill (Los Angeles County)	River & Stream	40531000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Benthic Community Effects
					2.2 Miles

4	San Nicolas Island at Freighter Dock	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Arsenic, Cadmium, Chlordane, Chlorpyrifos, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Selenium
					0.28 Miles

4	Santa Ana Creek, North Fork	River & Stream	40220030 / 18070101	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates,
					2.8 Miles

				Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)	River & Stream	40331000 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Arsenic, Cadmium, Chloride, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, ammonia (Total Ammonia), Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Arsenic, Bifenthrin, Cadmium, Chloride, Chlorpyrifos, Chromium, Copper, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Deltamethrin, Diazinon, Dieldrin, Endrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Methyl Parathion, Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, ammonia (Total Ammonia), Oxygen,	9 Miles

Dissolved, Permethrin, total, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH

- *Cold Freshwater Habitat*
  Benthic Community Effects, Chlordane, Nitrate/Nitrite (Nitrite + Nitrate as N), PCBs (Polychlorinated biphenyls), Toxicity

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4	Santa Clara River Reach 2	River & Stream	40311000 / 18070103	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, ammonia (Total Ammonia), Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, ammonia (Total Ammonia), Oxygen, Dissolved, Permethrin, total, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Marine Habitat* Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead , Nickel, Permethrin, total, Selenium, Silver, Zinc, pH ◦ *Estuarine Habitat* Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, total, Selenium, Silver, Zinc ◦ *Fish Spawning* Oxygen, Dissolved ◦ *Cold Freshwater Habitat*	17 Miles

				Alkalinity as CaCO3, Aluminum, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, ammonia (Total Ammonia), Oxygen, Dissolved, Permethrin, total, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH
				• **Fish Consumption**
				  ◦ ***Commercial or recreational collection of fish, shellfish, or organisms***
				    Manganese, Nickel, Selenium	

4	**Santa Clara River Reach 4B (Piru Creek to Blue Cut Gaging Station)**	**River & Stream**	**4403.410000 /**	• **Secondary Contact**
				  ◦ ***Non-Contact Recreation***
				    pH
				• **Swimming**
				  ◦ ***Water Contact Recreation***
				    pH
				• **Drinking Water Supply**
				  ◦ ***Municipal & Domestic Supply***
				    Aluminum, Ammonia, Arsenic, Cadmium, Chloride, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• **Aquatic Life Support**
				  ◦ ***Warm Freshwater Habitat***
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chloride, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH
					5.2 Miles

4	**Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)**	**River & Stream**	**40321000 / 18070102**	• **Secondary Contact**
				  ◦ ***Non-Contact Recreation***
				    pH
				• **Swimming**
					1.8 Miles

- *Water Contact Recreation*
  pH

- Drinking Water Supply
  - *Municipal & Domestic Supply*
    Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH

- Aquatic Life Support
  - *Warm Freshwater Habitat*
    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH

4	Wiley Canyon	River & Stream	40351000 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	1.3 Miles

- ***Estuarine Habitat***
  Chromium
- ***Fish Spawning***
  Ammonia, Oxygen, Dissolved
- ***Cold Freshwater Habitat***
  pH

2016 CALIFORNIA WATERS WITH INSUFFICIENT INFORMATION TO ASSESS BENEFICIAL USE SUPPORT

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 2 Criteria: A water with water quality information that is insufficient to determine an appropriate decision recommendation, for reasons such as: monitoring data have poor quality assurance, not enough samples in a dataset, no existing numerical objective or evaluation guideline, the information alone cannot support an assessment, etc.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ∘ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	**Ashland Avenue Drain**	**River & Stream**	**40513000 / 18070104**	• **Swimming** ∘ ***Water Contact Recreation*** **Indicator Bacteria** • **Aquatic Life Support** ∘ ***Warm Freshwater Habitat*** **Organic Enrichment/Low Dissolved Oxygen, Toxicity**	**2.3 Miles**
4	**Avalon Drain**	**River & Stream**	**40515010 / 18070104**	• **Aquatic Life Support** ∘ ***Warm Freshwater Habitat*** **Aluminum, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Nickel, Selenium, Zinc**	**2.2 Miles**
4	**Bear Creek (Los Angeles County)**	**River & Stream**	**40543000 / 18070106**	• **Secondary Contact** ∘ ***Non-Contact Recreation*** **pH** • **Swimming** ∘ ***Water Contact Recreation*** **pH** • **Drinking Water Supply** ∘ ***Municipal & Domestic Supply*** **Ammonia, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, Nitrite, Specific Conductivity, Sulfates, pH**	**11 Miles**

				Aquatic Life Support ◦ ***Warm Freshwater Habitat*** **Alkalinity as CaCO3, Ammonia, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH** ◦ ***Fish Spawning*** **Ammonia, Oxygen, Dissolved** ◦ ***Cold Freshwater Habitat*** **Alkalinity as CaCO3, Ammonia, Benthic Community Effects, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH**	
4	**Belvedere Park Lake**	**Lake & Reservoir**	**40515010 / 18070104**	• **Aquatic Life Support** ◦ ***Warm Freshwater Habitat*** **Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)** • **Fish Consumption** ◦ ***Commercial or recreational collection of fish, shellfish, or organisms*** **Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium**	**3.6 Acres**
4	**Big Sycamore Canyon**	**River & Stream**	**40447000 / 18070104**	• **Secondary Contact** ◦ ***Non-Contact Recreation*** **pH** • **Swimming** ◦ ***Water Contact Recreation*** **pH** • **Aquatic Life Support** ◦ ***Warm Freshwater Habitat*** **Ammonia, Arsenic, Azinphos-methyl (Guthion), Cadmium, Chloride, Chlorpyrifos, Copper, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Ethoprop, Lead , Malathion, Methidathion, Methyl**	**6.2 Miles**

				Parathion, Molinate, Nickel, Oxygen, Dissolved, Parathion, Phorate, Phosmet, Selenium, Silver, Temperature, water, Terbufos, Thiobencarb/Bolero, Zinc, pH ◦ *Cold Freshwater Habitat* Benthic Community Effects, Oxygen, Dissolved, Toxicity, pH	
4	Bouquet Canyon Creek (below Bouqet Reservoir)	River & Stream	40352000 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chlordane, Chlorpyrifos, Chromium, Copper, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Deltamethrin, Diazinon, Dieldrin, Endrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Fipronil, Fipronil Sulfide, Fipronil Sulfone, Iron, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	14 Miles
4	Camarillo Hills Drain (tributary to Revolon Slough)	River & Stream	40311000 / 18070103	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Azinphos-methyl (Guthion), Chlordane, Chlorpyrifos, Demeton, Diazinon, Endosulfan, Endrin, Methoxychlor, Methyl Parathion,	3.2 Miles

				Metribuzin, Mirex, Pentachlorophenol (PCP)	

4	Carbon Canyon Creek	River & Stream	40515010 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Sulfates
					8.8 Miles

4	Carlisle Canyon Creek	River & Stream	40426000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					3.3 Miles

4	Castaic Creek Reach 1 (confluence of Santa Clara River to Castaic Lagoon)	River & Stream	40351000 / 18070102	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Ammonia, Chlorpyrifos, Diazinon, Nitrate/Nitrite (Nitrite + Nitrate as N), Toxicity
					11 Miles

4	Cheeseboro Canyon	River & Stream	40423000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Benthic Community Effects, Oxygen, Dissolved, pH
					5.3 Miles

4	Compton Creek, unnamed tributary at Santa Fe Rd	River & Stream	40515010 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aluminum, Arsenic, Cadmium, Chlorpyrifos, Chromium, Copper, Demeton, Diazinon, Iron, Lead , Malathion, Methyl Parathion, Nickel, Selenium, Zinc
					1.1 Miles

4	Corral Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					4.1 Miles

4	Drain along Gerry Rd to Calleguas Creek Reach 9	River & Stream	40363000 / 18070103	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aldrin, Ammonia, Chlordane, Chloride, Chlorpyrifos, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dacthal, Diazinon, Dieldrin, Dimethoate, Disulfoton, Endosulfan,
					1.7 Miles

Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Nitrogen, Nitrate, Phorate, Phosmet, Specific Conductivity, Sulfates, Total Dissolved Solids, Toxaphene, alpha.-BHC (Benzenehexachloride or alpha-HCH), beta-BHC (Benzenehexachloride or beta-HCH), pH

- **Aquatic Life Support**
  - ***Warm Freshwater Habitat***

    Aldrin, Ammonia, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, pH
  - ***Marine Habitat***

    Aldrin, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Demeton, Diazinon, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Permethrin, Toxaphene, pH
  - ***Fish Spawning***

    Oxygen, Dissolved

4	**Encinal Canyon Creek**	**River & Stream**	**40441000 / 18070104**	• **Secondary Contact** ◦ ***Non-Contact Recreation*** **pH** • **Swimming** ◦ ***Water Contact Recreation*** **pH** • **Drinking Water Supply**	**2.7 Miles**

				◦ *Municipal & Domestic Supply* Sulfates • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	Escondido Canyon Creek	River & Stream	40434000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	4.6 Miles
4	Hammond Canyon	River & Stream	40210010 / 18070101	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	4.5 Miles
4	Hansen Lake	Lake & Reservoir	40523000 / 18070105	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT	118 Acres

				(Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) ◦ *Cold Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	
4	Hidden Valley Creek (Ventura County)	River & Stream	40426000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	2.2 Miles
4	Hollenback Park Lake	Lake & Reservoir	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) ◦ *Cold Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms*	4.5 Acres

				Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	

4	**Hueneme Drain**	**River & Stream**	**40311000 / 18070103**	• **Secondary Contact**
				  ◦ ***Non-Contact Recreation***
				    pH
				• **Swimming**
				  ◦ ***Water Contact Recreation***
				    pH
				• **Aquatic Life Support**
				  ◦ ***Warm Freshwater Habitat***
				    Anthracene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, Diazinon, Dieldrin, Endosulfan, Endrin, Fluoranthene, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Methyl Parathion, Naphthalene, Nickel, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Silver, Temperature, water, Toxicity, Zinc
				  ◦ ***Marine Habitat***
				    2-Methylnaphthalene, Aldrin, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Selenium, Silver, Zinc, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2), pH
					1.7 Miles

- *Estuarine Habitat*
  2-Methylnaphthalene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chromium, Chrysene (C1-C4), Copper, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dibenz[a,h]anthracene, Dieldrin, Endrin, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, PAHs (Polycyclic Aromatic Hydrocarbons), Phenanthrene, Pyrene, Silver, Zinc
- *Cold Freshwater Habitat*
  Anthracene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, Diazinon, Dieldrin, Endrin, Fluoranthene, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Methyl Parathion, Naphthalene, Nickel, Oxygen, Dissolved, PAHs (Polycyclic Aromatic Hydrocarbons), Phenanthrene, Pyrene, Zinc, pH

- **Fish Consumption**
  - *Commercial or recreational collection of fish, shellfish, or organisms*
    Acenaphthene, Aldrin, Anthracene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo[k]fluoranthene, Cadmium, Chlordane, Chlorpyrifos, Chrysene (C1-C4), DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Fluoranthene, Fluorene, Heptachlor, Heptachlor epoxide, Hexachlorobenzene/ HCB, Indeno[1,2,3-cd]pyrene, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Manganese, Mercury, Mirex, Nickel, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs

				(Polychlorinated biphenyls), Pyrene, Selenium, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2)	
4	John Ford Park Lake	Lake & Reservoir	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	14 Acres
4	Kenneth Hahn Park Lake	Lake & Reservoir	40513000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	28 Acres
4	La Jolla Canyon Creek	River & Stream	40448000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat*	0.9 Miles

				Oxygen, Dissolved	
4	Lake Eleanor Creek	River & Stream	40425000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	2.7 Miles
4	Lang Creek	River & Stream	40368000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	8.2 Miles
4	Las Flores Canyon Creek	River & Stream	40415000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Sulfates • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	3.6 Miles
4	Las Virgenes Reservoir	Lake & Reservoir	40424000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB,	123 Acres

				Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	
4	Latigo Canyon Creek	River & Stream	40433000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	2.9 Miles
4	Lion Creek (from confluence w San Antonio Creek to Resservoir)	River & Stream	40231010 / 18070101	• Aquatic Life Support ∘ *Cold Freshwater Habitat* Benthic Community Effects	5.2 Miles
4	Los Alisos Canyon Creek	River & Stream	40442000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	2.9 Miles
4	Los Cerritos Estuary	Estuary	40512000 / 18070104	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria • Aquatic Life Support ∘ *Marine Habitat* Oxygen, Dissolved ∘ *Estuarine Habitat* pH	53 Acres
4	Malaga Canyon Creek	River & Stream	40512000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Chloride, Sulfates	2.6 Miles
4	Mandeville Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	1.5 Miles
4	Marie Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	1.8 Miles
4	Oxnard Drain	River & Stream	40311000 / 18070103	• Secondary Contact ∘ *Non-Contact Recreation* pH • Swimming ∘ *Water Contact Recreation* pH • Aquatic Life Support ∘ *Warm Freshwater Habitat* Aldrin, Ammonia, Anthracene,	3 Miles

Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Diazinon, Dichlorvos, Dieldrin, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Endosulfan, Endosulfan sulfate, Endrin, Ethoprop, Fluoranthene, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Mercury, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Molinate, Naphthalene, Nickel, Oxygen, Dissolved, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Parathion, Phenanthrene, Phorate, Phosmet, Pyrene, Selenium, Temperature, water, Terbufos, Thiobencarb/Bolero, Zinc, pH

- *Marine Habitat*

  2-Methylnaphthalene, Aldrin, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Selenium, Silver, Zinc, pH

- *Estuarine Habitat*

  2-Methylnaphthalene, Aldrin, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene,

Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Oxygen, Dissolved, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Silver, Toxicity, Zinc, pH

- *Cold Freshwater Habitat*

  Aldrin, Anthracene, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Diazinon, Dichlorvos, Dieldrin, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Endosulfan, Endosulfan sulfate, Endrin, Ethoprop, Fluoranthene, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Mercury, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Molinate, Naphthalene, Nickel, PAHs (Polycyclic Aromatic Hydrocarbons), Parathion, Phenanthrene, Phorate, Phosmet, Pyrene, Terbufos, Thiobencarb/Bolero, Zinc

- Fish Consumption
  - *Commercial or recreational collection of fish, shellfish, or organisms*

    Acenaphthene, Aldrin, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo[k]fluoranthene, Chlordane, Chrysene (C1-C4), DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Fluoranthene, Fluorene, Heptachlor, Heptachlor epoxide, Hexachlorobenzene/ HCB, Indeno[1,2,3-cd]pyrene, Manganese, Mercury, Nickel, PCBs (Polychlorinated biphenyls), Pyrene

4	Pena Canyon Creek	River & Stream	40413000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	1.6 Miles
4	Piru, Lake	Lake & Reservoir	40341000 / 18070102	• Aquatic Life Support ∘ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) ∘ *Cold Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ∘ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	1220 Acres
4	Puerco Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	2.4 Miles
4	Ramirez Canyon Creek	River & Stream	40435000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates • Aquatic Life Support ∘ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	4.2 Miles
4	Rocky Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Swimming ∘ *Water Contact Recreation* Beach Closures	0.49 Miles

4	Rustic Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					7.6 Miles

4	San Clemente Island Darter	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Arsenic, Cadmium, Mercury, Selenium
					0.25 Miles

4	San Nicolas Canyon Creek	River & Stream	40443000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					2.4 Miles

4	Santa Ynez Canyon	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					5 Miles

4	South Catalina Island Bird Rock	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Arsenic, Cadmium, Chlordane, Chlorpyrifos, Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Selenium, Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)
					0.24 Miles

4	Sullivan Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved
					5.3 Miles

4	Sweetwater Canyon Creek	River & Stream	40421000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Sulfates
					1.6 Miles

4	Temescal Canyon Creek (Los Angeles County)	River & Stream	40513000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved
					4.2 Miles

4	Thacher Creek	River & Stream	40232011 / 18070101	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aldrin, Ammonia, Chlordane, Chloride, Chlorpyrifos, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dacthal, Diazinon, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Nitrogen, Nitrate, Phorate, Specific Conductivity, Sulfates, Total Dissolved Solids, Toxaphene, alpha.-BHC (Benzenehexachloride or alpha-HCH), beta-BHC (Benzenehexachloride or beta-HCH), pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aldrin, Ammonia, Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Permethrin, Phorate, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, Toxicity, pH
				  ◦ *Fish Spawning*
				    Oxygen, Dissolved
				  ◦ *Cold Freshwater Habitat*
				    Aldrin, Ammonia, Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda,
					2.2 Miles

				Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Permethrin, Phorate, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, pH • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Aldrin	
4	Toluca Lake	Lake & Reservoir	40521000 / 18070105	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	4.3 Acres
4	Trancas Canyon Creek	River & Stream	40437000 / 18070104	• Drinking Water Supply ◦ *Municipal & Domestic Supply* Chloride, Sulfates	6.4 Miles
4	Trancas Canyon Creek, West Fork	River & Stream	40437000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	1.9 Miles
4	Tuna Canyon Creek	River & Stream	40412000 /	• Secondary Contact	2.4 Miles

			18070104	◦ *Non-Contact Recreation* Trash • Drinking Water Supply ◦ *Municipal & Domestic Supply* Sulfates • Aquatic Life Support ◦ *Warm Freshwater Habitat* Nitrate	
4	Zone Ditch 1 (LA River Watershed)	River & Stream	40531000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Aquatic Life Support ◦ *Warm Freshwater Habitat* Arsenic, Cadmium, Chromium, Copper, Lead , Mercury, Nickel, Selenium, Silver, Zinc	1.5 Miles
4	Zuma Canyon	River & Stream	40436000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper,	7.5 Miles

Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Temperature, water, Toxicity, Zinc, pH

2016 CALIFORNIA WATERS SUPPORTING ALL ASSESSED BENEFICIAL USES

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 1 Criteria: 1) A water that fully supports at least one of its California beneficial uses; 2) has other uses that are not assessed or lack sufficient information to be assessed; and 3) No assessed uses are not supported.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ◦ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	Arroyo Seco Reach 3 (above Devils Gate Dam)	River & Stream	40532000 / 18070105	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	4.1 Miles
4	Arroyo Sequit (from confluence of East and West Forks to mouth)	River & Stream	40444000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects, Oxygen, Dissolved, pH	3.2 Miles
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list), unnamed tributary at Olsen Road	River & Stream	40364000 / 18070103	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Cyanide, Lead , Zinc	2.8 Miles
4	Channel Islands Harbor	Bay & Harbor	40311000 / 18070103	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Aquatic Life Support ◦ *Marine Habitat* 2-Methylnaphthalene, Aldrin, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene,	209 Acres

				Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Selenium, Silver, Toxicity, Zinc, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2), pH
				• **Fish Consumption**
				  ◦ ***Commercial or recreational collection of fish, shellfish, or organisms***
				    Acenaphthene, Aldrin, Anthracene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo[k]fluoranthene, Cadmium, Chlordane, Chlorpyrifos, Chrysene (C1-C4), DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Fluoranthene, Fluorene, Heptachlor, Heptachlor epoxide, Hexachlorobenzene/ HCB, Indeno[1,2,3-cd]pyrene, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Manganese, Mercury, Mirex, Nickel, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Pyrene, Selenium, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2)	

4	Clearwater Canyon	River & Stream	40351000 / 18070102	• **Secondary Contact**
				  ◦ ***Non-Contact Recreation***
				    pH
				• **Swimming**
				  ◦ ***Water Contact Recreation***
				    pH
				• **Drinking Water Supply**
				  ◦ ***Municipal & Domestic Supply***
				    Aluminum, Ammonia, Arsenic,
					1.8 Miles

				Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	

4	County Line Beach	Coastal & Bay Shoreline	40445000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					0.7 Miles

4	Deer Creek Beach	Coastal & Bay Shoreline	40446000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.2 Miles

4	Elizabeth Lake Canyon	River & Stream	40351000 / 18070102	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aluminum, Ammonia, Arsenic, Cadmium, Chloride, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
					12 Miles

				Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chloride, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	

4	Emma Woods State Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.6 Miles

4	Faria County Park Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					0.68 Miles

4	Hermosa Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					2 Miles

4	Hobson County Park	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					0.1 Miles

4	Hollywood Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.4 Miles

4	La Conchita Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
					1.3 Miles

				◦ *Shellfish Harvesting* Indicator Bacteria	
4	Leo Carillo Beach (South of County Line)	Coastal & Bay Shoreline	40444000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria	1.8 Miles
4	Little Sycamore Canyon	River & Stream	40445000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Azinphos-methyl (Guthion), Benthic Community Effects, Bifenthrin, Cadmium, Chlorpyrifos, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Iron, Lead , Malathion, Methidathion, Methyl Parathion, Molinate, Nickel, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Selenium, Silver, Sulfates, Temperature, water, Terbufos, Thiobencarb/Bolero, Toxicity, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved	4.8 Miles
4	Mandos Cove Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.69 Miles

4	Manhattan Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					2 Miles

4	Marina Park Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					0.33 Miles

4	Matilija Creek, North Fork	River & Stream	40220014 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Total Dissolved Solids
				• Aquatic Life Support
				  ◦ *Cold Freshwater Habitat*
				    Benthic Community Effects
					7.7 Miles

4	Mussel Shoals Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					0.39 Miles

4	Oil Piers Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.2 Miles

4	Oxnard Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					1 Miles

4	Oxnard Beach Park	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					0.65 Miles

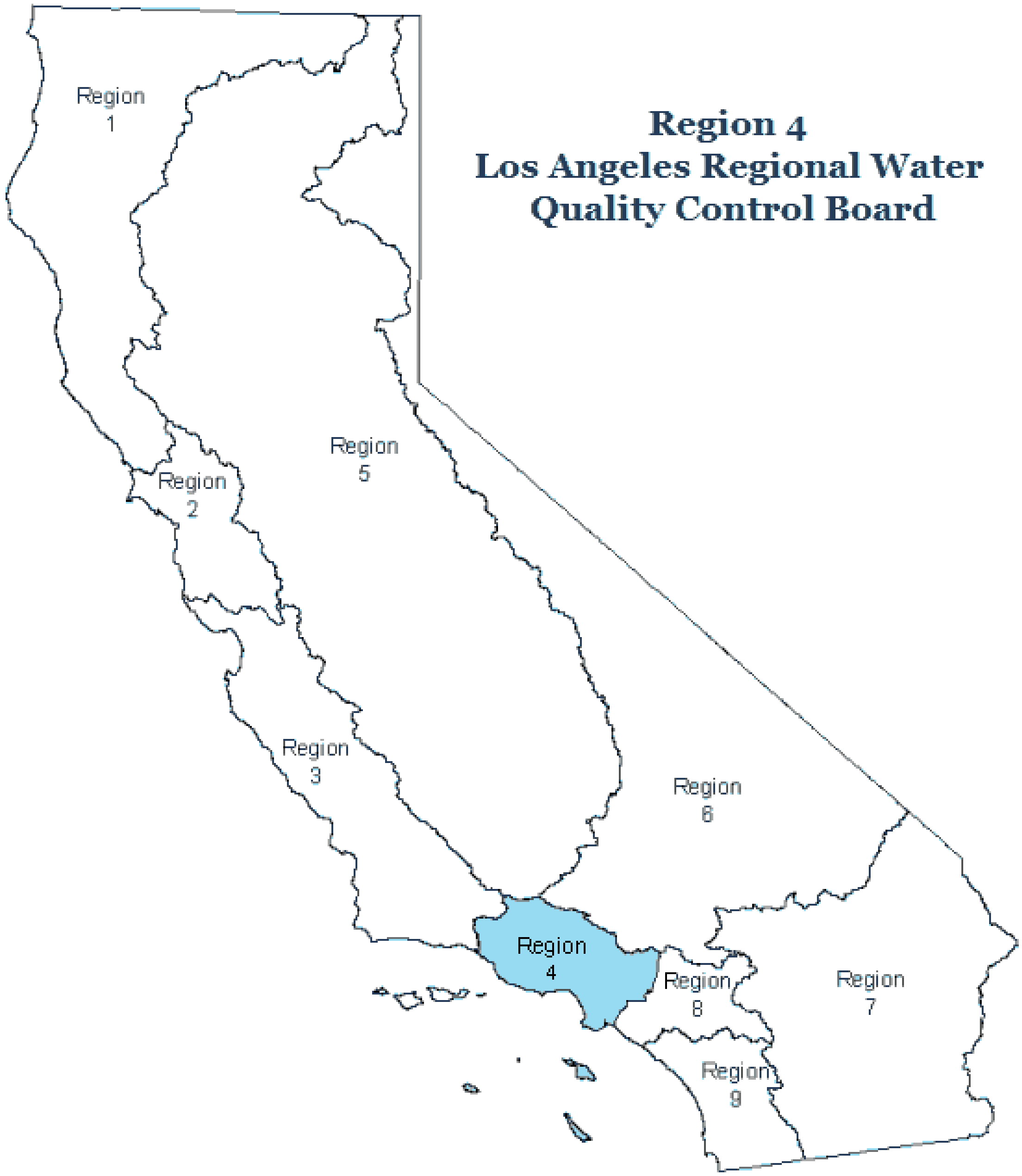
				• Swimming	

4	Promenade Park Beach	Coastal & Bay Shoreline	40210000 / 18070101	◦ *Water Contact Recreation* Indicator Bacteria	0.58 Miles
4	Santa Clara River Estuary Beach-Surfers Knoll	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	1 Miles
4	Seaside Wilderness Park Beach	Coastal & Bay Shoreline	40210011 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.74 Miles
4	Silverstrand Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.98 Miles
4	Solimar Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria	1.6 Miles
4	South Jetty Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.24 Miles
4	Staircase Beach (Leo Carillo Beach, North of County Line)	Coastal & Bay Shoreline	40445000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.51 Miles
4	Sycamore Cove Beach	Coastal & Bay Shoreline	40447000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting*	0.32 Miles

				Indicator Bacteria	

4	Thornhill Broome Beach	Coastal & Bay Shoreline	40447000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.3 Miles

4	Westlake Creek	River & Stream	40425000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					4.3 Miles



Region 4
Los Angeles Regional Water Quality Control Board

Draft

Draft California 2016 Integrated Report (303(d) List/305(b) Report)

Supporting Information

REGIONAL BOARD 4 - LOS ANGELES REGION

- **New or Revised Fact Sheets**
  These lines of evidence and/or decisions, which were developed during the last listing cycle, are new or have been revised.
- **Original Fact Sheets**
  These lines of evidence and/or decisions were developed during the last listing cycle.

New or Revised Fact Sheets

Delist from 303(d) list (TMDL required list)	Regional Board 4

- **Ballona Creek**
  - Cadmium (33380)
  - Chlordane (32617)
  - DDT (Dichlorodiphenyltrichloroethane) (32717)
  - Dieldrin (33158)
- **Channel Islands Harbor**
  - Lead (42844)
  - Zinc (42376)
- **Coyote Creek**
  - Zinc (32733)
- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Chromium (total) (34075)
- **Echo Park Lake**
  - Copper (33998)
  - Lead (34700)
- **Lake Calabasas**
  - DDT (Dichlorodiphenyltrichloroethane) (42257)
- **Los Angeles River Estuary (Queensway Bay)**
  - Zinc (43337)

- **Los Angeles/Long Beach Inner Harbor**
  - Zinc (33644)

- **Los Angeles/Long Beach Outer Harbor (inside breakwater)**
  - PAHs (Polycyclic Aromatic Hydrocarbons) (33119)

- **Promenade Park Beach**
  - Indicator Bacteria (42266)

- **San Gabriel River Reach 1 (Estuary to Firestone)**
  - Indicator Bacteria (38273)
  - Toxicity (32625)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Copper (33327)
  - Zinc (32705)

- **San Jose Creek Reach 1 (SG Confluence to Temple St.)**
  - Selenium (33931)

- **San Pedro Bay Near/Off Shore Zones**
  - Copper (44434)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (43259)
  - Zinc (42798)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Indicator Bacteria (34307)

- **Santa Monica Bay Offshore/Nearshore**
  - Chlordane (37492)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (32656)

- **Sepulveda Canyon**
  - Ammonia (36981)

- **Walnut Creek Wash (Drains from Puddingstone Res)**
  - Toxicity (42360)

- **Wilmington Drain**
  - Lead (35085)

Delist from 303(d) list (being addressed by USEPA approved TMDL)	Regional Board 4

- **Abalone Cove Beach**
  - Indicator Bacteria (32427)

- **Ballona Creek**
  - Selenium (32566)
  - Zinc (32927)

- **Bluff Cove Beach**

- Indicator Bacteria (32848)

- Cabrillo Beach (Outer)
  - Indicator Bacteria (32486)

- Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)
  - Chlordane (33675)
  - Endosulfan (tissue) (43177)

- Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)
  - Ammonia (36414)

- Coyote Creek
  - Lead (43334)

- Dominguez Channel (lined portion above Vermont Ave)
  - Diazinon (33061)

- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Zinc (sediment) (38512)

- Hermosa Beach
  - Indicator Bacteria (32408)

- Lake Sherwood
  - Ammonia (34406)
  - Organic Enrichment/Low Dissolved Oxygen (43370)

- Leo Carillo Beach (South of County Line)
  - Indicator Bacteria (33000)

- Long Point Beach
  - Indicator Bacteria (33003)

- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
  - Lead (34632)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
  - Ammonia (32913)
  - Copper (33749)
  - Lead (37137)

- Manhattan Beach
  - Indicator Bacteria (32409)

- Nicholas Canyon Beach
  - Indicator Bacteria (33001)

- Point Fermin Park Beach
  - Indicator Bacteria (32429)

- Portuguese Bend Beach
  - Indicator Bacteria (32379)

- **Rio Hondo Reach 2 (At Spreading Grounds)**
  - [Ammonia (32501)]
- **Royal Palms Beach**
  - [Indicator Bacteria (32423)]
- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - [Indicator Bacteria (32640)]
- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - [Ammonia (34352)]

Delist from 303(d) list (being addressed by action other than TMDL)	Regional Board 4

- **Coyote Creek**
  - [Ammonia (37877)]

Do Not Delist from 303(d) list (TMDL required list)	Regional Board 4

- **Alamitos Bay**
  - [Indicator Bacteria (42846)]
- **Ballona Creek**
  - [Cyanide (32970)]
- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - [Indicator Bacteria (32899)]
- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - [Fecal Coliform (32738)]
- **Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)**
  - [Indicator Bacteria (32747)]
- **Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)**
  - [Indicator Bacteria (32697)]
- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - [Indicator Bacteria (32585)]
- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - [Indicator Bacteria (33490)]
- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - [Indicator Bacteria (32561)]
- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - [Indicator Bacteria (32574)]

- Canada Larga (Ventura River Watershed)
  - Indicator Bacteria (32883)

- Casitas, Lake
  - Mercury (40196)

- Castaic Lake
  - Mercury (40191)

- Colorado Lagoon
  - Indicator Bacteria (44721)

- Coyote Creek
  - Diazinon (33100)
  - Toxicity (35132)
  - pH (32677)

- Dominguez Channel (lined portion above Vermont Ave)
  - Ammonia (35134)
  - Indicator Bacteria (32822)

- Dry Canyon Creek
  - Indicator Bacteria (34674)

- Hopper Creek
  - Sulfates (33395)
  - Total Dissolved Solids (33405)

- Lake Lindero
  - Selenium (33135)

- Las Virgenes Creek
  - Benthic Community Effects (44467)
  - Selenium (44477)

- Lindero Creek Reach 2 (Above Lake)
  - Selenium (33006)

- Los Angeles River Estuary (Queensway Bay)
  - PCBs (Polychlorinated biphenyls) (sediment) (33886)

- Los Angeles/Long Beach Outer Harbor (inside breakwater)
  - Toxicity (33930)

- Machado Lake (Harbor Park Lake)
  - Chlordane (tissue) (33013)
  - Dieldrin (tissue) (33643)
  - PCBs (Polychlorinated biphenyls) (tissue) (33285)

- Malibu Creek
  - Benthic Community Effects (44554)
  - Selenium (32716)
  - Sulfates (32394)

- McCoy Canyon Creek
    - Indicator Bacteria (32548)
- McGrath Lake
    - Indicator Bacteria (33512)
- Medea Creek Reach 1 (Lake to Confl. with Lindero)
    - Selenium (34182)
- Medea Creek Reach 2 (Abv Confl. with Lindero)
    - Benthic Community Effects (44495)
    - Selenium (44642)
- Ormond Beach
    - Indicator Bacteria (42278)
- Peninsula Beach
    - Indicator Bacteria (32757)
- Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
    - Chloride (32547)
    - pH (33044)
- Pole Creek (trib to Santa Clara River Reach 3)
    - Sulfates (33347)
- Puddingstone Reservoir
    - Chlordane (44911)
    - DDT (Dichlorodiphenyltrichloroethane) (36272)
    - Mercury (33092)
    - PCBs (Polychlorinated biphenyls) (34832)
- Puente Creek
    - Indicator Bacteria (40779)
- Pyramid Lake
    - Mercury (39684)
- Rincon Beach
    - Indicator Bacteria (42386)
- Rio De Santa Clara/Oxnard Drain No. 3
    - Toxaphene (tissue) (33565)
    - Toxicity (35083)
- San Antonio Creek (Tributary to Ventura River Reach 4)
    - Total Dissolved Solids (39724)
- San Buenaventura Beach
    - Indicator Bacteria (44599)
- San Gabriel River Estuary
    - Nickel (38039)
    - Oxygen, Dissolved (38237)

- San Gabriel River Reach 1 (Estuary to Firestone)
  - pH (33507)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - pH (35237)

- Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)
  - Toxicity (33258)

- Santa Clara River Reach 3 (Freeman Diversion to A Street)
  - Chloride (44278)
  - Total Dissolved Solids (33967)

- Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)
  - Iron (35383)

- Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)
  - Chlorpyrifos (33024)
  - Copper (35886)
  - Diazinon (44805)
  - Iron (36249)
  - Toxicity (33550)

- Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)
  - Sulfates (33366)
  - Total Dissolved Solids (37475)

- Sawpit Creek
  - Indicator Bacteria (32719)

- Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)
  - Chloride (36680)
  - pH (34156)

- Surfers Point at Seaside
  - Indicator Bacteria (36752)

- Topanga Canyon Creek
  - Lead (34158)

- Triunfo Canyon Creek Reach 1
  - Lead (34225)

- Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)
  - Indicator Bacteria (39229)

- Walnut Creek Wash (Drains from Puddingstone Res)
  - Benthic Community Effects (43696)
  - Indicator Bacteria (42989)

- Wheeler Canyon/Todd Barranca
  - Sulfates (32633)

- [Total Dissolved Solids (32647)]

- **Wilmington Drain**
  - Copper (44676)

Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)	Regional Board 4

- **Avalon Beach**
  - Indicator Bacteria (39065)

- **Ballona Creek**
  - Copper (32340)
  - Indicator Bacteria (33769)
  - Lead (34316)
  - Toxicity (34253)

- **Bell Creek**
  - Indicator Bacteria (34439)

- **Big Rock Beach**
  - Coliform Bacteria (32468)

- **Burbank Western Channel**
  - Indicator Bacteria (44606)

- **Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)**
  - Chlordane (tissue) (34564)
  - DDT (tissue & sediment) (39503)
  - Dieldrin (33966)
  - Endosulfan (tissue) (33982)
  - Mercury (33758)
  - PCBs (Polychlorinated biphenyls) (tissue) (34667)

- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Ammonia (33002)
  - Chlordane (39436)
  - DDT (Dichlorodiphenyltrichloroethane) (32727)
  - Dieldrin (34728)
  - Endosulfan (34175)
  - Toxaphene (34561)

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - Ammonia (33436)
  - Chlordane (34193)
  - Chloride (42314)
  - DDT (Dichlorodiphenyltrichloroethane) (33979)
  - Dieldrin (33929)
  - PCBs (Polychlorinated biphenyls) (44060)

- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Chlordane (tissue & sediment) (33351)
  - Chlorpyrifos (tissue) (34402)
  - Diazinon (34729)
  - Dieldrin (tissue) (34531)

- Endosulfan (tissue & sediment) (34641)
- Selenium (34524)
- Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (36487)
- Toxaphene (tissue & sediment) (33712)

- **Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)**
  - Ammonia (32814)
  - Sulfates (42710)
  - Total Dissolved Solids (42961)
  - Toxicity (33983)

- **Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)**
  - Chlorpyrifos (33794)
  - Diazinon (39437)
  - Toxicity (34714)

- **Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)**
  - Sulfates (42815)
  - Total Dissolved Solids (42401)

- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - Nitrogen, Nitrate (32706)
  - Sulfates (42315)
  - Total Dissolved Solids (34332)
  - Toxicity (34046)

- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - Ammonia (34090)
  - Sulfates (42383)
  - Total Dissolved Solids (42411)
  - Toxicity (34145)

- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - Toxaphene (tissue & sediment) (35191)

- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)**
  - Chlordane (tissue) (35158)
  - DDT (tissue) (35174)
  - Sulfates (42412)
  - Total Dissolved Solids (34221)
  - Toxaphene (33959)

- **Canada Larga (Ventura River Watershed)**
  - Oxygen, Dissolved (34288)

- **Channel Islands Harbor Beach**
  - Indicator Bacteria (44192)

- **Colorado Lagoon**
  - Chlordane (38427)
  - DDT (Dichlorodiphenyltrichloroethane) (35144)
  - Dieldrin (38428)
  - Lead (44941)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (43286)
  - PCBs (Polychlorinated biphenyls) (33858)
  - Zinc (36238)

- Compton Creek
  - Copper (36286)
  - Lead (34507)
  - pH (32967)
- Coyote Creek
  - Copper, Dissolved (32520)
  - Indicator Bacteria (38245)
- Coyote Creek, North Fork
  - Indicator Bacteria (40292)
- Dan Blocker Memorial (Coral) Beach
  - Indicator Bacteria (32474)
- Dockweiler Beach
  - Indicator Bacteria (32464)
- Dominguez Channel (lined portion above Vermont Ave)
  - Copper (37227)
  - Lead (37347)
  - Toxicity (43000)
  - Zinc (33114)
- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Benzo(a)anthracene (33810)
  - Benzo(a)pyrene (3,4-Benzopyrene -7-d) (33025)
  - Chlordane (tissue) (34671)
  - Chrysene (C1-C4) (33807)
  - DDT (tissue & sediment) (34076)
  - Lead (34613)
  - PCBs (Polychlorinated biphenyls) (33063)
  - Phenanthrene (33588)
  - Pyrene (33568)
  - Toxicity (43062)
- Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2
  - Chlordane (33912)
  - DDT (Dichlorodiphenyltrichloroethane) (33978)
  - Toxaphene (33913)
  - Toxicity (33660)
- Echo Park Lake
  - PCBs (Polychlorinated biphenyls) (33999)
- El Dorado Lakes
  - Mercury (tissue) (37448)
- Fox Barranca (tributary to Calleguas Creek Reach 6)
  - Sulfates (43740)
  - Total Dissolved Solids (43728)
- Hobie Beach (Channel Islands Harbor)
  - Indicator Bacteria (33239)

- **Royal Palms Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34247)
  - PCBs (Polychlorinated biphenyls) (37733)

- **San Antonio Creek (Tributary to Ventura River Reach 4)**
  - Nitrogen (33348)

- **San Gabriel River Estuary**
  - Copper (38252)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Lead (32995)

- **San Gabriel River Reach 3 (Whittier Narrows to Ramona)**
  - Indicator Bacteria (38851)

- **San Jose Creek Reach 1 (SG Confluence to Temple St.)**
  - Indicator Bacteria (37897)

- **San Jose Creek Reach 2 (Temple to I-10 at White Ave.)**
  - Indicator Bacteria (34242)

- **San Pedro Bay Near/Off Shore Zones**
  - Chlordane (34442)
  - PCBs (Polychlorinated biphenyls) (33722)
  - Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (33721)

- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
  - Ammonia (32846)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - Chloride (32396)
  - Indicator Bacteria (34306)

- **Santa Monica Bay Offshore/Nearshore**
  - DDT (Dichlorodiphenyltrichloroethane) (35166)
  - PCBs (Polychlorinated biphenyls) (33180)

- **Santa Monica Beach**
  - Indicator Bacteria (32401)

- **Topanga Beach**
  - Indicator Bacteria (32578)

- **Trancas Beach (Broad Beach)**
  - Indicator Bacteria (32480)

- **Venice Beach**
  - Indicator Bacteria (32952)

- **Will Rogers Beach**
  - Indicator Bacteria (32965)

Do Not Delist from 303(d) list (being addressed with action other than TMDL) — Regional Board 4

- **Port Hueneme Harbor (Back Basins)**
  - PCBs (Polychlorinated biphenyls) (42748)

Do Not List on 303(d) list (TMDL required list) — Regional Board 4

- **Alamitos Bay**
  - Copper (54822)
  - Toxicity (55141)
  - Zinc (54879)
  - pH (54878)
- **Alhambra Wash**
  - Alkalinity as CaCO3 (55200)
  - Chloride (55204)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (55209)
  - Nitrogen, Nitrite (55293)
  - Oxygen, Dissolved (60207)
  - Sulfates (55195)
  - Temperature, water (56151)
  - pH (55147)
- **Alondria Park Lake**
  - Aldrin (60210)
  - Chlordane (60212)
  - DDT (Dichlorodiphenyltrichloroethane) (60219)
  - Dieldrin (60216)
  - Endosulfan (60218)
  - Endrin (60213)
  - Heptachlor (60214)
  - Heptachlor epoxide (60215)
  - Hexachlorobenzene/ HCB (60221)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60222)
  - Mercury (60223)
  - Mirex (60220)
  - Selenium (60217)
- **Arroyo Seco Reach 3 (above Devils Gate Dam)**
  - Benthic Community Effects (65554)
- **Arroyo Sequit (from confluence of East and West Forks to mouth)**
  - Benthic Community Effects (65655)
  - Oxygen, Dissolved (60209)
  - pH (60208)
- **Avalon Drain**
  - Aluminum (60230)
  - Arsenic (60231)
  - Cadmium (60232)
  - Chromium (60243)
  - Copper (60245)
  - Iron (60249)
  - Lead (60250)

- Hexachlorobenzene/ HCB (60642)
- Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60644)
- Mirex (60645)
- PAHs (Polycyclic Aromatic Hydrocarbons) (60646)
- Selenium (60922)

- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Aldrin (60934)
  - Azinphos-methyl (Guthion) (60936)
  - Bifenthrin (60937)
  - Chloride (61022)
  - Chlorpyrifos (60939)
  - Cyfluthrin (60941)
  - Cyhalothrin, Lambda (60942)
  - Cypermethrin (60943)
  - Dacthal (60946)
  - Deltamethrin (60947)
  - Demeton (60951)
  - Diazinon (60952)
  - Dichlorvos (60959)
  - Dicofol (60960)
  - Disulfoton (60963)
  - Endosulfan sulfate (60965)
  - Endrin (60966)
  - Endrin aldehyde (61007)
  - Esfenvalerate/Fenvalerate (60967)
  - Ethoprop (60969)
  - Fenpropathrin (60970)
  - Heptachlor (60971)
  - Heptachlor epoxide (60972)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60973)
  - Malathion (60974)
  - Methidathion (60991)
  - Methoxychlor (60982)
  - Methyl Parathion (60988)
  - Mirex (60990)
  - Oxygen, Dissolved (61000)
  - Parathion (60992)
  - Permethrin (60993)
  - Phorate (60984)
  - Phosmet (60985)
  - Sulfates (61012)
  - Temperature, water (61002)
  - alpha.-BHC (Benzenehexachloride or alpha-HCH) (61005)
  - beta-BHC (Benzenehexachloride or beta-HCH) (61010)
  - pH (60986)

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - Alkalinity as CaCO3 (61058)
  - Aluminum (61059)
  - Arsenic (61060)
  - Bifenthrin (61061)
  - Cadmium (61062)
  - Chlorpyrifos (61063)
  - Chromium (61064)
  - Copper (61065)
  - Cyfluthrin (61066)
  - Cyhalothrin, Lambda (61067)
  - Cypermethrin (61068)
  - DDD (Dichlorodiphenyldichloroethane) (67335)

- Zinc (61490)
- pH (61520)

- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list), unnamed tributary at Olsen Road**
  - Cyanide (65423)
  - Lead (65424)
  - Zinc (65425)

- **Camarillo Hills Drain (tributary to Revolon Slough)**
  - Azinphos-methyl (Guthion) (61692)
  - Chlordane (61694)
  - Chlorpyrifos (61695)
  - Demeton (61696)
  - Diazinon (61697)
  - Endosulfan (61698)
  - Endrin (61699)
  - Methoxychlor (61700)
  - Methyl Parathion (61704)
  - Metribuzin (61705)
  - Mirex (61707)
  - Pentachlorophenol (PCP) (61706)

- **Canada Larga (Ventura River Watershed)**
  - Ammonia (61708)
  - Temperature, water (61709)

- **Carlisle Canyon Creek**
  - Oxygen, Dissolved (61710)
  - pH (61711)

- **Casitas, Lake**
  - Aldrin (61730)
  - Chlordane (61720)
  - DDT (Dichlorodiphenyltrichloroethane) (61727)
  - Dieldrin (61721)
  - Endosulfan (61723)
  - Endrin (61722)
  - Heptachlor (61732)
  - Heptachlor epoxide (61724)
  - Hexachlorobenzene/ HCB (61733)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (61725)
  - Mirex (61735)
  - PCBs (Polychlorinated biphenyls) (61729)
  - Selenium (61734)

- **Castaic Creek Reach 1 (confluence of Santa Clara River to Castaic Lagoon)**
  - Ammonia (61743)
  - Chlorpyrifos (61738)
  - Diazinon (61740)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (61742)
  - Toxicity (61741)

- **Castaic Lagoon**
  - Aldrin (61745)
  - Chlordane (61751)
  - DDT (Dichlorodiphenyltrichloroethane) (61756)
  - Dieldrin (61762)

- **Los Sauces Creek**
  - Ammonia (64832)
  - Arsenic (64797)
  - Azinphos-methyl (Guthion) (64798)
  - Cadmium (64788)
  - Chlorpyrifos (64831)
  - Copper (64792)
  - Diazinon (64799)
  - Dichlorvos (64800)
  - Dimethoate (64801)
  - Disulfoton (64802)
  - Dyfonate (Fonofos or Fonophos) (64803)
  - Ethoprop (64804)
  - Lead (64793)
  - Malathion (64805)
  - Methidathion (64806)
  - Methyl Parathion (64808)
  - Molinate (64807)
  - Nickel (64794)
  - Oxygen, Dissolved (64834)
  - Parathion (64826)
  - Phorate (64827)
  - Phosmet (64828)
  - Silver (64796)
  - Temperature, water (64835)
  - Terbufos (64829)
  - Thiobencarb/Bolero (64830)
  - Toxicity (64833)
  - Zinc (64795)
  - pH (64836)

- **Machado Lake (Harbor Park Lake)**
  - Aldrin (64843)
  - Endosulfan (64875)
  - Endrin (64876)
  - Heptachlor (64844)
  - Heptachlor epoxide (64884)
  - Hexachlorobenzene/ HCB (64845)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (64881)
  - Mercury (64871)
  - Mirex (64873)
  - Selenium (64872)

- **Madranio Canyon**
  - Ammonia (64911)
  - Arsenic (64891)
  - Azinphos-methyl (Guthion) (64892)
  - Cadmium (64886)
  - Chlorpyrifos (64895)
  - Diazinon (64896)
  - Dichlorvos (64897)
  - Dimethoate (64898)
  - Disulfoton (64899)
  - Dyfonate (Fonofos or Fonophos) (64900)
  - Ethoprop (64901)
  - Lead (64887)
  - Malathion (64902)
  - Methidathion (64903)
  - Methyl Parathion (64904)
  - Molinate (64905)

Santa Clara River Reach 3 (Freeman Diversion to A Street)

- Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)

- Cadmium (67000)
- Chromium (67001)
- Copper (67002)
- Cyhalothrin, Lambda (67012)
- Cypermethrin (67008)
- Deltamethrin (67013)
- Diazinon (36980)
- Endosulfan (67022)
- Endrin (67014)
- Esfenvalerate/Fenvalerate (67009)
- Fenpropathrin (67010)
- Heptachlor epoxide (67017)
- Lead (67003)
- Manganese (67011)
- Mercury (67023)
- Nickel (67004)
- Nitrate/Nitrite (Nitrite + Nitrate as N) (67015)
- Nitrogen, Nitrate (67020)
- Nitrogen, Nitrite (67021)
- Oxygen, Dissolved (67025)
- Permethrin (67032)
- Phosphate (33208)
- Selenium (67005)
- Silver (67006)
- Specific Conductance (36095)
- Sulfates (67027)
- Temperature, water (67026)
- Total Dissolved Solids (67028)
- Toxaphene (67018)
- Zinc (67016)
- pH (67030)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Arsenic (67037)
  - Bifenthrin (67048)
  - Cadmium (67040)
  - Chromium (67043)
  - Cyfluthrin (67049)
  - Cyhalothrin, Lambda (67050)
  - Cypermethrin (67051)
  - DDD (Dichlorodiphenyldichloroethane) (67052)
  - DDE (Dichlorodiphenyldichloroethylene) (67053)
  - DDT (Dichlorodiphenyltrichloroethane) (67055)
  - Deltamethrin (67054)
  - Dieldrin (67056)
  - Endrin (67057)
  - Esfenvalerate/Fenvalerate (67058)
  - Fenpropathrin (67059)
  - Lead (67038)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (67060)
  - Mercury (67041)
  - Methyl Parathion (67061)
  - Nickel (67042)
  - Nitrogen, ammonia (Total Ammonia) (67070)
  - Oxygen, Dissolved (67067)
  - PCBs (Polychlorinated biphenyls) (67062)
  - Permethrin (67063)
  - Phosphate (33848)
  - Selenium (67065)

- [Phorate (63849)]
- Picloram (63850)
- Prometon (Prometone) (63851)
- Prometryn (63852)
- Selenium (63853)
- Silver (63855)
- Simazine (63856)
- Specific Conductivity (63869)
- Sulfates (63871)
- Terbacil (63885)
- Tetrachlorvinphos (63887)
- Thiobencarb/Bolero (63888)
- Total Dissolved Solids (39656)
- Toxaphene (63889)
- Toxicity (63890)
- Zinc (63894)
- alpha.-BHC (Benzenehexachloride or alpha-HCH) (63897)
- beta-BHC (Benzenehexachloride or beta-HCH) (63899)
- delta-BHC (Benzenehexachloride or delta-HCH) (63901)
- pH (63903)

- Walnut Creek Wash (Drains from Puddingstone Res)
  - Bifenthrin (64035)
  - Chlordane (64036)
  - Chlorpyrifos (64037)
  - Cyfluthrin (64038)
  - Cyhalothrin, Lambda (64039)
  - Cypermethrin (64040)
  - DDD (Dichlorodiphenyldichloroethane) (64041)
  - DDE (Dichlorodiphenyldichloroethylene) (64043)
  - DDT (Dichlorodiphenyltrichloroethane) (64044)
  - Deltamethrin (64046)
  - Diazinon (64055)
  - Dieldrin (64061)
  - Endrin (64062)
  - Esfenvalerate/Fenvalerate (64063)
  - Fenpropathrin (64064)
  - Fipronil (64065)
  - Fipronil Sulfide (64066)
  - Fipronil Sulfone (64067)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (64068)
  - Permethrin (64069)

- Westlake Creek
  - Oxygen, Dissolved (64019)
  - pH (64020)

- Westlake Lake
  - Aldrin (64029)
  - Chlordane (64034)
  - DDT (Dichlorodiphenyltrichloroethane) (64145)
  - Dieldrin (64127)
  - Endosulfan (64131)
  - Endrin (64132)
  - Heptachlor (64133)
  - Heptachlor epoxide (64135)
  - Hexachlorobenzene/ HCB (64138)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (64139)
  - Mercury (64140)

- [Arsenic (63321)]
- [Cadmium (63322)]
- [Chromium (63325)]
- [Iron (63326)]
- [Nickel (63327)]
- [Selenium (63329)]

- **Zone Ditch 1 (LA River Watershed)**
  - [Arsenic (63331)]
  - [Cadmium (63333)]
  - [Chromium (63334)]
  - [Copper (63335)]
  - [Indicator Bacteria (63345)]
  - [Lead (63337)]
  - [Mercury (63339)]
  - [Nickel (63340)]
  - [Selenium (63341)]
  - [Silver (63342)]
  - [Zinc (63343)]

- **Zuma Canyon**
  - [Alkalinity as CaCO3 (55754)]
  - [Aluminum (63360)]
  - [Ammonia (63448)]
  - [Arsenic (63361)]
  - [Bifenthrin (63362)]
  - [Cadmium (63407)]
  - [Chromium (63408)]
  - [Copper (63409)]
  - [Cyhalothrin, Lambda (63415)]
  - [Cypermethrin (63416)]
  - [Deltamethrin (63417)]
  - [Esfenvalerate/Fenvalerate (63444)]
  - [Fenpropathrin (63446)]
  - [Iron (63414)]
  - [Lead (63410)]
  - [Manganese (63447)]
  - [Nickel (63411)]
  - [Nitrogen, Nitrate (63449)]
  - [Nitrogen, Nitrite (63450)]
  - [Oxygen, Dissolved (63451)]
  - [Permethrin (63452)]
  - [Selenium (63412)]
  - [Silver (63413)]
  - [Specific Conductivity (63453)]
  - [Sulfates (63454)]
  - [Temperature, water (63455)]
  - [Total Dissolved Solids (63456)]
  - [Toxicity (63457)]
  - [Zinc (63458)]
  - [pH (55751)]

List on 303(d) list (TMDL required list) Regional Board 4

- **Alamitos Bay**
  - [Oxygen, Dissolved (54877)]

- Alhambra Wash
  - Ammonia (60083)
  - Benthic Community Effects (65544)

- Alondria Park Lake
  - PCBs (Polychlorinated biphenyls) (60211)

- Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)
  - Benthic Community Effects (65548)

- Arundell Barranca (Ventura County)
  - Indicator Bacteria (64923)

- Balboa Lake
  - Ammonia (60378)
  - Oxygen, Dissolved (60379)
  - Toxicity (60276)

- Ballona Creek
  - Benthic Community Effects (65656)

- Boulder Creek (Ventura County)
  - Bifenthrin (60530)
  - Chlordane (60531)
  - Nitrogen, Nitrate (60506)
  - Specific Conductivity (60539)
  - Toxicity (60538)

- Bull Creek (Los Angeles County)
  - Ammonia (60597)
  - Toxicity (60592)

- Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)
  - Dimethoate (60961)
  - Specific Conductivity (61028)
  - Total Dissolved Solids (61035)

- Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)
  - Indicator Bacteria (61084)
  - Mercury (61085)

- Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)
  - Bifenthrin (61175)
  - Cyfluthrin (61208)
  - Cypermethrin (61209)
  - Malathion (61199)
  - Mercury (61211)
  - Permethrin (61213)
  - Specific Conductivity (61214)
  - Sulfates (42845)
  - Total Dissolved Solids (42771)

- Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)
  - Nitrogen, Nitrite (33703)

- Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)

- Chlorpyrifos (61517)
- Diazinon (61497)
- Malathion (61529)
- Temperature, water (61523)

- Castaic Lagoon
  - PCBs (Polychlorinated biphenyls) (61757)

- Castaic Lake
  - PCBs (Polychlorinated biphenyls) (61776)

- Compton Creek
  - Iron (62052)

- Coyote Creek
  - Iron (62167)
  - Malathion (62166)

- Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)
  - Copper (62243)
  - Oxygen, Dissolved (62242)

- Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2
  - Bifenthrin (62625)
  - Specific Conductivity (62640)
  - Sulfates (62641)
  - Total Dissolved Solids (62642)

- Elderberry Forebay
  - Dieldrin (62708)
  - PCBs (Polychlorinated biphenyls) (62709)

- Ellsworth Barranca
  - Chlorpyrifos (62845)
  - DDE (Dichlorodiphenyldichloroethylene) (67360)

- Honda Barranca
  - Bifenthrin (63180)
  - DDT (Dichlorodiphenyltrichloroethane) (63181)

- J Street Drain (Ventura County)
  - Trash (63443)

- Javon Canyon
  - Selenium (63524)

- La Vista Drain (Ventura County)
  - Chlordane (63644)
  - Chlorpyrifos (63645)
  - Copper (63643)
  - DDD (Dichlorodiphenyldichloroethane) (63681)
  - DDE (Dichlorodiphenyldichloroethylene) (63682)
  - DDT (Dichlorodiphenyltrichloroethane) (63680)
  - Indicator Bacteria (63679)
  - Mercury (63678)

- Indicator Bacteria (44241)

- Port Hueneme Beach Park
  - Indicator Bacteria (42105)

- Port Hueneme Harbor (Back Basins)
  - Arsenic (65893)
  - Cadmium (65894)
  - Dieldrin (65895)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (65896)

- Potrero Canyon Creek
  - Oxygen, Dissolved (65930)

- Pyramid Lake
  - Chlordane (62840)
  - DDT (Dichlorodiphenyltrichloroethane) (65950)
  - Dieldrin (62841)
  - PCBs (Polychlorinated biphenyls) (65949)

- Rincon Parkway Beach
  - Indicator Bacteria (67331)

- Rio De Santa Clara/Oxnard Drain No. 3
  - Specific Conductivity (66076)
  - Sulfates (66077)
  - Total Dissolved Solids (66078)

- Rio Hondo Reach 2 (At Spreading Grounds)
  - Iron (66110)
  - Oxygen, Dissolved (66113)
  - Toxicity (66146)

- San Gabriel River Estuary
  - Toxicity (66269)

- San Gabriel River Reach 1 (Estuary to Firestone)
  - Temperature, water (66242)

- San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam
  - Temperature, water (66310)

- San Gabriel River Reach 3 (Whittier Narrows to Ramona)
  - Toxicity (32521)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Temperature, water (66408)

- San Jose Creek Reach 2 (Temple to I-10 at White Ave.)
  - Toxicity (66411)

- Santa Clara Drain (Ventura County)
  - Chlordane (66523)
  - Chlorpyrifos (66538)
  - Cypermethrin (66539)

- Specific Conductivity (64538)
- Sulfates (64540)
- Total Dissolved Solids (64542)
- Toxicity (64544)

- **Timber Canyon**
  - Chlorpyrifos (64725)

- **Ventura Harbor: Ventura Keys**
  - Arsenic (67176)
  - Cadmium (67177)
  - Chlordane (67207)
  - DDT (Dichlorodiphenyltrichloroethane) (67211)
  - Dieldrin (67212)
  - Indicator Bacteria (67293)
  - PCBs (Polychlorinated biphenyls) (67271)

- **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)**
  - Temperature, water (66824)

- **Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)**
  - Mercury (63958)
  - Toxicity (63974)

- **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)**
  - Temperature, water (63875)

- **Wheeler Canyon/Todd Barranca**
  - Chlordane (63509)
  - Cypermethrin (63563)
  - DDT (Dichlorodiphenyltrichloroethane) (63592)
  - Specific Conductivity (63585)
  - Toxaphene (63587)
  - Toxicity (67369)

- **Wildlife Lake**
  - Ammonia (66374)
  - Oxygen, Dissolved (66373)

- **Wilmington Drain**
  - Zinc (63330)

List on 303(d) list (being addressed by USEPA approved TMDL) — Regional Board 4

- **Abalone Cove Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (35058)
  - PCBs (Polychlorinated biphenyls) (34339)

- **Aliso Canyon Wash**
  - Copper (32949)
  - Indicator Bacteria (32515)

- **Amarillo Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34340)

- Arroyo Seco Reach 1 (LA River to West Holly Ave.)
  - Indicator Bacteria (35135)

- Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)
  - Indicator Bacteria (34670)

- Artesia-Norwalk Drain
  - Indicator Bacteria (36938)

- Ballona Creek Wetlands
  - Exotic Vegetation (44746)
  - Habitat alterations (34697)
  - Hydromodification (34699)
  - Reduced Tidal Flushing (44747)

- Big Rock Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34441)
  - PCBs (Polychlorinated biphenyls) (34611)

- Bluff Cove Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34721)
  - PCBs (Polychlorinated biphenyls) (34588)

- Bull Creek
  - Indicator Bacteria (43227)

- Cabrillo Beach (Outer)
  - DDT (Dichlorodiphenyltrichloroethane) (44611)
  - PCBs (Polychlorinated biphenyls) (35005)

- Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)
  - DDD (Dichlorodiphenyldichloroethane) (67330)
  - DDE (Dichlorodiphenyldichloroethylene) (67334)
  - Nitrogen, Nitrate (61025)

- Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)
  - Ammonia (61201)
  - Chloride (61177)
  - Nitrogen, Nitrate (61212)

- Carbon Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34248)
  - Indicator Bacteria (44248)
  - PCBs (Polychlorinated biphenyls) (36216)

- Castlerock Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34249)
  - PCBs (Polychlorinated biphenyls) (34250)

- Colorado Lagoon
  - Toxicity (34304)

- Compton Creek
  - Zinc (62054)

- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Copper (33751)
  - Dieldrin (tissue) (34645)

- **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2**
  - Chlorpyrifos (62638)
  - DDD (Dichlorodiphenyldichloroethane) (67337)
  - DDE (Dichlorodiphenyldichloroethylene) (67338)
  - Nitrogen, Nitrate (62626)

- **Echo Park Lake**
  - Algae (34030)
  - Ammonia (34696)
  - Chlordane (62679)
  - Dieldrin (62680)
  - Eutrophic (34698)
  - Odor (34756)
  - Trash (32435)
  - pH (44748)

- **El Dorado Lakes**
  - Algae (34440)
  - Ammonia (38445)
  - Copper (34610)
  - Eutrophic (34720)

- **Escondido Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (39085)
  - Indicator Bacteria (34279)
  - PCBs (Polychlorinated biphenyls) (35052)

- **Fox Barranca (tributary to Calleguas Creek Reach 6)**
  - Chlordane (63031)
  - DDE (Dichlorodiphenyldichloroethylene) (67361)
  - DDT (Dichlorodiphenyltrichloroethane) (63029)

- **Honda Barranca**
  - Chlordane (63179)
  - Chlorpyrifos (63146)
  - DDD (Dichlorodiphenyldichloroethane) (67363)
  - DDE (Dichlorodiphenyldichloroethylene) (67364)

- **Inspiration Point Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34834)
  - PCBs (Polychlorinated biphenyls) (44913)

- **La Costa Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34835)

- **Lake Calabasas**
  - Ammonia (34334)
  - Eutrophic (34222)
  - Organic Enrichment/Low Dissolved Oxygen (34223)
  - pH (39032)

- **Lake Lindero**

- Los Angeles River Estuary (Queensway Bay)
  - Copper (64264)

- Los Angeles River Reach 2 (Carson to Figueroa Street)
  - Indicator Bacteria (34201)

- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
  - Indicator Bacteria (65099)

- Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)
  - Copper (64632)
  - Indicator Bacteria (34190)

- Los Angeles/Long Beach Inner Harbor
  - Beach Closures (34207)
  - Benthic Community Effects (34208)
  - Benzo(a)pyrene (3,4-Benzopyrene -7-d) (42749)
  - Chrysene (C1-C4) (42671)

- Machado Lake (Harbor Park Lake)
  - ChemA (tissue) (34362)

- Malaga Cove Beach
  - DDT (Dichlorodiphenyltrichloroethane) (35165)
  - PCBs (Polychlorinated biphenyls) (35182)

- Malibu Beach
  - DDT (Dichlorodiphenyltrichloroethane) (36696)

- Malibu Creek
  - Sedimentation/Siltation (34815)

- Malibu Lagoon Beach (Surfrider)
  - DDT (Dichlorodiphenyltrichloroethane) (34239)
  - PCBs (Polychlorinated biphenyls) (34258)

- McCoy Canyon Creek
  - Nitrate (37996)

- McGrath Lake
  - Chlordane (34166)

- McGrath Lake Agricultural Drain
  - Chlordane (62199)
  - DDT (Dichlorodiphenyltrichloroethane) (62201)

- Medea Creek Reach 1 (Lake to Confl. with Lindero)
  - Sedimentation/Siltation (34180)
  - Trash (38861)

- Medea Creek Reach 2 (Abv Confl. with Lindero)
  - Sedimentation/Siltation (34244)
  - Trash (38862)

- Nicholas Canyon Beach
  - DDT (Dichlorodiphenyltrichloroethane) (37686)
  - PCBs (Polychlorinated biphenyls) (35169)

- Palo Verde Shoreline Park Beach
  - Pesticides (35170)

- Paradise Cove Beach
  - DDT (Dichlorodiphenyltrichloroethane) (37498)
  - PCBs (Polychlorinated biphenyls) (44650)

- Peck Road Park Lake
  - Lead (44679)
  - Odor (34130)
  - Organic Enrichment/Low Dissolved Oxygen (34189)
  - Trash (32390)

- Point Fermin Park Beach
  - DDT (Dichlorodiphenyltrichloroethane) (35384)
  - PCBs (Polychlorinated biphenyls) (34210)

- Portuguese Bend Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34211)
  - PCBs (Polychlorinated biphenyls) (34353)

- Puerco Beach
  - DDT (Dichlorodiphenyltrichloroethane) (44912)
  - PCBs (Polychlorinated biphenyls) (43257)

- Rio De Santa Clara/Oxnard Drain No. 3
  - ChemA (tissue) (33195)
  - DDD (Dichlorodiphenyldichloroethane) (66079)
  - DDE (Dichlorodiphenyldichloroethylene) (66080)
  - Nitrogen, Nitrate (66075)
  - PCBs (Polychlorinated biphenyls) (35082)

- Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)
  - Indicator Bacteria (35084)

- Rio Hondo Reach 2 (At Spreading Grounds)
  - Indicator Bacteria (66155)

- Robert H. Meyer Memorial Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34286)
  - PCBs (Polychlorinated biphenyls) (34287)

- San Gabriel River Estuary
  - Indicator Bacteria (67332)

- Santa Clara River Estuary
  - ChemA (34243)
  - Indicator Bacteria (35722)
  - Nitrogen, Nitrate (35380)
  - Toxaphene (36274)

- Santa Clara River Reach 3 (Freeman Diversion to A Street)

- [Indicator Bacteria (66965)]

- **Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)**
  - Indicator Bacteria (44532)

- **Santa Fe Dam Park Lake**
  - Copper (34321)
  - Lead (44765)
  - pH (35145)

- **Santa Monica Bay Offshore/Nearshore**
  - Trash (34119)

- **Sea Level Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (35902)
  - PCBs (Polychlorinated biphenyls) (36557)

- **Topanga Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (36309)
  - PCBs (Polychlorinated biphenyls) (34157)

- **Torrance Carson Channel**
  - Copper (44916)
  - Lead (34159)

- **Trancas Beach (Broad Beach)**
  - DDT (Dichlorodiphenyltrichloroethane) (36325)
  - PCBs (Polychlorinated biphenyls) (34224)

- **Tujunga Wash (LA River to Hansen Dam)**
  - Indicator Bacteria (35044)

- **Ventura River Estuary**
  - Algae (35061)

- **Verdugo Wash Reach 1 (LA River to Verdugo Rd.)**
  - Copper (42106)
  - Indicator Bacteria (35010)

- **Verdugo Wash Reach 2 (Above Verdugo Road)**
  - Indicator Bacteria (39840)

- **Whites Point Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (39841)
  - PCBs (Polychlorinated biphenyls) (44279)

- **Zuma Beach (Westward Beach)**
  - DDT (Dichlorodiphenyltrichloroethane) (44589)
  - PCBs (Polychlorinated biphenyls) (37494)

REGIONAL BOARD 4 - LOS ANGELES REGION

- **New or Revised Fact Sheets**
  These lines of evidence and/or decisions, which were developed during the last listing cycle, are new or have been revised.
- **Original Fact Sheets**
  These lines of evidence and/or decisions were developed during the last listing cycle.

ORIGINAL FACT SHEETS

Delist from 303(d) list (TMDL required list)	Regional Board 4

- **Arroyo Seco Reach 1 (LA River to West Holly Ave.)**
  - Excess Algal Growth (32855)
- **Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)**
  - Excess Algal Growth (32354)
- **Ashland Avenue Drain**
  - Indicator Bacteria (33906)
  - Organic Enrichment/Low Dissolved Oxygen (34056)
  - Toxicity (33740)
- **Ballona Creek**
  - ChemA (32784)
  - PCBs (Polychlorinated biphenyls) (32743)
  - Silver (32417)
  - pH (32951)
- **Bluff Cove Beach**
  - Beach Closures (34417)
- **Burbank Western Channel**
  - Cadmium (32938)
  - Excess Algal Growth (34342)
  - Scum/Foam-unnatural (34503)
  - Taste and odor (34575)
- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Boron (42741)
  - Excess Algal Growth (34416)
- **Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)**
  - Dacthal (sediment) (34396)
  - Excess Algal Growth (34541)
- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - Excess Algal Growth (33816)
- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - Excess Algal Growth (34542)

- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - Excess Algal Growth (39590)

- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Excess Algal Growth (34456)

- **Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)**
  - Excess Algal Growth (34457)

- **Carbon Beach**
  - Beach Closures (32854)

- **Coyote Creek**
  - Abnormal Fish Histology (Lesions) (33373)
  - Excess Algal Growth (36718)

- **Dockweiler Beach**
  - Beach Closures (37565)

- **Dominguez Channel (lined portion above Vermont Ave)**
  - Aldrin (34620)
  - ChemA (34426)
  - Chlordane (34427)
  - Chromium (34430)
  - DDT (Dichlorodiphenyltrichloroethane) (36720)
  - Dieldrin (42330)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (34431)
  - PCBs (Polychlorinated biphenyls) (34429)

- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Aldrin (34428)
  - ChemA (34751)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (37949)

- **Escondido Beach**
  - Beach Closures (32451)

- **Flat Rock Point Beach Area**
  - Beach Closures (32943)

- **Inspiration Point Beach**
  - Beach Closures (32992)

- **La Costa Beach**
  - Beach Closures (32361)

- **Las Tunas Beach**
  - Beach Closures (32577)

- **Los Angeles Harbor - Consolidated Slip**
  - Nickel (33361)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (37793)

- **Los Angeles Harbor - Inner Cabrillo Beach Area**

- San Gabriel River Reach 1 (Estuary to Firestone)
  - Abnormal Fish Histology (Lesions) (32512)
  - Excess Algal Growth (33326)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Excess Algal Growth (32645)

- San Jose Creek Reach 2 (Temple to I-10 at White Ave.)
  - Excess Algal Growth (32691)

- San Pedro Bay Near/Off Shore Zones
  - Chromium (42525)

- Sea Level Beach
  - Beach Closures (32948)

- Topanga Beach
  - Beach Closures (34301)

- Torrance Beach
  - Beach Closures (35175)

- Trancas Beach (Broad Beach)
  - Beach Closures (34364)

- Tujunga Wash (LA River to Hansen Dam)
  - Scum/Foam-unnatural (34379)
  - Taste and odor (36753)

- Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)
  - Pumping (34271)

- Verdugo Wash Reach 1 (LA River to Verdugo Rd.)
  - Excess Algal Growth (32931)

- Verdugo Wash Reach 2 (Above Verdugo Road)
  - Excess Algal Growth (32932)

- Wilmington Drain
  - Ammonia (34349)

- Zuma Beach (Westward Beach)
  - Beach Closures (32372)

Delist from 303(d) list (being addressed by USEPA approved TMDL)	Regional Board 4

- Burbank Western Channel
  - Ammonia (32774)

- Malaga Cove Beach
  - Indicator Bacteria (32565)

- **Point Dume Beach**
  - Indicator Bacteria (34118)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - Nitrate and Nitrite (32484)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Ammonia (32462)

Do Not Delist from 303(d) list (TMDL required list) Regional Board 4

- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Sedimentation/Siltation (34228)

- **Compton Creek**
  - Benthic Community Effects (44498)

- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Ammonia (34669)

- **Los Angeles Harbor - Inner Cabrillo Beach Area**
  - DDT (Dichlorodiphenyltrichloroethane) (33085)
  - PCBs (Polychlorinated biphenyls) (33642)

- **Los Angeles River Estuary (Queensway Bay)**
  - Toxicity (37684)

- **Los Cerritos Channel**
  - Ammonia (44252)
  - Chlordane (sediment) (33506)

- **Machado Lake (Harbor Park Lake)**
  - DDT (tissue) (33211)

- **Malibu Lagoon**
  - Benthic Community Effects (42364)
  - pH (32543)

- **Marina del Rey Harbor - Back Basins**
  - DDT (Dichlorodiphenyltrichloroethane) (34405)
  - Dieldrin (34355)

- **McGrath Lake**
  - Dieldrin (sediment) (33442)
  - PCBs (Polychlorinated biphenyls) (sediment) (32981)

- **Pole Creek (trib to Santa Clara River Reach 3)**
  - Total Dissolved Solids (33055)

- **San Pedro Bay Near/Off Shore Zones**
  - Toxicity (34701)

- **Ventura River Estuary**
  - Indicator Bacteria (32663)

Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL) — Regional Board 4

- **Ballona Creek Estuary**
  - Toxicity (39181)
- **Los Angeles Harbor - Fish Harbor**
  - PCBs (Polychlorinated biphenyls) (44513)
- **Los Angeles/Long Beach Inner Harbor**
  - Toxicity (34495)

Do Not Delist from 303(d) list (being addressed with action other than TMDL) — Regional Board 4

- **Port Hueneme Harbor (Back Basins)**
  - DDT (Dichlorodiphenyltrichloroethane) (36221)

Do Not List on 303(d) list (TMDL required list) — Regional Board 4

- **Aliso Canyon Wash**
  - Diazinon (32856)
  - Zinc (32402)
- **Artesia-Norwalk Drain**
  - Copper (32461)
- **Balboa Lake**
  - Lead (60257)
- **Ballona Creek**
  - Ammonia (32758)
- **Ballona Creek Estuary**
  - Dieldrin (38268)
- **Big Sycamore Canyon**
  - Benthic Community Effects (66082)
- **Bouquet Canyon Creek (below Bouqet Reservoir)**
  - Benthic Community Effects (66084)
- **Bull Creek**
  - Toxicity (39159)
- **Bull Creek (Los Angeles County)**

- [Fluoride (37930)]
- [Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (35757)]
- [Nitrogen, Nitrite (32337)]
- [Pentachlorophenol (PCP) (37184)]

- **Coyote Creek, North Fork**
  - Copper (39223)
  - Zinc (39542)

- **Dominguez Channel (lined portion above Vermont Ave)**
  - Aluminum (33261)
  - Cadmium (33501)
  - Iron (36719)
  - Manganese (33476)
  - Mercury (32728)
  - Silver (32670)
  - Thallium (38761)
  - Turbidity (33344)

- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Mercury (33676)

- **Elizabeth Lake Canyon**
  - Benthic Community Effects (66179)

- **Encinal Canyon Creek**
  - Benthic Community Effects (66183)

- **Escondido Canyon Creek**
  - Benthic Community Effects (66190)

- **Hammond Canyon**
  - Benthic Community Effects (66195)

- **Hollywood Beach**
  - Indicator Bacteria (42922)

- **La Vista Drain (Ventura County)**
  - Benthic Community Effects (66222)

- **Lachusa Canyon Creek**
  - Benthic Community Effects (66223)
  - Sulfates (33321)

- **Las Flores Canyon Creek**
  - Benthic Community Effects (66224)

- **Las Virgenes Creek, East**
  - Benthic Community Effects (66225)
  - Specific Conductivity (63997)

- **Latigo Canyon Creek**
  - Sulfates (33139)

- **Lindero Creek Reach 2 (Above Lake)**

- Malibu Lagoon
    - Antimony | Arsenic | Benzo(a)anthracene | Benzo(a)pyrene (3,4-Benzopyrene -7-d) | Chrysene (C1-C4) | Copper | Dibenz[a,h]anthracene | Lead | Phenanthrene | Pyrene | Zinc (36054)
    - Toxicity (42897)

- Mandeville Canyon Creek
    - Sulfates (33688)

- Marie Canyon Creek
    - Sulfates (33209)

- Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)
    - Benthic Community Effects (66258)
    - Indicator Bacteria (39636)

- Matilija Creek Reach 2 (Above Reservoir)
    - Benthic Community Effects (66260)
    - Indicator Bacteria (39659)

- Matilija Creek, North Fork
    - Benthic Community Effects (66262)
    - Indicator Bacteria (39875)
    - Total Dissolved Solids (39224)

- McGrath Lake Agricultural Drain
    - Demeton (62089)

- Oxnard Beach Park
    - Indicator Bacteria (42348)

- Palo Comado Creek
    - Benthic Community Effects (66268)

- Pena Canyon Creek
    - Sulfates (33210)

- Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
    - Benthic Community Effects (66875)

- Pole Creek (trib to Santa Clara River Reach 3)
    - Ammonia (62829)
    - Benthic Community Effects (66876)

- Puerco Canyon Creek
    - Sulfates (33911)

- Ramirez Canyon Creek
    - Sulfates (33096)

- Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)
    - Benthic Community Effects (66877)

- Rose Valley Creek
    - Benthic Community Effects (66878)

- **Rustic Canyon Creek**
  - Sulfates (33437)

- **San Antonio Creek (Tributary to Ventura River Reach 4)**
  - Benthic Community Effects (66879)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Chloride (32628)
  - Nitrogen, Nitrite (38365)
  - Total Dissolved Solids (32629)

- **San Gabriel River Reach 4 (Morris Dam to Ramona Blvd)**
  - Benthic Community Effects (66881)

- **San Gabriel River, West Fork**
  - Benthic Community Effects (66882)

- **San Jose Creek Reach 2 (Temple to I-10 at White Ave.)**
  - Benthic Community Effects (66883)

- **San Jose Creek, unnamed tributary at Rose Hill (Los Angeles County)**
  - Benthic Community Effects (66885)

- **San Nicolas Canyon Creek**
  - Sulfates (33438)

- **Santa Ana Creek, North Fork**
  - Benthic Community Effects (66886)

- **Santa Clara River Estuary**
  - Arsenic (36060)

- **Santa Clara River Estuary Beach-Surfers Knoll**
  - Indicator Bacteria (42384)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - Chlorodibromomethane (35726)
  - DDT (Dichlorodiphenyltrichloroethane) (35969)
  - Dichlorobromomethane (36115)
  - PCBs (Polychlorinated biphenyls) (37728)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Benthic Community Effects (44626)
  - Bis(2ethylhexyl)phthalate (DEHP) (35899)
  - Chlordane (67064)
  - Chlorodibromomethane (36390)
  - Dichlorobromomethane (36189)
  - Nitrate and Nitrite (37051)
  - Specific Conductance (36575)

- **Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)**
  - Benthic Community Effects (66887)

- **Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**
  - [Benthic Community Effects (66888)]
- **Santa Clara River Reach 2**
  - [Benthic Community Effects (66889)]
- **Santa Clara River Reach 4B (Piru Creek to Blue Cut Gaging Station)**
  - [Benthic Community Effects (66890)]
- **Santa Monica Canyon**
  - [Sulfates (33440)]
- **Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)**
  - [Benthic Community Effects (66891)]
- **Santa Ynez Canyon**
  - [Sulfates (33257)]
- **Sawpit Creek**
  - [Aluminum (33269)]
  - [Iron (33270)]
- **Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)**
  - [Benthic Community Effects (66893)]
- **Solstice Canyon Creek**
  - [Benthic Community Effects (66894)]
- **Stokes Creek**
  - [Benthic Community Effects (66895)]
- **Sullivan Canyon Creek**
  - [Sulfates (34444)]
- **Sweetwater Canyon Creek**
  - [Chloride (34445)]
  - [Sulfates (36142)]
- **Topanga Canyon Creek**
  - [Benthic Community Effects (66896)]
- **Trancas Canyon Creek**
  - [Chloride (34497)]
  - [Sulfates (36161)]
- **Triunfo Canyon Creek Reach 1**
  - [Invasive Species (43301)]
- **Tujunga Wash (LA River to Hansen Dam)**
  - [Benthic Community Effects (66898)]
  - [Toxicity (42808)]

Tuna Canyon Creek
  - Nitrate (42329)
  - Sulfates (37306)

- Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)
  - Indicator Bacteria (39258)
  - Total Dissolved Solids (39564)

- Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)
  - Indicator Bacteria (39961)

- Walnut Creek Wash (Drains from Puddingstone Res)
  - Copper (35700)
  - Lead (36401)

- Wiley Canyon
  - Benthic Community Effects (66902)

- Zuma Canyon
  - Benthic Community Effects (66903)

List on 303(d) list (TMDL required list)	Regional Board 4

- Arroyo Seco Reach 1 (LA River to West Holly Ave.)
  - Benthic Community Effects (44553)

- Artesia-Norwalk Drain
  - Selenium (35869)

- Burbank Western Channel
  - Cyanide (32817)
  - Selenium (43271)

- Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)
  - Sedimentation/Siltation (35163)
  - Trash (43407)

- Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)
  - Sedimentation/Siltation (34346)
  - Trash (41500)

- Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)
  - Sedimentation/Siltation (35074)

- Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)
  - Sedimentation/Siltation (34278)

- Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)
  - Sedimentation/Siltation (34461)

- Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)
  - Sedimentation/Siltation (34462)
  - Trash (36548)

- Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)
  - Sedimentation/Siltation (35125)
- Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)
  - Trash (43452)
- Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)
  - Trash (43453)
- Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)
  - Trash (43400)
- Canada Larga (Ventura River Watershed)
  - Total Dissolved Solids (39621)
- Compton Creek
  - Indicator Bacteria (40596)
- Coyote Creek, North Fork
  - Selenium (40415)
- Crystal Lake
  - Organic Enrichment/Low Dissolved Oxygen (35133)
- Dominguez Channel (lined portion above Vermont Ave)
  - Benthic Community Effects (66165)
- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Benthic Community Effects (38511)
  - Indicator Bacteria (34672)
- Elizabeth Lake
  - Eutrophic (34264)
  - Organic Enrichment/Low Dissolved Oxygen (34384)
  - pH (34266)
- Javon Canyon
  - Benthic Community Effects (66198)
- Lake Hughes
  - Algae (34270)
  - Eutrophic (34330)
  - Odor (35009)
- Lake Lindero
  - Chloride (33005)
  - Specific Conductivity (35057)
- Las Virgenes Creek
  - Invasive Species (42701)
- Legg Lake

- **Munz Lake**
  - Eutrophic (34263)

- **Padre Juan Canyon**
  - Benthic Community Effects (66264)

- **Port Hueneme Pier**
  - PCBs (Polychlorinated biphenyls) (36256)

- **Puddingstone Reservoir**
  - Organic Enrichment/Low Dissolved Oxygen (34831)

- **Puente Creek**
  - Selenium (40656)

- **Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)**
  - Toxicity (33392)

- **Rio Hondo Reach 2 (At Spreading Grounds)**
  - Coliform Bacteria (35152)
  - Cyanide (44719)

- **San Antonio Creek (Tributary to Ventura River Reach 4)**
  - Indicator Bacteria (39972)

- **San Gabriel River Estuary**
  - Dioxin (38323)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Cyanide (38135)

- **San Gabriel River, East Fork**
  - Benthic Community Effects (66361)

- **San Jose Creek Reach 1 (SG Confluence to Temple St.)**
  - Total Dissolved Solids (36679)
  - Toxicity (33989)

- **Santa Clara River Estuary**
  - Toxicity (35422)

- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
  - Toxicity (34614)

- **Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**
  - Boron (36292)
  - Specific Conductance (37476)

- **Santa Monica Bay Offshore/Nearshore**
  - Toxicity (34120)

- **Santa Monica Canyon**
  - Lead (44822)

- Sawpit Creek
  - Bis(2ethylhexyl)phthalate (DEHP) (32627)

- Solstice Canyon Creek
  - Invasive Species (43291)

- Torrance Carson Channel
  - Indicator Bacteria (36310)

- Triunfo Canyon Creek Reach 1
  - Benthic Community Effects (66897)
  - Mercury (35059)
  - Sedimentation/Siltation (44766)

- Triunfo Canyon Creek Reach 2
  - Benthic Community Effects (43610)
  - Lead (36162)
  - Mercury (35242)
  - Sedimentation/Siltation (35060)

- Ventura Harbor: Ventura Keys
  - Coliform Bacteria (35045)

- Ventura Marina Jetties
  - DDT (Dichlorodiphenyltrichloroethane) (33138)
  - PCBs (Polychlorinated biphenyls) (33187)

- Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)
  - Algae (44533)
  - Benthic Community Effects (66899)

- Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)
  - Benthic Community Effects (66900)
  - Water Diversion (33817)

- Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)
  - Benthic Community Effects (66901)
  - Pumping (44793)
  - Water Diversion (44534)

- Walnut Creek Wash (Drains from Puddingstone Res)
  - pH (35243)

- Westlake Lake
  - Lead (36569)

- Wilmington Drain
  - Indicator Bacteria (34234)

List on 303(d) list (being addressed by USEPA approved TMDL) — Regional Board 4

- Aliso Canyon Wash

- DDT (tissue) (34604)
- Diazinon (39696)
- Dieldrin (tissue) (33268)
- Endosulfan (tissue) (39311)
- Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue) (35116)
- Nitrate as Nitrate (NO3) (40304)
- PCBs (Polychlorinated biphenyls) (tissue) (32631)
- Toxaphene (tissue & sediment) (39730)

- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - ChemA (tissue) (34500)
  - Chlordane (34715)
  - Chloride (42816)
  - Chlorpyrifos (34218)
  - DDT (tissue) (34074)
  - Diazinon (39748)
  - Dieldrin (33674)
  - Endosulfan (tissue) (35126)
  - PCBs (Polychlorinated biphenyls) (33944)
  - Toxaphene (tissue & sediment) (39574)

- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - Ammonia (33927)
  - ChemA (tissue) (37471)
  - Chloride (36639)
  - Chlorpyrifos (33957)
  - DDT (tissue) (36215)
  - Diazinon (34637)
  - Dieldrin (33616)
  - Nitrogen, Nitrite (32562)
  - PCBs (Polychlorinated biphenyls) (34638)
  - Sulfates (42818)
  - Total Dissolved Solids (35161)
  - Toxicity (34060)

- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Ammonia (33656)
  - ChemA (tissue) (34407)
  - Chlordane (34639)
  - DDT (tissue) (36413)
  - Dieldrin (35078)
  - Endosulfan (tissue) (36227)
  - PCBs (Polychlorinated biphenyls) (34380)
  - Sulfates (35162)
  - Total Dissolved Solids (32637)
  - Toxaphene (tissue & sediment) (34251)
  - Toxicity (34748)

- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)**
  - Dieldrin (33958)
  - PCBs (Polychlorinated biphenyls) (34679)

- **Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)**
  - Ammonia (33015)
  - ChemA (tissue) (39073)
  - Chlordane (33923)
  - Chloride (37624)
  - DDT (tissue) (33872)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
    - Nutrients (Algae) (44326)
    - Trash (32389)
- Los Angeles River Reach 5 (within Sepulveda Basin)
    - Nutrients (Algae) (35160)
    - Trash (33672)
- Lunada Bay Beach
    - Indicator Bacteria (34394)
- Machado Lake (Harbor Park Lake)
    - Algae (34305)
    - Ammonia (42416)
    - Eutrophic (42417)
    - Odor (42262)
    - Trash (35181)
- Malibou Lake
    - Algae (43284)
    - Eutrophic (44726)
    - Organic Enrichment/Low Dissolved Oxygen (42673)
- Malibu Beach
    - Indicator Bacteria (32363)
- Malibu Creek
    - Indicator Bacteria (34350)
    - Nutrients (Algae) (42674)
    - Scum/Foam-unnatural (36747)
    - Trash (44833)
- Malibu Lagoon
    - Eutrophic (34816)
    - Indicator Bacteria (34351)
    - Swimming Restrictions (42857)
    - Viruses (enteric) (42854)
- Marina del Rey Harbor - Back Basins
    - Chlordane (36798)
    - Indicator Bacteria (32347)
    - Lead (36797)
    - PCBs (Polychlorinated biphenyls) (37217)
    - Zinc (34605)
- McCoy Canyon Creek
    - Selenium, Total (34123)
- Medea Creek Reach 1 (Lake to Confl. with Lindero)
    - Algae (38948)
    - Indicator Bacteria (33975)
- Medea Creek Reach 2 (Abv Confl. with Lindero)
    - Algae (43372)
    - Indicator Bacteria (34383)

List on 303(d) list (being addressed by action other than TMDL) — Regional Board 4

Regional Board 4 - Los Angeles Region References

- Comments
- Data and Information
- QA Document
- Standards and Guidelines

Comments

Parent #	Ref #	Description	Date Received
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

320 W. 4th Street
Los Angeles, CA 90013
(213) 576-6600

Public Notice No. 17-005
Meeting: April 6, 2017

NOTICE OF PUBLIC HEARING AND BOARD MEETING
9:00 A.M., Thursday, April 6, 2017

Metropolitan Water District of Southern California
(Board Room)
700 North Alameda Street
Los Angeles, California 90012

Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired waterbodies in the Los Angeles Region

NOTICE IS HEREBY GIVEN that the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) will hold a public hearing to consider proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region (303(d) list). On April 6, 2017, the Los Angeles Water Board is expected to take formal action on proposed revisions to the 303(d) list and to hear further information on water quality assessments in the Los Angeles Region per Clean Water Act Section 305(b). Proposed revisions to the 303(d) list, supporting documentation, and a proposed Board Resolution, are available on the Los Angeles Water Board's website at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

Interested persons are invited to submit written comments and evidence on the proposed action. Written comments and evidence must be received by the Los Angeles Water Board by **5:00 p.m. on March 9, 2017** for consideration. Failure to comply with these requirements is grounds for the Los Angeles Water Board to refuse to admit the proposed written comment or exhibit into evidence (California Code of Regulations, Title 23, Section 649.4). Interested persons are encouraged to submit written comments and evidence in Microsoft Word format by e-mail to: losangeles@waterboards.ca.gov. Please indicate in the subject line of the email, **"Comment Letter – Revisions to the Los Angeles Region 303(d) list."** Written comments and evidence sent by mail should be addressed to:

California Regional Water Quality Control Board
Los Angeles Region
Attention: Jun Zhu
320 West Fourth Street, Suite 200
Los Angeles California, 90013

Interested persons may also make oral comments at the hearing. To the extent possible, oral comments should summarize any written comments. Time limitations on oral comments will be imposed by the Board.

Information regarding item continuances, deadline adjustments, and venue changes are available on the Los Angeles Water Board's website: http://www.waterboards.ca.gov/losangeles/. Board agendas are available ten days before the Board hearing date. For additional information, contact Jun Zhu at (213) 576-6681.

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I, **Maria Rodriguez**, hereby certify that the **Ventura County Star Newspaper** has been adjudged a newspaper of general circulation by the Superior Court of California, County of Ventura within the provisions of the Government Code of the State of California, printed in the City of Camarillo, for circulation in the County of Ventura, State of California; that I am a clerk of the printer of said paper; that the annexed clipping is a true printed copy and publishing in said newspaper on the following dates to wit:

Feb. 08, 2017

I, Maria Rodriguez certify under penalty of perjury, that the foregoing is true and correct.

Dated this Feb. 08, 2017; in Camarillo, California, County of Ventura.

MR

Maria Rodriguez
(Signature)

CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD
LOS ANGELES REGION

320 W. 4th Street
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(213) 576-6600

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Interested persons are invited to submit written comments and evidence on the proposed action. Written comments and evidence must be received by the Los Angeles Water Board by 5:00 p.m. on March 9, 2017 for consideration. Failure to comply with these requirements is grounds for the Los Angeles Water Board to refuse to admit the proposed written comment or exhibit into evidence (California Code of Regulations, Title 23, Section 649.4). Interested persons are encouraged to submit written comments and evidence in Microsoft Word format by e-mail to: losangeles@waterboards.ca.gov. Please indicate in the subject line of the email, "Comment Letter – Revisions to the Los Angeles Region 303(d) list." Written comments and evidence sent by mail should be addressed to:

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LOS ANGELES, CA 90013 USA

Los Angeles Times
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PROOF OF PUBLICATION
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STATE OF ILLINOIS
County of Cook

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the action for which the attached notice was published.

I am a principal clerk of the Los Angeles Times, which was adjudged a newspaper of general circulation on May 21, 1952, Cases 598599 for the City of Los Angeles, County of Los Angeles, and State of California. Attached to this Affidavit is a true and complete copy as was printed and published on the following date(s):

Feb 08, 2017

I certify (or declare) under penalty of perjury
under the laws of the State of California that the foregoing is true and correct.

Dated at Chicago, Illinois
on this 8 day of 2, 2017.

[signature]

435 N. Michigan Ave.
Chicago, IL 60611

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION

320 W. 4th Street
Los Angeles, CA 90013
(213) 576-6600

Public Notice No. 17-005
Meeting: April 6, 2017

NOTICE OF PUBLIC HEARING AND BOARD MEETING
9:00 A.M., Thursday, April 6, 2017

Metropolitan Water District of Southern California
(Board Room)
700 North Alameda Street
Los Angeles,
California 90012

Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired waterbodies in the Los Angeles Region

NOTICE IS HEREBY GIVEN that the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) will hold a public hearing to consider proposed revisions to the Clean Water Act Section 303(d) list of Impaired waterbodies in the Los Angeles Region (303(d) list). On April 6, 2017, the Los Angeles Water Board is expected to take formal action on proposed revisions to the 303(d) list and to hear further information on water quality assessments in the Los Angeles Region per Clean Water Act Section 305(b). Proposed revisions to the 303(d) list, supporting documentation, and a proposed Board Resolution, are available on the Los Angeles Water Board's website at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

Interested persons are invited to submit written comments and evidence on the proposed action. Written comments and evidence must be received by the Los Angeles Water Board by **5:00 p.m. on March 9, 2017** for consideration. Failure to comply with these requirements is grounds for the Los Angeles Water Board to refuse to admit the proposed written comment or exhibit into evidence (California Code of Regulations, Title 23, Section 649.4). Interested persons are encouraged to submit written comments and evidence in Microsoft Word format by e-mail to: losangeles@waterboards.ca.gov. Please indicate in the subject line of the email, **"Comment Letter – Revisions to the Los Angeles Region 303(d) list."** Written comments and evidence sent by mail should be addressed to:

California Regional Water Quality Control Board
Los Angeles Region
Attention: Jun Zhu
320 West Fourth Street, Suite 200
Los Angeles California, 90013

Interested persons may also make oral comments at the hearing. To the extent possible, oral comments should summarize any written comments. Time limitations on oral comments will be imposed by the Board.

Information regarding item continuances, deadline adjustments, and venue changes are available on the Los Angeles Water Board's website: h[illegible]w.waterboards.ca.gov/losangeles/. Board agendas are [illegible] ten days before the Board hearing date. For additional information, contact Jun Zhu at (213) 576-6681.
2/8/17

16401 Paramount Boulevard
Paramount, CA 90723
562.663.6850 phone
562-634-8216 fax

GWMA
GATEWAY WATER MANAGEMENT AUTHORITY

www.gatewaywater.org

Los Angeles Gateway Region
Integrated Regional Water Management
Joint Powers Authority

February 9, 2017

ATTN: Jun Zhu

Ms. Renee Purdy
Section Chief, Regional Programs
California Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Re: Comment Letter Revisions to the Los Angeles Region 303(d)

Dear Ms. Purdy:

The Gateway Water Management Authority Board of Directors, at its regular Board Meeting on February 9, 2017, unanimously voted to submit a formal letter requesting an extension of time to provide written comments on the proposed revisions to the 303(d) list. The significance of the changes is critical and has far-reaching implications.

Thus, we respectfully request that the 30-day deadline to submit comments be extended to 60 days. We understand that the hearing is scheduled for April 6th, and hope that this request will extend the hearing date as well. This is an extremely important issue that requires our full attention and it is our hope that our request will be granted.

Sincerely,

Christopher S. Cash
Chair

cc: GWMA Board Members
Lower Los Angeles River Upper Reach 2 Watershed Group
Lower Los Angeles River Watershed Group
Lower San Gabriel River Watershed Group
Los Cerritos Channel Watershed Group

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

February 10, 2017
File No. 37370.40.4A

Via Electronic Mail
Dr. Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Request for Extension of Comment Deadline for the Los Angeles Region 303(d) List

The Sanitation Districts of Los Angeles County (Sanitation Districts) appreciate the opportunity to provide comments to the California Regional Water Quality Control Board Los Angeles Region (Regional Board) on the proposed revisions to the Los Angeles Region 303(d) list. The Sanitation Districts provide wastewater and solid waste management services to approximately 5.6 million people in 78 cities and unincorporated areas of Los Angeles County, and are authorized to manage stormwater and urban runoff in support of local jurisdictions' compliance with Municipal Separate Storm Sewer System (MS4) NPDES permits. The Sanitation Districts are comprised of 24 individual special districts that own and operate eleven wastewater treatment facilities, many of which discharge to water bodies within the Los Angeles region that are included in the proposed 303(d) list. As such, revisions to the Los Angeles Region 303(d) list have the potential to impact our agency.

The Notice of Hearing and Opportunity to Comment on the proposed revisions was released on February 8, 2017, with comments due to the Regional Board on March 9, 2017 and a public hearing on April 6, 2017. The magnitude of the proposed changes is significant. Based on a very preliminary review of the proposed revisions, we have identified approximately 200 proposed new listings and have noticed discrepancies in the listings that will need to be resolved. Based on the identified issues, we believe that the March 9 deadline for receipt of comments will not provide adequate time for our agency to thoroughly review the revisions, engage with Regional Board staff as appropriate, and formulate well-supported comments. Therefore, we request an extension of the comment period from 30 to at least 90 days and a delay in the public hearing, to allow for adequate time to review and submit our comments regarding the proposed revisions.

The Sanitation Districts support the Regional Board's intent to revise the Los Angeles Region 303(d) list through updated assessments of the region's surface waters and would like to ensure that the proposed revisions are reviewed and analyzed thoroughly prior to adoption. In the interest of protecting and restoring water quality of surface waters in our region, the Sanitation Districts believe that an extension of the comment period is entirely appropriate and necessary.

If you have any additional questions or would like additional information on the issues identified above, please do not hesitate to contact the undersigned at (562) 908-4288, extension 2801 or aheil@lacsd.org.

Very truly yours,

Ann T. Heil
Section Head
Reuse and Compliance

ATH:NM:nm

Los Angeles County Division
League of California Cities®

February 13, 2017

Dr. Jun Zhu *Via Electronic Mail*
California Regional Water Quality Control Board Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Re: Request for Extension of Comment Deadline for the Los Angeles Region 303(d) List

The Los Angeles County Division of the League of California Cities® (Division), representing 86 cities in the county appreciates the opportunity for our member cities to comment to the California Regional Water Quality Board of Los Angeles Region (Regional Board) on the proposed revisions to the Los Angeles Region 303(d) list.

Every city in our Division makes significant investments to comply with their Municipal Separate Storm Sewer System (MS4) permit therefore the proposed revisions to the 303(d) list may have significant impacts to cities. Given the amount of staff resources and technical expertise required to fully review and comment on the proposed revisions, we respectfully request that the 30-day deadline to submit comments to the Regional Board is extended to at least 90 days. We also request a delay in the public hearing date currently scheduled for April 6, 2017.

Thank you for consideration of this request. If you have any additional questions or would like additional information, please contact Kristine Guerrero at (626) 716-0076.

Sincerely,

Jess A. Talamantes
President
Los Angeles County Division
League of California Cities®

CITY OF GLENDORA CITY HALL (626) 914-8200
116 East Foothill Blvd., Glendora, California 91741
www.ci.glendora.ca.us

February 14, 2017

Mr. Sam Unger
California Regional Water Quality Control Board
Los Angeles Region
320 W. 411 Street, Suite 200
Los Angeles, CA 90013

Re: Request for 90-Day Extension of Comment Deadline on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region

Dear Mr. Unger:

On behalf of the City of Glendora, I am writing to request a 90-day extension to the public comment period for the proposed revision to the Clean Water Act Section 303(d) listing for the Los Angeles Region.

Glendora seeks to address important issues impacting our community, including access to safe and clean drinking water, and proper treatment of stormwater and urban runoff. We take seriously the protection of the environment and our responsibilities therein. We join other cities located within the San Gabriel Valley that are taking special interest in regulatory decisions that affect interpretation of the Clean Water Act. A majority of our cities are Municipal Separate Sewer Stormwater System (MS4) permittees which discharge to water bodies within the Los Angeles region that are included in the proposed changes to the 303(d) list. As such, revisions have the potential to significantly impact our city.

The Notice of Hearing and Opportunity to Comment on the proposed revisions was released on February 8, 2017, with comments due to the Regional Board on March 9, 2017 and a public hearing on April 6, 2017. The magnitude of the proposed changes is significant. Your staff has identified 200 proposed new listings[1]. We believe that the March 9 deadline for receipt of comments will not provide adequate time for us to thoroughly evaluate the revisions, engage with Regional Board staff, and formulate well-supported comments. Therefore, we request an extension of the comment period from 30 to at least 90 days and a delay in the public hearing.

Glendora supports the Regional Board's intent to revise the Los Angeles Region 303(d) list and would like to ensure that the proposed revisions are reviewed and analyzed thoroughly prior to adoption.

Sincerely,

CITY OF GLENDORA

Chris Jeffers
City Manager

[1] 2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region: Staff Report, Los Angeles Regional Water Quality Control Board, February 2017

CITY OF LOS ANGELES

CALIFORNIA

ERIC GARCETTI
MAYOR

BUREAU OF SANITATION

ENRIQUE C. ZALDIVAR
DIRECTOR

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CHIEF OPERATING OFFICER

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ALEXANDER E. HELOU
LEO N. MARTINEZ
ROBERT B. IRVIN (ACTING)
ASSISTANT DIRECTORS

1149 SOUTH BROADWAY, 9TH FLOOR
LOS ANGELES, CA 90015
TEL: (213) 485-2210
FAX: (213) 485-2979
WWW.LACITYSAN.ORG

February 14, 2017

Renee Purdy, Section Chief, Regional Programs
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Attention: Dr. Jun Zhu, Environmental Scientist

REQUEST FOR ADDITIONAL TIME TO SUBMIT COMMENTS ON PROPOSED REVISIONS TO CLEAN WATER ACT SECTION 303(d) LIST FOR THE LOS ANGELES REGION

In the "NOTICE OF HEARING AND OPPORTUNITY TO COMMENT" issued by the Los Angeles Regional Water Quality Control Board (LARWQCB), dated February 8, 2017, the LARWQCB required that all written comments on the proposed revisions to the Clean Water Act Section 303(d) list and the 2016 Integrated Report be received by the LARWQCB no later than 5:00 p.m. on March 9, 2017. The City of Los Angeles (City) has initiated its review process, but will need more time to complete its review of the supporting documentation and to prepare comments. As stated in the LARWQCB's accompanying "Staff Report," dated February 2017, there are ". . . a significant number of changes to the Los Angeles Region's 303(d) list . . . ," 200 proposed new listings, and 40 proposed delistings.

In consideration of the large volume of proposed changes, the City respectfully requests a 90-day extension for the submittal of written comments.

If you require additional information, please contact Hassan Rad, Division Manager of the Regulatory Affairs Division at (213) 847-5186.

Sincerely,

ENRIQUE C. ZALDIVAR, Director
LA Sanitation

Los Angeles County Division
League of California Cities

February 14, 2017

Via Electronic Mail

Dr. Jun Zhu
California Regional Water Quality Control Board,
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Subject: **Request for Extension of Comment Deadline for the Los Angeles Region 303(d) List**

Dear Dr. Zhu:

I am writing on behalf of the Elected Officials Steering Committee, which was assembled by the California Contract Cities Association and the League of California Cities, Los Angeles County Division in 2015 to work collaboratively on storm water issues and which is currently comprised of representatives from the Cities of Claremont, Culver City, Glendora, Hermosa Beach, Long Beach, Rolling Hills Estates, Rosemead, Santa Clarita, Signal Hill, South Gate, South Pasadena, and Torrance. The Steering Committee appreciates the opportunity to provide comments to your Board on the proposed revisions to the Los Angeles Region 303(d) list. Our members, along with our constituents, are very interested in issues related to water quality and water quality regulations in the Region. As such, we request that the Los Angeles Regional Water Board extend the March 9, 2017 comment deadline on the proposed 2016 303(d) List revisions.

The Los Angeles Regional Water Board released a Notice of Hearing and Opportunity to Comment on the proposed 303(d) list revisions on February 8, 2017. The Draft 2016 Section 303(d) and 305 (b) Integrated Report for Public Review includes a Staff Report and eight (8) lengthy appendices. The Steering Committee understands that there is a significant number of proposed changes, including approximately 200 proposed new listings, some of which have been identified by other agencies as requiring corrections. The Steering Committee believes that a 30-day review period will be insufficient to allow Permittees to review the new list in a meaningful way and to prepare comments for your Board. We request that the Regional Water Board extend the comment period to a more appropriate 90-day duration and that the public hearing be rescheduled for a date following that 90-day review period.

The Elected Officials Steering Committee appreciates the work undertaken by the Regional Water Board in the updating of the 303(d) list. In order for the list to receive appropriate review, an extension of the review period is necessary.

Thank you for the opportunity to provide these comments and for your consideration of our request to extend the review period.

Sincerely,

LARRY FORESTER
CO-CHAIR, ELECTED OFFICIALS STEERING COMMITTEE
Council Member, City of Signal Hill

Cc: Elected Officials Steering Committee Members
Renee Purdy
Sam Unger

LF/jm

CITY OF RANCHO PALOS VERDES
PUBLIC WORKS DEPARTMENT

February 17, 2017

Renee Purdy, Regional Programs Section Chief
California Regional Water Quality Control Board, Los Angeles Region
320 W. 4th Street
Los Angeles, CA 90013

SUBJECT: Request for 90-day Comment Period for Review of Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and 2016 Integrated Report

Dear Ms. Purdy,

On February 8, 2017, the Regional Board distributed a notice of opportunity to comment on the proposed revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. It is understood that the comment deadline is March 9, 2017 (i.e. 30-day comment period) and a public hearing will be held on April 6, 2017.

The Palos Verdes Peninsula (PVP) Watershed Management Group (WMG) requests a 90-day comment period (i.e. until May 9, 2017) in order to fully review the lengthy amount of information that the Board has provided for the proposed revisions. Several new listings are suggested that would impact the PVP WMG, and the participating members feel that 30 days is not an adequate amount of time to thoroughly review the data.

We appreciate your time and consideration of our request.

Sincerely,

Natalie Chan

Natalie Chan, PE, QSD

City of Rancho Palos Verdes

On behalf of the Palos Verdes Peninsula Watershed Management Group

Cc: Greg Grammar – City of Rolling Hills Estates
Ken Rukavina – City of Palos Verdes Estates
Bill Johnson – Los Angeles County Flood Control District

City of Manhattan Beach

Public Works Department

3621 Bell Avenue, Manhattan Beach, CA 90266
Phone: (310) 802-5313 Fax: (310) 802-5301

February 21, 2017

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Via email: losangeles@waterboards.ca.gov

Attn: Kangshi Wang, Water Resources Control Engineer (Kangshi.Wang@waterboards.ca.gov)
Jun Zhu, Environmental Scientist (jzhu@waterboards.ca.gov)

Subject: Request for extension of time for written public comments on proposed revisions to the Los Angeles Region 303(d) list

Dear Mr. Unger:

On February 8, 2017, the Los Angeles Regional Water Quality Control Board (Regional Board) issued a 30-day Notice of Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. According to this notice, the comment deadline is March 9, 2017 and the public hearing is scheduled for April 6, 2017.

The City of Manhattan Beach respectfully requests on behalf of the Beach Cities Watershed Management Group, including the cities of Hermosa Beach, Redondo Beach and Torrance, that the deadline for submittal of written comments on the Los Angeles Region's draft 2016 Section 303(d) and 305(b) Integrated report be extended by an additional sixty (60) days to May 9, 2017 and that the public hearing be postponed until after this date. There are numerous changes proposed in the Integrated Report for both the Santa Monica Bay and Dominguez Channel water bodies that affect the members of the Beach Cities Watershed Management Group. Additional time is essential for our city staffs to review the extensive data and numerous documents associated with the Integrated report so that we may provide salient comment and recommendations.

Your prompt response to this request would be greatly appreciated.

Sincerely,

Stephanie Katsouleas

Stephanie Katsouleas, P.E.
Director of Public Works

Copies:
Andrew Brozyna, City of Hermosa Beach
Ted Semaan, City of Redondo Beach
Robert Beste, City of Torrance

SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

February 23, 2017

VIA EMAIL to:
losangeles@waterboards.ca.gov, Jun.Zhu@wasterboards.ca.gov, LB.Nye@waterboards.ca.gov, sunger@waterboards.ca.gov and rpurdy@waterboards.ca.gov

Dr. Jun Zhu and Dr. L. B. Nye
Los Angeles Regional Water Quality Control Board
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

Re: Comment Letter – Revisions to the Los Angeles Region 303(d) list

Dear Dr. Zhu and Dr. Nye:

The Southern California Alliance of Publicly Owned Treatment Works (SCAP) represents over 80 public agencies that provide essential water supply and wastewater treatment to nearly 19 million people in Los Angeles, Orange, San Diego, Santa Barbara, Riverside, San Bernardino and Ventura counties. SCAP's wastewater members provide environmentally sound, cost-effective management of more than two billion gallons of wastewater each day and, in the process, convert wastes into resources such as recycled water and biogas. Many SCAP member agencies discharge to water bodies within the Los Angeles region that are included in the proposed 303(d) list. Revisions to the Los Angeles Region 303(d) list have the potential to impact our member agencies.

SCAP appreciates the opportunity to provide comments to the California Regional Water Quality Control Board Los Angeles Region (Regional Board) on the proposed revisions to the Los Angeles Region 303(d) list. The Notice of Hearing and Opportunity to Comment on the proposed revisions was released on February 8, 2017, with comments due to the Regional Board on March 9, 2017 and a public hearing on April 6, 2017. The magnitude of the proposed changes is significant. Based on a preliminary review of the proposed revisions, we have identified approximately 200 proposed new listings. There also appear to be some discrepancies in the listings that will need to be investigated and resolved. Based on the issues described above, we believe that the March 9 deadline for receipt of comments will not provide adequate time for our member agencies to thoroughly review the revisions, engage with Regional Board staff as appropriate, and prepare well-supported comments. Therefore, we formally request an extension of the comment period from 30 days to at least 90 days and a delay in the public hearing, to allow for adequate time to review and submit comments regarding the proposed revisions. SCAP is in full support of the Regional Board's intent to revise the Los Angeles Region 303(d) list through updated assessments of the region's surface waters and would like to ensure that the proposed revisions are reviewed and analyzed thoroughly prior to adoption. In the interest of creating meaningful and implementable policies for protecting and restoring water quality of surface waters in the Los Angeles region, SCAP believes that an extension of the comment period is essential.

SCAP greatly appreciates the Regional Board's attention to this request.

Sincerely,

Steve Jepsen, Executive Director

Los Angeles Regional Water Quality Control Board

February 24, 2017

RE: NOTICE OF EXTENSION OF COMMENT DEADLINE AND CHANGE OF BOARD MEETING DATE FOR THE 2016 LOS ANGELES REGION CLEAN WATER ACT SECTION 303(d) LIST OF IMPAIRED WATERS

To Whom It May Concern,

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) has received several letters requesting an extension of the deadline for written comments on the draft 2016 Los Angeles Region Clean Water Act Section 303(d) list of impaired waters. Although the Los Angeles Water Board is compelled to follow the timeline for the 2014-2016 Integrated Report set by the State Water Resources Control Board (State Water Board), we understand the challenge of making a thorough review of proposed changes to the 303(d) list within the allowed time frame. Therefore, the Los Angeles Water Board, to accommodate these requests to the extent possible, is extending the comment deadline for the draft 2016 Los Angeles Region 303(d) list from March 9, 2017 to March 30, 2017. In addition, the Los Angeles Water Board meeting date at which the 303(d) list will be considered is changed from April 6, 2017 to May 4, 2017.

The Los Angeles Water Board is scheduled to consider the Los Angeles Region 303(d) list at its regularly scheduled board meeting on:

Date:	Thursday, May 4, 2017
Time:	9:00 a.m.
Place:	Metropolitan Water District of Southern California 700 North Alameda Street Los Angeles, CA, 90012

Please check the Los Angeles Water Board's website (http://www.waterboards.ca.gov/losangeles/) for the most up-to-date public hearing date and location as they are subject to change.

This new comment deadline will provide interested stakeholders a 51-day period to submit written comments prior to the Los Angeles Water Board meeting on May 4, 2017. Interested stakeholders will also have a 30-day period to submit written comments to the State Water Board after the Los Angeles Water Board's action at the May 4th Board meeting. This 30-day period provides additional review time and the opportunity to request that the State Water Board review specific listing or delisting recommendations acted upon by the Los Angeles Water Board. In addition, the State Water Board will provide another 30-day comment period so that stakeholders may comment on any changes proposed by State Water Board staff to the Los Angeles Water Board-approved 303(d) list prior to its consideration of this 303(d) list along with five other Regional Water Board-approved lists. Lastly, stakeholders will have an opportunity to comment to U.S. EPA Region IX prior to its final decision on the state's 303(d) list.

We are aware that, in several instances, *Appendix A*, the *Proposed Updates to the 303(d) List*, has not fully captured all of the new listing and delisting decisions that are detailed in *Appendix G*, the *Fact Sheets*, due to system and clerical errors. The Los Angeles Water Board staff is currently working with the State Water Board staff to address the issues causing this in the California Water Quality Assessment Database (CalWQA). Appendix G does, however, capture all of the new listing and delisting decisions that are proposed.

The Los Angeles Water Board welcomes all comments on the draft 2016 Los Angeles Regional 303(d) list during this public comment period and will provide our response to comments and a revised 2016 Los Angeles Region 303(d) list after the public comment period closes on March 30, 2017. The draft 2016 Los Angeles Regional 303(d) list is available at
http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

We also acknowledge the hard work among many in the regulated community and other stakeholders to improve the water quality in the Los Angeles region and we look forward to working together to achieve further water quality improvement. If you have any questions, please contact Dr. L.B. Nye at (213) 576-6785 or Dr. Jun Zhu at (213) 576-6681.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Offer

cc: Dr. Ed Hernandez, Senate District 22, California State Senate
Christopher Cash, Chair, Gateway Water Management Authority
Natalie Chan, City of Rancho Palos Verdes
Larry Forester, Council Member, City of Signal Hill/Co-Chair, Elected Official Steering Committee, Los Angeles County Division, League of California Cities
Ann Heil, Section Head, County Sanitation Districts of Los Angeles County
Stephanie Katsouleas, Directoro of Public Works, City of Manhattan Beach
Chris Jeffers, City Manager, City of Glendora
Steve Jepsen, Executive Director, Southern California Alliance of Publicly Owned Treatment Works
Jess Talamantes, President, Los Angeles County Division, League of California Cities
Enrique Zaldivar, Director, Bureau of Sanitation, City of Los Angeles

Lyris Name: 303(d)
2/24/17

DATEJOINED_	EMAILADDR_	FULLNAME_
1/18/2002 0:00	marym@water.ca.gov	Mary M. Miller
2/3/2002 0:00	javiergcardenas@hotmail.com	Javier G. Cardenas
5/23/2002 0:00	sgreen@lacsd.org	Sharon Green
6/20/2002 0:00	patrick.covert@valero.com	Patrick M. Covert
7/17/2002 0:00	lgallardo@waterboards.ca.gov	Laura Gallardo
8/1/2002 0:00	collins-6666@msn.com	J. Roger Collins
8/5/2002 0:00	robert_wu@dot.ca.gov	Bob Wu
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10/30/2003 0:00	kathleen.enve@verizon.net	Kathleen Mcgowan
4/2/2004 13:13	llarsen@rbf.com	Laura Larsen
8/18/2004 15:31	jccarmody2002@yahoo.com	John Carmody
8/26/2004 12:56	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
11/19/2004 10:52	srojas@newhall.com	Sam Rojas
12/1/2004 14:54	JEndicott@aei-casc.com	Jeff Endicott
12/2/2004 15:22	kwong@semprautilities.com	Karen Wong
1/6/2005 15:15	tbilezikjian@rbf.com	Tanya Bilezikjian
2/28/2005 9:05	earl.lapensee@rcslade.com	Earl LaPensee
2/28/2005 10:16	kris@scap1.org	Kris Whisenhunt
2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 14:01	arigg@pvestates.org	Allan Rigg
2/28/2005 14:44	jhuff@wpinc.com	John Huff
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2/28/2005 16:10	sarinamoraleschoate@santafesprings.org	Sarina Morales-Choate
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3/1/2005 7:20	cinciong@ladpw.org	Carrie Inciong
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3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson
3/1/2005 11:07	bmichaelis@ci.san-dimas.ca.us	Blaine Michaelis
3/1/2005 11:45	MLansdell@ci.gardena.ca.us	Mitchell Lansdell
3/1/2005 14:49	biniguez@bellflower.org	Bernardo Iniguez
3/1/2005 15:07	jranells@ci.la-verne.ca.us	JR Ranells
3/2/2005 9:44	susanstark10@sbcglobal.net	Susan Stark
3/2/2005 9:47	Ronald.Sheets@OjaiSan.org	Ronald Sheets
3/2/2005 12:01	bottorffm@verizon.net	Ron Bottorff
3/2/2005 13:42	dlippman@lvmwd.com	david lippman
3/2/2005 16:00	hashimoto.janet@epa.gov	Janet Hashimoto
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3/2/2005 16:53	jhunter@jlha.net	John Hunter

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11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 16:05	ann.demartini@gmail.com	Ann DeMartini
11/10/2011 10:16	epi@riousa.com	David Light
11/10/2011 11:00	cchiu@dtsc.ca.gov	Christine Chiu
11/11/2011 7:40	hawthornenursery@yahoo.com	Kei Nakai
11/12/2011 10:30	ltyko@msn.com	leonard m tyko
11/13/2011 14:47	ranchorecuerdo@gmail.com	Cate Austin
11/14/2011 9:17	Darren.Brumback@noaa.gov	Darren Brumback
11/14/2011 12:32	vcastro@covinaca.gov	Vivian Castro
11/14/2011 14:29	rick.bush@noaa.gov	Rick Bush
11/15/2011 14:36	kristin.mull@noaa.gov	Kristin Mull
11/15/2011 15:20	srigg@ci.vernon.ca.us	Scott Rigg
11/16/2011 10:12	bilwk@aol.com	Camille E. Held
11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/21/2011 16:41	grant@ci.ojai.ca.us	Greg Grant
11/23/2011 8:45	melanie_beck@nps.gov	Melanie Beck
11/23/2011 11:41	mgarcia@tvmwd.com	Mario Garcia
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12/6/2011 21:20	michael.mooradian@ecobilitycorp.com	Michael Mooradian
12/7/2011 14:53	pauldebusschere@gmail.com	Paul DeBusschere
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
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2/13/2012 16:55	srapoport@waterboards.ca.gov	Shana Rapoport
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
2/28/2012 8:46	bdouglas@naturalsystemsutilities.com	Bruce Douglas
3/5/2012 15:02	jtorres@ci.vernon.ca.us	Jerrick Torres
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
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3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
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11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/21/2012 15:07	Hyginus.Mmeje@Lacity.org	Hyginus Mmeje
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2/10/2014 9:01	gatkinson@mansonconstruction.com	George Atkinson
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2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
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3/14/2014 16:29	fred@soundpathtech.com	Fred C. DeMetz Sr.
3/20/2014 8:13	kmiddleton@glacvcd.org	Kelly Middleton
4/1/2014 19:29	cynthia.gabaldon@cgrme.com	Cynthia Gabaldon
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/11/2014 16:06	amousavi@infeng.co	Aidan Mousavi
4/22/2014 16:32	gperson@ccp.csus.edu	Grace Person
4/25/2014 13:08	carlson@mcandc.com	Stephen Carlson
5/13/2014 9:07	flopez@harris-assoc.com	Frank Lopez
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari

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5/29/2014 11:29	george.muehleck@urs.com	George Muehleck
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6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/11/2014 20:39	Econard@counsel.lacounty.gov	Erik Conard
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
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7/7/2014 9:19	stormwater1@live.com	Dianne Franks
7/9/2014 7:12	ana.deanda@longbeach.gov	Ana DeAnda
7/10/2014 15:54	jdyer@nrdc.org	Johanna Dyer
7/31/2014 9:31	jgondek@geiconsultants.com	John Gondek
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8/18/2014 9:10	scottquady@vrsd.com	Scott Quady
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
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9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
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10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
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11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/15/2014 9:42	kmorris@hermosabch.org	Kristy Morris
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
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1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/6/2015 20:11	susan.damron@ca.rr.com	Susan Damron
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
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2/2/2015 9:00	stephen.opot@lacity.org	Stephen Opot
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
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2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
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6/7/2011 20:38	jfries@counsel.lacounty.gov	Judith Fries
6/11/2011 22:08	humanhealthrisk@gmail.com	Daniel K. Lee
6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
6/15/2011 17:04	jholtz@quinncompany.com	James Holtz
7/1/2011 13:19	edwardc@westbasin.org	Edward Caldwell
8/4/2011 8:42	jbrown@malibucity.org	Jennifer Brown
8/17/2011 11:33	wynesta@earthlink.net	Wynesta Dale

8/19/2011 12:06	renee.purdy@waterboards.ca.gov	Renee Purdy
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/23/2011 8:51	zoe.carlson@ventura.org	Zoe Carlson
8/24/2011 13:35	toddfpeterson@gmail.com	todd f peterson
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
8/29/2011 14:08	Julie_Carver@ci.pomona.ca.us	Julie Carver
10/17/2011 16:22	kkunysz@mwdh2o.com	Kathy Kunysz
11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/6/2011 11:56	lilykaye@hotmail.com	Lily Kaye
11/7/2011 11:35	gary@parkwater.com	Gary R. Lynch
11/7/2011 11:43	lgrossberg@ci.vernon.ca.us	Leonard Grossberg
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/10/2011 11:00	cchiu@dtsc.ca.gov	Christine Chiu
11/11/2011 7:40	hawthornenursery@yahoo.com	Kei Nakai
11/14/2011 9:17	Darren.Brumback@noaa.gov	Darren Brumback
11/14/2011 12:32	vcastro@covinaca.gov	Vivian Castro
11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/15/2011 15:20	srigg@ci.vernon.ca.us	Scott Rigg
11/16/2011 10:12	bilwk@aol.com	Camille E. Held
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
12/1/2011 15:36	danielle.sakai@bbklaw.com	Danielle Sakai
12/6/2011 21:20	michael.mooradian@ecobilitycorp.com	Michael Mooradian
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/22/2011 16:15	klinker@anaheim.net	Keith Linker
12/27/2011 9:08	johnnym@agrx.com	John Morse
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2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 12:48	lclyde@waterboards.ca.gov	Lauren Clyde
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
3/5/2012 15:02	jtorres@ci.vernon.ca.us	Jerrick Torres
3/8/2012 9:59	kdjbio@gmail.com	Karen Jones
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
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3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
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3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/5/2012 14:48	boutwin@waterboards.ca.gov	Brandi Outwin-Beals
4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
5/22/2012 9:51	don.zdeba@iwvwd.com	Don Zdeba
5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
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7/21/2012 16:48	ffederico@ioes.ucla.edu	Felicia Federico
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11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/20/2012 16:02	betsye@lwa.com	Betsy Elzufon
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1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
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3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
4/17/2013 12:40	bbondy@calleguas.com	Bryan Bondy
4/24/2013 20:58	christiankiillkkaa@gmail.com	Christian Kiillkkaa
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2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
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2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/14/2014 16:29	fred@soundpathtech.com	Fred C. DeMetz Sr.
3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
3/27/2014 16:16	clai@waterboards.ca.gov	Ching-Piau Lai
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 16:32	gperson@ccp.csus.edu	Grace Person
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5/1/2014 14:15	cwhite1@wm.com	Charles White
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5/27/2014 16:55	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/29/2014 11:29	george.muehleck@urs.com	George Muehleck
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/11/2014 20:39	Econard@counsel.lacounty.gov	Erik Conard
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
6/25/2014 11:28	Melanie.Tory@ladwp.com	Melanie Tory
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/10/2014 15:54	jdyer@nrdc.org	Johanna Dyer
7/31/2014 9:31	jgondek@geiconsultants.com	John Gondek
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
11/18/2014 7:06	bob.sun@ladwp.com	Bob Sun
11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:25	geoff@brosseau.us	Geoff Brosseau
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/2/2014 15:05	lisa@rclwa.org	Lisa Lopez
12/12/2014 13:42	tmoorhouse@cleanlake.com	Tom Moorhouse
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 14:51	dtsai@waterboards.ca.gov	
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor

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1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/19/2015 9:44	croncw@cdmsmith.com	charles cron
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
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1/29/2015 15:57	serge.haddad@ladwp.com	Serge Haddad
2/2/2015 9:00	stephen.opot@lacity.org	Stephen Opot
2/2/2015 12:48	samick@rma.org	Sarah Amick
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/16/2015 16:00	mbelen.bernal@gmail.com	Belen Bernal
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
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4/17/2015 20:16	larrygilmour@gmail.com	Lawrence Gilmour
4/20/2015 15:22	tiffany.smith@clowvalve.com	Tiffany Smith
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4/29/2015 12:23	kmarkarian@lcf.ca.gov	Kris Markarian
4/29/2015 16:16	geraldine.trivedi@redondo.org	Geraldine Trivedi
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/25/2015 13:13	sue@wspa.org	Sue Gornick
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
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7/2/2015 10:07	chris.speelman@gerdau.com	Chris Speelman
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
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10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
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12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
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1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
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2/25/2016 11:00	charles.herbertson@culvercity.org	Charles D. Herbertson
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3/21/2016 7:09	croldan@elmonteca.gov	Cesar Roldan
3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
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9/9/2016 13:21	ghooper@mnwd.com	GREGG HOOPER
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10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/19/2016 13:28	monishabrown@lacsd.org	Monisha Brown
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11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/6/2016 13:26	matthew.cohen@waterboards.ca.gov	Matt Cohen
12/6/2016 13:27	erica.key@waterboards.ca.gov	Erica Key
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
12/31/2016 17:06	woonhoe.kim@waterboards.ca.gov	Woonhoe Kim
1/8/2017 9:23	edm@malibuonline.com	Eugene Donald Michael
1/16/2017 9:27	sbeck@mbcnet.net	Shane Beck
1/19/2017 0:49	steven.westhoff@waterboards.ca.gov	Steve Westhoff
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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2/10/2017 15:46	marcelo.garbiero@arcadis.com	Marcelo Garbiero
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek

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5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
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6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
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8/21/2013 11:58	deborah.deets@lacity.org	deborah deets
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10/2/2013 12:23	emmanuel.riclet@gmail.com	Emmanuel Riclet
10/27/2013 19:22	Lynne@scope.org	Lynne Plambeck
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
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2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
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4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:33	rhino0026@yahoo.com	John Parent
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/28/2012 12:50	ggallis@lacsd.org	George Gallis
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/5/2012 14:48	boutwin@waterboards.ca.gov	Brandi Outwin-Beals

4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/18/2012 15:39	smccraven@toddengineers.com	Sally McCraven
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
5/15/2012 13:35	vcuevas@waterboards.ca.gov	Veronica Cuevas
5/22/2012 9:51	don.zdeba@iwvwd.com	Don Zdeba
5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/30/2012 13:01	MeredithClement@kennedyjenks.com	Meredith Clement
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/12/2012 19:28	roche20@earthlink.net	WILLIAM ROCHE
6/15/2012 13:49	sandym@lwa.com	Sandy Mathews
6/18/2012 8:26	evelyn.cortez-davis@ladwp.com	Evelyn Cortez-Davis
6/18/2012 10:11	rosalba.santana@ladwp.com	Rosalba Santana
6/26/2012 10:07	eekdahl@waterboards.ca.gov	Erik Ekdahl
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/2/2012 12:15	jszytel@wsc-inc.com	Jeffery Szytel
7/3/2012 12:51	swaterman@wsc-inc.com	Spencer Waterman
7/4/2012 13:20	justin.dutmers@honeywell.com	Justin Dutmers
7/5/2012 14:06	crholguin@yahoo.com	claudia holguin
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/17/2012 13:59	cgeorge@malibucity.org	Craig George
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/29/2012 8:24	ggreene@cwecorp.com	Gerald Greene
8/30/2012 13:16	cgallon@waterboards.ca.gov	Celine Gallon
9/11/2012 15:52	mmotto@geosyntec.com	Megan Otto
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
9/27/2012 10:29	wlaton@earthforensics.com	Richard Laton
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/23/2012 15:34	dbarclay@waterboards.ca.gov	Diane Barclay
10/30/2012 7:29	timeyin.dafeta@lacity.org	Timeyin Dafeta
10/30/2012 11:04	loudmilla.vertanessian@lacity.org	Loudmilla Vertanessian
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/9/2012 10:07	srapoport@waterboards.ca.gov	Shana Rapoport
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/21/2012 15:07	Hyginus.Mmeje@Lacity.org	Hyginus Mmeje
12/28/2012 10:45	dornl@sacsewer.com	linda dorn
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
1/9/2013 10:43	jnfireball@yahoo.com	Jane E. Nelson
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1/11/2013 15:04	george.watland@sierraclub.org	George Watland

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1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/23/2013 13:59	diane.barclay@waterboards.ca.gov	Diane Barclay
1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/30/2013 14:52	pshadmani@dpw.lacounty.gov	Paul Shadmani
1/30/2013 17:53	zack@waterqualityconsultinggroup.com	Zack Moran
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
2/13/2013 15:28	karena@lwa.com	Karen Ashby
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/5/2013 10:57	lori.okun@waterboards.ca.gov	Lori T. Okun
4/10/2013 10:50	eerickson@waterboards.ca.gov	elizabeth erickson
4/16/2013 10:36	ianp@camrosa.com	Ian Prichard
4/17/2013 12:40	bbondy@calleguas.com	Bryan Bondy
4/29/2013 13:26	shokoufe.marashi@lacity.org	Shokoufe Marashi
5/2/2013 16:53	petebarbee@hotmail.com	Pete Barbee
5/9/2013 20:07	agarza@ci.hanford.ca.us	April Engen-Garza
5/15/2013 12:10	lsloan@ppeng.com	Linda G. Sloan
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
6/10/2013 8:27	vaday@flowscience.com	Vada Yoon
6/11/2013 13:24	dskophammer@rouxinc.com	David Skophammer
6/17/2013 11:42	mari.gilmore@amec.com	Mari Gilmore
6/25/2013 15:52	victor.harris@mwhglobal.com	Victor E. Harris
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8/20/2013 15:27	jpastore@scap1.org	John Pastore
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9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
10/2/2013 12:23	emmanuel.riclet@gmail.com	Emmanuel Riclet
10/19/2013 8:17	jon.green@ch2m.com	Jonathan M Green
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10/29/2013 11:39	mpf@stateside.com	Melissa Martin
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
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11/25/2013 7:03	kelly.hahs@ventura.org	Kelly Hahs
11/25/2013 10:57	jennad@sbck.org	Jenna Driscoll
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12/4/2013 9:21	msimon@counsel.lacounty.gov	Michael Simon
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4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/5/2014 11:56	ariana@capca.com	Ariana Zamora
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
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10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
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11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
12/2/2014 8:20	mark.ching@ladwp.com	Mark Ching
12/2/2014 9:23	pamalbers@sbcglobal.net	Pamela Albers
12/12/2014 13:42	tmoorhouse@cleanlake.com	Tom Moorhouse
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
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1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
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1/30/2015 9:07	abraham.razon@lacity.org	Abraham Razon
2/2/2015 9:00	stephen.opot@lacity.org	Stephen Opot
2/2/2015 12:48	samick@rma.org	Sarah Amick
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2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo

3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 7:08	greg.reed@ladwp.com	Greg Reed LADWP
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/17/2015 15:15	mark.cady@cdfa.ca.gov	Mark Cady
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/25/2015 13:13	sue@wspa.org	Sue Gornick
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/1/2015 14:50	laura@houstonmagnani.com	Laura Cottrell
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/29/2015 9:30	swarren@folar.org	Shawn Warren
7/29/2015 9:31	emiller@mbcnet.net	Eric Miller
7/29/2015 9:31	rmanwill@toaks.org	Ron Manwill
7/29/2015 9:34	Charlie.yu@lacity.org	Charlie Yu
7/29/2015 9:34	einnes@dpw.lacounty.gov	Emiko Innes
7/29/2015 9:36	Lgaboudian@lacsd.org	Lysa Gabooudian
7/29/2015 9:36	zora.baharians@lacity.org	Zora Baharians
8/17/2015 9:40	mtlopez@mwdh2o.com	Maria Lopez
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
10/13/2015 8:21	edelallave@rinconconsultants.com	Ed Llave
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/4/2015 16:08	mnaftaly@dudek.com	Matt Naftaly
11/5/2015 8:39	john.cobb.hamilton@LaCity.org	John Hamilton
11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/12/2015 21:22	Fred.eckert@me.com	Fred Eckert
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith

11/16/2015 14:29	sgreen@lacsd.org	Sharon Green
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/1/2015 13:20	rviergutz@clwa.org	Rick Viergutz
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/13/2016 14:44	jtellers@cityofdavis.org	Josie Tellers
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:21	Ksusilo@geosyntec.com	Ken Susilo
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/18/2016 13:38	aaron.s.miller@water.ca.gov	Aaron Miller
3/21/2016 7:09	croldan@elmonteca.gov	Cesar Roldan
3/21/2016 11:28	degnerjs@leidos.com	Joel Degner
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/7/2016 15:54	susan.fears@dtsc.ca.gov	susan fears
4/11/2016 18:10	Jennifer.Fordyce@waterboards.ca.gov	Jennifer Fordyce
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/17/2016 8:17	mpropersi@mwdh2o.com	Miluska Propersi
5/20/2016 8:16	steven.webb@waterboards.ca.gov	Steven Webb
5/23/2016 8:42	michael.partain@vmsinc.org	Michael E. Partain
5/24/2016 13:06	sbishop@lacsd.org	Shannon Bishop
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/21/2016 17:54	kules.ken@gmail.com	Ken Kules
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
7/29/2016 7:39	ASexton@simivalley.org	Al Sexton
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10/19/2016 13:28	monishabrown@lacsd.org	Monisha Brown
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1/8/2017 9:23	edm@malibuonline.com	Eugene Donald Michael
1/16/2017 9:27	sbeck@mbcnet.net	Shane Beck
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1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/10/2017 15:46	marcelo.garbiero@arcadis.com	Marcelo Garbiero
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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8/3/2005 14:08	spaulsen@flowscience.com	Susan Paulsen
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8/3/2005 14:11	cinciong@ladpw.org	Carrie Inciong
8/3/2005 14:11	fwu@ladpw.org	Frank Wu
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8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
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9/23/2005 9:12	dnarrieta@aol.com	David Arrieta
9/26/2005 12:55	kwong@semprautilities.com	Karen Wong
9/26/2005 23:43	fkrieger@msn.com	Fred Krieger
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
10/14/2005 10:17	susanstark10@sbcglobal.net	Susan Stark
10/19/2005 14:39	mike@wspa.org	Mike Wang
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11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
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1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
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2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
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1/12/2007 8:20	cm_consulting@comcast.net	Cliff Moriyama
1/16/2007 8:05	gvillarreal@rbf.com	Gian Villarreal
2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
4/5/2007 16:20	justin@calcattlemen.org	Justin Oldfield
4/12/2007 11:02	sschales@ladpw.org	T Scott Schales
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6/22/2007 18:29	hgest@burhenngest.com	Howard Gest
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/10/2007 13:58	imnmnm@yahoo.com	Michele McGarry
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
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10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
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7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
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8/13/2008 11:37	rsinger@uscgcaptain.com	Robert Singer
8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/23/2008 11:02	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
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11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjami	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 13:06	melissavm@lawaterkeeper.org	Melissa von Mayrhauser
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
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2/26/2016 15:26	bryn@pacrl.com	Bryn Home
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2/28/2008 17:33	dparkinson@geosyntec.com	David Parkinson
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11/9/2010 16:14	jreinhardt@lvmwd.com	Jeff Reinhardt
11/9/2010 16:24	bbarker@bh.lacounty.gov	Betsy Barker
11/9/2010 16:32	kstpeters@earthconsultants.com	Kay St. Peters
11/9/2010 16:40	ecomom2008@gmail.com	Chris Rowe
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 10:25	jfutoran@parks.ca.gov	John Futoran
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
11/18/2010 13:23	roger@ceitoday.com	Roger Pearson
11/28/2010 20:36	lmckenney@sawpa.org	Larry McKenney
1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
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11/25/2013 10:57	jennad@sbck.org	Jenna Driscoll
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11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
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4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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5/21/2014 15:34	richroman@live.com	Richard Roman
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2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
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2/25/2016 7:51	kevin@kjservices.net	kevin sales
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2/26/2016 15:26	bryn@pacrl.com	Bryn Home
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3/18/2016 13:38	aaron.s.miller@water.ca.gov	Aaron Miller
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7/1/2011 13:19	edwardc@westbasin.org	Edward Caldwell
7/28/2011 16:10	Joyntventr@aol.com	Jayne Staley
8/4/2011 8:42	jbrown@malibucity.org	Jennifer Brown
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/23/2011 12:23	ggfj1@aol.com	dr charles carstairs md phd
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
8/29/2011 14:09	Julie_Carver@ci.pomona.ca.us	Julie Carver
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
9/11/2011 18:15	tweybright@gmail.com	Teague Weybright
9/16/2011 9:48	ply@wrd.org	Phuong Ly
9/30/2011 9:38	david@sws-inc.com	David Nixon
10/24/2011 15:38	jwen@downeyca.org	Jason Wen
10/27/2011 12:53	rnewman@santa-clarita.com	Robert Newman
10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
11/4/2011 10:18	allison@bluewaterdesigngroup.com	Allison Brent
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 15:42	cemig@cerritos.us	Charles Emig
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/9/2011 10:08	talin.mangioglu@sen.ca.gov	
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio
11/11/2011 7:40	hawthornenursery@yahoo.com	Kei Nakai
11/14/2011 12:32	vcastro@covinaca.gov	Vivian Castro
11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/15/2011 8:57	chris@saticoyroots.com	Chrs Sayer
11/15/2011 15:20	srigg@ci.vernon.ca.us	Scott Rigg
11/16/2011 10:14	jconrowcpa@gmail.com	Jerry Conrow
11/16/2011 14:08	aimee@brokawnursery.com	Aimee Meidinger
11/21/2011 16:41	grant@ci.ojai.ca.us	Greg Grant
11/23/2011 8:45	melanie_beck@nps.gov	Melanie Beck

11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
11/28/2011 15:36	robert@ssseeds.com	Robert Sjoquist
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/20/2011 17:23	bpgibson@ucla.edu	Baylor Gibson
12/22/2011 16:15	klinker@anaheim.net	Keith Linker
12/27/2011 9:08	johnnym@agrx.com	John Morse
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/17/2012 12:15	younes@vertenergygroup.com	Younes Amemrouch
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/1/2012 14:02	gderas@pico-rivera.org	Gladis Deras
5/17/2012 16:36	k.london.haldeman@gmail.com	Katie Haldeman
5/25/2012 11:26	lorraine@ovlc.org	Lorraine Walter
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/29/2012 8:09	dion.coluso@lacity.org	Dion Coluso
5/30/2012 13:01	MeredithClement@kennedyjenks.com	Meredith Clement
6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/12/2012 19:28	roche20@earthlink.net	WILLIAM ROCHE
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/1/2012 18:03	bdepoto@yahoo.com	Bill DePoto
7/4/2012 11:03	razzip1@aol.com	Paul V. Ferrazzi
7/5/2012 10:21	michalkreiselman@gmail.com	Michal Danin-Kreiselman
7/5/2012 14:06	crholguin@yahoo.com	claudia holguin
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/16/2012 16:37	simran@northeasttrees.org	Simran Sikand
8/29/2012 8:24	ggreene@cwecorp.com	Gerald Greene
9/4/2012 17:27	mbw61@aol.com	Mike Wlliams
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/10/2012 11:37	JDodge@DBStephens.com	John J Dodge
10/15/2012 8:15	bdawadi@civiltec.com	Bed Dawadi
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/12/2012 20:28	rw@malibu-arts-journal.com	

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11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/3/2012 13:43	kotch@reynolds-group.com	Frank Kotch
12/4/2012 12:09	peggynguyen@lawa.org	Peggy Nguyen
12/21/2012 15:07	Hyginus.Mmeje@Lacity.org	Hyginus Mmeje
1/3/2013 7:48	atwater.richard@gmail.com	Richard Atwater
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
1/12/2013 15:27	davert85@hotmail.com	David Boyer
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1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
1/28/2013 18:35	scott@arroyoseco.org	Scott David Cher
1/30/2013 14:52	pshadmani@dpw.lacounty.gov	Paul Shadmani
1/30/2013 17:53	zack@waterqualityconsultinggroup.com	Zack Moran
2/5/2013 15:55	cory.jones@ghd.com	Cory Jones
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
2/20/2013 21:03	SSanten@socal.rr.com	Steve Santen
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
4/8/2013 13:57	nprice@lawa.org	Nancy Price
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
5/2/2013 16:53	petebarbee@hotmail.com	Pete Barbee
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
5/31/2013 8:27	jcramsie@cc-eng.com	James R. Cramsie
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8/21/2013 11:58	deborah.deets@lacity.org	deborah deets
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10/14/2013 15:27	vbrar@cerritos.us	vince brar
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
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11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
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12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
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2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
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5/21/2014 15:34	richroman@live.com	Richard Roman
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6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/16/2014 11:48	alan.cade@aol.com	Alan Cade
6/25/2014 14:04	erojas@wrd.org	Esther Rojas
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
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7/17/2014 20:11	garzamourino@att.net	Rosa Garza-Mourino
7/24/2014 9:59	hicksbr@wlac.edu	bruce Hicks
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8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/3/2014 15:31	shilpa.gupta@ladwp.com	Shilpa Gupta
9/11/2014 10:57	bdietrick@rmcwater.com	Brian Dietrick
9/16/2014 9:47	jcarlin@fullerton.edu	Joe Carlin
9/16/2014 10:40	aguzmanperez@dpw.lacounty.gov	Amanda Guzman-Perez
9/22/2014 12:32	allysonc42@outlook.com	Allyson Bakboychuk
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/10/2014 16:07	leftonk@metro.net	Kyle Lefton
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/21/2014 23:49	rsurles1@sbcglobal.net	Rhonda M Surles
10/25/2014 7:25	tastyasstatted12@gmail.com	Audrina Jackson
10/27/2014 9:12	carriola@montereypark.ca.gov	Chris Arriola
11/17/2014 11:59	madisont@metro.net	Travis J Madison
11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
12/15/2014 9:42	kmorris@hermosabch.org	Kristy Morris
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones

1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/17/2015 16:31	vgrossman@wishtoyo.org	Valarie Grossman
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 10:58	maa65993@csun.edu	Mike Antos
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
3/31/2015 16:52	bponton@bh.lacounty.gov	Brenda Ponton
4/15/2015 15:09	Elena@usgvmwd.org	Elena Layugan
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/22/2015 8:16	Myrna.Pietri@lacity.org	Myrna Pietri
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/20/2015 9:34	lmustafa@ci.claremont.ca.us	Loretta Mustafa
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/6/2015 8:51	apartie@jlha.net	Alison Partie
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/3/2015 10:02	jsira@cityofinglewood.org	Jesse Sira
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/24/2015 16:22	kerry.beane@agralogics.com	Kerry Beane
8/31/2015 13:08	sal@ebaplanning.com	Salvador Lopez Jr.
8/31/2015 16:29	ali.poosti@lacity.org	Ali Poosti
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
10/13/2015 9:00	lcyrus@cityofalhambra.org	Latoya Cyrus

10/27/2015 12:08	katelynn.rathbun@gmail.com	Kate Rathbun
11/2/2015 11:59	gchavez@cityofsignalhill.org	grissel chavez
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin.	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/8/2016 9:31	chelovd@gmail.com	Marcelo DIaz
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 7:50	Hamid.Tadayon@lacity.org	Hamid Tadayon
2/25/2016 7:51	kevin@kjservices.net	kevin sales
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2/27/2016 11:36	ochi@ci.monrovia.ca.us	Oliver Chi
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
3/23/2016 11:49	abakarian@elcapenv.com	Ara Bakarian
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
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5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
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5/23/2016 8:42	michael.partain@vmsinc.org	Michael E. Partain
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
8/17/2016 21:57	LouisaStephen@yahoo.com	Louisa Stephen
8/24/2016 6:54	lhempe@lynwood.ca.us	Lorry Hempe
8/25/2016 15:06	wwinter@dpw.lacounty.gov	Bill Winter
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/1/2016 7:43	eddyteasdale@kennedyjenks.com	Eddy Teasdale
9/7/2016 15:56	nancy@farmbureauvc.com	Nancy Broschart
9/7/2016 15:59	zoe.carlson@ventura.org	Zoe Carlson
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
9/9/2016 13:21	ghooper@mnwd.com	GREGG HOOPER
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10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/19/2016 11:38	rmacnamara@hswri.org	Ruairi MacNamara
11/7/2016 11:34	dana.brown@ngem.com	Dana R. Brown
11/10/2016 8:41	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 9:02	laplante@pcl.com	Lisa Plante
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/15/2017 11:14	scott.seyfried@waterboards.ca.gov	Scott Seyfried
2/16/2017 20:33	edm@malibuonline.com	EUGENE DONALD MICHAEL
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2/24/17

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7/6/2009 11:29	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/10/2015 13:01	rcendejas@ovs.org	Robert Cendejas
2/11/2015 14:55	teaguecaitlyn@gmail.com	Caitlyn Teague
2/12/2015 10:41	denis@horster.com	Denis Murrin
2/12/2015 16:05	mary_bergen1@roadrunner.com	Mary Bergen
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
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4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/22/2016 11:43	amanda.hall@sen.ca.gov	Amanda Hall
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/14/2013 17:26	Stephanie.Gasca@icfi.com	Stephanie Gasca
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
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6/10/2013 8:27	vaday@flowscience.com	Vada Yoon
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2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
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7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
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8/23/2011 12:23	ggfj1@aol.com	dr charles carstairs md phd
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
8/29/2011 14:09	Julie_Carver@ci.pomona.ca.us	Julie Carver
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
9/11/2011 20:56	davidrobinson77@gmail.com	David Robinson
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11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz

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3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
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8/10/2009 5:14	emilionehme@hotmail.com	Emilio Nehme
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8/26/2009 10:28	eerickson@waterboards.ca.gov	Elizabeth Erickson
9/9/2009 9:15	ldods@counsel.lacounty.gov	Lauren E. Dods
10/30/2009 17:37	hanslaetz@gmail.com	Hans Laetz
11/9/2009 6:26	collins-6666@msn.com	J. Roger Collins
11/10/2009 15:03	JCLavine@aol.com	Joan Lavine
12/9/2009 16:37	hwalsh@sikand.com	Henry Walsh
12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/20/2010 8:49	jnelson@cc-eng.com	Joshua Nelson
2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
2/18/2010 11:09	rosemarie_Chora@ci.pomona.ca.us	Rosemarie Chora
3/9/2010 9:38	mkinsler@wheelerandgray.com	Mary Kinsler
3/16/2010 8:24	hmerenda@santa-clarita.com	Heather Merenda
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
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9/22/2014 12:32	allysonc42@outlook.com	Allyson Bakboychuk
10/10/2014 16:07	leftonk@metro.net	Kyle Lefton
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3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson	
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3/1/2005 13:32	mark.pumford@ci.oxnard.ca.us	Mark Pumford	
3/1/2005 14:53	jgibson@torrnet.com	Jeffery W. Gibson	
3/1/2005 15:11	jgregg@coastal.ca.gov	Jack H. Gregg	
3/2/2005 7:13	canderson@ci.azusa.ca.us	Chet F. Anderson	
3/2/2005 9:56	Citymanager@hiddenhillscity.org	Cherie L. Paglia	
3/2/2005 12:01	bottorffm@verizon.net	Ron Bottorff	
3/3/2005 8:38	ekiepke@willdan.com	Elroy Kiepke	
3/3/2005 9:08	tsmith@bonterraconsulting.com	Thomas E Smith Jr	
3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling	
3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee	
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz	
3/4/2005 6:57	RKUBOMO@ladpw.org	Rod Kubomoto	
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder	
3/24/2005 14:34	kprickett@portla.org	Kat Prickett	
3/29/2005 15:50	eremson@tnc.org	E.J. Remson	
4/5/2005 9:52	fchin@ladpw.org	Frank Chin	
6/1/2005 10:16	pvcwd.agwater@verizon.net	Michael Miller	
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp	
9/23/2005 9:17	paul.tantet@ventura.org	Paul Tantet	
9/27/2005 13:01	darla.wise@ventura.org	Darla D. Wise	
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo	

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11/2/2005 14:00	Gerhardt.Hubner@ventura.org	Gerhardt Hubner
11/4/2005 12:06	info@smcca.org	George Wolfberg
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/4/2006 11:50	mbearzi@earthlink.net	Dr. Maddalena Bearzi
1/24/2006 16:33	wetlandact@earthlink.net	Marcia Hanscom
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1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
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2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/11/2006 20:09	g.wolfberg@verizon.net	George Wolfberg
4/12/2006 12:46	tmoorhouse@cleanlake.com	Thomas Moorhouse
4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
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4/19/2006 10:54	laurson.nancy@epa.gov	Nancy Laurson
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
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7/6/2006 13:30	dfox@treepeople.org	Debbie Edgar Fox
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7/17/2006 13:22	jpereira@ladpw.org	Jason Pereira
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2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
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8/23/2007 10:43	tgaur@smbaykeeper.org	Tatiana K. Gaur
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1/28/2008 12:48	DianaE@lwa.com	Diana Engle
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4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/5/2008 11:07	s.gasca@pcrnet.com	Stephanie Gasca
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5/9/2008 8:51	chrism@lwa.com	Chris Minton
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6/5/2008 11:06	hwylie1@hotmail.com	Heather Wylie
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
6/12/2008 4:40	GlennBaileySFV@yahoo.com	Glenn Bailey
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
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7/17/2008 10:34	heyrunt@yahoo.com	Linda Porta
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2/5/2009 8:20	hubertus.cox@lacity.org	Hubertus H.J. Cox
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2/6/2009 20:25	eugene.allevato@woodbury.edu	Eugene Allevato
3/18/2009 15:53	lesliejdaigle@aol.com	Leslie Daigle
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7/28/2009 10:38	damon.wing@ventura.org	Damon Wing
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1/4/2010 16:20	dxjones@sempra.com	Debran Reed
1/12/2010 8:06	pcmsusa@hotmail.com	Raymond Wells PhD
1/14/2010 11:11	dawn@mantapublications.com	Dawn Navarro Ericson
1/14/2010 14:32	stormwatercentral@gmail.com	Anna Hensley
1/19/2010 11:06	Jeremy.Bock@Kiewit.com	Jeremy Bock
2/1/2010 16:03	americawest2@ca.rr.com	Carole Lee Walsh R.N. Retired
2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
3/9/2010 9:38	mkinsler@wheelerandgray.com	Mary Kinsler
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/19/2010 9:55	llough@bbinfrastructureinc.com	Lynn Lough
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/28/2010 13:58	msclimenti@mwdh2o.com	Mike Sclimenti
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
4/29/2010 16:18	oaguilar@hunsaker.com	oscar aguilar
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 16:18	lnye@waterboards.ca.gov	LB Nye
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
6/3/2010 11:25	landtrust@ballona.org	Michele Bigelow
6/11/2010 12:43	dale@farmbureauvc.com	Dale Zurawski
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/21/2010 10:10	karenc@lwa.com	Karen Cowan
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
8/23/2010 11:36	kmattfeld@portla.org	Kenneth Mattfeld
8/23/2010 17:42	jvacca@ci.moorpark.ca.us	Joseph R. Vacca
8/25/2010 13:32	Lynn@MLMENG.com	Lynn Kubasek
9/13/2010 7:53	einnes@dpw.lacounty.gov	Emiko Innes
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/4/2010 9:18	kjames@healthebay.org	Kirsten James
10/22/2010 15:23	Ramon@calfran.net	Ramon Wagner
10/28/2010 12:38	vsalazar@ldcla.com	Victor Salazar PE
11/6/2010 10:46	jergeorge@hotmail.com	Jeremiah George
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11/9/2010 16:24	bbarker@bh.lacounty.gov	Betsy Barker
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11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/10/2010 11:39	kristy@lasgrwc.org	Kristy Morris
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11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
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11/14/2011 14:29	rick.bush@noaa.gov	Rick Bush
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2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
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5/9/2008 8:51	chrism@lwa.com	Chris Minton
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
6/12/2008 4:40	GlennBaileySFV@yahoo.com	Glenn Bailey
6/13/2008 16:56	mray@wmspartners.com	Maya Ray
6/18/2008 12:23	hagop.bedikian@yahoo.com	Hagop Bedikian
7/3/2008 12:09	travis.peterson.solutions@gmail.com	Travis Peterson
7/5/2008 7:45	bflores007@msn.com	Bill Flores
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/18/2008 10:38	brent.a.smith@amec.com	Brent Smith
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
10/2/2008 3:14	ECOMOM2008@gmail.com	Christine L. Rowe
10/8/2008 11:31	fhutton@fionahuttonassoc.com	fiona hutton
10/9/2008 10:35	dleachman@lacsd.org	Debra Leachman
10/9/2008 19:42	ccash@paramountcity.com	Christopher S.Cash
10/24/2008 12:13	william.taylor@emcbc.doe.gov	William L. Taylor
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
12/2/2008 13:25	rmitchell@waterboards.ca.gov	Roger Mitchell
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
1/7/2009 14:08	jrp@astound.net	John Peterson
1/10/2009 11:09	wlaton@aol.com	William Laton
1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
1/21/2009 9:33	fgonzal@dpw.lacounty.gov	Fred A. Gonzalez
1/26/2009 14:07	ajirik@portla.org	Andrew Jirik
1/27/2009 15:34	byee@waterboards.ca.gov	Betty Yee
2/5/2009 8:20	hubertus.cox@lacity.org	Hubertus H.J. Cox
2/25/2009 7:32	alasso@dpw.lacounty.gov	Aracely Lasso

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3/6/2009 12:10	mmehta@nrdc.org	Michelle Mehta
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3/11/2009 10:00	tweiland@lacsd.org	Thomas E. Weiland
3/11/2009 11:25	msullivan@lacsd.org	Michael Sullivan
4/6/2009 19:07	janswift@live.com	jan andrew swift
4/7/2009 6:53	bruceheyman@cox.net	Bruce Heyman
4/7/2009 11:22	geraldine.trivedi@redondo.org	Geraldine Trivedi
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5/20/2009 11:51	peter.gutierrez@lw.com	Peter J. Gutierrez
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1/4/2010 16:20	dxjones@sempra.com	Debran Reed
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1/12/2010 8:06	pcmsusa@hotmail.com	Raymond Wells PhD
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1/19/2010 11:06	Jeremy.Bock@Kiewit.com	Jeremy Bock
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3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
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4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
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5/13/2010 8:57	alecmu@aol.com	Alec Uzemeck
5/27/2010 11:33	symeon.finch@orco.com	Symeon Finch
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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7/8/2010 10:07	dn@davidnahai.com	David Nahai
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11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
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11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 11:54	nrccgcm@gmail.com	J. Ryan Bentley
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11/10/2011 10:16	epi@riousa.com	David Light
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11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/22/2011 12:00	jhunter@jlha.net	john Hunter
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas
12/1/2011 15:36	danielle.sakai@bbklaw.com	Danielle Sakai
12/6/2011 21:20	michael.mooradian@ecobilitycorp.com	Michael Mooradian
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/15/2011 14:30	kathy.knight@verizon.net	Kathy Knight
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/18/2011 9:59	dodger93277@yahoo.com	Daniel Galbraith
12/27/2011 9:08	johnnym@agrx.com	John Morse
12/29/2011 11:05	Ppeuron@forestlawn.com	Peter Peuron
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
1/12/2012 14:50	kgraves@schmitzandassociates.net	Kris Graves
1/17/2012 14:58	srapoport@waterboards.ca.gov	Shana Rapoport
1/26/2012 9:38	econard@petrodiamond.com	Eric Conard
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/22/2012 16:20	kaying_lee@ci.pomona.ca.us	Kaying Lee
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
2/28/2012 8:46	bdouglas@naturalsystemsutilities.com	Bruce Douglas
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
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5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
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5/9/2012 8:28	dgould@stormwaterusa.com	Derek A. Gould
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3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
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5/11/2009 10:03	dpatrick@angelusblock.com	Dennis Patrick
5/20/2009 11:51	peter.gutierrez@lw.com	Peter J. Gutierrez
5/28/2009 18:07	dboggs@craworld.com	Dave Boggs
6/9/2009 10:25	rdalfarra@sespeconsulting.com	Rob DalFarra
6/16/2009 10:52	btenner@smithtrager.com	Barbra Tenner
6/19/2009 9:10	kevin@g4grp.com	kevin p. garrity
6/23/2009 11:09	blanca@pacificcoastcivil.com	Blanca Hoffmeier
7/6/2009 11:29	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
8/6/2009 9:54	kmoore@sunstarlabs.com	Kevin Moore
8/7/2009 13:15	creyes@lvmwd.com	Carlos G. Reyes
8/23/2009 20:12	sflater@whitsoncm.com	Shaun Flater
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9/16/2009 9:53	mackw@lwa.com	Malcolm Walker
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12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
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1/4/2010 16:20	dxjones@sempra.com	Debran Reed
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
1/14/2010 14:32	stormwatercentral@gmail.com	Anna Hensley
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2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
3/9/2010 9:28	nascarjws@yahoo.com	John Schwartz
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3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
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5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
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6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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7/22/2010 11:18	amy.grant@erm.com	Amy Grant
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
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10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
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11/25/2013 7:03	kelly.hahs@ventura.org	Kelly Hahs
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
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2/13/2014 9:12	akuhlman@cityofcamarillo.org	Anita Kuhlman
2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
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5/27/2016 12:05	jimmy_chan@dot.ca.gov	Jimmy Chan
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7/25/2016 12:52	sidkumar@datmobilesolutions.com	Sid Kumar
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4/19/2010 9:55	llough@bbinfrastructureinc.com	Lynn Lough
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
4/29/2010 16:19	oaguilar@hunsaker.com	oscar aguilar
5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/6/2010 8:53	mfatemi@toaks.org	Mohammad Fatemi
5/10/2010 13:55	jsaltho@calstatela.edu	Jeffrey A. Salthouse
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
5/26/2010 8:55	morton.price@lacity.org	Morton Price
5/27/2010 11:33	symeon.finch@orco.com	Symeon Finch
6/2/2010 19:24	hnazarian@hfinc.com	Henrik Nazarian
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/21/2010 10:10	karenc@lwa.com	Karen Cowan

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6/29/2010 15:32	ken.ezoe@chemoil.com	Ken Ezoe
6/30/2010 13:06	JThompson@wheelerandgray.com	John Mark Thompson
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7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/22/2010 11:18	amy.grant@erm.com	Amy Grant
7/26/2010 10:25	tracyegoscue@paulhastings.com	Tracy Egoscue
7/27/2010 12:38	conkle@geoconinc.com	Mike Conkle
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10/17/2012 12:06	dmcalister@eaglereef.net	David McAlister
10/22/2012 13:24	rmcpherson@portla.org	Rachel McPherson
10/24/2012 8:43	carellano@ci.vernon.ca.us	Claudia Arellano
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/8/2012 15:11	Dan.Askenaizer@WQTS.com	Dan Askenaizer
11/12/2012 20:28	rw@malibu-arts-journal.com	
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12/18/2008 8:09	nisheeth.kakarala@gmail.com	Nisheeth Kakarala
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1/19/2009 18:15	michael.a.beasley@boeing.com	Michael Beasley
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3/11/2009 10:00	tweiland@lacsd.org	Thomas E. Weiland
3/18/2009 15:53	lesliejdaigle@aol.com	Leslie Daigle
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4/6/2009 19:07	janswift@live.com	jan andrew swift
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8/19/2013 11:33	mrenaud@lawa.org	Matthew Renaud
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9/22/2013 9:50	RCB@jmbm.com	Rebecca Couch Barnhardt
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
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10/19/2013 8:17	jon.green@ch2m.com	Jonathan M Green
10/21/2013 12:08	cdreyer@wgr-sw.com	Chelsea Dreyer
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
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12/31/2013 9:54	teri.madia@cdcr.ca.gov	Teri Madia
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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1/21/2014 14:49	Betsy.Malone@rbf.com	Betsy Malone
1/27/2014 18:18	richard@haimann.com	Richard Haimann
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2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
3/10/2014 16:29	coury.mckinlay@aes.com	Coury McKinlay
3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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2/26/2016 15:26	bryn@pacrl.com	Bryn Home
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5/11/2011 11:43	csantos@waterboards.ca.gov	Carlos D. Santos
5/31/2011 17:35	gmino@fuscoe.com	Greg Mino
6/7/2011 20:38	jfries@counsel.lacounty.gov	Judith Fries
6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
6/11/2011 22:09	humanhealthrisk@gmail.com	Daniel K. Lee
6/15/2011 17:04	jholtz@quinncompany.com	James Holtz
6/17/2011 20:16	uyeda@pbworld.com	Pamela Uyeda
6/29/2011 9:59	wcaffrey@vandermostconsulting.com	wade caffrey
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
9/16/2011 9:48	ply@wrd.org	Phuong Ly
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10/17/2011 16:22	kkunysz@mwdh2o.com	Kathy Kunysz
10/24/2011 15:38	jwen@downeyca.org	Jason Wen
10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
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12/1/2011 15:36	danielle.sakai@bbklaw.com	Danielle Sakai
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2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
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2/21/2012 8:50	shawn.hagerty@bbklaw.com	Shawn Hagerty
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3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
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4/15/2015 10:08	shawna.bennetts@nv5.com	Shawna Bennetts
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4/18/2015 16:37	cindyzhang@singtaola.com	Cindy Zhang
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4/28/2015 10:29	vivian.marquez@lacity.org	Vivian Marquez
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
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5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/6/2015 20:22	wharris@biocleanenvironmental.com	Will Harris
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6/19/2015 7:23	darryl.guenther@lacity.org	Darryl Guenther
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6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
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10/9/2015 15:41	sseivright@calcima.org	Suzanne Seivright
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11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
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12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
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7/17/2009 15:05	paul.singarella@lw.com	Paul Singarella
7/20/2009 16:47	jnewman@waterboards.ca.gov	Jenny Newman
7/23/2009 16:10	clee@rwglaw.com	Candice Lee
7/28/2009 8:26	aibanezjr@gmail.com	alfred ibanez
7/31/2009 16:20	lfeldman@localgovlaw.com	Lauren Feldman
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8/6/2009 16:44	rwellington@willdan.com	Ray Wellington
8/7/2009 13:15	creyes@lvmwd.com	Carlos G. Reyes
8/18/2009 16:48	dtupa@rickengineering.com	Daniel Tupa
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3/27/2013 8:40	theodore.vonbitner@amec.com	Ted Von Bitner
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
4/8/2013 13:58	nprice@lawa.org	Nancy Price
4/9/2013 16:16	js@swteng.com	Jonathan Sandoval
4/16/2013 13:32	veronica.seyde@parsons.com	Veronica Seyde
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
4/29/2013 13:26	shokoufe.marashi@lacity.org	Shokoufe Marashi
4/29/2013 14:01	ferdmana@gmail.com	Alan Ferdman
5/1/2013 7:20	kelly.hahs@ventura.org	Kelly Hahs
5/17/2013 11:49	dpedersen@lvmwd.com	David W. Pedersen
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
5/31/2013 8:27	jcramsie@cc-eng.com	James R. Cramsie
6/3/2013 15:48	Cy.Oggins@slc.ca.gov	Cy Oggins
6/3/2013 15:48	Jennifer.Lucchesi@slc.ca.gov	
6/6/2013 9:11	amelgoza-mendez@semprautilities.com	Adriana Melgoza-Mendez
6/10/2013 8:27	vaday@flowscience.com	Vada Yoon
6/12/2013 18:08	mmacleod@conteches.com	Maryjane MacLeod
6/17/2013 16:24	akikoh@reliablecontainer.com	Akiko Heurich
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6/25/2013 15:52	victor.harris@mwhglobal.com	Victor E. Harris
6/26/2013 9:32	kkwan@semprautilities.com	Karen Kwan
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
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10/28/2013 14:26	mhogan@awattorneys.com	Miles Hogan
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11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
7/18/2015 14:07	mackerman@hpca.gov	Michael Ackerman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/23/2015 12:44	rlewis@paramountcity.com	R L
7/25/2015 18:46	rebecca.andrews@bbklaw.com	Rebecca
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1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/28/2015 11:47	nancy@farmbureauvc.com	Nancy Broschart
1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/12/2015 8:15	Erum.Razzak@waterboards.ca.gov	Erum Razzak
2/25/2015 22:48	sabrshirley@yahoo.com	Elliott M. Benson
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 11:13	jon.lefevre@jmsmucker.com	Jonathan LeFevre
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/11/2015 14:39	timplandis@aol.com	Tim Landis
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 10:58	maa65993@csun.edu	Mike Antos
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/6/2015 14:47	jntrotter@burnsmcd.com	Jennifer Trotter
4/10/2015 15:43	hoconnell@mnsengineers.com	Heather O'Connell
4/15/2015 10:08	shawna.bennetts@nv5.com	Shawna Bennetts
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
4/28/2015 10:29	vivian.marquez@lacity.org	Vivian Marquez
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
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6/11/2015 9:29	bob.nimocks@zpowerbattery.com	Robert Nimocks
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
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2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
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2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
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2/26/2016 15:26	bryn@pacrl.com	Bryn Home
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6/21/2006 10:57	sempervirensbotanico@earthlink.net	John Low
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4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
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5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
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11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 13:39	richard@pidduck.net	Richard Pidduck
11/7/2011 15:42	cemig@cerritos.us	Charles Emig
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/8/2011 9:48	ghoeksma@allenmatkins.com	Gerben Hoeksma
11/8/2011 10:53	bettypalato@yahoo.com	Richard Palato
11/8/2011 20:02	avoking@roadrunner.com	Kevin Cannon
11/8/2011 20:09	emily@friendsranches.com	Emily T. Ayala
11/9/2011 8:47	tmcadam@gmail.com	Tom McAdam
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 16:05	ann.demartini@gmail.com	Ann DeMartini
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/9/2011 18:02	geoff@sunderland4.com	Geoffrey Sunderland
11/10/2011 11:09	ARPeterfy@aol.com	Annette Peterfy
11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio
11/10/2011 14:53	ATRAFTON@BOETHINGTREELAND.COM	Andrew Trafton
11/11/2011 7:40	hawthornenursery@yahoo.com	Kei Nakai
11/11/2011 8:02	Davidjoeross@gmail.com	David J. Ross
11/12/2011 10:30	ltyko@msn.com	leonard m tyko
11/13/2011 14:47	ranchorecuerdo@gmail.com	Cate Austin
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11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/15/2011 8:57	chris@saticoyroots.com	Chrs Sayer
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11/16/2011 10:14	jconrowcpa@gmail.com	Jerry Conrow
11/16/2011 14:08	aimee@brokawnursery.com	Aimee Meidinger
11/17/2011 16:20	richg@countypipeline.com	Richard Gallimore
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12/12/2011 10:54	adanortega@me.com	Adan Ortega
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3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
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10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
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8/24/2015 16:22	kerry.beane@agralogics.com	Kerry Beane
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9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/1/2015 13:16	barry.pulver@waterboards.ca.gov	
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/12/2015 21:22	Fred.eckert@me.com	Fred Eckert
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith
11/18/2015 8:37	edith.hannigan@bof.ca.gov	Edith Hannigan
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
1/6/2016 12:51	stephen.louie@wildlife.ca.gov	Stephen Louie
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff

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2/3/2016 8:54	OlinA@lwa.com	Olin Applegate
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
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2/28/2005 9:05	earl.lapensee@rcslade.com	Earl LaPensee
2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
3/1/2005 7:20	cinciong@ladpw.org	Carrie Inciong
3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson
3/2/2005 9:44	susanstark10@sbcglobal.net	Susan Stark
3/2/2005 16:00	hashimoto.janet@epa.gov	Janet Hashimoto
3/2/2005 16:53	jhunter@jlha.net	John Hunter
3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/3/2005 15:51	fleming.terrence@epa.gov	Terrence Fleming
3/4/2005 14:24	dburhenn@burhenngest.com	Dave Burhenn
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3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
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3/24/2005 14:34	kprickett@portla.org	Kat Prickett
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
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1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
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11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
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12/10/2013 15:45	cmiyamoto@bh.lacounty.gov	Charlotte Miyamoto
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/3/2014 8:31	nbader13@gmail.com	Ned Bader
1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
1/11/2014 17:54	marvin@brashind.com	Marvin H. Sachse

1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/5/2014 14:54	eoffermann@gmail.com	Eddie Offermann
2/7/2014 11:11	larrykoch0516@yahoo.com	Larry Koch
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
3/7/2014 9:22	bh94940@yahoo.com	John Raulph
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
3/15/2014 20:25	FoodieJoan@gmail.com	Joan Lavine
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/10/2014 14:47	lansford.ruth@gmail.com	Ruth Lansford
4/23/2014 12:28	mtripp@bh.lacounty.gov	Michael Tripp
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 20:39	Econard@counsel.lacounty.gov	Erik Conard
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
7/25/2014 12:25	JoanLavine@gmail.com	Joan Lavine
8/15/2014 14:35	bobbigold@ucla.edu	Bobbi Gold
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/8/2014 15:42	eripley@algcorp.com	Elliott Ripley
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
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1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/16/2015 16:38	laura_emberson@yahoo.com	Laura Emberson
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
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2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
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2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
2/10/2015 16:15	gkomjakraphan@dpw.lacounty.gov	Grace Komjakraphan
2/10/2015 21:02	emiller@mbcnet.net	Eric Miller
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo

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3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
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4/3/2015 10:33	George@la-equestriancenter.com	
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4/3/2015 10:34	sagolfcrse@aol.com	
4/3/2015 19:44	ADLN.MTEKLLCcf@gmail.com	Project Coordinator
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5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/9/2015 14:47	kevin.han@ladwp.com	Kevin Han
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
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6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/16/2015 14:19	sylvia_peterson@fmi.com	Sylvia Peterson
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
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12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
12/31/2016 9:29	georgetevelde@hotmail.com	George teVelde
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/8/2017 9:23	edm@malibuonline.com	Eugene Donald Michael
1/16/2017 9:27	sbeck@mbcnet.net	Shane Beck
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek

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2/24/17

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10/5/2000 0:00	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
1/10/2002 0:00	jim.steele@tetratech.com	James R. Steele
1/18/2002 0:00	marym@water.ca.gov	Mary M. Miller
7/18/2002 0:00	dkuida@amgen.com	Darin Kuida
8/6/2002 0:00	gary.wortham@tetratech.com	Gary Wortham
8/15/2002 0:00	robert_wu@dot.ca.gov	Bob Wu
4/22/2003 0:00	vconway@lacsd.org	Victoria O. Conway
4/2/2004 13:13	llarsen@rbf.com	Laura Larsen
12/1/2004 14:54	JEndicott@aei-casc.com	Jeff Endicott
1/6/2005 15:15	tbilezikjian@rbf.com	Tanya Bilezikjian
2/28/2005 9:05	earl.lapensee@rcslade.com	Earl LaPensee
2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 21:25	calcropdoc@yahoo.com	David Holden
3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson
3/1/2005 13:01	mzirbel@atozlaw.com	Mark Zirbel
3/2/2005 9:44	susanstark10@sbcglobal.net	Susan Stark
3/2/2005 9:47	Ronald.Sheets@OjaiSan.org	Ronald Sheets
3/2/2005 10:56	jdeakin@simivalley.org	Joe Deakin
3/2/2005 13:42	dlippman@lvmwd.com	david lippman
3/2/2005 16:00	hashimoto.janet@epa.gov	Janet Hashimoto
3/2/2005 16:36	lbehjan@simiValley.org	Laura Behjan
3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling
3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 15:51	fleming.terrence@epa.gov	Terrence Fleming
3/7/2005 8:36	steve.granade@navy.mil	Steve Granade
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder
3/10/2005 11:15	scottquady@vrsd.com	Scott Quady
3/15/2005 14:42	kathleen.enve@verizon.net	Kathleen McGowan
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
6/1/2005 11:37	blizmo1@aol.com	Elizabeth Zlotnik
7/13/2005 13:29	jjensen@waterboards.ca.gov	Joanna Jensen
7/21/2005 9:10	jnewman@waterboards.ca.gov	Jenny Newman
8/9/2005 19:51	sgreen@lacsd.org	Sharon N. Green
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/19/2005 14:39	mike@wspa.org	Mike Wang
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
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2/15/2006 16:17	kjames@healthebay.org	Kirsten James
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3/30/2006 17:02	sunger@waterboards.ca.gov	Sam Unger
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/28/2006 10:26	pvcwd.agwater@verizon.net	Michael Miller
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
8/29/2006 14:54	tnguyen@waterboards.ca.gov	Thanhloan Nguyen
9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
9/26/2006 13:49	rnf92679@yahoo.com	Raul N. Fernandez
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11/27/2006 14:53	jon.chase@mac.com	Jonathan Chase
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12/19/2006 13:10	ashlid@lwa.com	Ashli Desai
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3/13/2007 14:10	dapt@rbf.com	Daniel Apt
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8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
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1/26/2009 14:31	Jeanine.Hutton@ci.oxnard.ca.us	Jeanine Hutton
2/24/2009 16:13	tsexton@camrosa.com	Tamara Sexton
3/2/2009 11:26	kbrophy@gswater.com	Katherine Brophy
3/12/2009 12:29	kwang@waterboards.ca.gov	Kangshi Wang
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4/13/2010 15:03	tech@normbrown.com	Norm Brown
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4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
5/6/2011 8:10	kevarts@rbf.com	Kevin Evarts
6/7/2011 20:38	jfries@counsel.lacounty.gov	Judith Fries
6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
6/11/2011 22:09	humanhealthrisk@gmail.com	Daniel K. Lee
6/17/2011 10:35	jreeve@newportpower.com	James Reeve
6/21/2011 14:05	Hopet@lwa.com	Hope Taylor
6/29/2011 9:59	wcaffrey@vandermostconsulting.com	wade caffrey
8/19/2011 12:06	renee.purdy@waterboards.ca.gov	Renee Purdy
8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/23/2011 8:51	zoe.carlson@ventura.org	Zoe Carlson
8/23/2011 12:23	ggfj1@aol.com	dr charles carstairs md phd
8/24/2011 13:35	toddfpeterson@gmail.com	todd f peterson
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
9/8/2011 15:06	mary.welch@pgenv.com	Mary Welch
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/6/2011 17:01	jimengel@wildblue.net	Jim Engel
11/6/2011 19:56	johnbfarmad@cs.com	John Borchard
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/8/2011 20:02	avoking@roadrunner.com	Kevin Cannon
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 11:54	nrccgcm@gmail.com	J. Ryan Bentley
11/9/2011 12:42	csummers@missionpro.com	Chris Summers
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11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio

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11/11/2011 8:02	Davidjoeross@gmail.com	David J. Ross
11/11/2011 10:06	ctyrrell@rmcwater.com	Catherine Tyrrell
11/12/2011 10:30	ltyko@msn.com	leonard m tyko
11/14/2011 18:35	rcking@rain.org	Robert King
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/9/2015 15:59	jennifer.lindquist@csuci.edu	Jennifer Lindquist
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo

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9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/17/2016 11:03	acondelli@simivalley.org	Alex Condelli
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
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4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
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6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
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1/23/2017 16:12	adriell@lwa.com	Adriel Leon
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1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson

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4/29/2015 16:16	geraldine.trivedi@redondo.org	Geraldine Trivedi
5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
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6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
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9/8/2011 15:06	mary.welch@pgenv.com	Mary Welch
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10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/14/2011 12:32	vcastro@covinaca.gov	Vivian Castro
11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas

12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
1/6/2012 9:52	ankitavyas@rbf.com	Ankita Vyas
1/10/2012 10:23	sbeck@mbcnet.net	Shane Beck
2/13/2012 16:55	srapoport@waterboards.ca.gov	Shana Rapoport
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/16/2012 14:54	aclark@calwater.com	Allyson Clark
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 4:06	wbotha@brownandwinters.com	Wentzelee Botha
3/5/2012 14:15	luke.milick@lacity.org	Luke Milick
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
4/5/2012 14:48	boutwin@waterboards.ca.gov	Brandi Outwin-Beals
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/1/2012 14:02	gderas@pico-rivera.org	Gladis Deras
5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/5/2012 14:06	crholguin@yahoo.com	claudia holguin
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
8/6/2012 10:00	wjohnson@dpw.lacounty.gov	William Johnson
8/13/2012 19:23	fmcchesney@waterboards.ca.gov	Frances McChesney
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/14/2012 11:35	lnaslund@dpw.lacounty.gov	Lisa Naslund
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9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/3/2012 15:30	rmcpherson@portla.org	Rachel McPherson
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 8:43	carellano@ci.vernon.ca.us	Claudia Arellano
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
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11/12/2012 20:28	rw@malibu-arts-journal.com	
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1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/12/2013 15:27	davert85@hotmail.com	David Boyer
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2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
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5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
6/16/2015 16:56	benjamin.gibson@lw.com	Ben Gibson
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/19/2015 7:23	darryl.guenther@lacity.org	Darryl Guenther
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
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7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/19/2015 11:03	melinda@flowscience.com	Melinda Werts
8/28/2015 11:34	caln@stormwaterx.com	Calvin P Noling
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/29/2015 9:04	fdelorenzo@lacsd.org	Frank J DeLorenzo
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/13/2015 9:00	lcyrus@cityofalhambra.org	Latoya Cyrus
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 13:06	melissavm@lawaterkeeper.org	Melissa von Mayrhauser
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:00	brad.lindahl@redondo.org	Bradley Lindahl
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
3/2/2016 12:47	sbishop@lacsd.org	Shannon Bishop

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3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
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5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
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10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
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11/8/2016 6:47	mhall@pmanet.org	M Hall
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1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
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8/10/2016 15:15	astroduo@hotmail.com	Astro Duo
8/10/2016 15:15	sands.linda@hotmail.com	Linda Sands
8/10/2016 15:16	d_gottas@yahoo.com	Debbie Gottas
8/10/2016 15:16	jimhotchkiss@yahoo.com	Jim Hotchkiss
8/10/2016 15:17	TerriGordon1@gmail.com	Terri Gordon
8/10/2016 15:17	daehms@verizon.net	Debbie Ehms
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3/22/2005 12:07	fkrieger@msn.com	Fred Krieger
3/24/2005 14:34	kprickett@portla.org	Kat Prickett
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
3/29/2005 16:00	fddryden@juno.com	Franklin D. Dryden
4/4/2005 7:39	rorton@lvmwd.com	Randal Orton
4/4/2005 9:43	joe.bellas@nbcuni.com	Joe Bellas

4/5/2005 9:52	fchin@ladpw.org	Frank Chin
4/28/2005 13:15	kozelka.peter@epa.gov	Peter Kozelka
6/8/2005 15:05	lwlarios@hotmail.com	Lisa Larios
7/13/2005 10:08	jjensen@waterboards.ca.gov	Joanna Jensen
7/21/2005 9:10	jnewman@waterboards.ca.gov	Jenny Newman
8/9/2005 19:51	sgreen@lacsd.org	Sharon N. Green
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
10/19/2005 14:39	mike@wspa.org	Mike Wang
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:20	bbax@lacsd.org	Beth Bax
12/17/2005 8:28	aheil@lacsd.org	Ann Heil
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/16/2006 0:31	pweinberger55@hotmail.com	Peter Weinberger
4/19/2006 4:26	annadbrat@yahoo.com	A Bee
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5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/7/2006 16:26	gamah@waterboards.ca.gov	Ginachi Amah
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
7/24/2006 11:31	kkatona@lacbos.org	Karly Katona
9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
9/14/2006 13:40	gmusejr@mwdh2o.com	George W. Muse Jr.
9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
10/4/2006 9:09	cmitchell@mbcnet.net	Charles T. Mitchell
10/4/2006 15:48	lnye@waterboards.ca.gov	L. B. Nye
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11/28/2006 13:07	koletty@usc.edu	Stephen Koletty PhD
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12/1/2006 2:38	mstevens@kinneticlabs.com	Marty Stevenson
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12/7/2006 17:28	jbell@mwdh2o.com	Janet Bell
12/12/2006 5:56	lokun@waterboards.ca.gov	Lori Okun
12/19/2006 10:11	asteele@lacsd.org	Alex Steele
12/19/2006 12:43	neal.shapiro@smgov.net	Neal Shapiro
12/19/2006 12:44	chichen@ladpw.org	Chien-hao Chen
12/19/2006 13:38	jmorton@igc.org	Jess Morton
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10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
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12/5/2007 12:43	mas.dojiri@lacity.org	Masahiro Dojiri
12/19/2007 11:15	Hassan.Rad@lacity.org	Hassan rad
1/28/2008 11:54	amys@lwa.com	Amy Storm
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3/10/2008 14:27	matthew_gorman@yahoo.com	Matthew Gorman
3/14/2008 10:14	dhock@rmcwater.com	Dawn Hock
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4/23/2008 17:00	Adel.Hagekhalil@lacity.org	Adel H Hagekhalil
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
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5/23/2008 6:00	william_rea@yahoo.com	William John Rea Jr.
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6/18/2008 12:23	hagop.bedikian@yahoo.com	Hagop Bedikian
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
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7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/14/2008 10:47	samantha.yu@ladwp.com	Samantha Yu
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1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
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2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
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3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
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4/5/2010 11:48	kruffell@lacsd.org	Kristen Ruffell
4/7/2010 8:58	jdougall@lvmwd.com	Jan Dougall
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
5/3/2010 17:45	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
6/2/2010 19:24	hnazarian@hfinc.com	Henrik Nazarian
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/13/2010 17:13	ileeleviten@yahoo.com	Ian Lee-Leviten
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
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7/8/2010 10:07	dn@davidnahai.com	David Nahai
7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/29/2010 9:03	langford.book@ladwp.com	Langford Book
7/30/2010 15:00	shada@waterboards.ca.gov	Stefanie Hada
8/16/2010 22:02	sschuyler@wspa.org	steve schuyler
8/18/2010 8:58	alfredo.magallanes@lacity.org	Alfredo Magallanes, PE
8/19/2010 18:38	davidw20003@yahoo.com	David Warren
8/23/2010 11:36	kmattfeld@portla.org	Kenneth Mattfeld
9/3/2010 12:22	hjgarcia@farmerjohn.com	Hector J. Garcia
9/9/2010 15:25	acruz@ci.burbank.ca.us	Alvin Cruz
9/14/2010 10:01	markbaker@physislabs.com	Mark D. Baker
9/22/2010 11:07	ana.deanda@longbeach.gov	Ana DeAnda
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
9/29/2010 8:23	kvivanti@lakewoodcity.org	Konya Vivanti
10/8/2010 11:55	martinagarnier@gmail.com	Martin Garnier

10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
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11/9/2010 15:38	wrlindinc@aol.com	Wes Lind
11/9/2010 15:50	kwang@waterboards.ca.gov	Kenny Wang
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11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/15/2010 7:46	CaliforniaWaterTechnologies@gmail.com	Carlos Aguilar
11/19/2010 14:02	bdietrick@rmcwater.com	Brian Dietrick
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12/23/2010 20:27	info@ecokai.com	Jim Burton
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1/24/2011 11:30	vhevener@ci.arcadia.ca.us	Vanessa Hevener
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2/4/2011 12:18	mac@pesengineering.com	Magdi Abdou
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2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
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4/21/2011 12:47	loriwolfe@wolfe-engineering.com	Lori Wolfe
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8/24/2011 13:35	toddfpeterson@gmail.com	todd f peterson
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
9/8/2011 15:06	mary.welch@pgenv.com	Mary Welch
9/16/2011 9:48	ply@wrd.org	Phuong Ly
10/5/2011 10:04	ctyrrell@rmcwater.com	Catherine Tyrrell
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10/18/2011 17:05	tecsenv@yahoo.com	RayTehir
10/18/2011 17:06	DRynn@ci.burbank.ca.us	Daniel Rynn
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10/18/2011 17:10	jcarlson@cityofsierramadre.com	James Carlson
10/18/2011 17:11	dillardjoyce@yahoo.com	Joyce Dillard
10/19/2011 12:18	sean.j.dunn@damco.com	Sean Dunn
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11/10/2011 10:16	epi@riousa.com	David Light
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1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
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11/20/2012 16:15	gtakayesu@honolulu.gov	Gerald Takayesu
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3/12/2013 10:04	Christy_Brigham@nps.gov	Christy Brigham
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9/14/2010 10:01	markbaker@physislabs.com	Mark D. Baker
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/8/2010 11:55	martinagarnier@gmail.com	Martin Garnier
11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett

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11/9/2010 15:50	kwang@waterboards.ca.gov	Kenny Wang
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
12/13/2010 9:01	sanghera@anchorqea.com	Shelly Anghera
12/23/2010 20:27	info@ecokai.com	Jim Burton
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1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
3/23/2011 11:22	rwang@dpw.lacounty.gov	Ruby Wang
4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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5/12/2011 22:58	cyanda@gmail.com	Catherine Yanda
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6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
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4/25/2014 13:08	carlson@mcandc.com	Stephen Carlson
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5/22/2014 12:50	jim@cmanc.com	jim haussener
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7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
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8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
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11/24/2014 11:54	alicia_black@avalonbay.com	Alicia Black
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
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2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/5/2015 13:43	michelle.bowman@amecfw.com	Michelle Bowman
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
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3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
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3/15/2005 14:42	kathleen.enve@verizon.net	Kathleen McGowan
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
4/28/2005 13:15	kozelka.peter@epa.gov	Peter Kozelka
5/16/2005 8:12	zbaharia@san.lacity.org	Zora Bahariance
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8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/26/2005 11:05	vlhaller@aol.com	Verne Haller
11/2/2005 14:00	Gerhardt.Hubner@ventura.org	Gerhardt Hubner
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
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12/17/2005 8:28	aheil@lacsd.org	Ann Heil
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12/22/2006 8:49	gregory.savitske@tetratech-ffx.com	Gregory Savitske
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3/13/2007 14:10	dapt@rbf.com	Daniel Apt
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3/26/2007 14:40	mpeterson@kpcc.org	Molly Peterson
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7/18/2007 14:29	Kalam.Cheung@lacity.org	Kalam Cheung
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7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
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9/11/2008 10:09	lin.cindy@epa.gov	Cindy Lin
9/23/2008 11:24	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
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10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
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1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/26/2017 12:18	david.laak@ventura.org	David Laak
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/8/2011 18:33	dancerdawg@yahoo.com	Kurt Johnson
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
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3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling
3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/3/2005 15:51	fleming.terrence@epa.gov	Terrence Fleming
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder
3/9/2005 10:45	ghildeb@ladpw.org	Gary Hildebrand
3/10/2005 10:12	DLaff@ladpw.org	Daniel J. Lafferty
3/10/2005 11:15	scottquady@vrsd.com	Scott Quady
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
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10/26/2005 10:31	gordon@kimballengineering.com	Gordon Kimball
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11/17/2005 11:20	bbax@lacsd.org	Beth Bax
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8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
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11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/28/2015 11:47	nancy@farmbureauvc.com	Nancy Broschart
1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
1/30/2015 9:26	phillip.lopez@jmsmucker.com	Phillip Lopez
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 16:15	gkomjakraphan@dpw.lacounty.gov	Grace Komjakraphan
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/20/2015 16:24	keith@pritskerconsulting.com	Keith Pritsker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 10:58	maa65993@csun.edu	Mike Antos
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
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5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
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11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
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6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
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6/21/2010 10:10	karenc@lwa.com	Karen Cowan
6/28/2010 9:14	dmurray@healthebay.org	Dana Murray
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
7/8/2010 10:07	dn@davidnahai.com	David Nahai
7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/30/2010 15:00	shada@waterboards.ca.gov	Stefanie Hada
9/10/2010 15:36	alfredo.magallanes@lacity.org	Alfredo Magallanes
9/14/2010 10:01	markbaker@physislabs.com	Mark D. Baker
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/8/2010 11:55	martinagarnier@gmail.com	Martin Garnier
10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
10/26/2010 16:59	dparkinson@geosyntec.com	David Parkinson
10/28/2010 12:38	vsalazar@ldcla.com	Victor Salazar PE
11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett
11/9/2010 15:50	kwang@waterboards.ca.gov	Kenny Wang
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11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 5:47	wlaton@earthforensics.com	Richard Laton
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/15/2010 7:46	CaliforniaWaterTechnologies@gmail.com	Carlos Aguilar
12/23/2010 20:27	info@ecokai.com	Jim Burton
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1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
1/19/2011 16:58	rebecca_lasko@yahoo.com	Rebecca Marie Lasko
2/4/2011 12:18	mac@pesengineering.com	Magdi Abdou
2/15/2011 10:36	s.guldimann@gmail.com	Suzanne Guldimann
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
2/24/2011 9:15	cchang@wrd.org	Cathy Chang
3/8/2011 0:37	rwpgilljr@yahoo.com	Richard William Gill Jr.
3/9/2011 15:14	sanghera@anchorqea.com	Shelly Anghera
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3/10/2011 10:39	kemmerer.john@epa.gov	John Kemmerer
3/23/2011 11:22	rwang@dpw.lacounty.gov	Ruby Wang
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4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
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11/8/2011 11:55	citymanager@hiddenhillscity.org	Cherie L. Paglia
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11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
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12/21/2011 10:21	eddie_isaacs@dot.ca.gov	Eddie Isaacs
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2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
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1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/5/2014 14:54	eoffermann@gmail.com	Eddie Offermann
2/7/2014 14:05	kehrlich@elkinskalt.com	Ken Ehrlich
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
3/3/2014 17:44	davidw20003@yahoo.com	David Warren
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
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4/10/2014 13:12	ychebabi@ladpw.org	youssef chebabi
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/22/2014 12:50	jim@cmanc.com	jim haussener
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
7/25/2014 12:25	JoanLavine@gmail.com	Joan Lavine
8/6/2014 9:27	JDodge@DBStephens.com	John J Dodge
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9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/3/2014 15:31	shilpa.gupta@ladwp.com	Shilpa Gupta
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/8/2014 15:42	eripley@algcorp.com	Elliott Ripley
10/8/2014 16:37	eugeneungermann@gmail.com	Eugene Ungermann
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/31/2014 9:41	kroeplinjeffrey@gmail.com	Jeffrey Kroeplin
11/14/2014 10:01	jgamble@lvmwd.com	Jacqy Gamble
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/15/2014 9:42	kmorris@hermosabch.org	Kristy Morris
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
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2/10/2015 21:02	emiller@mbcnet.net	Eric Miller
2/25/2015 22:48	sabrshirley@yahoo.com	Elliott M. Benson
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3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
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6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
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11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/10/2014 9:35	gatkinson@mansonconstruction.com	George Atkinson
3/7/2014 14:46	nmaguire@fcoplaw.com	Neal Maguire
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/22/2014 12:50	jim@cmanc.com	jim haussener
5/27/2014 16:55	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/12/2014 11:14	jariley@amgen.com	James Riley
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
8/6/2014 9:27	JDodge@DBStephens.com	John J Dodge
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
8/25/2014 9:28	kmiller@haleyaldrich.com	Katherine Rose Miller
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/8/2014 15:42	eripley@algcorp.com	Elliott Ripley
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George

1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:47	nancy@farmbureauvc.com	Nancy Broschart
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
1/30/2015 9:26	phillip.lopez@jmsmucker.com	Phillip Lopez
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 11:13	jon.lefevre@jmsmucker.com	Jonathan LeFevre
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/6/2015 14:48	jntrotter@burnsmcd.com	Jennifer Trotter
4/10/2015 15:43	hoconnell@mnsengineers.com	Heather O'Connell
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/18/2015 16:37	cindyzhang@singtaola.com	Cindy Zhang
4/21/2015 15:13	david.harter@ojaisan.org	David Harter
4/21/2015 21:29	rkampalath@healthebay.org	Rita Kampalath
4/28/2015 6:38	craig.hoover@fda.hhs.gov	Craig Hoover
5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/15/2015 15:55	onlibst@yahoo.com	Douglas Schmalenberger
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/26/2015 10:22	withwind2@gmail.com	Larry W. Harris
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/28/2015 16:21	syreeta.steele@ventura.org	Syreeta Steele
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/28/2015 11:34	caln@stormwaterx.com	Calvin P Noling
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/13/2015 8:21	edelallave@rinconconsultants.com	Ed Llave

10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/6/2015 14:44	amaday@calleguas.com	Amy Maday
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/29/2015 14:48	aaron.williams@ventura.org	aaron williams
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/17/2016 16:12	katlh9@gmail.com	Katherine Hunt
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/9/2016 13:29	jeffrey.sanchez@waterboards.ca.gov	Jeff Sanchez
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/19/2016 10:54	lnichols@cabrilloedc.org	
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/5/2016 16:44	Gerhardt@sslocsd.us	Gerhardt Hubner
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/26/2016 8:50	sawyer.rob@icloud.com	Rob Sawyer
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
9/8/2016 9:36	lhlampara@aeraenergy.com	Louise Lampara
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
12/8/2016 11:17	sjepsen@dudek.com	Steve Jepsen
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:11	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour

1/26/2017 12:18	david.laak@ventura.org	David Laak
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/13/2017 13:14	kmoran@tdcenvironmental.com	Kelly Moran
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/16/2017 20:33	edm@malibuonline.com	EUGENE DONALD MICHAEL

March 24, 2017

Los Angeles Regional Water Quality Control Board
Attn: Dr. L.B. Nye, Dr. Jun Zhu, and Mr. Kangshi Wang
320 W 4th St., Suite 200
Los Angeles, CA 90013
LB.Nye@waterboards.ca.gov; Jun.Zhu@waterboards.ca.gov;
Kangshi.Wang@waterboards.ca.go

VIA EMAIL

Re: Comments on the 2016 Clean Water Act Sections 303(d) and 305(b) Integrated Report for the Los Angeles Region, Public Review Draft

Dear Dr. Nye, Dr. Zhu, Mr. Wang, and to Whom it May Concern with the Los Angeles Regional Water Quality Control Board:

On behalf of Wishtoyo Foundation and our Ventura Coastkeeper Program, please accept the following comments on the 2016 Clean Water Act Sections 303(d) and 305(b) Integrated Report for the Los Angeles Region, Public Review Draft ("Draft 303(d)/305(b) List").

In reviewing the Draft 303(d)/305(b) List and in corresponding with Los Angeles Regional Water Quality Control Board ("Los Angeles Regional Board") staff, it has come to our attention that almost all of the proposed 303(d)/305(b) listings (See Attachment A) and accompanying supporting data timely submitted on August 30, 2010 by Wishtoyo Foundation's Ventura Coastkeeper Program ("VCK") were not assessed for inclusion in the Draft 303(d)/305(b) List[1].

We thus respectfully request the Los Angeles Regional Board assess all of VCK's proposed 303(d)/305(b) listings and accompanying data submitted in 2010, and ensure VCK's proposed listings are included in the 2016 303(d)/305(b) List. All of VCK's proposed listings meet the requirements for listing in the State Water Resources Control Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Notably, as demonstrated by VCK August 30, 2010 proposed listing submission, VCK's watershed monitoring data supporting the proposed listings were collected and analyzed in accordance with VCK's Quality Assurance Project Plan (QAPP) approved by the Los Angeles Regional Water Quality Control Board.

Furthermore, we ask the Board to include on the list, the dissolved oxygen ("DO") data submitted by VCK that supports the Santa Clara River Estuary ("Estuary") being

[1] See Attachment B for Los Angeles Regional Board staff worksheet detailing some of the VCK proposed listings and accompanying data improperly not assessed to date for the Draft 2016 303(d)/305(b) List.

included on the 2016 Draft 303(d)/305(b) list for DO impairment. Even one event where DO levels drops below Basin Plan thresholds can be catastrophic for native and endangered aquatic life, including the Southern California Steelhead[2] and Tidewater Goby that use the Estuary as habitat and that need healthy and suitable water quality in the Estuary to survive and recover. It only takes one event of low DO for these species to perish, and the Los Angeles Regional Board was provided over 200 separate data entries indicating that DO fell in the Estuary below Basin Plan thresholds and non-harmful levels for aquatic life. Attached to this letter is are two studies by a Regional Board Scientist (Carter 2005 and 2008) that further details the harms of low DO on aquatic life and native and endangered species, including Southern California Steelhead.

VCK's mission is to protect, preserve, and restore the ecological integrity and water quality of Ventura County's inland and coastal waterways. In 2009 and 2010, VCK, in coordination with the Los Angeles Regional Water Quality Control Board and State Water Resources Control Board Clean Water Team, dedicated a tremendous amount of resources to its watershed monitoring program that resulted in VCK's proposed 303(d)/305(b) listings. These resources include VCK running volunteer stream teams, utilizing staff time to collect and analyze water quality data, purchasing and maintaining field equipment, and running a laboratory. It would be a shame, and detrimental to Ventura County's inland and coastal waterways and their beneficial uses, if the water quality impairments discovered, rigorously documented by VCK, and provided to the state did not result in 2016 303(d)/305(b) listings, especially on the account that they were not assessed. It is without second thought that the Los Angeles Regional Board assessing our proposed 303(d)/305(b) listings and accompanying data from August 30, 2010, and ensuring these proposed listings are included in the 2016 303(d)/305(b) List, is critical to the protection of Ventura County's waters for all the people, wildlife, communities, and the Chumash Native American Peoples that depend upon clean and healthy waters to sustain their health, wellbeing, and life ways.

Thank you for considering our comments. Please feel free to contact me with any questions.

Sincerely,

Jason Weiner
General Counsel, Water Initiative Director
Wishtoyo Foundation and its Ventura Coastkeeper Program
jweiner.venturacoastkeeper@wishtoyo.org
(805) 823-3301

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[2] Juvenile Southern California Steelhead utilize estuaries as over-summering and rearing habitat for extended periods of time. (See attached Hayes, et. al (2008); See attached Bond (2006).) The National Marine Fisheries Service ("NMFS") has designated the Estuary as critical habitat under the federal Endangered Species Act, and the NMFS Steelhead Recovery Plan (January 2012) prioritizes Santa Clara River Estuary habitat restoration and protection as a critical action for the survival and recovery of the species. For NMFS Steelhead Recovery Plan visit: http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/south_central_southern_california_coast/south_central_southern_california_coast_recovery_publications.html (last visited March 24, 2017).

ATTACHMENT A

VENTURA COASTKEEPER® 3875-A Telegraph Road #423, Ventura, California 93003
Phone (805) 658-1120 • Fax (805) 258-5135 • www.wishtoyo.org

August 30, 2010

Jeffrey Shu, State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100
VIA ELECTRONIC MAIL: jshu@waterboards.ca.gov

RE: **Region 4, Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report [Clean Water Act Sections 305(b) and 303(d)]**

Dear Mr. Shu:

Wishtoyo Foundation's Ventura Coastkeeper Program (VCK), which represents over 700 Ventura County residents, appreciates the opportunity to submit water quality data and information for the 2012 California Integrated Report for Los Angeles Region 4 pursuant to Clean Water Act Sections 305(b) and 303(d).

VCK's Watershed Monitoring Program has conducted water quality monitoring throughout the Santa Clara River, Ormond Beach, Calleguas Creek, and Nicholas Canyon Creek watersheds from June 2009 to August 2010. After reviewing VCK's monitoring data collected and analyzed in accordance with VCK's Quality Assurance Project Plan (QAPP) approved by the Los Angeles Regional Water Quality Control Board, and after analyzing additional water quality parameters collected by local and state agencies, VCK requests that the following waterbodies[1] are incorporated into the 2012 California Integrated Report for the Los Angeles Region (Region 4) and added to the 2012 Clean Water Act 303(d) impaired waterbody list (List of Water Quality Limited Sections) for the following impairments:

1.) Nicholas Canyon Creek

[1] The locations and description of all waterbodies are included in the attached Wishtoyo Foundation's Ventura Coastkeeper Program's Watershed Monitoring Data Spreadsheet unless otherwise noted. VCK's watershed monitoring locations are part of VCK's watershed monitoring routes, and were chosen based on varying upstream land uses, accessibility, and the need for baseline and real time data to assess the water quality and ecological integrity of Ventura County's inland and coastal waterbodies, and to help pinpoint water quality impairments.

a. **Trash[2]:** VCK's attached watershed monitoring program data indicates that on 5 out of 7 VCK monitoring events on Nicholas Canyon Creek downstream of PCH, the presence of trash pollution exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

2.) San Jon Barranca / Creek

a. **Trash:** VCK's attached watershed monitoring program data indicates that on 8 out of 8 VCK monitoring events on San Jon Barranca downstream of Harbor Boulevard , the presence of trash pollution in San Jon Barranca exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

b. **E. Coli**: VCK's attached watershed monitoring program data indicates that on 5 out of 8 VCK monitoring events on San Jon Barranca downstream of Harbor Boulevard, the presence of E. Coli exceeded the Water Quality Control Plan for the Los Angeles Region ("Basin Plan") single sample numeric water quality standard for E. Coli density of 235/100ml for Fresh Waters Designated for Water Contact Recreation (REC-1).

Pictured below, a child plays in the trash lined San Jon Barranca in the presence of E. Coli pollution.

[2] For monitoring of trash at all of VCK's watershed monitoring locations, if the length of the reach monitored for trash is not listed, trash was counted at the sampling location only.

Wishtoyo

3.) Ormond Beach Lagoon[3]

a. **<u>Trash:</u>** VCK's attached watershed monitoring program data indicates that on 9 out of 9 VCK monitoring events in the Ormond Beach Lagoon, the presence of trash pollution in the Ormond Beach Wetlands Lagoon exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

b. **<u>E. Coli</u>**: VCK's attached watershed monitoring program data indicates that on 6 out of 32 VCK monitoring events on the Ormond Beach Lagoon, the presence of E. Coli exceeded the Basin Plan single sample numeric water quality standard for E. Coli density of 235/100ml for Fresh Waters Designated for Water Contact Recreation (REC-1).

c. **<u>pH:</u>** VCK's attached watershed monitoring program data indicates that on 6 out of 8 VCK monitoring events in the Ormond Beach Wetlands Lagoon, pH levels in the Ormond Beach Wetlands Lagoon water column exceeded the Basin Plan single sample numeric water quality standard of 8.5 for Fresh Waters Designated for Water Contact Recreation (REC-1).

d. **<u>Nitrate</u>:** VCK's attached watershed monitoring program data indicates that on 11 out of 14 VCK monitoring events in the Ormond Beach Lagoon, the concentration of Nitrate in the Ormond Beach Wetland Lagoon water column exceeded the numeric targets for Nitrate at 1 mg/l as derived in the Los Angeles Regional Water Quality Control Board's Machado Lake TMDL[4] and the Nutrient TMDL for Malibu Creek, adopted by USEPA in 2003[5]. In addition, it should be noted that the USEPA guidance value for CWA section 304(a) nutrient criteria specific to the Los Angeles Region (Ecoregion III) is 0.38 mg/l total nitrogen and 0.022 mg/l total phosphorus for protection of aquatic life and recreation.[6]

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[3] Samping Locations OB-1, OB-5, OB-3(b), OB-4(b) are all 200 meters apart from one another.

[4] Resolution NO. R08-006, Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Eutrophic, Algea, Ammonia, and Odors (Nutrient) for Machado Lake, California Regional Water Quality Control Board, Los Angeles Region. The Regional Board appropriately included a numeric target for total phosphorus of .1mg/l that was based of the EPA Nutrient Criteria Technical Guidance Manual Lakes and Reservoirs (2000), which does not recommend setting a numeric target for total phosphorus greater than 0.1 mg/L. Additionally, to maintain a balance of nutrients for biomass growth and prevent limitation by one nutrient or another, a ratio of total nitrogen to total phosphorus of 10 is used to derive the total nitrogen numeric target of 1.0 mg/L as a monthly average concentration (Thomann, Mueller, 1987)." (Regional Board Staff Report for Machado Lake TMDL at 35.)

[5] The Nutrient TMDL for Malibu Creek, adopted by USEPA in 2003, provides summer season water quality objectives of 1.0 mg/l total nitrogen and 0.1 mg/l total phosphorous. Other established nitrogen criteria for protection of aquatic life are significantly lower.

[6] See: USEPA, *Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III* (2000) (EPA 822-B-00-016).

While, the Basin Plan's water quality objective for nitrogen is that "Waters shall not exceed 10 mg/l nitrogen as nitrate-nitrogen plus nitrite-nitrogen, 45 mg/l as nitrate, 10 mg/l as nitrate-nitrogen, or 1 mg/l as nitrite-nitrogen or as otherwise designated in Table 3-8," during the promulgation of the Machado Lake TMDL, the Regional Board determined that the Basin Plan's water quality objective for nitrogen as applied to aquatic life:

> "is not supportive of the narrative biostimulatory substance water quality objective. The nitrogen objective (10 mg/L) in the Basin Plan is based on criteria acceptable for drinking water and not appropriate to address eutrophic conditions in the lake. A review of available data and scientific literature demonstrates that the numeric objective of 10 mg/L for nitrogen is not sufficiently protective for controlling excessive algal/macrophyte growth and the symptoms of eutrophication in the lake. Therefore, the numeric target for total nitrogen will be more stringent than the existing numeric nitrogen objective in the Basin Plan to ensure attainment of the narrative biostimulatory substances water quality objective. The TMDL and its numeric targets must be developed to ensure protection of all the beneficial uses and attainment of nutrient related water quality objectives specified in the Basin Plan."[7]

The Regional Board Staff, in its 2008 update of the Los Angeles Regional Integrated Report for Clean Water Act Section 305(b) Report and Section 303(d) List of Impaired Waters, verified its determinations in their comment for the Machado Lake TMDL by stating:

> "The Basin Plan contains a specific nitrogen (nitrate nitrite) water quality objective, which is established at 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen. This objective is specifically set to protect drinking water beneficial uses and is consistent with the California Department Public Health nitrate drinking water standard. This nitrogen water quality objective does not protect waterbodies from impairments related to biostimulatory substances and eutrophication."

4.) Bubbling Springs

a. <u>Trash:</u> VCK's attached watershed monitoring program data indicates that on 9 out of 9 VCK monitoring events at Bubbling Springs, the presence of trash pollution in Bubbling Springs exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL

[7] Regional Board Staff Report for Machado Lake TMDL at 32, emphasis added.

b. **E. Coli**: VCK's attached watershed monitoring program data indicates that on 5 out of 11 VCK monitoring events at Bubbling Springs, the presence of E. Coli exceeded the Basin Plan single sample numeric water quality standard for E. Coli density of 235/100ml for Fresh Waters Designated for Water Contact Recreation (REC-1).

5.) J-Street Drain[8]

a. **Trash:** VCK's attached watershed monitoring program data indicates that on 9 out of 9 VCK monitoring events at J St. Drain, the presence of trash pollution in the J. Street Drain exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

6.) Oxnard Industrial Drain (OID)[9]

a. **Trash:** VCK's attached watershed monitoring program data indicates that on 8 out of 8 VCK monitoring events at the OID, the presence of trash pollution in the OID exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

b. **E. Coli**: VCK's attached watershed monitoring program data indicates that on 5 out of 11 VCK monitoring events at the OID, the presence of E. Coli exceeded the Basin Plan single sample numeric water quality standard for E. Coli density of 235/100ml for Fresh Waters Designated for Water Contact Recreation (REC-1).

c. **pH:** VCK's attached watershed monitoring program data indicates that on 6 out of 7 VCK monitoring events in the OID, pH levels in the OID water column exceeded the Basin Plan single sample numeric water quality standard of 8.5 for Fresh Waters Designated for Water Contact Recreation (REC-1).

d. **Nitrate:** VCK's attached watershed monitoring program data indicates that on 8 out of 8 VCK monitoring events at the OID, the concentration of Nitrate in the OID water column exceeded the numeric targets for Nitrate at 1 mg/l as derived in the Los Angeles Regional Water Quality Control Board's Machado Lake TMDL[10] and the Nutrient TMDL for Malibu

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[8] J-Street Drain is visually depicted and labeled as an inland waterbody in Basin Plan Figure 2-1 :"Miscellaneous Streams and Coastal Features, Ventura County".

[9] The OID is visually depicted and labeled as an inland waterbody in Basin Plan Figure 2-1:"Miscellaneous Streams and Coastal Features, Ventura County".

[10] Resolution NO. R08-006, Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Eutrophic, Algea, Ammonia, and Odors (Nutrient) for Machado Lake, California Regional Water Quality Control Board, Los Angeles Region. The Regional Board appropriately included a numeric target for total phosphorus of .1mg/l that was based of the EPA Nutrient Criteria Technical Guidance Manual Lakes and Reservoirs (2000), which does not recommend setting a numeric target for total phosphorus greater than 0.1 mg/L. Additionally, to maintain a balance of nutrients for biomass growth and prevent limitation by one nutrient or another, a ratio of total nitrogen to

Creek, adopted by USEPA in 2003[11]. In addition, it should be noted that the USEPA guidance value for CWA section 304(a) nutrient criteria specific to the Los Angeles Region (Ecoregion III) is 0.38 mg/l total nitrogen and 0.022 mg/l total phosphorus for protection of aquatic life and recreation.[12]

7.) Santa Clara River Estuary

a. **<u>Trash:</u>** VCK's attached watershed monitoring program data indicates that on 8 out of 8 VCK monitoring events at the Santa Clara River Estuary, the presence of trash pollution in the Santa Clara River Estuary exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

b. **<u>Dissolved Oxygen:</u>** The City of Ventura's Dissolved Oxygen recordings recorded for 24 hour periods by the City's North Sonde (SCR Sonde #1) and South Sonde (SCR Sonde #2)[13] stationed in the Santa Clara River Estuary, when converted to mg/l from % saturation based on additional water quality parameter recordings obtained by the City's sondes, violated the Basin Plan numeric water quality standard for Dissolved Oxygen of 5 mg/l for surface waters designated as WARM and 6mg/l for surface waters designated as COLD on over 40 days between 2009 and 2010.

c. **<u>Nitrate:</u>** VCK's attached watershed monitoring program data indicates that on 8 out of 10 VCK monitoring events at the Santa Clara River Estuary, the concentration of Nitrate in the Santa Clara River Estuary water column exceeded the numeric targets for Nitrate at 1 mg/l as derived in the Los Angeles Regional Water Quality Control Board's Machado Lake TMDL and the Nutrient TMDL for Malibu Creek, adopted by USEPA in 2003. In addition, it should be noted that the USEPA guidance value for CWA section 304(a) nutrient criteria specific to the Los Angeles Region (Ecoregion III) is 0.38 mg/l total nitrogen and 0.022 mg/l total phosphorus for protection of aquatic life and recreation.[14]

d. **Phosphate:** VCK's attached watershed monitoring program data indicates that on 10 out of 10 VCK monitoring events at the Santa Clara River Estuary, the concentration of Phosphate in the Santa Clara River Estuary water column exceeded the numeric targets for Phosphate at .1 mg/l as

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total phosphorus of 10 is used to derive the total nitrogen numeric target of 1.0 mg/L as a monthly average concentration (Thomann, Mueller, 1987)." (Regional Board Staff Report for Machado Lake TMDL at 35.)

[11] The Nutrient TMDL for Malibu Creek, adopted by USEPA in 2003, provides summer season water quality objectives of 1.0 mg/l total nitrogen and 0.1 mg/l total phosphorous. Other established nitrogen criteria for protection of aquatic life are significantly lower.

[12] See: USEPA, *Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III* (2000) (EPA 822-B-00-016).

[13] Data from City of Ventura included in email and attachments Labeled: City of Ventura Data

[14] See: USEPA, *Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III* (2000) (EPA 822-B-00-016).

derived in the Los Angeles Regional Water Quality Control Board's Machado Lake TMDL and the Nutrient TMDL for Malibu Creek, adopted by USEPA in 2003. In addition, it should be noted that the USEPA guidance value for CWA section 304(a) nutrient criteria specific to the Los Angeles Region (Ecoregion III) is 0.38 mg/l total nitrogen and 0.022 mg/l total phosphorus for protection of aquatic life and recreation.[15]

e. **pH:** VCK's attached watershed monitoring program data indicates that on 2 VCK monitoring events, and on greater than 60 City of Ventura[16] pH recordings taken on separate days in the Santa Clara River Estuary via the City's North and South Sondes, pH levels in the Santa Clara River Estuary water column exceeded the Basin Plan single sample numeric water quality standard of 8.5 for Fresh Waters Designated for Water Contact Recreation (REC-1).

f. **Low Flows:** As discussed in the City of Ventura Estuary Special Studies One Year Assessment (attached) and the July 23, 2008, National Marine Fisheries Service, Southwest Region Final Biological Opinion (BIOP) concerning the operation of the Vern Freeman Diversion and Fish-Passage Facility (attached), due to diversions at the Vern Freeman Diversion Dam by United Water Conservation District, the Santa Clara River Estuary, Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults to migrate up and down the Santa Clara River, and the Estuary does not receive sufficient flows during the dry season when the Estuary is closed as a lagoon to sustain aquatic life. Additionally, flow data indicates that reduced flows below the Vern Freeman Diversion Dam alters the natural flow regime needed to sustain aquatic life and vegetation that evolved with the River's natural flows. Attached daily flow data obtained from United Water Conservation District from 1993-2010, and monthly flow dating back to the 1956, above and below the Vern Freeman Diversion Dam, with the quantity of flows diverted by United included, demonstrates the flow impairments in the Santa Clara River Estuary, Santa Clara River Reach 1, and Santa Clara River Reach 2.

8.) Santa Clara River Reach 1

a. **Low Flows:** As discussed in the City of Ventura Estuary Special Studies One Year Assessment (attached) and the July 23, 2008, National Marine Fisheries Service, Southwest Region Final Biological Opinion (BIOP) concerning the operation of the Vern Freeman Diversion and Fish-Passage Facility (attached), due to diversions at the Vern Freeman Diversion Dam by United Water Conservation District, the Santa Clara River Estuary,

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[15] See: USEPA, *Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III* (2000) (EPA 822-B-00-016).

[16] Data from City of Ventura included in email and attachments Labeled: City of Ventura Data

Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults to migrate up and down the Santa Clara River, and the Estuary does not receive sufficient flows during the dry season when the Estuary is closed as a lagoon to sustain aquatic life. Additionally, flow data indicates that reduced flows below the Vern Freeman Diversion Dam alters the natural flow regime needed to sustain aquatic life and vegetation that evolved with the River's natural flows. Attached daily flow data obtained from United Water Conservation District from 1993-2010, and monthly flow dating back to the 1956, above and below the Vern Freeman Diversion Dam, with the quantity of flows diverted by United included, demonstrates the flow impairments in the Santa Clara River Estuary, Santa Clara River Reach 1, and Santa Clara River Reach 2. Additionally, VCK attached watershed monitoring program data indicates no flow or trickle flow in the Santa Clara River at SC-02 below Highway 101, which would other wise be of greater magnitude or sufficient magnitude to support aquatic life absent a diversion at the Vern Freeman Diversion Dam.

b. **<u>Trash:</u>** VCK's attached watershed monitoring program data indicates that on 9 out of 9 VCK monitoring events at Santa Clara Reach 1, the presence of trash pollution in the Santa Clara River Reach 1 exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

9.) Santa Clara River Reach 2

a. **<u>Low Flows:</u>** As discussed in the City of Ventura Estuary Special Studies One Year Assessment (attached) and the July 23, 2008, National Marine Fisheries Service, Southwest Region Final Biological Opinion (BIOP) concerning the operation of the Vern Freeman Diversion and Fish-Passage Facility (attached), due to diversions at the Vern Freeman Diversion Dam by United Water Conservation District, the Santa Clara River Estuary, Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults to migrate up and down the Santa Clara River, and the Estuary does not receive sufficient flows during the dry season when the Estuary is closed as a lagoon to sustain aquatic life. Additionally, flow data indicates that reduced flows below the Vern Freeman Diversion Dam alters the natural flow regime needed to sustain aquatic life and vegetation that evolved with the River's natural flows. Attached daily flow data obtained from United Water Conservation District from 1993-2010, and monthly flow dating back to the 1956, above and below the Vern Freeman Diversion Dam, with the quantity of flows diverted by United included, demonstrates the flow impairments in the Santa Clara River Estuary, Santa Clara River Reach 1, and Santa Clara River Reach 2.

b. **Fish Passage:** As discussed in the July 23, 2008, National Marine Fisheries Service, Southwest Region Final Biological Opinion (BIOP) concerning the operation of the Vern Freeman Diversion and Fish-Passage Facility (attached), the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.

10.) Santa Clara River Reach 3

a. **E. Coli**: VCK's attached watershed monitoring program data indicates that on 5 out of 27 VCK monitoring events at Santa Clara River Reach 3 on the Santa Clara River below the Santa Paula Creek confluence, on the Santa Clara River below the Sespe Creek Confluence, and on the lower segments of Sespe Creek and Santa Paula Creek, the presence of E. Coli in the water column of these waterbodies exceeded the Basin Plan single sample numeric water quality standard for E. Coli density of 235/100ml for Fresh Waters Designated for Water Contact Recreation (REC-1). Additionally, water monitoring on 11/26/08, 12/15/08, 2/6/2009, and 3/5/2009 at ME-SCR (attached), the mass emissions station sampling station operated by the Ventura County Watershed Protection District just above the Vern Freeman Diversion Dam, indicated E.Coli concentrations of 820/100ml, 4884/100ml, 12033/100ml, and 3873/100ml respectively (attached). All of these samples exceeding Basin Plan numeric water quality standards were taken by the county during wet weather events (see Ventura Annual Stormwater Report Appendix F starting at PDF pg 108).

b. **Trash:** VCK's attached watershed monitoring program data indicates that on 26 out of 31 VCK monitoring events at the Santa Clara River Reach 3 on the Santa Clara River below the Santa Paula Creek confluence, on the Santa Clara River below the Sespe Creek confluence, and on the lower segments of Sespe Creek and Santa Paula Creek, the presence of trash pollution in these waterbodies exceeded the numeric target for trash as derived in the Los Angeles River Trash TMDL.

c. **Fish Passage:** As discussed in the July 23, 2008, National Marine Fisheries Service, Southwest Region Final Biological Opinion (BIOP) concerning the operation of the Vern Freeman Diversion and Fish-Passage Facility (attached), the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.

11.) Santa Clara River Reach 4a

a. **Trash:** VCK's attached watershed monitoring program data indicates that on 7 out of 8 VCK monitoring events in the Santa Clara River Reach 4 below the Santa Clara River's confluence with Piru Creek, the presence of trash pollution exceeded the numeric target for trash in Santa Clara Reach 4 as derived in the Los Angeles River Trash TMDL.

12.) Santa Clara River Reach 5 or 6

a. **Trash:** VCK's attached watershed monitoring program data indicates that on 5out of 7 VCK monitoring events at the Santa Clara River Reach 5 or 6 in Santa Clarita (see attached long lat coordinates), the presence of trash pollution exceeded the numeric target for trash in Santa Clara River Reach 5 or 6 as derived in the Los Angeles River Trash TMDL.

Thank you for considering our data and agency data, and the incorporation of the above mentioned waterbodies as impaired for the above specified constituents into the 2012 California Integrated Report as Clean Water Act 303(d) impaired waterbodies. The ecological integrity and water quality of Ventura County's inland and coastal waterbodies would benefit greatly from these 303(d) listings for all of our communities.

Please feel free to contact us with any questions.

Sincerely,

Jason Weiner, M.E.M.
Associate Director & Staff Attorney
Ventura Coastkeeper
jweiner.venturacoastkeeper@wishtoyo.org
805-823-3301

ATTACHMENT B

These are the listings VCK specifically asked for listing in VCK's submission letter dated 8/30/2010
Date: March 23, 2017

Reach	**Pollutant**	**Data Source**	**RB Action**
Nicholas Canyon Creek (San Nicolas Canyon Ck)	Trash	VCK data	Data not assessed (5/7)
San Jon Barranca Creek (Sanjon Barranca Creek)	Trash	VCK data	Data not assessed (8/8)
	E coli	VCK data	Data not assessed (5/8)
Ormond Beach Lagoon (Ormond Beach Wetlands)	Trash	VCK data	Data not assessed (9/9)
	E coli	VCK data	**Do Not Delist (DI 42278) Data is not assessed.**
	pH (>8.5)	VCK data	Data not assessed (6/8)
	Nitrate(>1 mg/L or >10 mg/L)	VCK data	Data not assessed (VKC (11/14), RB(0/10))
Bubbling Springs (Hueneme Drain)	Trash	VCK data	Data not assessed (9/9)
	E coli	VCK data	Data not assessed (5/11)
J Street Drain	Trash	VCK data	List (DI 63443)
Oxnard Industrial Drain (Oxnard Drain)	Trash	VCK data	Data not assessed (8/8)
	Ecoli	VCK data	Data not assessed (VKC(5/11), RB(3/7))
	pH (>8.5)	VCK data	Data not assessed (VKC(6/7), RB(5/7)) **Do Not List (DI62330) Data is not assessed.**
	Nitrate(>1 mg/L or >10 mg/L)	VCK data	Data not assessed (VKC (8/8), RB(3/8))
Santa Clara River Estuary	Trash	VCK data	**Do Not List (DI66592) Data (2009) is used** Data not assessed (8/8)
	DO	City of Ventura Sonde data	**Do Not List (DI66590)** Problems QAQC
	Nitrate	VCK data	**List (DI35380)** Data not assessed (8/10)
	Phosphate	VCK data	Data not assessed (10/10)
	pH	VCK data	**List (DI66591)** Data not assessed
	Low flows	City of Ventura estuary special study	Flow, see below
Santa Clara Reach 1	Low flows	City of Ventura estuary special study	Flow, see below
	Trash	VCK data	**List (DI66631)**

			Data not assessed (9/9)
Santa Clara Reach 2	Low flows	City of Ventura estuary special study	Flow, see below
	Fish passage	NMFS BO	Flow, see below
Santa Clara Reach 3	E coli	VCK data	Data not assessed (5/27)
	Trash	VCK data	Data not assessed (26/31)
	Fish passage	NMFS BO	Flow, see below
Santa Clara Reach 4a	Trash	VCK data	Data not assessed (7/8)
Santa Clara Reach 5or6	Trash	VCK data	Data not assessed (5/7)

CITY OF
ROLLING HILLS ESTATES
4045 PALOS VERDES DRIVE NORTH • ROLLING HILLS ESTATES, CA 90274
TELEPHONE 310.377.1577 FAX 310.377.4468
RollingHillsEstatesCA.gov

March 27, 2017

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Via email: losangeles@waterboards.ca.gov

Attn: Jun Zhu, Environmental Scientist (jzhu@waterboards.ca.gov)

Subject: Comment Letter—Revisions to the Los Angeles Region 303(d) list

Dear Mr. Unger:

On February 8, 2017, the Los Angeles Regional Water Quality Control Board (Regional Board) issued a 30-day Notice of Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. On February 24, 2017, the Regional Board issued a Notice of Extension of Comment Deadline with a revised comment deadline of March 30, 2017 and the public hearing scheduled for May 4, 2017. The City of Rolling Hills Estates respectfully submits the attached pollutant/water body-specific comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report for consideration by the Regional Board.

The City is pleased that that Palos Verdes Peninsula beaches are being proposed for delisting for indicator bacteria. This is also consistent with Regional Board Resolution No. 2006-008 reviewing the Implementation Plan submitted by Jurisdictional Group 7 for the Santa Monica Bay Beaches Bacteria Wet Weather TMDL which noted that "Palos Verdes Peninsula have had historically fewer exceedances than the reference beach". and " . . . existing water quality is equivalent to compliance with the Santa Monica Bay Beaches Wet Weather TMDL."[1]

Thank you for your consideration of our comments.

Sincerely,

Greg Grammer
Assistant City Manager

Attachment
Copies: Dr. L.B. Nye (LB.Nye@waterboards.ca.gov)

[1] California Regional Water Quality Control Board – Los Angeles Region, Resolution No. 2006-008

City of Rolling Hills Estates Comments on Proposed Revisions to 303(d) List

Water Body/Pollutant	**Comment**	**Recommendation**
Los Angeles-Long Beach Inner Harbor/Zinc	We are in agreement with Decision ID 33644 LARWCB staff recommendation to delist the water body both due to flaws in the original listing and because applicable water quality standards are not being exceeded this recommendation, however Appendix A does not reflect this proposed change.	Add a "Y" in the New Delistings column in Appendix A for Zinc in Los Angeles-Long Beach Inner Harbor.
Wilmington Drain/Lead	We are in agreement with Appendix G Decision ID 35085 to delist the Wilmington Drain for lead based on the weight of evidence. Additionally, the weight of evidence is stronger than indicated because data was included in this fact sheet from Compton Creek. LOE 90133 included in Fact Sheet 35085 describes data collected in Compton Creek which is unrelated to the Wilmington Drain.	Remove LOE 90133 from Fact Sheet 35085 and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that "0 of 33 samples exceeded the CRITERIA."
Wilmington Drain/Copper	The Appendix G Decision ID 44676 regarding copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples.	Remove LOE ID data set 90473 from Decision ID 44676 and revise the recommendation to Delist from 303(d) List.
Machado Lake/Algae, Ammonia, ChemA, Eutrophic, Odor, Trash	These listings for Machado Lake are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these	These listings should be moved to Category 4a in Appendix C. An explanation that "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" should be

Water Body/Pollutant	Comment	Recommendation
	pollutant listings are being addressed by USEPA-approved TMDLs.	included in Appendix A under the "Other Revisions" column for each of these pollutants in Machado Lake.
Los Angeles-Long Beach Outer Harbor (inside breakwater)/DDT, PCBs and Toxicity; Los Angeles Harbor Inner Cabrillo Beach/DDT, PCBs; San Pedro Bay Near-Off Shore/Chlordane, PCBs, Total DDT, and Toxicity	These are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these listings are being addressed by the USEPA approved TMDL for Dominguez Channel and Greater Los Angeles and Long Beach Harbors. These changes are explained in Appendix A summary under "other revisions".	These listings for DDT, PCBs and Toxicity should be moved to Category 4a in Appendix C.
San Pedro Bay Near-Off Shore Zones/Zinc	Appendix G Decision ID 42798 to Delist San Pedro Bay Near/Off Shore Zones for Zinc because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes.	Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for zinc.
San Pedro Bay Near-Off Shore Zones/Chromium	Appendix G Decision ID 42525 restates and does not revise the original recommendation to delist San Pedro Bay Near/Off Shore Zones for Chromium, however delisting does not seem to have occurred since the pollutant-waterbody combination still appears in Appendix A.	Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs and remove the "Y" from the Pollutant Name Changes column since there does not appear to have been any name change made for this pollutant.
San Pedro Bay Near-Off Shore Zones/Copper	Appendix G Decision ID 44434 to Delist San Pedro Bay Near/Off Shore Zones for Copper based on flaws in the original listing. This recommendation is not reflected in Appendix A summary of recommended changes.	Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for copper.
San Pedro Bay Near-Off Shore Zones/Polycyclic Aromatic Hydrocarbons (PAHs)	Appendix G Decision ID 43259 to Delist San Pedro Bay Near/Off Shore Zones for PAHs because applicable water quality standards are not being exceeded. This recommendation is not	Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs.

Water Body/Pollutant	Comment	Recommendation
	reflected in Appendix A summary of recommended changes.	
Santa Monica Bay Offshore-Nearshore/Chordane	The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes.	Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.
Santa Monica Bay Offshore-Nearshore/Polycyclic Aromatic Hydrocarbons (PAHs)	The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for PAHs is not reflected in the Appendix A summary of recommended changes.	Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.
Santa Monica Bay Offshore-Nearshore/Arsenic	Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5—these sampling areas are north of Redondo Beach Pier.	This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet (Decision ID 67208) should be revised to discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.
Santa Monica Bay Offshore-Nearshore/Mercury	Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5.	This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet should

Water Body/Pollutant	Comment	Recommendation
		be revised to (Decision ID 67209) discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.

MAYOR:
SANDRA ARMENTA

MAYOR PRO TEM:
POLLY LOW

COUNCIL MEMBERS:
WILLIAM ALARCON
MARGARET CLARK

City of Rosemead

8838 E. VALLEY BOULEVARD P.O BOX 399
ROSEMEAD, CALIFORNIA 91770
TELEPHONE (626) 569-2100
FAX (626) 307-9218

March 28, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Email: losangeles@waterboards.ca.gov

Subject: Comment Letter – Revisions to the Los Angeles Region (303(d))

Dear Mr. Zhu:

The City of Rosemead (City) is pleased to submit for your consideration the attached comments regarding the Regional Board's propose 2016 303(d) list revisions.

We note significant changes to this list, they include: Rosemead is located in Reach 3 of the Rio Hondo (R3-RH), upstream of the spreading grounds and Whittier Narrows Dam. According to the 2016 303(d) list, all of the metals subject to the Los Angeles River Metals TMDL have been placed on the "**do not list**" for Rio Hondo. This validates the 2010 303(d) list, which did not list any of the metals for R3-RH.

This is good news for our City and once the Los Angeles Basin Plan is amended, Rosemead's MS4 Permit compliance burden will be significantly reduced.

In closing, the City of Rosemead appreciates the opportunity to comment on this matter. Should you have questions or require additional information, please do not hesitate to contact me.

Sincerely,

Kathy Garcia
Director of Public Works
City of Rosemead
(626) 569-2118

cc: Bill R. Manis, City Manager
Rafael Fajardo, City Engineer

I. Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries[1] propose to ***de-list***, ***do not de-list***, and ***do not list*** metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the *Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-TMDL)* adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).

Although many metals have either been placed on the "de-list" and "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. Nevertheless, these listings should be voided because:

1. although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and

2. the LAR-MTMDL is based on water quality samples that were conducted before the Water *Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004.

- **California Toxic Rule**

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR here by claiming that EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as:

[1]Includes but is not limited to the Estuary (Queens Bay); Los Angeles/Long Beach Harbor, Estuary to Reach 1, Reaches 2, 3, 4, 5, and 6; Alhambra Wash, Arroyo Seco, Reaches 1 and 2 (tributaries); Compton Creek (tributary); Monrovia Canyon, Rio Hondo Reach 1; Reach 1 (tributary); Sawpit Wash, and Tujunga Wash.

Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.

Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-TMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on ambient water quality sampling and analysis.

- **California 303(d) Listing Policy (Listing Policy)**

The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on a 303(d). That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.

MS4 Permittees located in Reach 2 of the Rio Hondo will be pleased to know that the 2016 303(d) list does not propose to list it for any of the metals covered by the LAR-MTDL. This makes sense given that this reach was not listed for metals impairment on the 2010 303(d) list. Further, LAR-MTMDL makes no mention of Reach 2 of the Rio Hondo. As result, the following cities should not be subject to this TMDL: Alhambra (partially); Arcadia; Bradbury; Duarte; El Monte; Irwindale (partially); Montebello (partially); Monterey Park; Pasadena (partially); Rosemead; San Gabriel; San Marino; South El Monte; Irwindale (partially); and South Pasadena (partially).

However, it is noted that Reaches 1 and 2 of the Arroyo Seco was not placed on the "do not list" for metals. It should have been for the same reason Reach 2 of the Rio Hondo was. Neither Reach 1 nor Reach 2 of the Arroyo Seco appears on the 2010, 2006, or 2002 303(d) list for metals. The Regional Board may wish to update the 2016 303(d) list to place the Arroyo Seco on the "do not list" category.

Attachment #1

TABLE 3.1: MINIMUM NUMBER OF MEASURED EXCEEDANCES NEEDED TO PLACE A WATER SEGMENT ON THE SECTION 303(D) LIST FOR TOXICANTS. *Null Hypothesis: Actual exceedance proportion < 3 percent. Alternate Hypothesis: Actual exceedance proportion > 18 percent. The minimum effect size is 15 percent.*	
Sample Size	List if the number of exceedances equal or is greater than
2 – 24	2*
25– 36	3
37– 47	4
48– 59	5
60– 71	6
72– 82	7
83– 94	8
95– 106	9
107– 117	10
118– 129	11

*Application of the binomial test requires a minimum sample size of 16. The number of exceedances required using the binomial test at a sample size of 16 is extended to smaller sample sizes.

For sample sizes greater than 129, the minimum number of measured exceedances is established where α and f3 < 0.2 and where |α - f3| is minimized.

α = Excel® Function BINOMDIST(n-k, n, 1 – 0.03, TRUE)
f3 = Excel® Function BINOMDIST(k-1, n, 0.18, TRUE)
where n = the number of samples,
k = minimum number of measured exceedances to place a water on the section 303(d) list,
0.03 = acceptable exceedance proportion, and
0.18 = unacceptable exceedance proportion

City of Compton
Public Works/Municipal Utilities
205 South Willowbrook Avenue
Compton, CA 90220

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Fax: (310) 605-6326

Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th St. Suite 200
Los Angeles, CA 90013

RE: SWMP/I-WMP Submittal

Dear Mr. Zhu:

The **City of Compton** is pleased to submit for your consideration the attached comments regarding the Regional Board's proposed 2016 303(d) list revisions.

We note that the Regional Board has proposed excluding many metals (copper, lead, selenium, and zinc. This is good news for the City. Once the Los Angeles Basin Plan is amended, the City's MS4 Permit compliance burden will be significantly reduced.

In closing, the City appreciates the opportunity to comment on this matter. Should you have questions are require additional information please do not hesitate to contact me.

Sincerely,

Glen W. C. Kau
Director of Public Works

Cc: Cecil Rhambo, City Manager
Craig Cornwell, City Attorney
Hien Nguyen, Asst. City Engineer
Ray Tahir, TECS Environmental

City of Compton Comments In Re: Los Angeles Regional Board's Proposed 2016 303(d) List Revisions Affecting Los Angeles River Metals

I. Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries[1] propose to ***de-list***, ***do not de-list***, and ***do not list*** metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the *Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-MTMDL)* adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E WMPs).

Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:

1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and
2. The LAR-MTMDL is based on water quality samples that were conducted before the *Water Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004.

- **California Toxic Rule**

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water

[1]Includes but is not limited to the Estuary (Queens Bay); Los Angeles/Long Beach Harbor, Estuary to Reach 1, Reaches 2, 3, 4, 5, and 6; Alhambra Wash, Arroyo Seco, Reaches 1 and 2 (tributaries); Compton Creek (tributary); Monrovia Canyon, Rio Hondo Reach 1; Reach 1 (tributary); Sawpit Wash, and Tujunga Wash.

quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as:

> *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.*

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.

Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals□toxics using a hardness value of 100 milligrams per liter (mg□l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.

- **California 303(d) Listing Policy (Listing Policy)**

The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment □1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.

II. Los Angeles River Reach□Tributary Specific Comments

Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories.

1. **Compton Creek**

Of the 4 subject LAR-MTMDL metals, the 2016 303(d) list only places selenium on the "do not list" for the Creek.

According to the fact sheet, copper is placed on the "do not de-list" based on 1 of 15 samples that exceeded dissolved copper. This result, however, does not meet the 3.1 Listing Policy's binomial test requirement. The policy explains that the application of the binomial test requires a minimum sample size between 2 and 24, with at least 2 exceedances required for 303(d) listing placement. But, the Listing Policy also mentions that a sample size less than 16 is insufficient to meet the listing test.

Lead is also placed under the "do not de-list" category. <u>This appears to be in error.</u> According to the fact sheet, *1 of 15 samples and 0 of 3 samples exceeded the criteria for this sample size to determine the applicable beneficial use.* However, 1 exceedance out of 15 and 0 out of 3 samples do not meet the Listing Policy for 303(d) list placement. Not only is the exceedance frequency insufficient, but the sample size is too small.

The same is true of zinc, which was placed on the "list" category because 2 of the 15 samples exceeded the allowable frequency. That cannot be. Once again, a sample size of 15 is too small. Further, it is not clear whether the samples were taken from the Creek during a storm event or during an ambient water body condition.

It should also be noted that according Regional Board SWAMP data taken in June of 2005, no exceedances were reported for copper, lead, or zinc.

Based on the foregoing, it is recommended that copper, lead, and zinc be placed on the **"do not list"** category.

Table I. Compton Creek

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	-	-	-	x	x	Yes
Lead	x	-	-	-	x	x	Yes
Selenium	-	-	-	x	-		Yes
Zinc	-	x	-	-	-	x	Yes

2. **Los Angeles River Reach 1 (Estuary to Carson)**

Copper, lead, and zinc were listed, while selenium was not. The justification for their listing is questionable. The listing fact sheet indicates 7 out of 18 samples exceeded CTR criteria. Because the LAR-MTMDL asserts that CTR limitations can be based on both wet weather and dry weather (ambient) sampling, the Regional Board needs to provide data that shows which samples were based on wet weather and dry weather.

As mentioned above, CTR limitations are exclusively expressed as ambient standards. Wet weather samples should be excluded. If the number of excluded samples does not meet the Listing Policy requirement for minimum sample size, then the sampling data is invalid. Further, it is not clear when the samples were taken, nor whether the actual hardness value was applied.

Based on this information, copper, lead, and zinc should be de-listed.

Table II. LAR Reach 1

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	-	-	x	x	x	Yes
Lead	x	-	-	x	x	x	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	-	x	-	-	-	x	Yes

3. **Los Angeles River Reach 2 (Carson to Figueroa)**

Copper and lead are carried-over from the 2010 303(d) list and placed in the "do not de-list" category. Selenium and zinc were not listed. Copper and lead should be de-listed because according to the 303(d) listing fact sheet, 0 samples were taken.

Based on this information copper and lead should be should be de-listed.

Table III. LAR Reach 2

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	-	-	-	x	x	Yes
Lead	x	-	-	-	x	x	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	-	-	-	-	-	-	Yes

Attachment #1

TABLE 3.1: MINIMUM NUMBER OF MEASURED EXCEEDANCES NEEDED TO PLACE A WATER SEGMENT ON THE SECTION 303(D) LIST FOR TOXICANTS. *Null Hypothesis: Actual exceedance proportion < 3 percent.* *Alternate Hypothesis: Actual exceedance proportion > 18 percent. The minimum effect size is 15 percent.*	
Sample Size	List if the number of exceedances equal or is greater than
2 – 24	2*
25– 36	3
37– 47	4
48– 59	5
60– 71	6
72– 82	7
83– 94	8
95– 106	9
107– 117	10
118– 129	11

*Application of the binomial test requires a minimum sample size of 16. The number of exceedances required using the binomial test at a sample size of 16 is extended to smaller sample sizes.

For sample sizes greater than 129, the minimum number of measured exceedances is established where α and f3 < 0.2 and where |α - f3| is minimized.

α = Excel® Function BINOMDIST(n-k, n, 1 – 0.03, TRUE)
f3 = Excel® Function BINOMDIST(k-1, n, 0.18, TRUE)
where n = the number of samples,
k = minimum number of measured exceedances to place a water on the section 303(d) list,
0.03 = acceptable exceedance proportion, and
0.18 = unacceptable exceedance proportion.

More To Sea
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BEACH

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March 29, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013
Electronic Submission: losangeles@waterboards.ca.gov

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu:

The City of Redondo Beach (City) appreciates the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region (303(d) List), which was distributed for public review on February 8, 2017.

The Los Angeles Regional Water Quality Control Board (Water Board) has stated, within the Staff Report, that it is proposing a total of 200 new waterbody segment-pollutant combination 303(d) listings, of which 43 modifications fall within the City's two watersheds – Santa Monica Bay and Dominguez Channel. The City is committed to implementing management programs that assist in achieving the shared goal of improving water quality within the Los Angeles region. The City participates in the implementation of several total maximum daily loads (TMDLs), including the Santa Monica Bay Bacteria[1] and DDT/PCBs[2], which have resulted in a reduction of exceedances and are reflected in the Water Board's reclassification of indicator bacteria, PCBs, and DDT to Category 4A[3]. These TMDLs are listed as the highest priority pollutant combinations in the Beach Cities Enhanced Watershed Management Program, to which the City is a party. The City fully endorses the proposed re-categorizations and looks forward to continued collaboration with the Water Board to protect beneficial uses.

However, after reviewing the proposed changes to the 303(d) List, the City remains concerned about a number of specific issues, which are detailed below. The City's comments are generally grouped within two categories:

- Segment specific comments on the proposed 303(d) List; and
- Inconsistencies within the 303(d) List.

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[1] Santa Monica Bay Bacteria TMDL. Resolution R12-007. Approved by LARWQCB April 6, 2006. Pending USEPA approval.
[2] Santa Monica Bay TMDL for DDT and PCBs. Approved by USEPA March 26, 2012.
[3] Category 4A is defined as "*A TMDL has been developed and approved by USEPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.*"

I. Segment Specific Comments on the Proposed 303(d) List

A. Dominguez Channel (lined portion above Vermont)

<u>Comment 1: The benthic community effects listing (Decision ID 66165) appears to be flawed and should be removed.</u>

The listing for benthic community effects should be removed because it is based on flawed data and/or analyses. The basis for this comment is as follows:

- The sample size did not meet the minimum criteria pursuant to the Listing Policy. According to Section 3.9 Degradation of Biological Populations and Communities of the Listing Policy[4], *The analysis should rely on measurements from at least two stations*. The Appendix G Fact Sheets list only one sample site, however it treats the data from the one site as three separate samples, which is incorrect. As a result, there are not enough data to justify a listing.
- The benthic community effects listing for the lined portion of Dominguez Channel lacks a sufficient reference site. Since this section of the Dominguez channel is lined, it does not have a traditional bed structure or substrates found in a typical stream. The classic Index of Biotic Integrity (IBI) stream assessment score does not take into consideration that lined channels naturally have lower IBI scores as noted in the recently released SCCWRP Special Study on Engineered Channels[5]. In order to make a robust assessment, the reference site should also be a lined channel that has not been subject to anthropogenic influences, however such a reference site was not used in the analysis.
- The IBI is not the assessment tool that should be used to determine benthic community effects. As acknowledged in the Appendix G Fact Sheets: *The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).* We agree with this statement and also note that some IBI scores are especially skewed when utilized for hardened channels since they heavily rely on macroinvertebrates, which are inherently more common in natural bottom stream beds. Other assessment tools such as the diatom IBI may also be used to assess the benthic community of a hardened channel as demonstrated by the SCCWRP Study on Engineered Channels referenced earlier. Therefore, the IBI assessment tool should not be used as the sole basis for a listing in this lined channel.
- The benthic community effects exceedance should not be linked to diazinon as a way to establish a causal effect since this pollutant has been delisted with respect to the Dominguez Channel (lined portion above Vermont) (Decision ID 33061).

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[4] State Water Resources Control Board. *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List*, as amended Feb. 3, 2015. [Referred to hereinafter as the Listing Policy]

[5] Pages 5-7 of Southern California Stormwater Monitoring Coalition. 2017. *2015 Report on the Stormwater Monitoring Coalition Regional Stream Survey: Special Study on Engineered Channels*. SCCWRP Technical Report 963. Southern California Coastal Water Research Project. Costa Mesa, CA.

Requested Action:

- *Remove the benthic community effects listing for Dominguez Channel since the sample size does not meet the minimum criteria, this section of channel lacks a proper reference site, and is based on an inappropriate assessment tool.*
- *If the listing is not removed, the diazinon linkage to benthic community effects should be removed since this pollutant has been delisted.*

<u>Comment 2: The ammonia listing (Decision ID 35134) should be updated to consider all readily available data.</u>

Ammonia was not delisted based on the existence of 2 exceedances out of 21 samples collected from 7/1/2009 to 8/13/2009 at Western Ave., Manhattan Beach Blvd, and El Segundo Blvd. Additional samples were also collected at a sample site just across Vermont Ave. (33° 52' 16" N, 118° 17' 23" W), however these samples were not included in the analysis. The Basin Plan lists Vermont Ave. as the reach break between the Dominguez Channel and Dominguez Channel Estuary and, therefore, it appears a decision was made to include the Vermont Ave. samples in the downstream segment - the Dominguez Channel Estuary (unlined portion below Vermont Ave.) (see map in **Attachment A**).

The City maintains that the Vermont Ave. samples should be considered in the Dominguez Channel (lined portion above Vermont) based on their direct proximity to the end of the reach, offering optimal spatial representation of the water body segment. Furthermore, the sample site is located less than 100 meters from the lined portion of Dominguez Channel and according to the Listing Policy, a sample collected 200 meters upstream, in the lined portion of the Channel, would be considered the same station location[6].

If the additional 8 samples from the Vermont Ave. station are included in the Dominguez Channel (lined portion above Vermont) analysis, the total samples in exceedance would be 2 out of 29. These data would then meet the requirement to delist ammonia as stated in Section 4.1 of the California Delisting Factors set in the Listing Policy – i.e., these samples support rejection of the null hypothesis using the binomial distribution and the sample size is greater than 28. Specifically, Table 4.1 at page 14 of the Listing Policy demonstrates that where 2 or less exceedances are identified in a sample size of 28-36 samples, such as here, then the water segment shall be removed from the 303(d) List. Therefore, based on the updated and appropriate sample size, which includes Vermont Ave. samples, and number of exceedances, ammonia should be delisted for this reach.

Requested Action:

Include the Vermont Ave. sampling data in the analysis of the ammonia listing for Dominguez Channel (lined portion above Vermont).

Delist ammonia based on the updated analysis.

B. Dominguez Channel Estuary (unlined portion below Vermont Ave)

<u>Comment 3: Delist Ammonia (unionized) due to lack of exceedances.</u>

A listing for ammonia was shown in the Appendix G Fact Sheets, however none of the cited lines of evidence (LOE) shows evidence of an exceedance. One LOE is an unspecified

[6] Page 22 of the SWRCB Listing Policy "*Samples collected within 200 meters of each other should be considered samples from the same station or location.*"

placeholder for a listing decision made prior to 2006, however the other two LOE show 0 out of 28 and 0 out of 7 exceedances. Based on the data, this pollutant meets the Section 4 California Delisting Factors set in the Listing Policy.

Requested Action:

- *Delist ammonia (unionized) (Decision ID 34669) based on lack of evidence and exceedances.*

C. Santa Monica Bay Offshore/Nearshore

Comment 4: The arsenic and mercury fish tissue listings are not based on all readily available data, are not spatially representative of the water body, and samples were not treated as temporally independent.

The samples used for the proposed 5A Arsenic and Mercury fish tissue listings (Decision ID: 67208 and 67209) are not spatially representative of the water body. Samples used for these listings were collected for the City of Los Angeles Hyperion Treatment Plant NPDES Permit (NO. CA0109991). The permit designates 5 different sampling zones along the coast of the Santa Monica Bay[7] of which the City falls along the border of zones 4 and 3 (see map in **Attachment B**). All of the samples used for these listings were collected from zones 4 and 5 - no representative samples were collected from zone 3, which includes the southern end of Santa Monica Bay and a substantial portion of the City's drainage area. Therefore, using current samples to list the entire Santa Monica Bay Offshore/Nearshore would incorrectly list zone 3 of the bay despite a lack of representative samples from this area. This would contradict the Listing Policy which states that "*samples should represent statistically or in a consistent targeted manner the segment of the water body*"[8]. The spatial coverage of the samples should be considered and the listing reassessed by either segmenting the water body or using samples from all representative zones of Santa Monica Bay.

In addition, sampling data beyond the 19 samples collected in 2006-2007 should be available from the City of Los Angeles' Hyperion Treatment Plant NPDES permit. It is unclear why only the 2006-2007 samples were used when there are presumably more samples available from the Hyperion Treatment Plant NPDES monitoring program. The City requests that the Water Board review all available data for fish tissue before making a listing for Arsenic and/or Mercury.

Finally, the fish tissue assessment for arsenic and mercury did not properly categorize the data in a way that is temporally independent. The Listing Policy states that samples should be *temporally independent*[9]; however, in some cases fish collected on the same day were treated as unique data points. In addition, the samples collected were from August 2006, October 2007- November 2007, and August - September 2007. Because both arsenic and mercury bioaccumulate over the lifetime of the individual species an averaging period of at least a year should be considered. Therefore, instead of considering 19 individual samples these data should only be considered representative of 2 years thus supporting the need for additional data as previously requested.

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[7] Page T-55 of City of Los Angeles Hyperion Treatment Plant. Order NO. R4-2005-0020. NPDES Permit NO. CA0109991, as revised April 7, 2005.
[8] Page 22 of the Listing Policy.
[9] Page 23 of the Listing Policy.

Requested Action:

Either (1) segment the Santa Monica Bay listing since the data used to list arsenic and mercury are not representative of the entire water body as required by the Listing Policy, or (2) seek additional data from all zones of Santa Monica Bay to ensure proper spatial representation of the data prior to listing.

Seek and reanalyze additional sample data from the City of Los Angeles beyond the 19 samples from 2006 and 2007 that were originally used for the analysis.

The mercury and arsenic fish tissue data should be aggregated based on a more reasonable temporal resolution.

<u>Comment 5: Sediment toxicity should be delisted; no justification was provided for the name change in the Fact Sheets.</u>

The Santa Monica Bay Offshore/Nearshore toxicity listing (Decision ID 34120) was marked only as a name change in Appendix A. However, a TMDL for DDTs and PCBs was developed and approved by USEPA in 2012[10] which evaluated sediment toxicity resulting in a recommendation for delisting:

"Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list."

Based on the statement above and data summarized on pages 19 and 20 of the TMDL there is sufficient evidence to delist sediment toxicity for Santa Monica Bay Offshore/Nearshore.

The listed name change appears to be a change from "sediment toxicity" to "toxicity" based on the Appendix G Fact Sheets. We assume that this name change is the result of the Water Board's acknowledged systems and clerical errors in Appendix A. In the event that it is not a mere error that will be corrected by the Water Board, the City requests that justification be provided to support the name change. This name change should only occur if new data is used to support the observation of toxicity in the water column as outlined in section 3.6 of the Listing Policy, however no new data was presented and a reason for this name change was not discussed in the staff report.

Requested Action:

Delist sediment toxicity for Santa Monica Bay based on the data analysis performed in the 2012 DDTs and PCBs TMDL.

- *Correct the name change error.*

II. Inconsistencies within the 303(d) List

As noted by Water Board staff, the Appendices of the proposed 303(d) List have a number of inconsistencies. The inconsistencies listed below are a few examples and should not be considered an exhaustive list. We request that the Water Board do a thorough review of all of the Appendices to ensure that they are internally consistent with the changes listed in the Appendix G Fact Sheets.

[10] Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs. Approved by USEPA March 26, 2012.

Table 1. Inconsistencies in the Proposed 303(d) List Appendices		
Waterbody Segment	**Pollutant(s)**	**Comment/Requested Action**
Dominguez Channel (lined portion above Vermont)	Diazinon	This pollutant is shown as "delisted" in Appendix A with a note "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*". In Appendix G the same pollutant is listed as "*Delist from 303(d) list (being addressed by USEPA approved TMDL)*". **The City would like clarification that this listing will be entirely removed from the 303(d) list and not categorized as 4A as indicated by the note in Appendix A.**
	Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs	These pollutants are shown as delisted in the Appendix G factsheets, however they are not listed as changed in Appendix A. **All of these pollutants should be delisted due to flaws in the original listing (as noted within the factsheets).**
	Chromium and Dieldrin	These pollutants are shown as "name changes" in Appendix A, however we could find no evidence of a name change throughout the rest of the document. **Any name change should be supported by a reason detailing the need for the change in the Fact Sheets. Furthermore both of these listing should be delisted based on the comment above.**
Dominguez Channel Estuary (unlined portion below Vermont Ave)	Aldrin, ChemA, Chromium (total), and PAHs	These pollutants are not listed as a change in Appendix A, but shown as "delisted" in Appendix G. **All listings should be delisted either because of flaws in the original listing or lack of an exceedance.**
	DDT	This listing is missing from Appendix B or C and has not been listed as changed in Appendix A, however the Appendix G factsheets lists DDT as being addressed with a USEPA approved TMDL and therefore **should be categorized as 5B or 4A.**
	Dieldrin	Listed in Appendix A as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*", however the pollutant does not appear in Appendix B or C and is listed as "*List on*

		303(d) list (being addressed by USEPA approved TMDL)" in Appendix G. **This pollutant should be listed as 4A or delisted.**
	Chlordane(tissue)	Listed in Appendix A as unchanged but not found in Appendix B or C. The Appendix G Fact Sheets list this pollutant as "*Do not delist (being addressed with USEPA approved TMDL)*". **The City would like clarification if this pollutant has been delisted or recategorized as 5B.**
The Santa Monica Bay Offshore/Nearshore	Chlordane and PAHs	Not listed as a change in Appendix A but shown as "delisted" in Appendix G. **These pollutants should be delisted.**
Redondo Beach	DDT	Listed in Appendix A only as a 'name change', however Appendix G lists this as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*". The 2010 303(d) list shows Redondo Beach DDT listing was Category 5A however in the newly proposed 303(d) list the pollutant is listed as 4A in Appendix C. Category 4A is the correct category for this pollutant since a USEPA-approved TMDL does exist to manage DDT which is expected to result in full attainment of the water quality standard within a specified time frame. **The City would like Appendix A edited to reflect new 4A listing.** Furthermore if this is in fact a name change, as stated in Appendix A, **an explanation including supporting data for the name change should be included in the Appendix G Fact Sheets.**

The City thanks the Water Board for the substantial time invested in developing the proposed 303(d) List and appreciates the opportunity to comment and consideration of these comments. If you have questions, please do not hesitate to contact me at 310-318-0661.

Sincerely,

Andrew S. Winje, PE
City Engineer

Attachment A: Map of Vermont Ave. Sampling Location
Attachment B: Map of Hyperion NPDES Santa Monica Bay Sampling Zones

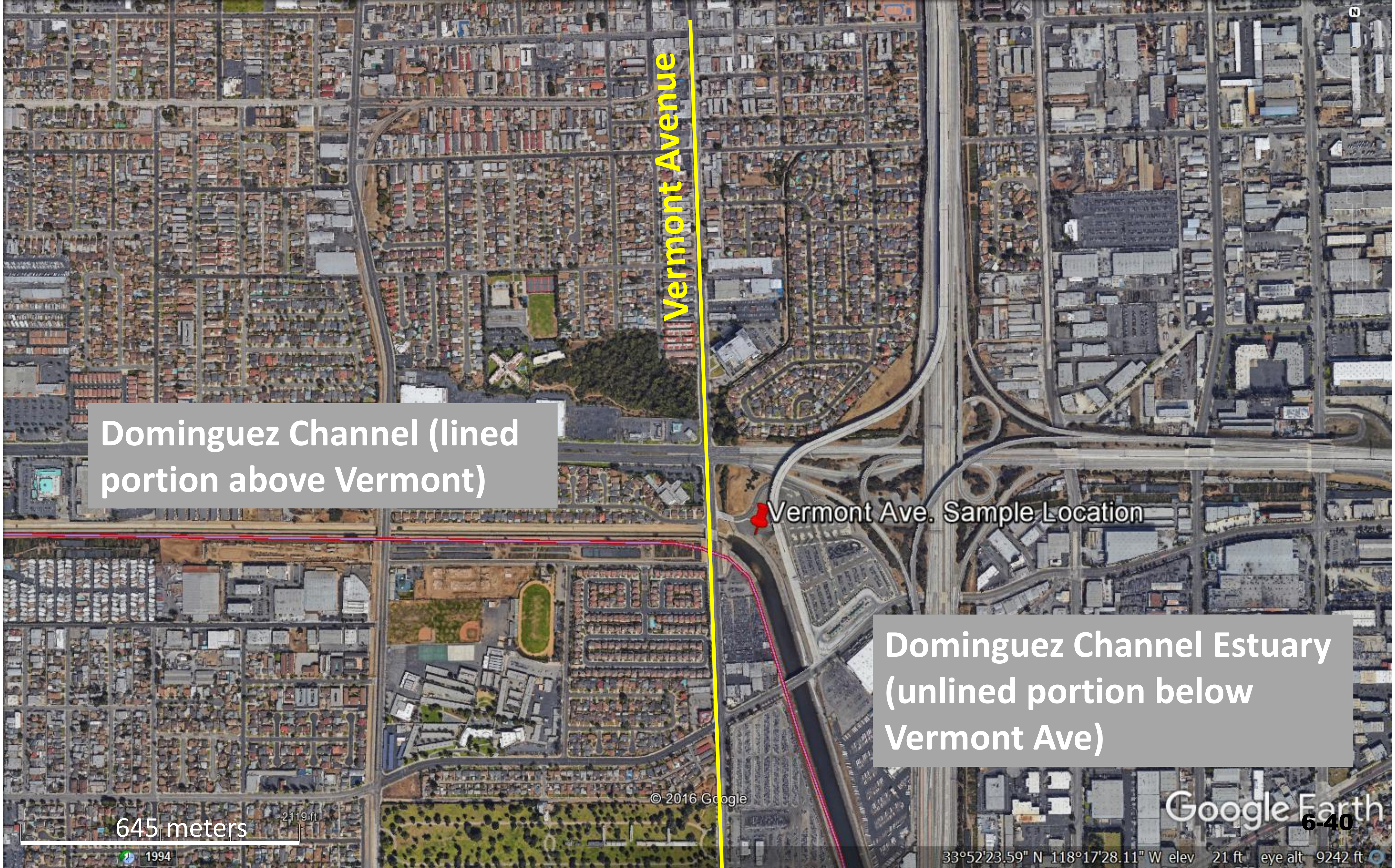
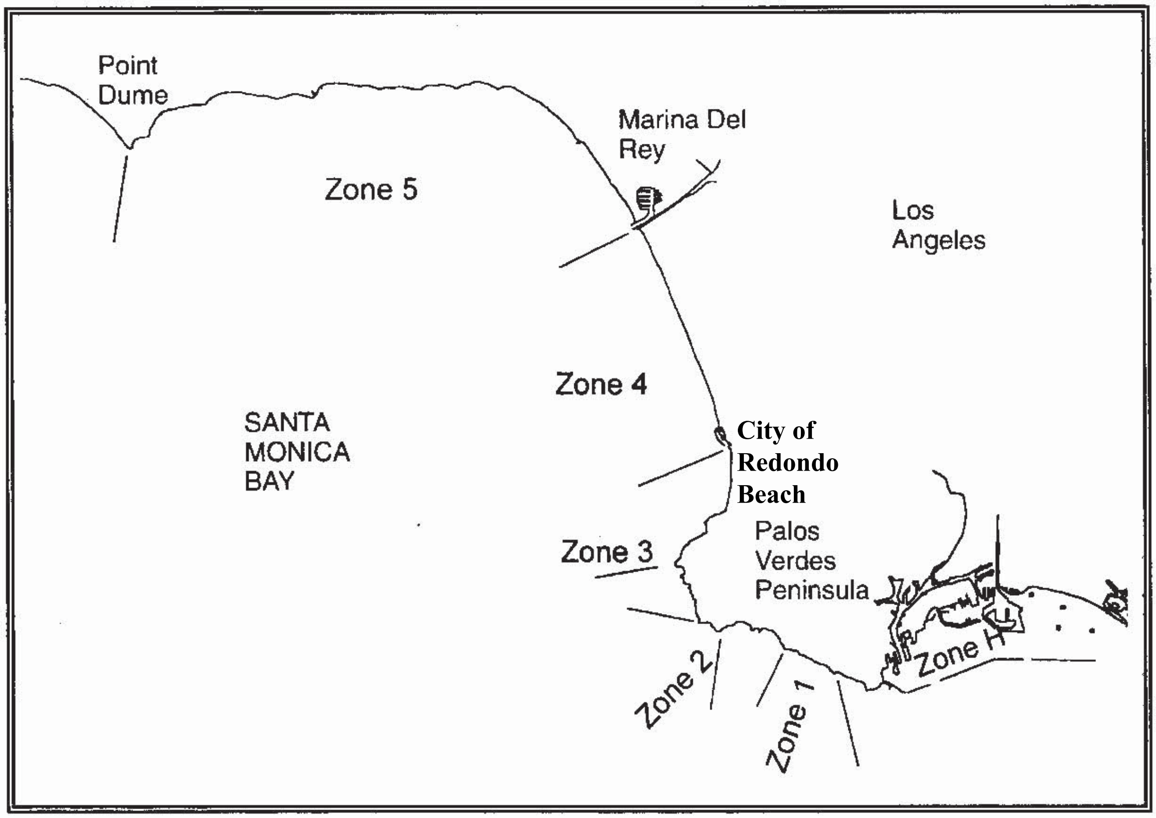

Vermont Avenue
Dominguez Channel (lined portion above Vermont)
Vermont Ave. Sample Location
Dominguez Channel Estuary (unlined portion below Vermont Ave)
© 2016 Google
645 meters
2119 ft
1994
Google Earth
33°52'23.59" N 118°17'28.11" W elev 21 ft eye alt 9242 ft

Figure 5. Local seafood survey zones as defined by SMBRP seafood tissue monitoring design.



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March 28, 2017

Dr. Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles CA 90013

Dear Dr. Zhu:

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

This letter is regarding the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) public hearing on May 4, 2017, to consider revisions to the Clean Water Act Section 303(d) list of impaired water bodies. At this meeting, the Regional Board is expected to hear information and take formal action on the proposed revisions to water quality assessments in the Los Angeles Region.

The City of Santa Clarita (City), County of Los Angeles, and the Los Angeles County Flood Control District worked collaboratively to develop the Enhanced Watershed Management Program (EWMP) for the Upper Santa Clara River Watershed to comply with requirements of the Municipal National Pollutant Discharge Elimination System (NPDES) Permit (R4-2012-0175). The EWMP was developed to meet the Permit requirements and also address pollutants specific to the Upper Santa Clara River watershed.

In developing the EWMP for the Upper Santa Clara River, an extensive pollutant prioritization process was performed based on all available data. The characterization process consisted of the following steps:

1. Data from multiple sources, including the 303(d) list, Water Quality Based Effluent Limitations (WQBELs), Receiving Water Limitations (RWLs), the Surface Water Ambient Monitoring Program (SWAMP), annual reports, established Total Maximum Daily Loads (TMDLs), the Los Angeles Department of Public Works, and Los Angeles County Sanitation Districts;
2. Identifying water bodies affected by discharges from the EWMP area;
3. Data analysis to identify constituents with exceedances of water quality objectives;
4. Water body-pollutant combinations identified;
5. Compiling 303(d) listings from the 2010 303(d) List; and

6. Comparing the data analysis to the State of California's (State) Listing Policy.

A wide-ranging watershed model analysis was performed for the entire Upper Santa Clara River Watershed Valley area taking into account pollutant loading, unique characteristics of the area, and control measure performance. The EWMP proposed a detailed path to implementing the stormwater program through programmatic and structural best management practices (BMPs) to effectively address pollutants in the storm drain system and the receiving waters. The EWMP plan prescribes long term strategies, such as regional BMPs, green streets, and other types of infiltration BMPs. After years of studies, modeling, and review, the Regional Board-approved EWMP demonstrates that the selected water quality control measures will result in compliance with applicable WQBELs and RWLs. The City, County of Los Angeles, and the Los Angeles County Flood Control District are just now beginning to implement the EWMP.

Change All Listings to "Being Addressed by Action Other Than a TMDL"

Due to the extensive studies and long term implementation efforts contained in the EWMP, the City requests all pollutants remaining on the 303(d) list without a developed TMDL should be changed to the Category 4B for the Clean Water Act as "Being Addressed by Action Other Than a TMDL." More specifically, the pollutants will be addressed through the long-term implementation of the EWMP. In addition, the City requests a focus be placed on "Delisting" pollutants by the Regional Board so that limited resources can be better applied to applying long-term strategies of the approved EWMP.

The City requests the following amendments for the 2017 303(d) List. The affected water quality objectives are listed below.

Affected Waterbodies, Water Quality Objectives, and Suggested Revisions

Santa Clara River Reach 5 (Blue Cut Gauging Station to West Pier Highway 99 Bridge)

Ammonia should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was completed in 2004. The Los Angeles County Sanitation Districts revised their operations at the Saugus Water Reclamation Plant and the Valencia Water Reclamation Plant and installed a Nitrification-Denitrification (NDN) process in 2004. The applicable water quality standards for nitrate, nitrite, and ammonia are not being exceeded. Decision ID 34352 states that no discharges exceeded limits.

Benthic Community Effects should be revised to "Being Addressed by Action Other Than a TMDL." Decision ID 44468 states that the water body is impaired with multiple pollutants, including zinc, iron, bacteria, and chloride. However, Line of Evidence 88732 states that 0 out of 153 samples had any exceedance for zinc. Although iron is naturally occurring in the Santa Clara River watershed, Line of Evidence 88656 found 6 of 81 samples exceeded and Line of Evidence 88648 found 0 of 2 samples exceeding water quality limits. There were no samples taken for coliform bacteria, and therefore, no exceedances recorded as per Line of Evidence 4156. Line of Evidence 88792 states that none of the two samples taken exceeded the criterion for chloride. Further, the listing was based on the Southern Coastal California Index of Biotic Integrity (SCIBI). However, the SCIBI-based analysis is inadequate for use in low-gradient and low-elevation waters, such as the Upper Santa Clara River. Through the implementation of the EWMP, the benthic community should rebound to its natural populations as the EWMP addresses toxicity, metals, pesticides, and other metrics that affect benthic communities.

Chloride should be revised to "Being Addressed by Completed TMDL." The Santa Clara River chloride TMDL was approved by the United States Environmental Protection Agency (USEPA) on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.

Indicator bacteria should be revised to "Being Addressed by Action Other Than a TMDL." Through the implementation of the EWMP, indicator bacteria should fall to levels found in ambient waters.

Iron should be revised to "Being Addressed by Action Other Than a TMDL." Iron was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.

Nitrate and nitrite should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32484 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA. Toxicity should be revised to "Being Addressed by Action Other Than a TMDL."

Toxicity was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.

Santa Clara River Reach 6 (West Pier Highway 99 to Bouquet Canyon Road)

Ammonia should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations, including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32462 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.

Chloride should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Santa Clara River chloride TMDL was approved by the USEPA on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.

For chlorpyrifos, Decision ID 33024 states samples were collected from August 2002 through April 2003. It should be noted that USEPA phased out all residential use of chlorpyrifos products since 2004. Since the samples were taken prior to being phased out and no further positive results are presented, this information is no longer relevant. Due to the long term implementation efforts contained in the EWMP, this pollutant should be changed to "Being Addressed by Action Other Than a TMDL."

Copper was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Copper should be revised to "Being Addressed by Action Other Than a TMDL."

Decision ID 44805 states samples for diazinon were collected from August 2002 through April 2003. It should be noted that USEPA phased out all residential use of diazinon products since 2004. Only data generated from after the ban should be considered. For a sample size of 28-36, Table 4.1 of the State's Listing Policy recommends delisting a previously listed pollutant if the numbers of exceedances are less than two. Since no other samples show an exceedance, diazinon should be delisted. In addition, due to the implementation of the EWMP, this pollutant could also be changed to "Being Addressed by Action Other Than a TMDL."

Iron is abundant in the natural soils in the Santa Clarita Valley. In addition, iron was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Iron should be revised to "Being Addressed by Action Other Than a TMDL."

According to the National Weather Service, ambient air temperature for Santa Clarita during the summer months regularly exceeds 100 degrees Fahrenheit due to a semi-arid climate. The Santa Clara River is an ephemeral stream with water flow quickly subsiding into the natural sandy, soft- bottom riverbed. It is noted that all samples registering over 80 degrees Fahrenheit occurred between the months of May and August. It is reasonable that hot and dry air temperatures correlate to warmer water temperatures in shallow, sandy soils. Receiving waters in the Santa Clara River registering above 80 degrees Fahrenheit are the result of natural, ambient conditions and should not be considered as a result of storm drain or treatment discharge.

In Line of Evidence 88683, it is noted that toxicity data was not reported with a control, and therefore anything reported as <100% (chronic) or <100% survival (acute) was considered an exceedance. In addition, toxicity was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Toxicity should be revised to "Being Addressed by Action Other Than a TMDL."

The attached supporting information is the section of the Upper Santa Clara River EWMP that includes a Water Quality Priorities section that summarized the pollutants and findings included in the approved Upper Santa Clara River EWMP. Please contact me if you have any questions about the information provided at (661) 255-4337 or by e-mail at tlange@santa-clarita.com.

Sincerely,

Travis Lange
Environmental Services Manager

TL:OC:ll
S:\ENVSRVCS\NPDES2\303(d) List\2016\303d Response 3-9-17 (Rev).doc

Enclosure

cc: Darren Hernández, Deputy City Manager

4.3 WATER BODY POLLUTANT CLASSIFICATION

The classification process categorizes the WBPCs to focus subsequent EWMP components including the Source Assessment, Prioritization, and the selection of Watershed Control Measures. Based on the water quality characterization, water body-pollutant combinations were classified in one of the three Permit categories as presented in **Table 4-4.**

Table 4-4. Water Body-Pollutant Classification Categories

Category	Water Body-Pollutant Combinations (WBPCs) Included
1 Highest Priority	WBPCs for which TMDL WQBELs and/or RWLs are established in Part VI.E and Attachments L and O of the MS4 Permit.
2 High Priority	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List, and for which MS4 discharges may be causing or contributing.
3 Medium Priority	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

The categories were further subdivided to provide more support for the prioritization and sequencing in the EWMP. Additionally the subcategorization was utilized to provide a better link to the methods for demonstrating compliance with RWL exceedances as outlined in Parts VI.C.2-C.3. The water body-pollutant combination subcategories are shown in **Table 4-5.**

Table 4-5. Categorization for Water Body Pollutant Combinations

Category	Water Body-Pollutant Combinations (WBPCs)
1	**Category 1A:** WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years.
	Category 1B: WBPCs with TMDL deadlines beyond the Permit term and with exceedances in the past 5 years.
	Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan.
	Category 1D: WBPCs with past due, current, or future Permit term TMDL deadlines without exceedances in the past 5 years.
	Category 1E: WBPCs with TMDLs for which MS4 discharges are not causing or contributing. [2]
2	**Category 2A:** 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.
	Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[1] (i.e., toxicity).
	Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements without exceedances in past 5 years or that could be delisted.
	Category 2D: 303(d) Listed WBPCs for which MS4 discharges are not causing or contributing. [3]
3	**Category 3A:** All other WBPCs with exceedances in the past 5 years.
	Category 3B: All other WBPCs that are not a "pollutant"[1] (i.e., toxicity).
	Category 3C: All other WBPCs that have exceeded in the past 10 years, but not in past 5 years.
	Category 3D: WBPCs identified by the USCR EWMP Group Members.

1. While pollutants may be contributing to the impairment, it currently is not possible to identify the specific pollutant/stressor.
2. The Permit requires prioritization of all constituents with established WQBELs or RWLs, regardless of source. WBPCs in this category are for reaches without MS4 discharges. While urban areas may be within the drainage area, no point source MS4 discharges to the waterbody.
3. The Permit does not require prioritization of constituents for which data indicate water quality impairment in the receiving water, but where MS4 discharges are not causing or contributing to the impairment. Pollutants in this category are in reaches within the EWMP area that do not receive MS4 discharges.

In addition to defining the categories for the WBPCs identified, the constituents were assigned a class. As defined in the permit, pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the Watershed Management Program for the TMDL. The classes assigned as part of the analysis were utilized in developing the scheduling and milestones for the EWMP.

The categorization of WBPCs developed based on the receiving water data characterization is shown in **Table 4-6.** The Santa Clara River reaches are shown in **Figure 4-1.**

Table 4-6. WBPC Categorization

Class[(1)]	Constituent	Santa Clara River Reach				Bouquet Canyon	Lake Elizabeth	Mint Canyon	Piru Creek	Munz Lake	Lake Hughes	Castaic Lake	Pyramid Lake	Los Angeles River
		4B[2]	5	6	7									
Category 1A: WBPCs with past due or current term TMDL deadlines <u>with</u> exceedances in the past 5 years.														
Bacteria	*E. Coli* (dry) [3]	I	I		I									
Salts	Chloride	F	F	F										
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and <u>with</u> exceedances in the past 5 years.														
Bacteria	*E. Coli* (wet and dry) [3]	F	F		F									
Category 1D: WBPCs with past due, current term, or future deadlines <u>without</u> exceedances in the past 5 years.														
Nutrients	Ammonia	F	F											
	Nitrate and Nitrite	F	F											
Trash	Trash						F							
Bacteria	*E. Coli* (wet and dry) [3]			I/F										
Category 1E: WBPCs with TMDLs for which MS4 discharges are not causing or contributing														
Trash	Trash									TMDL	TMDL			F
Nutrients	Ammonia													F
Nutrients	Nitrate and Nitrite							TMDL[4]						F
Bacteria	*E. Coli*													I
Metals	Cadmium													I
Metals	Copper													I
Metals	Lead													I
Selenium	Selenium													I
Metals	Zinc													I

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Class[1]	Constituent	Santa Clara River Reach				Bouquet Canyon	Lake Elizabeth	Mint Canyon	Piru Creek	Munz Lake	Lake Hughes	Castaic Lake	Pyramid Lake	Los Angeles River
		4B[2]	5	6	7									
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.														
Metals	Copper			303 (d)										
	Iron		D	303 (d)										
Cyanide	Cyanide			L										
Category 2B: 303(d) Listed WBPCs that are not a "pollutant" (i.e., toxicity).														
Toxicity	Toxicity			303 (d)										
Other	pH				L		303(d)							
Other	Eutrophic						303(d)							
Other	Organic Enrichment/Low DO						303(d)							
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years or that could be delisted.														
Pesticides	Chlorpyrifos			D										
Pesticides	Diazinon			D										
Category 2D: 303(d) Listed WBPCs for which MS4 discharges are not causing or contributing.														
Metals	Mercury											303(d)	303(d)	
Other	Eutrophic									303(d)	303(d)			
Other	Fish Kills										303(d)			
Other	Odor										303(d)			
Other	Algae										303(d)			
Other	pH								303(d)					
Salts	Chloride								303(d)					

Class[1]	Constituent	Santa Clara River Reach				Bouquet Canyon	Lake Elizabeth	Mint Canyon	Piru Creek	Munz Lake	Lake Hughes	Castaic Lake	Pyramid Lake	Los Angeles River
		4B[2]	5	6	7									
Category 3A: All other WBPCs with exceedances in the past 5 years.														
Metals	Copper		X		X									
	Mercury		X	X	X									
	Selenium			X										
	Zinc			X										
Cyanide	Cyanide				X									
Salts	TDS		X											
Category 3C: All other WBPCs with exceedances in the past 10 years, but without exceedances in past 5 years.														
Phthalates	Bis-2 Ethylhexyl phthalate			X										
Category 3D: Other EWMP Priorities														
Pesticides	Pyrethroids					X								

1. Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the Watershed Management Program for the TMDL.
2. Reach 4B is located in Ventura County but was considered for the purposes of understanding downstream water quality
3. Interim limits for dry *E. Coli* during permit term, interim limits for wet *E. Coli* past permit term, final limits for dry and wet past permit term.
4. Mint Canyon is included in the Nutrients TMDL, but no WLAs for MS4 discharges are assigned for the reach in the TMDL.

I=Interim TMDL WQBEL or Receiving Water Limit
F=Final TMDL WQBEL or Receiving Water Limit
D=303(d) listing that could now be delisted
303(d)=Confirmed 303(d) Listing
L=WBPC that meets the listing criteria, but is not currently on the 303(d) list
TMDL=TMDL that does not contain MS4 allocations for the reach
Other= Used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated.

4.4 SOURCE ASSESSMENT

To complement the water quality prioritization process, permittees must identify known and suspected storm water and non-storm water sources influencing MS4 discharges by utilizing existing information for the water body-pollutant combinations in Categories 1-3. The intent of the Source Assessment is to identify potential sources within the watershed for the water body-pollutant combinations and to support prioritization and sequencing of management actions.

In order to identify potential sources for water quality priorities from MS4 discharges, a review of available data and information was conducted, including the following sources:

1. Findings from Illicit Connections and Illicit Discharge Eliminations Programs;
2. Findings from Industrial/Commercial Facilities Programs;
3. Findings from Development Construction Programs;
4. Findings from Public Agency Activities Programs;
5. TMDL source investigations;
6. Watershed model results;
7. Findings from the Permittees' monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring; and
8. Any other pertinent data, information, or studies related to constituent sources and conditions that contribute to the highest water quality priorities.

The City, County, and County Flood Control District submit Individual Annual Report Forms (Annual Report) to the Regional Board for each fiscal year. The submitted Annual Reports contain details pertaining to their activities under the Industrial/Commercial Facilities Program, Development Construction Program, Public Agency Activities Program and Illicit Connection and Illicit Discharge (IC/ID) Elimination program (items 1-4 in the list above), as well as other MS4 permit requirements. The annual reports include details on inspections and enforcement activities, as well as findings on BMP implementation. As part of the IC/ID program, the City of Santa Clarita produces annual maps showing the locations and type of illicit connections and illicit discharges found during the fiscal year. Available Annual Reports and IC/ID maps were reviewed for the source assessment.

Four TMDLs are pertinent to MS4s in the Upper Santa Clara River watershed: The Upper Santa Clara River Chloride TMDL, Santa Clara River Nitrogen Compounds TMDL, Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL, and Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL. Findings from source assessments from each TMDL were incorporated into the source assessment.

Data from the Permittee's monitoring programs mostly consist of receiving water monitoring, and little data is available to characterize MS4 discharges. However, these data were used to evaluate the location and timing of exceedances to inform the source assessment. Additional information and data reviewed included POTW effluent data, other TMDL source assessments from watersheds in the Los Angeles Region, and other studies and reports pertaining to the EWMP area or water quality priorities.

Finally, information from the model developed for the Reasonable Assurance Analysis (RAA) was utilized as part of the source assessment. Summaries of the relative loading estimated from the model for sediment, total zinc, total copper, total lead, and bacteria by land use are provided in Appendix A-1.

The results of source assessments for WBPCs in Categories 1-3 are shown below in **Table 4-7** and described in detail in Appendix A-1. Given the lack of watershed specific information, the source assessment provides a list of potential MS4 sources that are likely to be present in the USCR EWMP area and could be contributing to any exceedances observed in the receiving waters. A source assessment for category 2B constituents, 303(d) Listed WBPCs that are not a "pollutant", could not be developed because the constituents contributing to the condition have not yet been identified. However, source assessments have been provided for other constituents that are potentially contributing to the condition. For example, eutrophic conditions, low dissolved oxygen and changes in pH are all potentially the result of excess algae growth which could be influenced by elevated nutrient levels and pesticides may contribute to toxicity.

Table 4-7. MS4 Sources of Water Quality Priorities

Class	Constituent	Reaches/ Waterbodies	MS4 Potential Sources

Bacteria[1,5]	*E. coli*	4B[2], 5, 6, 7	- Dry- and wet- weather urban runoff
			  - Animal wastes, including those from pets, wildlife and birds
			  - Trash
			- Direct human discharges
			- Sanitary sewer overflows
			- Leaking septic systems
			- Illicit discharge of sewage and wastewater

Nitrogen Compounds[5]	Ammonia, Nitrate/ Nitrite	4B[2], 5, 6, 7	- Atmospheric deposition
			- Leaf litter and debris
			- Runoff from over-fertilized landscaping
			- Improper storage or disposal of fertilizers and ammonia
			- Soil concentrations
			- Leaking septic systems
			- Groundwater concentrations
			- Industrial and commercial sources including:
			  - Landscaping businesses
			  - Nurseries

Salts	Chloride, TDS	4B[2], 5, 6, 7	- Naturally occurring salts in water supply - Saltwater swimming pool discharges
Pesticides	Pyrethroids	Bouquet Canyon	- Residential and professional use of pyrethroids as an insecticide, often to control Argentine ants[3]
	Diazinon and chlopyrifos	6	- Professional pesticide applications

Class	Constituent	Reaches/ Waterbodies	MS4 Potential Sources

Metals[2,5]	All (Copper, Iron, Mercury, Selenium, Zinc)	5,6,7	- Atmospheric deposition
			- Water supply
			- Commercial and municipal vehicle sources
			  - Gas stations, service stations and car washes
			  - Dealerships
			  - Municipal maintenance and storage yards
			- Soil concentrations, release of sediment during:
			  - Construction activities
			  - Gravel mining

	Copper	5,6,7	- Automotive sources
			  - Brake pad debris
			  - Vehicle fluids
			  - Wear on vehicle exterior and engine
			  - Tailpipe emissions
			- Architectural copper
			- Corrosion of copper pipes
			- Runoff of atmospheric deposition
			- Copper-containing pesticides and algaecides
			- Industrial uses including electroplating, metal finishing and semiconductor manufacturing

	Mercury	5,6,7	- Runoff of atmospheric deposition - Mercury containing products including batteries, dental amalgam, fluorescent lamps, jewelry, paint, thermometers and thermostats - Vehicle sources such as mercury switches and emissions that contribute to atmospheric deposition - Industrial uses including semiconductor manufacturing
	Selenium	6	- Nursery runoff - Groundwater concentrations - Mining and oil extraction
	Zinc	6	- Galvanized metal[4] - Vehicle sources such as tires
Other	Cyanide[6]	7	- Industrial uses including metal finishing, electroplating, plastics manufacturing, animal control and fumigation
Trash	Trash	Lake Elizabeth	- Litter from adjacent areas and roadways - Direct dumping

1. Los Angeles Regional Water Quality Control Board (RWQCB), 2010. Los Angeles River Watershed Bacterial TMDL. Adopted by the RWQCB on July 9, 2010.
2. Reach 4B is located in Ventura County but was considered for the purposes of understanding downstream water quality.
3. Castaic Lake Water Agency (CWLA), 2013. The Santa Clarita Valley 2013 Water Quality Report.
4. Larry Walker Associates (LWA), 2009. Urban Water Quality Management Plan for Copper, Mercury, Nickel, and Selenium in Calleguas Creek Watershed. March 25, 2009.
5. California Stormwater Quality Association (CASQA), 2014. Draft Effectiveness Assessment Guidance. May 2014.
6. California Regional Water Quality Control Board, San Francisco Bay Region, 2006. Staff Report on Proposed Site-Specific Water Quality Objectives for Cyanide for San Francisco Bay. December 4, 2006.

The Appendix A-1 includes a map of the major MS4 outfalls as part of the source assessment. No major structural controls were identified in the EWMP area.

The source assessment also identified that MS4s are not the primary source of several of the water quality priorities. As noted in both the Chloride and Nitrogen TMDLs, the primary sources of these constituents in the USCR are the wastewater treatment plants. Additionally, cyanide can be a laboratory contaminant and not many potential MS4 sources exist in the USCR EWMP area.

4.5 PRIORITIZATION

Based on the WBPC categorization and the source analysis, water quality priorities were identified. The prioritization was used to structure the process of identifying watershed control measures, conducting the RAA, and defining the adaptive management process for the EWMP.

Section VI.C.5.a.iv of the Permit identifies the minimum priorities to be considered for the first permit term (2012 to 2017) covered by the EWMP. The minimum priorities are:

- **Priority 1 (TMDLs):** TMDLs for which there are WQBELs and/or RWLs with interim or final compliance deadlines within the Permit term, or TMDL compliance deadlines that have already passed and limitations have not been achieved. This priority corresponds to WBPC categories 1A.
- **Priority 2 (Other Receiving Water Considerations):** WBPCs where data indicate impairment or exceedances of RWLs in the receiving water and the findings from the source assessment implicate discharges from the MS4. This priority corresponds to WBPC categories 2A and 3A.

In addition to the two priorities identified in the permit, Category 1B, TMDLs with deadlines beyond the current permit term were determined to be a priority for the USCR EWMP group and are considered Priority 1. The prioritized WBPCs are shown in **Table 4-8.** The prioritized constituents were utilized to direct the development of the EWMP towards the constituents of highest concern. The prioritized constituents were used to define the RAA approach and analysis and are the drivers for identification of control measures. Further discussion of how the prioritized constituents were utilized in the RAA is described in Section 6.

Table 4-8. Prioritized WBPCs

Class	Constituent	Santa Clara River Reach				Lake Elizabeth
		4B[1]	5	6	7	
Priority 1: TMDLs[2]						
Bacteria	*E. Coli* (wet and dry)	X	X	X	X	
Salts	Chloride	X	X	X		
Trash	Trash					X
Priority 2: Other Receiving Water Considerations[2,3]						
Metals	Copper		X[4]	X	X[6]	
	Iron		X	X		
	Mercury		X[4]	X[5]	X[6]	
	Zinc			X[5]		
Selenium	Selenium			X[5]		
Cyanide	Cyanide			X[5]	X[6]	
Salts	TDS		X[4]			

1. Reach 4B is in Ventura County but was considered for the purposes of understanding downstream water quality.
2. Constituents with no exceedances within the past 5 years and WBPCs located in areas where MS4s are not a source contributing to the exceedances (categories 1D, 1E, 2C, 2D, 3C) are not considered to be priorities for the EWMP. Nitrogen compounds for SCR Reach 5, and chlorpyrifos and diazinon for Reach 6 are not prioritized for this reason.
3. Constituents contributing to impairments in Category 2B (e.g. toxicity, organic enrichment, etc.) are not yet identified and therefore cannot be specifically evaluated in the RAA analysis, and are not prioritized at this time.
4. Copper, mercury and TDS have been observed as exceeding applicable water quality objectives in Reach 5, and are prioritized as "other receiving water considerations" per Permit Provision 5.a.iv.2.a.
5. Mercury, zinc, selenium and cyanide have been observed as exceeding applicable water quality objectives in Reach 6, and are prioritized as "other receiving water considerations" per Permit Provision 5.a.iv.2.a.
6. Copper, mercury and cyanide have been observed as exceeding applicable water quality objectives in Reach 7, and are prioritized as "other receiving water considerations" per Permit Provision 5.a.iv.2.a.

Categories without recent exceedances and WBPCs located in areas where MS4s are not a source contributing to the exceedances (categories 1D, 1E, 2C, 2D, 3C) are not considered to be priorities for the EWMP. Constituents within these categories have not had exceedances within the past 5 years, and are considered to be no longer exceeding water quality objectives, or MS4s were determined to not be the source because the exceedances occur in areas where there is no MS4 infrastructure. However, the RAA analysis addresses all of the WBPCs for which MS4s are contributing (1D, 2C, 3C and 3D) and demonstrates they will likely be addressed by the control measures identified for the prioritized constituents. Additionally, the constituents contributing to the impairments in Category 2B (e.g. toxicity, organic enrichment, etc.) are not yet identified and therefore cannot be specifically evaluated in the RAA analysis. As noted in the source assessment, controlling constituents identified as water quality priorities, such as pesticides and nutrients, may also contribute to reducing the Category 2B impairments and the EWMP is focused on addressing the constituents identified in the other categories. If the impairments continue after the other water quality priorities are addressed, further investigation will be conducted to identify control measures to address the remaining impairment(s).

FARM BUREAU OF VENTURA COUNTY
THE INDEPENDENT VOICE FOR AGRICULTURE

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March 29, 2017

ATTN: Jun Zhu
Los Angeles Regional Water Quality Control Board
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Submitted via email

Re: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu,

Farm Bureau of Ventura County (FBVC) appreciates the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as the 303(d) list], which was distributed for public review on February 8, 2017.

Farm Bureau manages the Ventura County Agricultural Irrigated Lands Group (VCAILG), which acts as a unified discharger group for Ventura County farmers complying with the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Agricultural Lands within the Los Angeles Region* (Order No. R4-2016-0143). This order, also known as the Conditional Waiver, incorporates requirements that provide for agriculture's compliance with total maximum daily load (TMDL) allocations. Farm Bureau also serves as a stakeholder representative in watershed groups within Ventura County and collaborates on TMDL development and implementation.

Approximately 98 of the new 303(d) listings being proposed by the Los Angeles Regional Water Quality Control Board (Regional Board) are in Ventura County, and many are apparently driven by data collected through VCAILG's Conditional Waiver monitoring program. We have reviewed these proposed listings, and found numerous factual and legal errors that must be corrected. In some cases, the errors or ambiguities in the proposed listings are such that we and our technical consultants found it impossible to properly analyze them.

The development and implementation of TMDLs represents a significant investment of our members' resources, and compliance imposes a significant burden on agricultural operators, so it is critical that the 303(d) list be based on sound science and methodologies. We therefore ask that the issues identified in this letter be addressed, and that the proposed 303(d) list be revised and released for another 60-day comment period before adoption.

The requested modifications fall into four general categories:

1. New Category 4 and 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g. mismatched units, incorrectly assigned sample locations). This comment category also addresses the issue of

agricultural drains and ditches — which are not legally recognized as waterbodies — being inappropriately included in the listings.
2. Potential delistings that may be justified if all watershed data were evaluated (e.g. TMDL monitoring program and all wastewater treatment plant NPDES monitoring).
3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants.
4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.

The remaining sections of this letter provide the detailed list of requested changes to the 303(d) list and the rationale for the requests. In summary, FBVC requests that all waterbody pollutant combinations in **Table 1** not be listed on the 303(d) list, that waterbody pollutant combinations in **Table 3** and **Table 4** be designated as being addressed by a TMDL if they remain on the 303(d) list after the reassessment, and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies. Furthermore, FBVC supports the 303(d) list comment letter submitted by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed.

I. REQUESTED MODIFICATIONS TO THE LISTING STATUS

Based on a review of the proposed Category 4 and 5 waterbody pollutant combinations, FBVC has identified a number of waterbodies that we feel should either be delisted based on available data, or which should not be listed based on errors in the evaluation. The requested modifications are shown in **Table 1**, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
Boulder Creek (Ventura County)	Chlordane	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).
Boulder Creek (Ventura County)	Nitrogen, Nitrate	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Boulder Creek (Ventura County)	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Boulder Creek (Ventura County)	Toxicity	• Listed based on toxicity observed during a single sampling event (6/4/07). According to the Listing Policy, a larger number of samples is required to justify this listing.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
McGrath Lake Agricultural Drain	Bifenthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
McGrath Lake Agricultural Drain	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
McGrath Lake Agricultural Drain	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
McGrath Lake Agricultural Drain	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
McGrath Lake Agricultural Drain	Toxaphene	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Dimethoate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Salts criteria do not apply below Potrero Rd.
Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Ammonia	• Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Bifenthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Chloride	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Cyfluthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Malathion	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Permethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Sulfates	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Chlorpyrifos	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Diazinon	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Malathion	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Temperature, water	• Inappropriately applied beneficial use criteria (see temperature comment below)
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Nitrogen, Nitrate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. *
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Nitrogen	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. *
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Sulfate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. *
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Specific Conductivity	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Total Dissolved Solids	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2	Toxaphene	• J-flagged data incorrectly used in assessment.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Ellsworth Barranca	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.
Fox Barranca	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Honda Barranca[1]	DDD	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Honda Barranca[1]	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Rio De Santa Clara/Oxnard Drain No. 3	Nitrogen, Nitrate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Nitrogen	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Sulfate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Specific Conductivity	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Total Dissolved Solids	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity	• Insufficient exceedances to warrant listing.
La Vista Drain (Ventura County)	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.
La Vista Drain (Ventura County)	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
La Vista Drain (Ventura County)	Copper	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody
La Vista Drain (Ventura County)	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody
La Vista Drain (Ventura County)	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	Indicator Bacteria	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	Mercury	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Santa Clara Drain	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.
Santa Clara Drain	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.
Santa Clara Drain	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited with chain link fencing and locked gates.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Santa Clara Drain	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara Drain	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara Drain	Sulfates	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara Drain	Toxaphene	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara River Reach 3	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara River Reach 3	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara River Reach 3	Cyfluthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Criterion listed is for 2,4,5-TP, not cyfluthrin.
Santa Clara River Reach 3	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara River Reach 3	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara River Reach 3	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara River Reach 3	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara River Reach 3	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Tapo Canyon	Chlordane	• Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
Tapo Canyon	DDD	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
Tapo Canyon	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
Tapo Canyon	Nitrogen, Nitrate	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Tapo Canyon	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Wheeler Canyon/Todd Barranca	Chlordane	• J-flagged data incorrectly used in assessment. • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
Wheeler Canyon/Todd Barranca	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Ventura River Reach 3	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
*Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are not listed in the Basin Plan and therefore do not have assigned beneficial uses but they are tributaries to Mugu Lagoon which does not have a MUN beneficial use and are brackish waterbodies that would not support the MUN beneficial use. 1. Please review the name of this waterbody, our understanding is that it is Hondo Barranca.		

1. Agricultural Drain monitoring data incorrectly used as basis for listing decisions.
There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS,

which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains.

In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in the Basin Plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain.

Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list.

McGrath Lake Agricultural Drain is also an agricultural drain comprised of a small open ditch that conveys water from surrounding agricultural lands. A monitoring site was selected on this drain for VCAILG Conditional Waiver monitoring to represent agricultural discharges and was not designed to characterize receiving waters. Moreover, discharges from this drain are already being addressed under the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL, which has identified this drain as the “Central Ditch” (the Monitoring Program for the Conditional Waiver also identifies this monitoring site as the Central Ditch). Implementation activities that reduce loadings of chlorinated pesticides and PCBs will also reduce loadings of toxaphene, bifenthrin and chlorpyrifos. For the foregoing reasons, McGrath Lake Agricultural Drain should be removed from the Draft Category 5 list.

Requested Action:

- **Remove all listings shown in Table 1 that were based on VCAILG Conditional Waiver monitoring data from agricultural drains not representative of the listed waterbody, and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.**
- **Remove La Vista Drain and Santa Clara drain from the list as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) list.**

- **Remove the McGrath Lake Agricultural Drain because it is not a waterbody that falls under the jurisdiction of the 303(d) list, and because there is an effective TMDL that addresses discharges from this agricultural drain ("Central Ditch") to McGrath Lake.**

2. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.

Numerous listings were based on water quality objectives for the protection of municipal drinking water for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated, or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes.

State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans) state, "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards… (with certain exceptions which must be adopted by the Regional Board)." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63.

On May 26, 2000, the USEPA approved the revised Basin Plan, except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated:

> *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water*

> *quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."*[1]

In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified, "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision fact sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1:

> *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty."*

Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use.

The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate, as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based.

USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3",[2] where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in **Table 1** should be removed.

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[1] Language adapted from the 2014 National Pollutant Discharge Elimination System permit findings for wastewater treatment plants in the Calleguas Creek Watershed.
[2] Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3. Approved by USEPA on October 6, 2011.

The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence, which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which, as described above, cannot be used to justify a listing. Furthermore, the fact sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process, and it is not clear that this threshold would meet the Listing Policy requirements.

Requested Action:

- **Revise all of the new listings in the fact sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.**
- **Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) list.**

3. Reassess mercury listings using correct objective and correct units.

The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, La Vista Drain, Santa Clara Reach 3, and Ventura River Reach 3 are in ng/L and the objective is in µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. Our consultants believe that after this calculation has been performed, the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. Regional Board staff should explain why they used a recommended criterion instead of an established water quality objective.

Requested Action:

- **Repeat the mercury analysis after correcting the units error.**

4. Remove toxicity Lines of Evidence (LOE) from pollutant fact sheets when an LOE specifically for toxicity already exists.

Numerous pollutants listed for Calleguas Creek Reach 3, Tapo Canyon and Wheeler Canyon/Todd Barranca include an LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the fact sheet. The toxicity LOE listed for the waterbody is sufficient as it is intended to identify the cause of observed toxicity through established and accepted methodologies.

5. Incorrect location and data were used for listings in Reach 12.

The name of the monitoring site presented in the fact sheet for chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12, and TO1 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, TO1 should not be used for a 303(d) listing decision, and University data are not from Reach 12. A review of the datasets provided in the link on the fact sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the fact sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12.

In addition, FBVC requests that only data collected after applicable pesticide-use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrate a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide-use restrictions, monitoring data collected prior to 2009 are not representative of current waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates continued impairment.

Requested Action:

- **Remove listings for Reach 12 that are not based on receiving water data from that reach.**
- **Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide-use restrictions.**

6. Ensure no J-flagged data were used in the assessment.

The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

> "*When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.*"

All listings based on the use of J-flagged data should therefore be removed from the draft 303(d) list. Specific instances are included in **Table 1** and further explained in **Table 2** below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

Table 2. Incorrect use of J-flagged data		
Segment	**Pollutant**	**Comment**
Boulder Creek (Ventura County)	Chlordane	The LOE for Chlordane erroneously states that three out of five samples exceed the objectives. A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy.
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2	Toxaphene	The Lines of Evidence (LOE) for Toxaphene lists the number of exceedances incorrectly at two. However, only one of six samples exceeded the indicated criterion. The other sample was reported by the laboratory as "estimated" (J-flagged). Because only one of six samples showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy.
Rio de Santa Clara/Oxnard Drain No. 3	Chlordane	The LOE for Chlordane erroneously states that four out of five samples exceed the objectives. A review of the data shows that only 3 out of 5 samples exceed indicated criteria. The remaining 2 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit.
La Vista Drain	Chlordane	The LOE for chlordane shows that one of the samples used to justify the listing is based solely on estimated (J-flagged) data because results were below the reporting limit. Because Chlordane has only one detected value for two sampling events, more monitoring data are needed to justify the listing and the proposed listing should be removed. Additionally, refer to comment 1 regarding the inappropriateness of this drain being a listed waterbody.

Requested Action:

- **Review all fact sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.**
- **Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain (though we also disagree with the listing of this as a waterbody to begin with), and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**

7. Remove listings where a waterbody assessment does not meet listing thresholds based on data provided.

Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) list. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) list.

Requested Action:

- **Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3, based on failure to meet listing threshold requirements in the Listing Policy.**

II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET

As manager of the VCAILG program, FBVC is a stakeholder in the Calleguas Creek Watershed TMDL monitoring program and represents the agricultural responsible parties listed in the TMDLs. As such, FBVC supports the comments made by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed regarding the use of all appropriate monitoring data for the 303(d) listing process.

The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. Please refer to the letter submitted by the Calleguas Creek Watershed Stakeholders for details regarding the waterbody/pollutant combinations eligible for delisting. While this comment is specific to knowledge regarding monitoring programs in the Calleguas Creek Watershed, it should be applied to the other watersheds in Ventura County.

Requested Action:

- **Reassess all Ventura County waterbodies using all available data.**

III. REQUESTED CATEGORY ASSIGNMENT CHANGES

8. Correct pollutants listed as Category 5A that should be 5B based on coverage by an existing TMDL.

There are number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. Although we contend that all of these listings should be removed entirely because of the issues detailed in Comment I**,** if they are not removed they should, at a minimum, be changed from 5A to 5B as applicable.

Because discharges from the McGrath Lake Agricultural Drain (i.e., "Central Ditch") are already being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL (effective June 30, 2011), toxaphene should be changed from Category 5A to Category 5B. A Calleguas Creek nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DDE, DDD, dieldrin, PCBs, sediment toxicity, and toxaphene.

The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), and although we oppose the inclusion of these listings on the grounds that they are not waterbodies, the actual receiving waters are already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, the Nitrogen TMDL, and the Metals TMDL, and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for chlorpyrifos – Honda Barranca and Duck Pond Agricultural Drains – but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL.

The nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed under the Santa Clara River TMDL, in effect since 2004.

- We request that any listings in **Table 3** and **Table 4** that are maintained after addressing the issues in Comment I also be corrected to be designated in Category 5B.

Table 3. 303(d) Category 5A listings which should be changed to 5B listings

Segment	Pollutant	Proposed 303(d) Category	Requested 303(d) Category	Existing TMDL
McGrath Lake Agricultural Drain	Toxaphene	5A	5B	PCBs, Pesticides and Sediment Toxicity TMDL[1]
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Specific Conductivity	5A	5B	CCW Salts TMDL[2]
	Total Dissolved Solids	5A	5B	CCW Salts TMDL[2]
Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek)	Mercury	5A	5B	CCW Metals TMDL[3]
Calleguas Creek Reach 4	Mercury	5A	5B	CCW Metals TMDL[3]
	Specific Conductivity	5A	5B	CCW Salts TMDL[2]
	Total Dissolved Solids	5A	5B	CCW Salts TMDL[2]
	Sulfates	5A	5B	CCW Salts TMDL[2]
Calleguas Creek Reach 9A	Nitrogen, Nitrite	5A	5B	CCW Nitrogen TMDL[4]
Calleguas Creek Reach 12	Chlorpyrifos	5A	5B	CCW Toxicity TMDL[5]
	Diazinon	5A	5B	CCW Toxicity TMDL[5]
Honda Barranca	DDT	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
Fox Barranca	DDE	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity	5A	5B	Oxnard Drain #3 Pesticides, PCBs, Sediment Toxicity TMDL[7]
La Vista Drain (Ventura County)	Chlorpyrifos	5A	5B	CCW Toxicity TMDL[5]
	Chlordane	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	DDT	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	DDE	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	DDD	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	Copper	5A	5B	CCW Metals TMDL[3]
	Mercury	5A	5B	CCW Metals TMDL[3]

Segment	Pollutant	Proposed 303(d) Category	Requested 303(d) Category	Existing TMDL
Santa Clara Drain	Chlordane	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	Chlorpyrifos			CCW Toxicity TMDL[5]
	DDD	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	DDE	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	DDT	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
	Nitrogen, Nitrate	5A	5B	CCW Nutrients TMDL[4]
	Specific Conductivity	5A	5B	CCW Salts TMDL[2]
	Sulfates	5A	5B	CCW Salts TMDL[2]
	Total Dissolved Solids	5A	5B	CCW Salts TMDL[2]
	Toxaphene	5A	5B	CCW OC Pesticides and PCBs TMDL[6]
Tapo Canyon	Nitrogen, Nitrate	5A	5B	Santa Clara River Nitrogen TMDL[8]
Boulder Creek (Ventura County)	Nitrogen, Nitrate	5A	5B	Santa Clara River Nitrogen TMDL[8]

1. The McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL. RS 2009-006. Approved by USEPA on June 30, 2011.
2. The Calleguas Creek Watershed Salts TMDL. RS 2007-016. Approved by USEPA on December 2, 2008.
3. The Calleguas Creek Watershed Metals TMDL. RS 2006-012. Approved by USEPA on March 26, 2007.
4. The Calleguas Creek Nitrogen TMDL. RS 2002-017. Approved by USEPA on June 20, 2003.
5. The Calleguas Creek, Its Tributaries, and Mugu Lagoon Toxicity, Chlorpyrifos and Diazinon TMDL. RS 2005-009. Approved by USEPA on March 24, 2006.
6. Total Maximum Daily Load for Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation in Calleguas Creek, its Tributaries and Mugu Lagoon. RS 2005-010. Approved by USEPA on March 24, 2006.
7. Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3. Approved by USEPA on October 6, 2011.
8. Santa Clara River Nitrogen Compounds TMDL RS 2003-011. Effective on March 23, 2004.

In addition, we believe the Calleguas Creek Watershed Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion), if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity, and the Conditional Waiver includes a bifenthrin water quality benchmark triggering management practice implementation in response to exceedances, in addition to the organophosphate pesticides included in the TMDL. Additionally, the structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. As a result, if the waterbodies are placed on the 303(d) list as new listings, we request that the waterbodies in **Table 4** be moved from 5A to 5B.

Table 4. Pyrethroid and Organophosphate listings covered by the existing Toxicity TMDL[1]

Segment	Pollutant	Proposed 303(d) Listing Category	Requested 303(d) Listing Category
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Bifenthrin	5A	5B
	Cyfluthrin	5A	5B
	Cypermethrin	5A	5B
	Malathion	5A	5B
	Permethrin	5A	5B
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Malathion	5A	5B
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	5A	5B
Honda Barranca	Bifenthrin	5A	5B
Santa Clara Drain	Cypermethrin	5A	5B

1. The Calleguas Creek, Its Tributaries, and Mugu Lagoon Toxicity, Chlorpyrifos and Diazinon TMDL. RS 2005-009. Approved by USEPA on March 24, 2006.

Requested Action:

- **Change all pollutant-waterbody segment combinations in Table 3 and Table 4 from 5A to 5B or 4A based on coverage by an existing USEPA approved TMDL.**

9. Remove waterbody-pollutant combinations for agricultural drains listed as Category 2.

Two new agricultural drains were included inappropriately on the Category 2 list (i.e., assessed for listing) and should be removed: Drain Along Gerry Road to Calleguas Creek Reach 9, and Oxnard Drain.

The Gerry Road agricultural drain is a small drainage ditch with intermittent flows that exists solely to collect non-potable water from the adjacent agricultural lands before it drains into Calleguas Creek Reach 9; it is not a tributary to Calleguas Creek Reach 9. A VCAILG monitoring site was selected on this drain to be representative of agricultural discharges to Calleguas Creek Reach 9 and is not representative of receiving water conditions. Accordingly, neither the MUN beneficial use nor the MAR beneficial uses apply to this agricultural drain.

The new listing for Oxnard Drain also should be removed from the Draft Category 2 list. The monitoring site indicated for this drain is located in the Ormond Beach Wetlands area where flows from the Hueneme Drain, the J St. Drain (now "Chumash Creek")[3], and the Oxnard Industrial Drain (formerly known as the Oxnard Drain but now known as the "Ormond Lagoon Waterway") commingle. In order to list the "Ormond Lagoon Waterway" (formerly the Oxnard Industrial Drain), a monitoring station would have to be established on that channel upstream of the wetlands area to ascertain water quality in that waterbody.

IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST

FBVC's staff and consultants have identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified. The list is not comprehensive, because in many cases the information provided made it difficult or impossible to conduct a proper analysis.

10. Correct Appendix G fact sheets.

The Appendix G fact sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include:

- Incorrect Evaluation Guideline and Guideline Reference. For example, the Evaluation Guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200 and 88712 actually is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited Guideline Reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final fact sheets and 303(d) list.
- Incorrect beneficial uses assigned to objectives. For example, MUN beneficial uses listed when aquatic life objectives are presented in the fact sheet.
- Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally influenced waterbody (e.g., Duck Ponds Agricultural Drain), and MAR and EST beneficial uses assigned to a waterbody that is too far upstream to be tidally influenced (e.g., Wheeler Canyon/Todd Barranca).
- Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL.
- Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set.
- Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 and on Wheeler Canyon/Todd Barranca is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in fact sheets, including 3 samples with results of "ND". Stating in fact sheets that a pollutant exceeds criteria in 100% of samples, instead of the

[3] On November 2, 2015, Ventura County Watershed Protection District renamed two drains in Oxnard: The Oxnard Industrial Drain ("Oxnard Drain") was renamed "Ormond Lagoon Waterway", and the J St. Drain was renamed "Chumash Creek". Regional Board staff should update their records accordingly.

true figure of 40%, conveys an inflated impression of the degree of impairment by that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.

Requested Action:

- **Correct the Appendix G fact sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples / number of exceedances.**

11. Correct the Appendices and Fact Sheet Categories.

Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent, which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow FBVC to fully vet and understand the proposed listings.

A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are no associated fact sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The fact sheets for the following name changes should provide justification or explanation for the name change, as many appear to be switching tissue or sediment listings to water listings. If this is in fact the change being made, justification for the water listing needs to be provided in the fact sheet. It is not appropriate to characterize changing the medium that is the basis for the listing as a name change.

Table 5. Listed as Name Changes in Appendix A	
CCW Segment	**Pollutants**
Reach 1	Toxicity
Reach 2	Chlordane, endosulfan, toxaphene
Reach 4	Chlorpyrifos (tissue), fecal coliform, total DDT
Reach 12	DDT (tissue), ammonia
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity
Duck Pond	ChemA

There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies.

Table 6. Incorrectly listed waterbody segment-pollutant combinations

Segment	Pollutant	Issue
La Vista Drain	DDT	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
Honda Barranca	Bifenthrin	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
Rio De Santa Clara/Oxnard Drain No. 3	Total Dissolved Solids	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
	Toxicity	Listed only as a “name change” in Appendix A but listed as a new 2014 5A listing in Appendix B.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Indicator Bacteria	Not included as a new change or “name change” in Appendix A but listed as a new 2014 5A listing in Appendix B. Please clarify if this is a new listing or a “coliform bacteria” name change as described for Calleguas Reaches 6, 9A, 10, and 11.
	PCBs	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B.
	Toxicity	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B.
	ChemA	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B despite cited as a historical use of pesticides and lubricants.
Calleguas Creek Reach 4	Cyfluthrin	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.

There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) list were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. We request clarification as to whether these waterbody-pollutant combinations are, in fact, being delisted, as some align with the assessment provided by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed.

Table 7. Not described as delisted in Appendix A but not found Appendix B or C	
Segment	**Pollutants**
Reach 2	Ammonia
Reach 3	Ammonia
Reach 4	Chlordane (tissue & sediment), DDT (tissue & sediment), PCBs (tissue), Toxaphene (tissue & sediment)
Reach 5	Chlordane (tissue & sediment), Chlorpyrifos (tissue), DDT (tissue & sediment), Dieldrin (tissue), Endosulfan (tissue & sediment), Nitrogen, PCBs (tissue), Toxaphene (tissue & sediment)
Reach 6	DDT (sediment)
Reach 9A	Chlorpyrifos, DDT (tissue), Dieldrin (tissue), Endosulfan (tissue), PCBs (tissue), Toxaphene (tissue & sediment)
Reach 9B	Endosulfan (tissue), Toxaphene (tissue & sediment)
Reach 10	DDT (tissue)
Reach 11	DDT (tissue), Endosulfan (tissue), Toxaphene (tissue & sediment)
Rio de Santa Clara / Oxnard Drain #3	Chlordane (tissue), DDT (tissue), Toxaphene (tissue)

Requested Action:

- **Correct the numerous inconsistencies described above in Table 5, Table 6, and Table 7 and ensure that all of the proposed 303(d) list appendices are internally consistent.**

12. Correct the waterbody assigned Hydrologic Unit (HUCs) and Calwater numbers to reflect those listed in the Basin Plan.

There are multiple instances of what appear to be incorrect Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) list to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors.

Requested Action:

- **Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**

13. Correct or clarify inconsistencies in the staff report.

There is inconsistent discussion about some proposed listings in the staff report, which should be clarified to avoid confusion. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants: "*For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 … are being* *addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL … and would then be in Category 4A.*" However, we could find no listings of DDE and DDD for Reach 3 in any Appendix of the report including Appendix C – Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that DDE and DDD should *not* be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement, and clarify any other inconsistencies between the staff report and the list.

Requested Action:

- **Correct or remove language cited on page 10 of the staff report regarding DDE and DDD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**

14. Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy.

In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment. This is inconsistent with the Listing Policy, which states that it must be demonstrated that an evaluation guideline is *"applicable to the beneficial use, protective of the beneficial use, scientifically based and peer reviewed, and well described."* Because it has not been demonstrated that the individual species' response to these pollutants is applicable and protective of the beneficial use, these guidelines should not be used to make a listing. The Regional Board should review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin), as well as applicability to the beneficial use as described in the listing policy.

Table 8. 303(d) Pollutants Using Thresholds for Interpreting Narrative Objectives

Pollutant	Segment	Objective Used
Bifenthrin	Boulder Creek (Ventura County)	0.0006μg/L (4-day average) from UC Davis[1]
	CCW Reach 4	0.0006μg/L (4-day average) from UC Davis[1]
	Honda Barranca	0.0006μg/L (4-day average) from UC Davis[1]
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	0.00397μg/L mean acute value for mysid from Cal Dept. of Fish and Game[2]
Cyfluthrin	CCW Reach 4	LC50: 29000μg/L from the USEPA OPP Pesticide Ecotox database. LOE states that this applies to 2,4,5-TP, not cyfluthrin.
	Santa Clara River Reach 3	LC50: 29000μg/L from the USEPA OPP Pesticide Ecotox database. LOE states that this applies to 2,4,5-TP, not cyfluthrin.
Cypermethrin	CCW Reach 4	0.002μg/L from the Cal Dep of Fish and Game[2]
	Santa Clara River Reach 3	0.002μg/L from the Cal Dep of Fish and Game[2]
	Santa Clara Drain	0.002μg/L from the Cal Dep of Fish and Game[2]
	Wheeler Canyon/Todd Barranca	0.002μg/L from the Cal Dep of Fish and Game[2]
Malathion	CCW Reach 4	0.28μg/L (4-day average) from UC Davis[1]
	CCW Reach 12	0.1μg/L USEPA[3]
	Tapo Canyon	0.28μg/L (4-day average) from UC Davis[1]
Permethrin	CCW Reach 4	0.0002μg/L from UC Davis[1]

1. Aquatic life water quality criteria derived via the UC Davis method: II. Pyrethroid insecticides. Reviews of Environmental Contamination and Toxicology 216:51-103.
2. Hazard Assessment of the Synthetic Pyrethroid Insecticides Bifenthrin, Cypermethrin, Esfenvalerate, and Permethrin to Aquatic Organisms in the Sacramento-San Joaquin River System; 2000. Cal Dept. of Fish and Game. Report 00-6.
3. National Recommended Water Quality Criteria (Red Book). 1976. United States Environmental Protection Agency. Office of Water. Office of Science and Technology.

The 303(d) list includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in Ventura County watersheds. Currently no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken):

- The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 μg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain.
- Use of LC50 for listing of cyfluthrin for CCW Reach 4 and Santa Clara River Reach 3 is inappropriate. LC50s do not meet the standard set forth in the listing policy as stated on page 20: " *the evaluation guideline… identifies a range above which impacts occur and below which no or few impacts are predicted*." By definition an

LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline.

- The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis[4] criteria. However, upon reviewing the UC Davis source, we found the listed chronic standard for permethrin is 2 ng/L (page 92), which is 0.002µg/L not 0.0002µg/L as listed in the 303(d) list.

Requested Action:

- **Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.**
- **Remove all guidelines that do not comply with the stated listing policy as described above.**

Farm Bureau appreciates the opportunity to comment on the 303(d) list and looks forward to continuing to work with the Regional Board to address these concerns. Thank you for your time and consideration of these comments. If you have any questions, please contact me at (805) 289-0155.

Sincerely,

John Krist, CEO
Farm Bureau of Ventura County

cc: Edgar Terry, chairman, VCAILG Steering Committee
Nancy Broschart, Farm Bureau of Ventura County
Christ Scheuring, Legal Affairs Division, California Farm Bureau Federation

[4] Aquatic life water quality criteria derived via the UC Davis method: ll. Pyrethroid insecticides. Reviews of Environmental Contamination and Toxicology 216:51-103.

CASTAIC LAKE WATER AGENCY

March 30, 2017

Dr. Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles CA 90013

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) list

Dear Dr. Zhu:

CLWA is a water wholesaler that treats and delivers State Water Project water from Castaic Lake to four water retailers.

This letter regards the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) public hearing on April 6, 2017, to consider revisions to the Clean Water Act Section 303(d) list of impaired water bodies. At this meeting, the Regional Board is expected to hear information and take formal action on the proposed revisions to water quality assessments in the Los Angeles Region, including Castaic Lake.

One of the subject proposed revisions would add polychlorinated biphenyls (PCBs) to the 303(d) listing for Castaic Lake and Lagoon. The data referenced in the proposed PCB listing is from a relatively small number of fish tissue samples analyzed in 2007.

The Agency samples and analyzes water from the lake prior to treatment. Our data does not indicate that PCBs are present in the lake water. Because of this, and the limited data described above, we believe additional study should be conducted to look at longer term trends in PCB concentrations in fish tissue, and PCB source determination.

If you have any questions please call me at (661) 513-1281, or email me at rviergutz@clwa.org.

Sincerely,

Rick Viergutz
Principal Water Resources Planner

AZUSA

The Canyon City — Gateway to the American Dream

March 30, 2017

Sent via USPS and email

California Regional Water Quality Control Board
Los Angeles Region
Attn: Dr. Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

RE: COMMENT LETTER – REVISIONS TO THE LOS ANGELES REGION 303(d) LIST

The City of Azusa appreciates the opportunity to provide comments on the Los Angeles Regional Water Quality Control Board's proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region. Enclosed are our comments for your review and consideration.

If you have any questions, please contact Daniel Bobadilla, Director of Public Works/City Engineer, at (626) 812-5264 or dbobadilla@ci.azusa.ca.us.

Sincerely,

Troy L. Butzlaff, ICMA-CM
City Manager

Attachment – As Stated

cc: Azusa City Council
Daniel Bobadilla, PE, Director of Public Works/City Engineer, City of Azusa

Troy L. Butzlaff, ICMA-CM, City Manager
213 E. Foothill Blvd., Azusa, CA 91702
626-812-5238 -- tbutzlaff@ci.azusa.ca.us

City of Azusa Comments on the Los Angeles Regional Water Quality Control Board's Proposed Revision to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region, San Gabriel River

Summary

The City of Azusa ("City") appreciates the opportunity to comment upon the proposed revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region (San Gabriel Valley). Of the 22 metals reported for all San Gabriel River water quality segments, 19 (84.3%) of them fall under the "de-list" and "do not list" categories.[1] The City believes that 3 additional metals (15.7%) should be de-listed[2], which would raise the total to 22 (100%), for reasons more particularly described below. Based on the de-listing of these metals, the City contends that the Regional Board should remove the San Gabriel Metals TMDL from the Los Angeles Basin Plan.

I. San Gabriel River: Estuary

As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. Whether or not this was an oversight on the part of the Regional Board, there is ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent:

1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/l for hardness is only intended to be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it.

---

[1] copper = 4 (21%); lead = 5 (26.3%); zinc = 6 (31.6%); and selenium = 4 (21%).
[2] copper = 2 (SGR Estuary and Coyote Creek); lead = 1 (SGR R2).

2. Regional Board also did not follow the *Water Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried-over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998.

3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/l). The limit is 9.4 ug/l. In other words, no exceedance was detected.

Table I. San Gabriel River: Estuary

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	X	-	-	-	-	x	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x	-	-	Yes

Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3.7 ug/l (see Table I(a) below).

Table I(a) from Attachment P of the Los Angeles MS4 Permit

Water Body	WLA Daily Maximum	
	Copper	Selenium
San Gabriel Reach 1	18 µg/L	---
Coyote Creek	0.941 kg/day*	---
San Gabriel River Estuary	3.7 µg/L	---
San Jose Creek Reach 1 and 2	---	5 µg/L

Recommendation to Regional Board: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

II. San Gabriel River: Reach 1 (Estuary to Firestone)

Metals for San Gabriel River, Reach 1 from the Estuary to Firestone were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/l (shown above in Table I(a), despite the fact that copper was not listed on the 2010 303(d) list in the first place.

Table II. San Gabriel River: Reach 1 (Estuary to Firestone)

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	-	x	-	-	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x		-	Yes

Recommendation to Regional Board: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan

III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)

As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons:

1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced).

2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above.

3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in zero exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement.

4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/l). The limit is 3.8 ug/l. In other words, no exceedance was detected.

Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam)

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	x	-	-	-	Yes
Lead	x	-	-	-	x	X	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	-	-	x	-	-	-	Yes

Recommendation to Regional Board: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)

As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit *Attachment P: TMDLs in San Gabriel River Watershed Management Area.* It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table I(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81.34 ug/l; and (2) Coyote Creek lists copper target of 24.71 ug/l and zinc at 144.57 ug/l. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity.

Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona)

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	-	x	-	-	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x	-	-	Yes

Table I(b) from Attachment P of the Los Angeles MS4 Permit

Water Body	WLA Daily Maximum (kg/day)		
	Copper	Lead	Zinc
San Gabriel Reach 2	---	81.34 µg/L x daily storm volume (L)	---
Coyote Creek	24.71 µg/L x daily storm volume (L)	96.99 µg/L x daily storm volume (L)	144.57 µg/L x daily storm volume (L)

Recommendation to Regional Board: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

V. San Gabriel River: Coyote Creek

The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons:

1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2.

2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied – incorrectly -- to MS4s and other NPDES permittees.

Table V. Coyote Creek

(San Gabriel River Tributary)2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	-	-	-	x	x	Yes
Lead	x	-	x	-	-	-	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	x	-	x	-	-	-	Yes

Recommendation to Regional Board: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

VI. **San Jose Creek Reach 1 (SG Confluence to Temple St.)**

Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below).

Table VI: San Jose Creek Reach 1

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-			x			Yes
Lead	-			x			Yes
Selenium	-		x				Yes
Zinc	-			x			Yes

Recommendation to Regional Board: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

VII. **South San Jose Creek (Los Angeles County)**[3]

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-			x			Yes
Lead	-			x			Yes
Selenium	-			x			Yes
Zinc	-			x			Yes

Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

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[3]This is Reach is a new listing under the 2016 303(d) List.

CITY of GARDENA
ELECTED and ADMINISTRATIVE OFFICES – CITY MANAGER

TASHA CERDA, *Mayor*
MARK E. HENDERSON, *Mayor Pro Tem*
ART KASKANIAN, *Councilmember*
DAN MEDINA, *Councilmember*
RODNEY G. TANAKA, *Councilmember*

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MINA SEMENZA, *City Clerk*
J. INGRID TSUKIYAMA, *City Treasurer*
MITCHELL G. LANSDELL, *City Manager*
PETER L. WALLIN, *City Attorney*

March 29, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Email: losangeles@waterboards.ca.gov

Subject: Comment Letter – Revisions to the Los Angeles Region (303(d)

The City of Gardena (City) appreciates the opportunity to comment on the revised 2016 303(d) Integrated Report for the Dominguez Channel. The City also welcomes the proposed "de-list" and "do not list" of pollutants, particularly metals and toxics. These pollutants are the basis for the Dominguez Channel Harbor Toxics TMDL (DCHT-TMDL), which is derived from the 2010 303(d) list. The elimination of these pollutants should effectively eliminate the need for the DCHT-TMDL, which the Dominguez Channel Watershed Management Program was created to comply with.

I. 2010 303(d)/2016 303(d) List Dominguez Channel, Reaches 1 and 2

This list, on which the DCHT-TMDL was developed, contains the following toxics for Reach 1 and 2 as shown in the tables presented below. The tables also show the status of toxic pollutants, including metals, which the 2016 303(d) list revises in terms of the following categories: (1) list; (2) de-list; and (3) don't de-list.

II. Reach 1 Dominguez Channel (unlined portion below Vermont)

2010 303(d) List Toxics/Metals	List Status	2016 303(d) List Toxics/Metals	List Status
1. Benzo(a)pyrene (PAH[1])	List	1. Benzo(a)pyrene (PAH)	Don't de-list
2. Benzo(a)anthracene (PAH)	List	2. Benzo(a)anthracene (PAH)	Don't de-list
3. Chlordane (tissue)	List	3. Chlordane (tissue)	Don't de-list
4. Chryslene (PAH)	List	4. Chryslene (PAH)	Don't de-list
5. Copper (not listed)[2]	?	5. Copper	Don't de-list
6. DDT(tissue and sediment)	List	6. DDT(tissue and sediment)	Don't de-list
7. Dieldren (tissue)	List	7. Dieldren (tissue)	List

[1]This pollutant is a polyaromatic hydrocarbon (PAH), along with benzo(a)anthracene, chryslene, phenathrene, and pyrene (total of 6).
[2]Copper for Reach 1 of the Dominguez Channel was not listed on the 2010 303(d) List. However, according to the 2012 303(d) List, copper is not to be de-listed. There is a disconnect between the listings that requires resolution.

8. Lead (tissue)	List	8. Lead (tissue)	Don't de-list
9. Methylnaphthlene 2	List	9. Methylnaphthlene 2	**Don't list**
10. Polychlorinated Bi-phenyls (PCBs)	List	10. Polychlorinated Bi-phenyls (PCBs)	Don't de-list
11. Polyaromatic Hydrocarbons (PAHs)	Not listed	11. Polyaromatic-Hydrocarbons (PAHs)	**De-list**
12. Phenanthrene (PAH)	List	12. Phenanthrene (PAH)	Unknown
13. Pyrene (PAH)	List	13. Pyrene (PAH)	Don't de-list
14. Sediment Toxicity	List	14. Sediment Toxicity	Unknown
15. Toxicity	List	15. Toxicity	Don't de-list
16. Zinc (sediment)	List	16. Zinc (sediment)	**De-list**

In sum, the 2016 303(d) list for toxics and metals proposes to de-list PAHs and zinc (in sediment) and not list Methylnaphthalene 2. However, because PAHs are to be de-listed, Chryslene, Phenanthrene, and Pyrene must also be de-listed because they are specific types of PAHs. Thus, the total number of toxics to be eliminated from the 2016 303(d) list is 8. Copper should be de-listed as well because: (1) it was not listed on the 2010 303(d) Integrated Report for toxics and metals for Reach 1 of the Dominguez Channel; (2) the 2012 303(d) list recommended that copper not be listed;" and (4) SWAMP data (2003) for all reaches of the Dominguez Channel resulted in only a few slight exceedances for dissolved copper (but not for total recoverable copper, which is the California Toxics Rule (CTR) compliance standard). Should the Regional Board insist on retaining copper on the 2016 303(d) list, it should provide sampling data based on the CTR for establishing ambient water quality standards.

Excluding the aforementioned metals and toxics from the 2016 303(d) list eliminates 9 of them – 56% of the total. On this basis alone, the DCHT-TMDL should be voided. As discussed below the metals and toxics on the proposed 2016 303(d) list that have not been de-listed for Reach 1 of the Dominguez Channel should be de-listed.

1. *Chlordane*

This toxic should be de-listed for the following reasons: (1) no justificaCTRtion to list chlordane was provided in Decision ID 20199 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) the 2016 303(d) list proposes that chlordane be de-listed for Reach 2 of the Dominguez Channel (); and (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for chlordane.

2. *DDT (tissue/sediment)*

This toxic should be de-listed for the following reasons: (1) no justification was provided in Decision ID 19790 of the proposed 2016 303(d) list to list DDT in keeping with 303(d) Listing Policy; (2) DDT is de-listed for Reach 2 of the Dominguez Channel; (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for DDT; and (4) DDT is a legacy pollutant that has been banned for several decades.

3. *Dieldrin (tissue)*

Dieldrin (tissue) should be de-listed for the following reasons: (1) no 303(d) listing policy justification for was provided in Decision ID 34645 of the proposed 2016 303(d) list to list dieldrin; (2) the proposed 2016 303(d) list recommends that dieldren be de-listed for Reach 2 of the Dominguez Channel (despite the fact that the two reaches are connected); (3) dieldrin is a legacy pollutant; and (4) SWAMP data (2003) based on multiple grab samples for both Dominguez Channel reaches resulted in non-detects for dieldrin.

4. *Lead (including tissue)*

Lead (tissue) should be de-listed for the following reasons: (1) no justification to list lead was provided in Decision ID 34645 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in no exceedances for dissolved lead in Reach 1 of the Dominguez Channel; (3) according to the DCHT-TMDL, the samples taken for lead do not comply with the federal California Toxic Rule (CTR), in that they were not based exclusively on ambient samples and incorrectly used a hardness default value of 49 mg/l[3]); and (4) lead as legacy pollutant has been significantly reduced in the environment as a result of de-leaded fuels).

5. *Polychlorinated Bi-phenyls (PCBs*

PCBs should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 33063 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy); (2) PCBs are de-listed for Reach 2 of the Dominguez Channel; (3) PCBs are legacy pollutants that have been banned for decades; and (4) SWAMP data (2003) based on multiple grab samples for both reaches resulted in non-detects for PCBs.

6. *Toxicity*

Toxicity should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 43000 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the

[3]CTR sets ambient (dry weather) receiving water quality standards. Nevertheless, the DCHT-TMDL mentions that wet weather standards were set in accordance with CTR. Any wet weather standard based on this misinterpretation of CTR should be voided. Further, the hardness value that was used (according to the DC/Harbor Toxics TMDL) was 49 mg/l, which is an average based on samples taken from 2002-2010 (presumably during storm events from Dominguez Channel). This value is too low and is inconsonant with CTR. Hardness influences calculating CTR standards. The higher the hardness value, the higher the target for a toxic or metal. The higher the number, the less difficult it is to comply with. CTR specifically requires an actual hardness a value (using calcium carbonate as an adjustment parameter) to be determined by sampling and analysis at the same time samples are taken for toxics and most metals. CTR cautioned that the use of the 100 mg/l hardness value is intended only as an illustrative factor for calculating CTR standards using a required formula. The Regional Board's SWAMP abides by this requirement when it conducts ambient water quality monitoring.

policy)[4]; (2) SWAMP data (2003) based on multiple grab samples for both reaches resulted in non-detects for most toxics (both Dominguez Channel reaches); and a few detects but no exceedances; and a very few exceedances for metals; and (3) the 2016 303(d) list proposes to de-list toxics affecting Dominguez Channel R1 and R2 that contribute to toxicity[5] (there can be no toxicity if many of the toxics are to be de-listed).

7. *Sediment Toxicity*

Sediment toxicity cannot be commented on because it is not addressed in the 2016 303(d) listing report, although it is listed in both the 2010 and 2012 303(d) reports. It is not certain if the Regional Board intended to de-list sediment toxicity or to carry it over.

Against this background it is recommended the all of following toxics and metals be eliminated from the proposed 2016 303(d) Integrated Report for Reach 1 of the Dominguez Channel:

1. Benzo(a)pyrene (PAH)
2. Benzo(a)anthracene (PAH)
3. Chlordane (tissue)
4. Chryslene (PAH)
5. Copper
6. DDT(tissue and sediment)
7. Dieldren (tissue)
8. Lead (tissue)
9. Methylnaphthlene 2
10. Polychlorinated Bi-phenyls (PCBs)
11. Polyaromatic-Hydrocarbons (PAHs)
12. Phenanthrene (PAH)
13. Pyrene (PAH)
14. Sediment Toxicity
15. Toxicity
16. Zinc (sediment)

Eliminating all of these toxics/metals should be sufficient justification for eliminating or significantly revising the DCHT-TMDL.

III. Reach 2 Dominguez Channel (lined portion above Vermont)

2010 303(d) List Toxics/Metals	List Status	2016 303(d) List Toxics/Metals	List Status

[4]The DCHT-TMDL appears to replace CTR-derived toxics standards with a TUc (toxic unit chronic). According to the DCHT-TMDL, this numeric toxicity objective was created because the Basin Plan's narrative toxicity objective does not allow acute or chronic toxicity in any receiving waters. However, CTR resolves this problem by providing a formula that translates acute or chronic toxicity in dissolved and total recoverable values. Further, other TMDLs adopted by the Regional Board do not resort to a TUc. If the TUc standard is used to meet the binomial distribution requirement under 303(d) Listing Policy Section 3.1 that data, along with the null hypothesis, should be made available.

[5]Chlordane, dieldren, diazinon, DDT, PCBs, and PAHs with the justification that copper, lead, and zinc should also be de-listed.

1. Copper	List	1. Copper	Don't de-list
2. Diazinon	List	2. Diazinon	**De-list**
3. Lead	List	3. Lead	Don't de-list
4. Toxicity	List	4. Toxicity	Don't de-list
5. Zinc	List	5. Zinc	Don't de-list
		6. Benthic-Macroinvertebrate Bioassessment	**List (new)**

The 2016 303(d) list proposes to carry-over from the 2010 303(d) all of the toxics except diazinon, which is de-listed. Copper, lead, zinc, and toxicity should be de-listed for the same reasons for de-listing Dominguez Channel R1 metals and toxics.

The 2016 (303d) list also adds "Benthic-Macroinvertebrate Bioassessment" (BMB), which should not be listed for the following reasons:

- BMB is not a pollutant.
- BMB is used to evaluate the health of wadeable streams using a scoring system. Reach 1 of the Dominguez Channel is not wadeable. The Los Angeles County Flood Control District forbids entry into this and other flood control channels.
- The Index of Biotic Integrity (IBI) score of 40, on which the BMB is justified, is considered to be on the edge of "poor" to "fair." But it was based only on 3 samples, taken in 2006, 2007, and 2008. Not only is the sample size not statistically significant, and therefore not in keeping with the 303(d) Listing Policy, but the data is not current.
- BMB decision ID, 83960, also uses as lines of evidence toxicity, which is associated with copper, lead, zinc, and diazinon. However, copper, lead, zinc, and toxicity should not be listed on the proposed 2016 303(d) list for the same reasons they should not be listed for Reach 2 of the Dominguez Channel. Further, the 2016 303(d) list proposes to de-list diazinon, a toxic.
- According to the Southern California Coastal Water Research Project (SCCWRP), Technical Report 88, which is a bioassessment study concluded in 2015, metals, toxicity, and pyrethroids were only weakly or rarely associated with poor stream health in the Southern region.
- Biota, including fish, located in Reach 1 or Reach 2 of the Dominguez Channel has not been specifically identified as being impaired by metals or toxics. The Regional Board has not been able to demonstrate that fish and other wildlife have been impaired. Admittedly, this would be difficult given that Dominguez Channel is a non-perennial stream; it only flows when it rains. There are no studies that have identified the number and species of fish in the Dominguez Channel during storm events. If there were any fish

in the channel traveling from up-stream they would probably perish when moving from a freshwater to a saltwater environment.

III. Conclusions

In the final analysis, each of the metals and toxic pollutants on the proposed 2016 303(d) list for Reaches 1 and 2 of the Dominguez Channel should be de-listed. The bases for the de-listings are, in the aggregate, defective because:

1. The data supporting the listings are out-dated (in some cases by almost 15 years). It is unclear why more current water quality data is not available, especially given that each MS4 in the State is required to pay an annual SWAMP surcharge along with its regular annual MS4 Permit fee to the State. Unlike most non-SWAMP monitoring (sampling and analysis), the Regional Board's SWAMP unit conducts monitoring in accordance with USEPA guidance and State policy. The data SWAMP generates is accurate, objective, and extremely useful. Had SWAMP been allowed to conduct monitoring on a regular basis, the DCHT-TMDL may not have been necessary.

2. Over the past two decades, water quality undoubtedly has improved. Many toxic pollutants are no longer in the environment (e.g., DDT, various pesticides, cleaning solvents, lead in gasoline, etc.). Substantial credit should also be given to municipalities. Since the Los Angeles County MS4 program began in the nineties, cities have dutifully implemented best management practices (BMPs) that have been effective in source-controlling pollutants and reducing them from outfalls through post-construction runoff pollution mitigation controls. Community sensitivity to mitigating runoff pollution is another factor attributable to MS4 public education and outreach programs.

3. The pollutant listings claim to be based on water quality standards developed in conformance with CTR, but they are not. CTR standards for metals and toxics are intended to be ambient standards, derived from dry weather sampling and analysis from receiving water. Instead, they were derived from wet weather conditions. Further, CTR requires an actual hardness value to calculate water quality standards. Many of the 303(d) pollutants were CTR calculated using average hardness values or in some cases the hardness factor of 100 mg/l. According to CTR, this factor was intended only to be used for illustrative purposes when calculating ambient standards for metals and toxics.

4. The pollutant listings, with the exception of those based on the Regional Board's Surface Water Ambient Monitoring Program (SWAMP), do not comply with the State's 303(d) Listing Policy's requirement of meeting the statistical frequency test using a binomial distribution in accordance with a null hypothesis.

It should be noted that the DCHT-TMDL was based on faulty 303(d) metals and toxic pollutant listings. What is regrettable is that the costly Dominguez Channel EWMP is based on the DCHT-TMDL.

In closing, the City once again appreciates the opportunity to comment on this important proposition. Should you have any questions, please feel free to contact me.

Best Regards,

Mitchell G. Lansdell

MITCHELL G. LANSDELL
City Manager

MGL:nw

c: Ray Tahir, TECS Environmental
Joseph Cruz, Director - General Services Dept.

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March 30, 2017

ELECTRONIC MAIL

Dr. Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Dear Dr. Zhu:

COMMENT LETTER – REVISIONS TO THE LOS ANGELES REGION 303(D) LIST

The City of Los Angeles LA Sanitation (LASAN) appreciates the opportunity to provide comments on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. The decisions related to the 303(d) List have the potential to direct resources to new or changing water quality priorities in all of the City's watersheds and development of new or revised TMDLs that require significant investment of both public agency and State resources. It is crucial that the 303(d) List be revised based on sound science and methodologies following the requirements of the State's Listing Policy. Revisions to the 303(d) List may result in changes to our Enhanced Watershed Management Programs, Coordinated Integrated Monitoring Programs, as well as affecting requirements for the four Water Reclamation Plants operated by LASAN. As such, we feel it is imperative that the listings reflect our understanding of the watersheds to the best of our abilities given the available data.

Attachment 1 to this letter contains a table presenting detailed technical comments. If you have any questions related to comments #1 through 23, please contact Shahram Kharaghani, Watershed Protection Program Division Manager at Shahram.Kharaghani@lacity.org or at (213) 485-0587. For questions related to comments #24 through 28, please contact Hassan Rad, Regulatory Affairs Division Manager at Hassan.Rad@lacity.org or at (213) 847-5186.

We welcome the opportunity for our Division Managers and staff to meet with you to discuss our comments and look forward to continuing our collaborative efforts to collect quality data for use in evaluating the attainment of water quality standards.

Sincerely,

Traci Minamide, for

ENRIQUE C. ZALDIVAR, Director
LA Sanitation

ECZ:SK:JLC:HR:es

Attachment

c: Samuel Unger, Regional Water Quality Control Board
Deborah J. Smith, Regional Water Quality Control Board
Renee Purdy, Regional Water Quality Control Board
L.B. Nye, Regional Water Quality Control Board
Traci Minamide, LA Sanitation/EXEC
Adel Hagekhalil, LA Sanitation/EXEC
Mas Dojiri, LA Sanitation/EXEC
Shahram Kharaghani, Bureau of Sanitation/WPD
Hassan Rad, Bureau of Sanitation/RAD

Attachment 1: Detailed Technical Comments on the 2016 Revisions to the Los Angeles Region 303(d) List

	Water Body Pollutant	Technical Comment
1.	Wilmington Drain Zinc	The Fact Sheet for Decision ID 63330 states that one line of evidence is available to assess zinc in Wilmington Drain (90159). LOE 90159 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 3 of 5 samples exceeded the evaluation guideline (i.e., the CTR). However, data collected by Heal the Bay's, "Compton Creek Monitoring Program", were collected from Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90159 consists of data that should not be included when assessing whether or not a zinc impairment exists in Wilmington Drain. Excluding LOE 90159 results in no data available to assess the waterbody pollutant combination. ***Requested Action: Remove Decision ID 63330 for the zinc listing for Wilmington Drain as there are no data to assess the waterbody pollutant combination.***
2.	Wilmington Drain Copper	Although the Fact Sheet for Decision ID 44676 states that only two lines of evidence are available in the administrative record to assess the pollutant, Appendix G shows three distinct lines of evidence (4280, 90131, and 90473). LOE 4280 is a placeholder LOE to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 90131 includes data collected by the City of Los Angeles where 2 of 33 samples exceeded the evaluation guideline (i.e., the CTR). LOE 90473 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 2 of 5 samples exceeded the evaluation guideline (i.e., the CTR). The Fact Sheet for Decision ID 44676 combines these three LOEs to state that 4 of 38 samples exceed the CRITERIA and this exceeds the allowable frequency listed in Table 4.1 of the Listing Policy. However, as previously noted, the third LOE includes data collected by Heal the Bay's, "Compton Creek Monitoring Program", which was focused on Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90473 consists of data that should not be included when assessing whether or not a copper impairment exists in Wilmington Drain. Excluding LOE 90473 results in the sample exceedance frequency being 2 of 33 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy. ***Requested Action: Revise Decision ID 44676 for the copper listing for Wilmington Drain to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.***
3.	Los Angeles River Estuary (Queensway Bay) Copper	The Fact Sheet for Decision ID 64264 presents one line of evidence related to copper in the Los Angeles River Estuary (85965). LOE 85965 presents information from a State of California program that sampled marinas throughout California and assess the data provided as follows: *"A total of six grab samples were collected during each sampling event. Four separate grab samples were collected from inside the marina basin (Sites 1, 2, 3, & 4) and two separate grab samples were collected from outside the marina basin (Sites 5 & 6). Sample results for sites inside the marina basin and sites outside the marina basin were averaged per sample event, resulting in two sample results per sampling event."*

		Per the LOE, the Regional Board utilized data collected from inside the Downtown Shoreline Marina (Sites 1, 2, 3, & 4) and data collected outside the marina basin (Sites 5 & 6) to make a determination that 3 of 6 samples exceeded the copper criterion. No site location information is provided specific to these sites (GPS locations are provided in the associated documents, but no sites are specifically named Sites 1, 2, 3, 4, 5, & 6) so it is not possible to verify the locations. Regardless, data from inside the Marina should not be combined with data from the Estuary to assess the Estuary. These are two distinct bodies of water with differing inputs and water quality conditions. Dissolved copper data collected inside the Marina shows an average concentration of 7 ug/L and represents three of the three exceedances identified in the Fact Sheet. Dissolved copper data collected outside of the Marina (presumably in the Estuary) shows an average concentration of 0.72 ug/L and represents zero of three exceedances. The dissolved copper data collected from inside and outside of the Marina are significantly different from one another, as is to be expected, given that they are separate waterbodies and one is a marina and the other is an estuary. ***Requested Action: Either 1) remove Decision ID 64264 and the corresponding 303(d) listing in Attachment B or 2) revise Decision ID 64264 to reflect the waterbody is the Downtown Shoreline Marina rather than the Los Angeles River Estuary and remove the copper listing for the Los Angeles River Estuary from the 303(d) list (Attachment B).***
4.	Ballona Creek Toxicity	The Fact Sheet for Decision ID 34253 presents two lines of evidence that indicate the presence of sediment toxicity (83019 and 83020). LOE 83019 references a Statewide Stream Pollution Trends Study 2008 and LOE 83020 references Statewide Project Urban Pyrethroid Status Monitoring. When reviewing the station locations (404SUP093 and 404BLNAxx) associated with these two LOEs in an August 2012 Surface Water Ambient Monitoring (SWAMP) report titled “Toxicity in California Waters: Los Angeles Region”, the sampling locations are identified as (page 11) “approximately one kilometer downstream from the confluence with Sepulveda Channel.” In a 2014 SWAMP report titled “Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program Third Report - Five-Year Trends 2008-2012”, the site 404BLNAxx is identified as Ballona Creek Downstream of Centinela (33.986 -118.417). In the Ballona Creek Toxics TMDL Staff Report, Ballona Creek Reach 2 and Estuary are defined as follows (page 5): Ballona Creek to Estuary (Reach 2) is the longest segment of the creek (approximately 4 miles) continuing on from National Boulevard and ending at Centinela Avenue where the Estuary begins. As such, the sites identified in LOEs 83019 and 83020 are in the Ballona Creek Estuary rather than in Ballona Creek and the Estuary already has a toxics TMDL. ***Requested Action: Remove Decision ID 34253 for toxicity for Ballona Creek as there are no data to assess the waterbody pollutant combination.***
5.	Dominguez Channel (lined portion above Vermont Ave) Ammonia	The Fact Sheet for Decision ID 35134 states that two lines of evidence are available in the administrative record to assess pollutant (4098 and 83962). LOE 4098 is a placeholder to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 83962 includes data collected by the City of Los Angeles (City) and states that samples were collected at 3 locations: Artesia Blvd. & Western Ave., Manhattan Beach Blvd., and El Segundo Blvd. where 2 of the 21 samples exceeded the Water Quality Objective/Criterion. However, the data included within the Data Reference for LOE 83962 includes eight additional results that did not exceed the Water Quality Objective/Criterion (including samples collected at Vermont Ave., which was not identified within the LOE Spatial Representation). Given that the Basin Plan indicates that Vermont Ave. represents the reach break between Dominguez Channel and the Dominguez Channel Estuary, samples collected at Vermont Ave. are representative of the upstream water body (i.e., Dominguez Channel lined portion above Vermont Ave). Including all of the applicable data included within the Data Reference for LOE 83962 results in the sample exceedance frequency

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being 2 of 29 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy.

Requested Action: Revise Decision ID 35134 for the ammonia listing for Dominguez Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.
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<td>6.</td>
<td>Dominguez Channel Estuary (unlined portion below Vermont Ave) Ammonia</td>
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As presented in LOE 83995, ammonia, pH, and temperature data were collected by the City of Los Angeles at four stations in Dominguez Channel Estuary during July 2009 and August 2009. The following table summarizes the number of samples and exceedances.

Summary of data for Dominguez Channel Estuary (unlined portion below Vermont Ave)
<table>
<tr><th>Waterbody</th><th>□ of Samples</th><th>□ of Exceedances of 4-Day Criteria</th><th>Delist if the □ of exceedances equal or is less than[1]</th></tr>
<tr><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>28</td><td>0</td><td>2</td></tr>
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1 For toxicants, the maximum number of exceedances allowed for delisting is shown in Table 4.1 (Page 14) of the Listing Policy.

COMPARISON OF EXCEEDANCES TO LISTING POLICY

As shown in the table above, the total number of exceedances is below the maximum number of exceedances allowed to delist per the Listing Policy. As a result, the available data demonstrates that Dominguez Channel Estuary meets the water quality objectives for ammonia (un-ionized) and should be delisted from the 303(d) list. This decision would be consistent with Decision ID 62240 (which treated the listing as a new listing despite an existing listing being present), which finds that ammonia in the Dominguez Channel Estuary should not be listed and states the following (emphasis added): “Based on the readily available data and information, the weight of evidence indicates that <u>there is sufficient justification against placing this water segment-pollutant combination on the CWA section 303(d) List in the Water Quality Limited Segments category</u>. This conclusion is based on the staff findings that:

1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. 0 of 28 samples exceeded the CRITERIA and this does not exceed the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

Regional Board Staff Decision Recommendation: After review of the available data and information, <u>RWQCB staff concludes that the water body-pollutant combination should not be placed on the section 303(d) list </u>because applicable water quality standards are not being exceeded.”

Requested Action: Revise Decision ID 34669 for the ammonia listing for Dominguez Channel Estuary to Delist from
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		303(d) list and remove from Category 5 (Appendix B) based on Decision ID 62240 (for the ammonia [un-ionized] listing for Dominguez Channel Estuary) and the data reference provided in LOE 83995.
7.	Compton Creek Iron	The Fact Sheet for Decision ID 62052 states that one LOE (83798) is available in the administrative record to assess iron in Compton Creek. LOE 83798 lists the following as the Evaluation Guideline used as the basis for the listing: "National Recommended Water Quality Criteria Continuous Concentrations are intended to protect freshwater aquatic organisms from chronic exposures and are expressed as 4-day average concentrations. The City has several concerns with this listing: • The only two exceedances are associated with wet-weather samples collected on October 13, 2009. The Evaluation Guideline used as the basis is **Criteria Continuous Concentrations** (i.e., chronic criterion). It is inappropriate to use a chronic criterion as it is meant to protect aquatic life against chronic exposure and the samples were taken during a wet-weather event not representative of chronic conditions. USEPA does not recommend a Criteria Maximum Concentration (acute criterion) for iron within its National Recommended Water Quality Criteria. • The National Recommended Water Quality Criteria Continuous Concentration for iron does not specify whether the criterion applies to the total recoverable or dissolved fraction. None of the dissolved iron results associated with the samples used to assess the water body exceeded the criterion. • Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision." However, multiple samples were collected on the same day during the same storms and each was considered separately. Samples collected on the same day during the same storm (as was the case with the two exceedances) should not be considered independently from one another as they are clearly not temporally independent and do not meet the Listing Policy requirements. Averaging samples collected on the same day results in 1 of 5 exceedances, which does not meet the requirements of the Listing Policy for placing a water body segment on the 303(d) list. ***Requested Action: Revise the decision for Decision ID 62052 for the iron listing for Compton Creek to Do Not List on 303(d) list (TMDL required list) and remove from Category 5 (Appendix B) due to an inappropriate evaluation guideline being used as the basis for the listing, the observed exceedances were not temporally independent, and none of the dissolved results exceeded the evaluation guideline.***
8.	Ballona Creek Estuary Silver	The Fact Sheet for Decision ID 34520 states "Silver has not been specifically listed on the 303(d) list." Furthermore, the single Line of Evidence (LOE) does not indicate that any data were analyzed (i.e., the number of samples listed is zero). As such, the listing should be removed. ***Requested Action: Revise Decision ID 34520 for the silver listing for Ballona Creek Estuary to Delist from 303(d) list and remove from Category 4 (Appendix C) to be consistent with the Fact Sheet.***
9.	Dominguez Channel Estuary (unlined portion below	The Fact Sheet for Decision ID 33751 states that five LOEs are available to assess copper in the Dominguez Channel Estuary, four of which correspond to sediment and one of which corresponds to water. The sole LOE that presents water data states that 3 of 3 samples exceeded the dissolved California Toxics Rule (CTR) saltwater chronic criterion. However, these sample results were all collected on the same day and appear to be for total copper associated with a wet-weather event. When using the total copper CTR acute criterion (rather than the dissolved CTR chronic criterion), the samples do

	Vermont Ave) Copper	not exceed. As such, all LOEs that support a listing correspond to the sediment matrix. ***Requested Action: Revise the pollutant for Decision ID 33751 for the copper listing for Dominguez Channel Estuary to "Copper (sediment)" given that the LOEs supporting a listing correspond to the sediment matrix and move the listing to Category 4a (Appendix C).***
10.	Various waterbodies Various pollutants	For a number of existing listings, it appears as if a significant number of readily available data were not considered when making the Final Listing Decision. These data are from NPDES Permit monitoring programs (both wastewater and stormwater). When these data are considered, the number of measured exceedances supports rejection of the null hypothesis as presented in Table 4.1 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy). As such, these listings should be removed from the section 303(d) list. Furthermore, with regards to the cyanide listing for Ballona Creek, it appears as if Los Angeles (LA) Regional Water Quality Control Board (Regional Board or LARWQCB) staff applied the chronic CTR criterion to the entire dataset instead of applying the chronic CTR criterion during dry-weather and the acute CTR criterion during wet-weather.

Water Body	Pollutant	Listing Category	Date Range		□ of Samples	□ of Exceedances	Max □ of Exceedances to Delist
			Start	End			
Ballona Creek	Cyanide	5	10□2000	12□2010	66	5	5
Burbank Western Channel	Selenium	5	10□2003	12□2010	201	15	17
Los Angeles River Reach 1 (Estuary to Carson Street)	Diazinon	5	10□2002	12□2010	56	1	4
	Lead	5	02□2001	12□2010	173	4	14
Los Angeles River Reach 2 (Carson to Figueroa Street)	Lead	5	01□2001	12□2010	241	4	20
Los Angeles River Reach 5 (within Sepulveda Basin)	Lead	5	02□2002	11□2010	78	0	6
Sepulveda Canyon	Lead	4	10□2004	12□2010	98	4	8
	Selenium	4	10□2004	12□2010	98	4	8

Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list and remove from Category 5 (Appendix B) or Category 4 (Appendix C), whichever is applicable.

11.	Burbank Western	The Fact Sheet for Decision ID 32882 finds that lead in the Burbank Western Channel should not be listed and states (emphasis added): "One line of evidence is available in the administrative record to assess this pollutant. None of the

	Channel Lead	samples exceed the water quality objective. Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category*." In addition, the analysis conducted as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) did not identify any exceedances from October 2003 through December 2010. ***Requested Action: Revise Decision ID 32882 for the lead listing for Burbank Western Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2003.***
12.	Los Angeles River Reach 1 (Estuary to Carson Street) Cadmium	The Fact Sheet for Decision ID 32639 finds that cadmium in the Los Angeles River Reach 1 should not be listed and states (emphasis added): "Three lines of evidence are available in the administrative record to assess this pollutant. The CTR criterion for cadmium for the protection of aquatic life was exceeded three out of forty-two samples from data collected between 1996 and 2002 and no samples exceeded CCR Title 22 MCL guidelines for the protection of MUN beneficial uses in data collected between 2000 and 2003. Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification for removing this water segment pollutant combination from the section 303(d) list.*" In addition, the analysis conducted as part of the ULAR EWMP did not identify any exceedances from February 2001 through December 2010. ***Requested Action: Revise Decision ID 32639 for the cadmium listing for Los Angeles River Reach 1 to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2001.***
13.	Echo Park Lake Ammonia	Decision ID 34696 proposes to change the ammonia listing for Echo Park Lake from List on 303(d) list (TMDL required list) to list on the 303(d) list (being addressed by United States Environmental Protection Agency [USEPA] approved TMDL). However, the TMDL report made a finding of nonimpairment for ammonia, as outlined in the following excerpt from Section 6.2.3.2 of the TMDL report (emphasis added): "Echo Park Lake was listed as impaired for ammonia in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 35 additional samples (7 wet-weather) between May 2003 and February 2010 to evaluate current water quality conditions. There was one ammonia exceedance in 35 samples (Appendix G, Monitoring Data). Therefore, Echo Park Lake meets ammonia water quality standards and USEPA concludes that preparing a TMDL for ammonia is unwarranted at this time. *USEPA recommends that Echo Park Lake not be identified as impaired for ammonia in California's next 303(d) listing*."[1] ***Requested Action: Revise Decision ID 34696 for the ammonia listing for Echo Park Lake to Delist from 303(d) list and remove from Category 4 (Appendix C) based on USEPA's recommendation.***
14.	Lincoln Park Lake Lead	Decision ID 34817 proposes to change the lead listing for Lincoln Park Lake from List on 303(d) list (TMDL-required list) to list on the 303(d) list (being addressed by USEPA approved TMDL). However, the TMDL report made a finding of

[1] U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 6.2.3.2 Summary of Ammonia Non-Impairment , March 2012, p.6-13

		nonimpairment for lead, as outlined in the following excerpt from Section 5.3 of the TMDL report (emphasis added): "Lincoln Park Lake was listed as impaired for lead in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 40 additional samples (11 wet-weather) between October 2008 and December 2010 to evaluate current water quality conditions. There were zero dissolved lead exceedances in 40 samples (Appendix G, Monitoring Data). USEPA also collected one sediment sample in September 2010 to further evaluate lake conditions. There were zero sediment lead exceedances of the 128 ppm freshwater (Probable Effect Concentrations) sediment target (Appendix G, Monitoring Data). Therefore, Lincoln Park Lake meets lead water quality standards and USEPA concludes that preparing a TMDL for lead is unwarranted at this time. *USEPA recommends that Lincoln Park Lake not be identified as impaired by lead in California's next 303(d) list*."[2] ***Requested Action: Revise Decision ID 34817 for the lead listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B) based on USEPA's recommendation.***
15.	Lincoln Park Lake Ammonia	The data utilized to develop the original listing in 1998 are not available (these data were requested from USEPA and the Regional Board during development of the TMDL in 2010. Based on USEPA's TMDL report, data collected prior to 2009 were reported as ammonium, without corresponding ammonia, pH, or temperature measurements making it impossible to compare these data to ammonia criteria. Only ammonia data collected with corresponding pH and temperature data can be used to determine if criteria were exceeded. In 2008, the Regional Board collected eight ammonia samples all of which were below the reporting limit of 0.1 mg/L and chronic criterion. In 2009, the City of Los Angeles and USEPA/Regional Board conducted monitoring and collected 15 and three samples, respectively, all of which were below the chronic criterion. As stated in the TMDL report (pg. 5-10): *"There were no exceedances of the acute or chronic ammonia criteria during any recent sampling events with associated pH and temperature measurements."* In summary, there are no ammonia data with corresponding pH and temperature measurements available to support the original listing and all available recent data demonstrate there are no exceedances. ***Requested Action: Revise Decision ID 35004 for the ammonia listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B).***
16.	Los Angeles River Reach 2 (Carson to Figueroa Street) and Los Angeles River Reach	The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized as follows: An investigation was conducted following seeps of petroleum hydrocarbons into the LA River in June 2001. Based on lab results and borings, it was concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands. Oil was visible in Puente formation seams, partings and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation

[2] U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 5.3 Lead Impairment, March 2012, p.5-18

	5 (within Sepulveda Basin) Oil	contacts with younger, less permeable units or layers.

The USEPA On-Scene Coordinator (OSC) conducted subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge as a result of a spill, leak, or discharge from any facility and that the oil has been discharging to the river since at least 1943 and there is no practical means of preventing this oil seep from discharging to the River.

On April 19, 2002, an email was sent to Steven Pedersen of City of Los Angeles /Watershed Protection Division (WPD) by Steven Poole of the US Coast Guard/National Pollution Funds Center (USGC/NPFC). Mr. Poole stated that City of Los Angeles cannot submit to USGC/NPFC a claim for reimbursement for cost incurred by the City associated with May 2001 oil clean-up efforts in the LA River because Title 1 of the Oil Pollution Act does not allow for reimbursement for **naturally-occurring oil** (natural seepage).

In summary, the reports and correspondence discussed herein, indicate that multiple agencies believe that the oil found in the listed reaches of the LA River is associated with naturally-occurring seepage suggesting that a 303(d) listing is not warranted.

Studies Used in the Analysis
The following studies/correspondences were used in the analysis:

- Pollution Report (2002), USEPA Region IX
- Correspondence (2002) from Michael P. Brown, Manager, Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles
- Correspondence (2002) from Steven Poole, Claims Manager, USGC/NPFC

Despite repeated efforts by WPD to obtain the historical information utilized to develop the original listing, the Regional Board has not provided the information for inclusion in the analysis. Therefore, the analysis is based solely on recent information available to WPD.

Summary of Findings
The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized below.

Investigations of the Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles – June 2001
An investigation was conducted following seeps of petroleum hydrocarbons into the engineered channel of the LA River across from the Piper Technical Center in June 2001. This study concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands, based on lab results and borings.

The samples of the oil seeps and associated bacterial-growth scums revealed that the seeps were predominantly in the oil or heavy-hydrocarbon range. This supports the conclusion that the LA River oil seeps are natural crude oil as opposed to

		fuel leaks. Drilling of wells along Mission St. (east of the river channel) confirmed that oil-bearing Puente formation sands and fractures are the source of crude oil and gases that migrate into the shallow alluvial soils. The hydrocarbons, visible oil and PID readings generally increased with depth toward the Puente formation. Oil was visible in Puente formation seams, partings, and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts younger, less permeable units or layers. **Pollution Report, EPA – January 2002** The USEPA OSC conducted extensive subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge to the River as a result of a spill, leak, or discharge from any facility based on the investigation. The oil has been discharging to the river since the least 1943 and there is no practical means of preventing this oil seep from discharging to the LA River. The OSC also evaluated the use of epoxy or urethane sealants on the seeps to reduce the flow of oil. However, it was concluded that the use of sealants on the seeps would cause the oil to get into the subdrain system and eventually enter the LA River. In summary, WPD attempted to evaluate the original listing information in light of the currently available information. Although the Regional Board did not provide the information, the reports and correspondence discussed herein, and attached to this letter, indicate that multiple agencies believe that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. ***Requested Action: Revise Decision IDs 34118 and 34203 for the oil listings for Los Angeles River Reaches 2 and 5 to Delist from 303(d) list and remove from Category 5 (Appendix B) given that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. Alternatively, move the listing to Category 4b as other regulatory programs are reasonably expected to result in attainment of the water quality standard.***
17.	Various waterbodies Various pollutants	Section 2 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) states (pg. 3): "At a minimum, the California section 303(d) list shall identify waters where standards are not met, **pollutants or toxicity** contributing to standards exceedance, and the TMDL completion schedule." In addition, Section 2.1 of the Listing Policy titled "Water Quality Limited Segments" states (pg. 3): "Waters shall be placed in this category of the section 303(d) list if it is determined, in accordance with the California Listing Factors that the water quality standard is not attained; **the standards nonattainment is due to toxicity, a pollutant, or pollutants**; and remediation of the standards attainment problem requires one or more TMDLs." As such, all listings that do not identify either toxicity or a pollutant as the impairment do not meet the requirements for being placed in the water quality-limited segments category. This is supported by current listing decisions made by the Los Angeles Regional Water Quality Control Board (Regional Board) in Burbank Western Channel for excess algal growth, scum foam-unnatural, and taste and odor and Calleguas Creek Reach

13 for excess algal growth that state the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of **removing** these listing from the 303(d) Water Quality Limited Segment list **because the segment pollutant combinations is not a pollutant**." The following table presents water body segments and listings that correspond to instances where there is not a pollutant.

Decision ID	Water Body Segment	Listing
44553	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects
65656	Ballona Creek	Benthic Community Effects
44746	Ballona Creek Wetlands	Exotic Vegetation
34697	Ballona Creek Wetlands	Habitat alterations
34699	Ballona Creek Wetlands	Hydromodification
44747	Ballona Creek Wetlands	Reduced Tidal Flushing
44498	Compton Creek	Benthic Community Effects
32967	Compton Creek	pH
66165	Dominguez Channel (lined portion above Vermont Ave)	Benthic Community Effects
38511	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Benthic Community Effects
34030	Echo Park Lake	Algae
34698	Echo Park Lake	Eutrophic
34756	Echo Park Lake	Odor
44748	Echo Park Lake	pH
35180	Lincoln Park Lake	Eutrophic
44641	Lincoln Park Lake	Odor
35223	Lincoln Park Lake	Organic Enrichment/Low Dissolved Oxygen
35168	Los Angeles Harbor - Consolidated Slip	Benthic Community Effects
33456	Los Angeles River Reach 1 (Estuary to Carson Street)	Nutrients (Algae)
32959	Los Angeles River Reach 2 (Carson to Figueroa Street)	Nutrients (Algae)
66229	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Benthic Community Effects
34204	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Nutrients (Algae)
64386	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Temperature, water
66232	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Benthic Community Effects
44326	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Nutrients (Algae)

35160	Los Angeles River Reach 5 (within Sepulveda Basin)	Nutrients (Algae)
34207	Los Angeles/Long Beach Inner Harbor	Beach Closures
34208	Los Angeles/Long Beach Inner Harbor	Benthic Community Effects
34305	Machado Lake (Harbor Park Lake)	Algae
42417	Machado Lake (Harbor Park Lake)	Eutrophic
42262	Machado Lake (Harbor Park Lake)	Odor
61605	Marina del Rey Harbor - Back Basins	Oxygen, Dissolved

Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, and remove from Category 5 (Appendix B) or Category 4 (Appendix C).

18. Various waterbodies
Various pollutants

There are numerous listings that include waterbody segments which are in nonattainment due to pollution that is not caused by a pollutant. The *2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region Staff Report* states the following (pg. 9): "Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant, but rather caused by pollution, such as flow alteration or habitat alteration." Impairments for benthic community effects, exotic vegetation, habitat alterations, hydromodification, reduced tidal flushing, and temperature are caused by either flow and/or habitat alteration (not by a pollutant or combination of pollutants) and; therefore, waterbody segments under these listings should instead be moved to Category 4c.

Decision ID	Water Body Segment	Listing
44553	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects
65656	Ballona Creek	Benthic Community Effects
44746	Ballona Creek Wetlands	Exotic Vegetation
34697	Ballona Creek Wetlands	Habitat alterations
34699	Ballona Creek Wetlands	Hydromodification
44747	Ballona Creek Wetlands	Reduced Tidal Flushing
44498	Compton Creek	Benthic Community Effects
66165	Dominguez Channel (lined portion above Vermont Ave)	Benthic Community Effects
38511	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Benthic Community Effects
35168	Los Angeles Harbor - Consolidated Slip	Benthic Community Effects
66229	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Benthic Community Effects
64386	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Temperature, water
66232	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Benthic Community Effects

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<td><table><tr><td>34207</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr></table>
Requested Action: Notwithstanding the previous comment that supports revising the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, move all segments listed in the preceding table with impairments caused by pollution to Category 4c and revise Appendix B or C as appropriate.</td>
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<td>19.</td>
<td>Lincoln Park Lake
PCBs</td>
<td>Decision ID 64083 proposes to list PCBs in fish tissue for Lincoln Lake Park. However, this Lake is annually stocked with fish and therefore the lake population does not spend its lifespan in Lincoln Park Lake and may have accumulated PCBs from another waterbody. A number of studies have indicated that farmed salmon accumulate PCBs from the fish meal they are fed. In order to determine the source of the exceedance, fish from the State's stocking system need to be tested prior to introduction and the duration of time they spend in the Lake needs to be determined by a tagging program. The current analysis makes the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments. In addition, the Lake is restocked every year in April which suggests that all fish stocked are immediately removed and consumed. Both of these assumptions need to be fully evaluated prior to determining the source of the exceedance and therefore Lincoln Park Lake does not meet the minimum requirements to justify a listing.

Requested Action: Remove Decision ID 64083 from Category 5 (Appendix B) or revise from Category 5 to Category 3 so that further evaluation of whether or not the lake itself is actually impaired.</td>
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<td>20.</td>
<td>Santa Monica Bay Offshore/Nearshore
Arsenic</td>
<td>The Fact Sheet for Decision ID 67208 presents two lines of evidence related to arsenic in Santa Monica Bay (88949 and 88950). LOE 88949 presents information related to sediment and found that 0 of 32 samples exceeded the sediment goals utilized in the assessment. LOE 88950 presents information related to fish tissue and indicates that 19 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis and 10% of the total arsenic result represented the amount of inorganic arsenic in the sample for comparison to the guideline.

In reviewing LOE 88950, no information/citation can be found supporting the assumption that 10% of the total arsenic result represented the amount of inorganic arsenic in the sample. It is appropriate to utilize inorganic arsenic in assessing potential risk; however, either measured inorganic arsenic or a conversion factor developed from actual measured ratios from Santa Monica Bay should be utilized. In USEPA's 2000 Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 1 Fish Sampling and Analysis Third Edition (EPA 823-B-00-007), USEPA recommends that, in both screening and intensive studies, total inorganic arsenic tissue concentrations be determined for comparison with the recommended screening value for chronic oral exposure. Scientific literature demonstrates that a range of total to inorganic arsenic ratios exist. For example, a 2008 study specifically looking at arsenic speciation in 383 samples of marine fish and shellfish, showed that the inorganic fraction of arsenic is typically <0.5% with a few of the highest samples ranging from 1-5%[3]. The City's concern with the approach has been expressed in other regions of California as well. The Port of San</td>
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3 Peshut, P.J. et al., 2008. *Arsenic speciation in marine fish and shellfish from American Samoa*. Chemosphere 71 488-492. doi:10.1016/j.chemosphere.2007.10.014

		Diego in an August 11, 2016 comment letter to the San Diego Regional Water Quality Control Board regarding a 303(d) arsenic listing[4], noted the high level of variability of the proportion of inorganic arsenic across species (typically □10□) as measured in a number of other studies, as well as a methodology that could be used to ground truth the applied proportion through actual sample data. In response to the Port of San Diego's comment the San Diego Regional Board removed an arsenic listing from their draft 303(d) list and stated: *"… there is a high level of uncertainty in the levels of inorganic arsenic in shellfish tissue. The assumption regarding the percent of total arsenic in shellfish tissue is likely conservative, and the San Diego Water Board agrees that a listing based on those assumptions has a high probability of mischaracterizing the results as an impairment. The San Diego Water Board supports the Port's suggestion that future monitoring of shellfish incorporate a measurement of both total and inorganic arsenic.[5]"* The City also has concerns with the approach to utilizing the data in comparison to the guidelines. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years and the risk endpoint relates to a carcinogenic effect over a 30-year period, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes, which should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns. In summary, the lack of inorganic arsenic data and use of an unsupported conversion factor in combination with the approach to comparing tissue data that does not appropriately meet the requirements of temporal independence or reflect actual exposure conditions does support listing arsenic in Santa Monica Bay. The City welcomes the opportunity to discuss approaches to develop inorganic arsenic data for use in future evaluations, as well as an approach to consider tissue data to properly evaluate arsenic in Santa Monica Bay. ***Requested Action: Remove Decision ID 67208 from the 303(d) list. However, if the Regional Board feels it is***

[4] Port of San Diego comment letter to California Water Quality Control Board – San Diego Region. *"Comment – CWA Section 305(b)/303(d) Integrated Report."* Letter Dated August 11, 2016.

[5] Page 47 of San Diego Region Response to Comment on 2014 303(d) list. http://www.swrcb.ca.gov/sandiego/water_issues/programs/303d_list/docs/Response_To_Comments.pdf

		necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.
21.	Santa Monica Bay Offshore Nearshore Mercury	The Fact Sheet for Decision ID 67209 presents three lines of evidence related to mercury in Santa Monica Bay (4165, 88894, and 88891). LOE 4165 and 88891 presents information related to sediment toxicity and sediment chemistry, respectively. LOE 88894 presents information related to fish tissue and indicates that 2 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes that should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns. The City welcomes the opportunity to discuss an approach to appropriately consider tissue data to properly evaluate mercury in Santa Monica Bay. ***Requested Action: Remove Decision ID 67209 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.***
22.	Echo Park Lake and Machado Lake (Harbor Park Lake) Various pollutants	Echo Park Lake and Machado Lake (Harbor Park Lake) are two waterbodies located in Los Angeles County which have both been included on the 303(d) impaired waters list since 2006. Because of their water quality impairments, the City invested significant resources to rehabilitate the water quality of the lakes. The 45 million Echo Park Lake Rehabilitation Project was completed in 2015 and included extensive changes to the lake hydrology (e.g., storm drain upgrades, inlet and outlet upgrades, removal of contaminated lake sediments, and installation of lake aeration system) and immediately surrounding areas, including best management practices (BMPs) to reduce the loads of targeted pollutants including trash, metals, coliform, pesticides, and nutrients[6]. The Machado Lake Ecosystem Rehabilitation Project involved dredging and

[6] City of Los Angeles. Echo Park Lake Rehabilitation Proposition O Project. December 13, 2006. http://www.lapropo.org/sitefiles/docs/concept_reports/echoparklakerehab.pdf

capping the lake bottom, constructing an oxygenation system, adding new storm drain systems, as well as a number of other BMPs to improve water quality[7]. These award-winning projects have been very successful and produced significant water quality improvements; however, these improvements are not reflected in the Regional Board's proposed 303(d) list.

The proposed changes for Echo Park Lake includes two delistings for copper and lead, which the City supports; however, two new listings were added for chlordane (tissue) and dieldrin. The other legacy listings for Echo Park Lake and Machado Lakes remain on the proposed 303(d) list (see following table). The City maintains that these legacy listings are inappropriately categorized and should instead be listed as Category 3 based on the significant restoration efforts conducted since the last update to the 303(d) list. The USEPA 2010 Integrated Report Guidance[8] uses the following definition for Category 3 listings:

> *"The existing and readily available data and information is not representative of current conditions of the water body. This rationale might include a determination that: significant land use changes have occurred in the watershed changing the hydrology and nonpoint source loadings; point source discharges were removed; new discharges are now operating; or the locations of sampling stations did not reflect the character of the segment (e.g., limited to locations near discharge outfalls)."*

The extensive restoration projects have entirely changed not only the chemical and physical conditions of the lakes themselves, but have also completely transformed the nonpoint source loadings, and hydrology of the system. Any data collected prior to the restoration efforts (i.e., all of the data used for the current listings) are not representative of the current condition of the lakes; therefore, both of these waterbodies are excellent candidates for a Category 3 listing and should be categorized as such until enough data exists to establish their current condition. It is likely that as a result of both of these restoration efforts, the lakes could be entirely delisted. However, until that time, a Category 3 listing would represent the most conservative listing on the part of the Regional Board.

The City appreciates the time and effort that goes into maintaining the 303(d) list and notes that these award-winning restoration projects were facilitated in part by the Regional Board's historical listing actions. The City hopes that the extensive resources put into restoring the beneficial use of these waterbodies can be recognized by assigning the proper Category 3 listing to Echo Park and Machado Lake pollutants.

Decision ID	Water Body Segment	Listing
34030	Echo Park Lake	Algae
34696	Echo Park Lake	Ammonia
62679	Echo Park Lake	Chlordane
62680	Echo Park Lake	Dieldrin

[7] http://www.machadoprojects.com/machado_lake_ecosystem.php

[8] Page 5 of USEPA Information Concerning 2010 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions. https://www.epa.gov/sites/production/files/2015-10/documents/2009_05_06_tmdl_guidance_final52009.pdf

34698	Echo Park Lake	Eutrophic
34756	Echo Park Lake	Odor
33999	Echo Park Lake	PCBs (Polychlorinated biphenyls)
44748	Echo Park Lake	pH
32435	Echo Park Lake	Trash
34305	Machado Lake (Harbor Park Lake)	Algae
42416	Machado Lake (Harbor Park Lake)	Ammonia
34362	Machado Lake (Harbor Park Lake)	ChemA (tissue)
42417	Machado Lake (Harbor Park Lake)	Eutrophic
42262	Machado Lake (Harbor Park Lake)	Odor
35181	Machado Lake (Harbor Park Lake)	Trash

In reviewing the proposed listings for the 303(d) list for Echo Park and Machado Lakes a number of inconsistencies were noted. They have been identified below:

- Echo Park Lake PCB (tissue) (Decision ID 33999) is listed as a new 4A listing in Appendix C, but the change is not noted in Appendix A.
- Machado Lake Chlordane (tissue) (Decision ID 33013), Dieldrin (tissue) (Decision ID 33643), and PCBs (tissue) (Decision ID 33285) are not listed as changes in Appendix A, do not appear in Appendix B or C, but are listed in Appendix G.
- Machado Lake DDT (tissue) (Decision ID 33211) is not listed as a change in Appendix A and does not appear in Appendix B or C, but is listed in Appendix G, although incorrectly, as requiring a TMDL despite the fact that DDT is covered by an existing TMDL.
- Machado Lake algae, ammonia, ChemA (tissue), eutrophication, odor and trash are included in Appendix G Fact Sheets as already being addressed by a USEPA-approved TMDL, which is expected to result in attainment of the standard; however, they are all listed as Category 5B in Appendix B and as unchanged in Appendix A in the proposed 303(d) List.

The Regional Board should clarify if these omissions and inconsistencies equate to a delisting of the pollutants. As explained above, the City supports the delisting of the pollutants due to the extensive restoration projects that have been completed. If, for some reason, these listing were omitted in error and the RWQCB disagrees with the City's comment to include them as Category 3, then all of the listings should, at a minimum, be included as Category 4A. Category 4A is defined as "*A TMDL has been developed and approved by USEPA and the approved implementation plan is expected to*

		result in full attainment of the water quality standard within a specified time frame." Category 4A is supported by the approved TMDLs covering Echo Lake Chlordane and PCB listings[9], as well as the Machado Lake Chlordane, DDT, Dieldrin, PCB, algae, ammonia, ChemA(tissue), eutrophication, odor, and trash listings[10,11,12]. ***Requested Actions:*** ***(1) Move all segments listed in the preceding table to Category 3 based on the completion of extensive restoration projects, and include the following text to explain the category change: "Due to recent extensive restoration efforts, data from 2010 and prior is not representative of current conditions of the water body. Available data are insufficient to determine attainment status."*** ***(2) If Category 3 listing of suggested pollutants does not occur, ensure that all pollutants listed in the preceding table are correctly categorized as Category 4A based on the existence of USEPA approved TMDLs.*** **(3)** ***Correct and/or clarify inconsistent listings in Appendices for consistency throughout the entire proposed 303(d) document.***
23.	Various waterbodies Benthic Community Effects	Notwithstanding the City's comments related to removing all listings that do not identify either toxicity or a pollutant as the impairment, the City identified the following listings for Benthic Community Effects (summarized in the following table) that are inappropriate: • Ballona Creek: Decision ID 65656 • Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165 • LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229 • LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232 • Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553 • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548 • Compton Creek: Decision ID 44498 The City believes the listings are inappropriate, based on the following issues that are described in more detail below: • <u>Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.</u> The listing decisions were based on Southern California Coastal Index of Biotic Integrity (SCIBI). The State Water Board has rejected use of the SCIBI in favor of the California Stream Condition Index (CSCI). The Regional Board Staff Conclusions (Staff Conclusions) for the listing decisions do not acknowledge that the data used to support the decisions were SCIBI scores, not CSCI scores. Instead, the Staff Conclusions imply that the decisions are based on CSCI scores.

9 The Los Angeles Area Lakes Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs TMDL approved by USEPA March 26, 2012.
10 The Machado Lake Nitrogen TMDL approved by USEPA on March 11, 2009.
11 The Machado Lake Toxics TMDL was approved by USEPA on March 20, 2012.
12 The Machado Lakes Trash TMDL approved by USEPA on March 6, 2008.

- There is no established water quality criteria for benthic community condition. Use of a SCIBI score of 40 (or other “cutoffs” promulgated by the authors of the SCIBI) as a listing threshold is not consistent with the State Board’s current approach for identifying impairment thresholds for benthic community data. The Regional Board use of a CSCI score of 0.79 in other listing decisions (and implied to be appropriate for Ballona Creek) is also not consistent with the State Board’s current approach for identifying impairment thresholds for benthic community data.
- Listings for concrete-lined channels using current metrics are inappropriate. Reference reaches for concrete-lined channels in highly urbanized catchments are lacking. Physical habitat conditions were apparently not considered during data evaluation. The State Board is planning to develop expectations for benthic community condition for developed landscapes using the CSCI and a new Algal Stream Condition Index (ASCI). TMDL development for benthic community effects in concrete-lined channels based on unofficial IBI thresholds is premature.
- Insufficient data are available to meet the listing requirements. Notwithstanding the previous issues, several of the listings rely on a single site for data as a basis of the listing inconsistent with the Listing Policy.

Type of Decision	Segment □Station	Cited Benthic Community Data				
		Line of Evidence (LOE) ID	**Data Source**	**Metric used in Data Source**	**Time Frame**	**Scores[a]**
New Listing	Ballona Creek (Station 14)	82971	Bioassessment Monitoring Report in LA County, 2006-2008	SCIBI	2006, 07, 08	3□3 scores were below 40
New Listing	Dominguez Channel (Station 19)	83960		SCIBI	2006, 07, 08	3□3 scores were below 40
New Listing	LA River Reach 3 (Stations 11 and 12)	85994		SCIBI	2006, 07	4□4 scores were below 40
New Listing	LA River Reach 4 (Station 13)	86097		SCIBI	2006, 07	2□2 scores were below 40
Do Not Delist	Compton Creek (Station 8)	83829		SCIBI	2006, 07, 08	3□3 scores were below 40
		30224	LA County 1994-2005 Integrated Receiving Water Impacts Report. Section 5, LA River Watershed Management Area, pp 5.1 - 5.40	SCIBI	2003, 04	2□2 scores were “very poor”
Previous Listing	Arroyo Seco Reach 1 (Station LALT501)	30223		SCIBI	2003, 04	2□2 scores were below 13
		82895	Bioassessment Monitoring Report in LA County, 2006-2008	SCIBI	2008	1□1 score was below 40
New Listing	Arroyo Seco Reach (Station 7)	82896		SCIBI	2006, 07, 08	3□3 scores were below 40

[a] Per Staff Conclusions, SCIBI scores were binned as very good (80-56), good (41-55), fair (27-40), poor (14-26) and very poor (0-13) habitat conditions; sites with scores below 26 are considered to have impaired conditions.

Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.

SCIBI-based datasets should not be considered for listing decisions. Section 3.9 of the Listing Policy states:

		"A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities ***as compared to reference site(s)*** *and is associated with water or sediment concentrations of pollutants including, but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]* While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low-elevation low-gradient streams commonly found in the alluvial plains of the Los Angeles Region.[13,14] It was developed using data from 275 sites, ranging from Monterey County to the Mexican border, but not a single reference location represented low-elevation and low-gradient streams. The reaches listed in the table above are extremely low gradient, low-elevation water bodies, and thus the SCIBI does not adequately define relevant reference conditions. Furthermore, the reference conditions used in the SCIBI represent a less restrictive definition of the reference condition than that which was deemed adequate as part of the State's Reference Condition Management Program[15]. The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a recently published paper regarding a study examining the SCIBI relative to other benthic macroinvertebrate bioassessments, he concluded that the SCIBI did not adequately address reference conditions in low-elevation sites, stating that the SCIBI was "not completely effective at controlling for an elevation gradient."[16] Dr. Ode was also the coauthor of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams.[17] This report describes recommendations made by a technical panel of experts on bioassessment, including experts from the California Department of Fish and Wildlife, Southern California Coastal Water Research Project (SCCWRP), US EPA Region 9, and various universities. The technical panel laid out a number of steps that would be necessary to develop a network of adequate reference sites for implementation of criteria for bioassessments. They note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework

[13] Ode, P.R., A.C. Rehn, J.T. May. 2005. A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams. Environmental Management Vol. 35, No 4, pp. 494, Figure 1.

[14] Carter, J.L. and V.H. Resh. (2005). Pacific Coast Rivers of the Coterminous United States. pp. 541-590 *in*: A.C. Benke and C.E. Cushing (eds.), Rivers of North America. Elsevier Academic Press. Boston, MA.

[15] Mazor, R.D. (2012). Reference Streams and the Development of Bio-Objectives. Presentation to Member Agencies, Southern California Coastal Water Research Project. Costa Mesa, CA. Accessed on 02/21/2017.

ftp://ftp.sccwrp.org/pub/download/PRESENTATIONS/Symposium2012/Bioassessment_1_Mazor.pdf.

[16] Ode, P.R., C.P. Hawkins, R.D. Mazor, Comparability of Biological Assessments Derived from Predictive Models and Multimetric Indices of Increasing Geographic Scope, J. N. Am. Benthol. Soc., 2008, 27(4):967-985.p. 982. Copy included in Appendix 4.

[17] Ode, P.R., K. Schiff. Recommendations for the Development and Maintenance of a Reference Condition Management Program to Support Biological Assessment of California's Wadeable Streams: Report to the Surface Water Ambient Monitoring Program. Southern California Coastal Water Research Project, Technical Report 581. March 2009. Copy included in Appendix 5.

for consistent selection of reference sites must account for this complexity."

In 2010, as part of its project to develop a statewide Biointegrity Policy, the State Board abandoned use of the SCIBI and other regional IBIs, and funded development of the statewide CSCI (Mazor et al., 2016). The CSCI addressed at least some of the problems with the SCIBI through its use of a modeled reference condition as opposed to a regional reference pool. Starting in late 2016, the State Board began funding the development of a "companion" Algal Stream Condition Index (ASCI). The State Board is developing expectations for benthic community condition using both the CSCI and the ASCI which will be incorporated in a statewide Biointegrity Assessment Implementation Plan.[18]

The Staff Conclusions associated with the new listings in the preceding table do not acknowledge that the data used to support the new listings were SCIBI scores. Further, the Staff Conclusions for all of the new listings imply that Regional Board staff based the listing decision on CSCI scores. The source of the BMI data for each of the new listings, and the new LOE for Compton Creek, ("Bioassessment Monitoring Report in Los Angeles County, 2006-2008") were appendices (Appendix H) of the Los Angeles County Stormwater Monitoring Reports for 2006, 2007, and 2008. *In these reports, BMI data were scored using the SCIBI (Ode et al. 2005), not the CSCI*. In two cases (Ballona Creek and Arroyo Seco Reach 2), the Staff Conclusions explicitly, but erroneously, state that the underlying BMI data were CSCI scores. In the other cases, the ambiguous acronym "IBI" is used where scores are cited, and then the narrative ends with a passage implying that the "IBI" scores were CSCI scores. The misleading information in the Staff Conclusion for each new listing recommendation is provided below.

- Ballona Creek: "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing Benthic Community Effects on the CWA section 303(d) List. .... "**3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**, indicating poor water quality and that pollutant concentration and toxic effects are impacting aquatic life in this waterbody segment" ... "**The CSCI** is available statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity." (Regional Board Staff Conclusion for Decision ID 65656, emphasis added)
- Dominguez Channel (lined portion above Vermont Ave.): "Three of the three samples collected had IBI scores below 40 there are several other pollutants in this water body that are listed for impairment including ammonia, copper, diazinon, nitrogen, toxicity, and zinc." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66165, emphasis added)
- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.): "Four of the four samples collected had IBI scores below 40." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff

18 Sutula, M., A. R. Mazor, S. Theroux, E. Stein, P. Ode, A. Rehn, M. Paul, and B. Jessup. (2017) Science Plan to Support the State Water Board's Biostimulatory-Biointegrity Project for California Wadeable Streams.

Conclusion for Decision ID 66299, emphasis added)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam): “Both of the two samples collected had IBI scores below 40.... Two of the two samples collected had IBI scores below 40. ... “**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 66232, emphasis added)
- Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): “3 of 3 samples exceeded the GUIDELINE... **3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**. ... “**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 65548, emphasis added)

There is no established water quality criteria.

Regional Board staff utilized a SCIBI score of 40 as a listing threshold. However, this value is not an established water quality criteria, nor does it represent the type of threshold the State Board intends to use to identify community condition or levels of impairment in its Biointegrity Assessment Implementation Plan. A SCIBI score of 39 was originally promulgated by the authors of the SCIBI (Ode et al. 2005) as an “impairment threshold” because it was equal to an arbitrary statistical criterion (two standard deviations below the mean reference site score). Although it was not used for the listings in the table above, Regional Board staff have also used a CSCI score of 0.79 as a listing threshold for other reaches (see also the statement regarding this threshold in the Staff Conclusions excerpt for Ballona Creek above). However, a CSCI threshold of 0.79 is also based on an arbitrary statistical criterion (10th percentile of the reference calibration site scores; Mazor et al. 2016), and is not an adopted water quality criteria.

The State Board is not pursuing use of arbitrary statistical cutoffs, such as reference population percentiles, to identify benthic community impairment going forward. As outlined in the November 2016 Work Plan[19], the State Board is using a Biological Condition Gradient Expert Synthesis approach to relate ranges of biological condition scores to community condition. Using this approach, a team of experts uses taxonomic metrics to assign degrees of biological condition to test sites while being blind to the degree of anthropogenic stressors present at the sites. In addition, the analysis is blind to the relationship between site scores and statistical distributions of overall datasets or reference datasets.

Listings for concrete-lined channels using currently available metrics are inappropriate.

Application of the SCIBI to concrete-lined channels is especially inappropriate given the lack of a reference population for low-gradient streams in coastal southern California, in general, much less for modified channels, in specific. Section 6.1.5.8 of the listing policy states:

> *“When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall evaluate bioassessment data from other sites, and compare to reference condition. Evaluate physical habitat*

[19] Sutula, M., E. Stein, R. Mazor, S. Theroux, M. Paul, B. Jessop, and J. Gerritsen. 2016. Draft Work Plan “Expert Interpretation of the Biological Condition Gradient in California Wadeable Streams” November 2016 Update.

		data and other water quality data, when available, to support conclusions about the status of the water segment." EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303(d) lists and recommends that, in all cases where physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[20] Physical habitat conditions are not referenced in the Lines of Evidence for the benthic community effects listings in the preceding table, although physical habitat data collection is a standard part of bioassessment monitoring and reporting. Ultimately, benthic community impairments in concrete-lined channels should be evaluated for potential listing in Category 4c of the 305(b) integrated report, instead of on the 303(d) list of segments requiring a TMDL. The USEPA Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (IRG) states: *"Circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization."* As part of its statewide Biostimulatory-Biointegrity Project, in recognition that it may not be appropriate or productive to apply a single set of benthic community condition expectations to streams in pristine and developed landscapes, the State Board is currently employing SCCWRP and CDFW to developing expectations for benthic community condition for developed landscapes using the CSCI and the Algal Stream Condition Index (ASCI).[21] The probability that concrete-lined channels in highly urbanized settings will be candidates for alternative benthic community endpoints is illustrated by language from the Work Plan: *"**In some streams, direct channel modifications (e.g., bank armoring) may also limit opportunities to sustain high-quality ecological conditions for aquatic life**. In these highly developed settings, the large number of linked stressors may prevent a stream from supporting its beneficial uses or attaining high scores on indices of biological condition. **Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards**. In these circumstances, the range of CSCI and/or ASCI scores may be constrained, but targeted restoration could improve conditions. Key technical questions underpinning the range of options and prioritization of management actions for wadeable streams along the continuum from undeveloped to highly developed landscapes found within California are: For which streams is biological integrity constrained by development in the catchment? How can they be identified and mapped? What are the ranges of biological conditions these developed landscapes can support?" (Mazor et al. 2017; emphasis added)* Triggering TMDL development for benthic community effects in concrete-lined channels using unofficial impairment thresholds derived from statistical distributions of IBIs from unarmored reference reaches is unwarranted. **Insufficient data are available to meet the listing requirements**

[20] U.S. EPA (Environmental Protection Agency). (2010). Causal Analysis/Diagnosis Decision Information System (CADDIS). Office of Research and Development, Washington, DC. Available online at https://www.epa.gov/caddis. Last updated September 23, 2010

[21] Mazor, R., M. Sutula, E. Stein, A. Rehn, and R. Ode (2017) Work Plan. Predicting Biological Integrity of Streams Across a Gradient of Development in California Landscapes.

		Notwithstanding the previous issues, several of the listings rely on a single site for bioassessment data, which is inconsistent with the Listing Policy. Per section 3.9 (Degradation of Biological Populations and Communities) of the Listing Policy, “The analysis should rely on measurements from at least two stations.” Only one site is referenced in the Fact Sheets for the following listing decisions: • Ballona Creek • Dominguez Channel (lined portion above Vermont Ave) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) [Also, note that the data associated with Los Angeles River Reach 4 was actually collected in Los Angeles River Reach 5.] • Arroyo Seco Reach 1 (LA River to West Holly Ave.) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam) • Compton Creek Because data were only collected at one site within these waterbodies, the requirements of the Listing Policy are not met. **Summary** As described in detail above, the approach utilized to establish benthic community effects impairments are not demonstrated using an appropriate metric for benthic community condition. The listings rely on an unestablished water quality criteria based on metrics that are not appropriate for concrete-lined channels. Lastly, in all but one listing, there are not sufficient data to meet the listing requirements per the Listing Policy as the data were only collected at a single site within a waterbody. ***Requested Action: Remove the following Decision IDs from the 303(d) list:*** • ***Ballona Creek: Decision ID 65656*** • ***Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165*** • ***LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229*** • ***LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232*** • ***Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553*** • ***Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548*** • ***Compton Creek: Decision ID 44498***
24.	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) Temperature, water	The temperature listing for Los Angeles River Reach 3 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Los Angeles River Reach 3 is WARM. Only the COLD beneficial use uses the rainbow trout growth range as a listing criteria. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. Notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body’s beneficial uses, the manner in which the evaluation guideline is applied is also inappropriate. Line of Evidence (LOE) 85933 references Moyle 1976 as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002[22]. Moyle 2002 states: “Rainbows are found where daytime temperatures range from nearly 0°C in winter to

[22] Moyle, Peter B. 2002. Inland Fishes of California – Revised and Expanded. University of California Press Berkeley and Los Angeles, California.

		26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures." As such, while temperatures above 21°C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline as used in the proposed listing. When utilizing 23°C, only 40 of the 542 samples exceed the guideline, which does not meet the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants (a minimum of 90 exceedances would be required). As such, even if the Los Angeles River Reach 3 was designated with a COLD beneficial use, applying the appropriate "not-to-exceed" guideline of 23°C results in a finding of nonimpairment for temperature in Los Angeles River Reach 3. Lastly, notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses and that 23°C is the more appropriate "not-to-exceed" guideline, when the average water temperature across Los Angeles River Reach 3 was above 21°C (69.8°F), with only one exception out of 33, the air temperature was also above 21°C (69.8°F). As such, ambient air temperature above 21°C is most likely cause of exceedances of the 21°C evaluation guideline. ***Requested Action: Revise Decision ID 64386 for the temperature water listing for Los Angeles River Reach 3 to Do Not List on 303(d) list and remove from Category 5 (Appendix B) because the beneficial use protected by the evaluation guideline is not an existing or potential beneficial use within Los Angeles River Reach 3; the number of measured exceedances does not meet the minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants if an appropriate evaluation guideline is applied; and ambient air temperature is the most likely cause of exceedances of the evaluation guideline.***
25.	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 5 (within Sepulveda Basin), Bull Creek, Wildlife Lake, and Balboa Lake	The Fact Sheet for Decision ID 32974 corresponds to the ammonia listing for Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (85894, 86019, and 2507). LOE 2507 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 85894 and 86019 each state that all of the exceedances in each dataset occurred prior to and in 2007. The City found that the last exceedance was July 2007, which is to be expected given that 2007 was the year that the nitrification/denitrification (NDN) treatment process as completed at both the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) and Donald C. Tillman Water Reclamation Plant (DCTWRP). Both the LAGWRP and DCTWRP discharges travel through Los Angeles River Reach 3, and since the NDN processes to remove ammonia were completed in July 2007, no exceedances in this waterbody have been observed. The Fact Sheet for Decision ID 32567 corresponds to the ammonia listing for Los Angeles River Reach 5 (within Sepulveda Basin) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (86205, 86204, and 2520). LOE 2520 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 86205 and 86204 each state that all of the exceedances in each dataset occurred prior to March and August 2007, respectively. The DCTWRP discharge flows through part of Reach 5 and the NDN processes to remove ammonia were completed in 2007.

	Ammonia	The Fact Sheet for Decision ID 60597 corresponds to the ammonia listing for Bull Creek and states that two lines of evidence are available in the administrative record to assess the pollutant (83158 and 83154). LOE 83154 presents one data point collected in May 2008 that does not show an exceedance. LOE 83158 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Bull Creek and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 66374 corresponds to the ammonia listing for Wildlife Lake and states that one line of evidence is available in the administrative record to assess the pollutant (90174). LOE 90174 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Wildlife Lake and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60378 corresponds to the ammonia listing for Balboa Lake and states that one line of evidence is available in the administrative record to assess the pollutant (82930). LOE 82930 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Balboa Lake and the NDN processes to remove ammonia were completed in 2007. Furthermore, the Fact Sheet for Decision ID 32913 corresponds to the ammonia listing for Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) and includes the decision to Delist from 303(d) list (being addressed by USEPA approved TMDL) based on the following Regional Board Staff Decision Recommendation: “RWQCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not being exceeded.” This decision is based on two LOEs (2513 and 86136). LOE 2513 states “A TMDL and implementation plan have been approved for this water segment-pollutant combination. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004.” LOE 86136 finds that 0 of 152 samples exceeded the site-specific basin plan objective for total ammonia as nitrogen and only includes samples collected from 2008 to 2010 (which is after the date when the WRPs added the NDN treatment process and is inconsistent with the dates used in the assessments conducted for Los Angeles River Reaches 3 and 5, Bull Creek, and Wildlife Lake). Through the installation and implementation of NDN treatment facilities and process optimization by the City of Los Angeles (and City of Burbank), which has spent approximately □75 million to construct advanced treatment facilities to address ammonia, and approximately □6 million per year to operate those facilities, the quality of the water in the Los Angeles River watershed has been demonstrated to be fully attaining the applicable water quality objectives for ammonia. The message from the City and the Regional Board should be that the cooperative process worked, and that the applicable water quality standards are now being attained. Instead, the 303(d) list does not reflect the water quality improvement. Given that the addition of the NDN treatment process to the WRPs has eliminated exceedances, the timeframe used to evaluate impairments due to ammonia should be made consistent with the timeframe used in Los Angeles River Reach 4 which would result in the same listing decision for each water body (i.e., Delist from 303(d) list [being addressed by USEPA approved TMDL]). ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:***

		- ***Los Angeles River Reach 3 Decision ID 32947*** - ***Los Angeles River Reach 5 Decision ID 32567*** - ***Bull Creek Decision ID 60597*** - ***Wildlife Lake Decision ID 66374*** - ***Balboa Lake Decision ID 60378***
26.	Los Angeles River Reach 1 (Estuary to Carson Street) and Los Angeles River Reach 2 (Carson to Figueroa Street) Ammonia	The Fact Sheet for Decision ID 32973 corresponds to the ammonia listing for Los Angeles River Reach 1 (Estuary to Carson Street) and is based on one LOE (2319), which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. The Fact Sheet for Decision ID 32911 corresponds to the ammonia listing for Los Angeles River Reach 2 (Carson to Figueroa Street) and is based on one LOE (2465) which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. In light of the information presented in the previous comment, it can be expected that conditions in Los Angeles River Reaches 1 and 2 since NDN was fully implemented (mid-2007) are consistent with what has been observed in Los Angeles River Reaches 3, 4, and 5 (i.e., no exceedances). A review of the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) do not show any exceedances. ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 1 Decision ID 32973*** - ***Los Angeles River Reach 2 Decision ID 32911***
27.	Tujunga Wash (LA River to Hansen Dam) Ammonia	The Fact Sheet for Decision ID 32873 corresponds to the ammonia listing for Tujunga Wash (LA River to Hansen Dam) and is based on one LOE (2554) which does not contain any data. Rather, the Fact Sheet states that "One line of evidence is available in the administrative record to assess this pollutant. A TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004. This listing will substitute for the previous listings for foam, floc, scum, and taste and odor." As there are no data to support the listing, the ammonia listing for Tujunga Wash should be removed. Also, substituting the listing for foam, scum, and taste and odor is not necessary because the Regional Board removed those listings from the section 303(d) list because they are not pollutants or toxicity. ***Requested Action: Revise Decision ID 32873 for the ammonia listing for Tujunga Wash to Delist from 303(d) list and remove from Category 5 (Appendix B).***
28.	Bull Creek, Los Angeles River Reach 3 (Figueroa St. to	The Fact Sheets for the following Decision IDs relate to toxicity in the water column: - Decision ID 39159 Bull Creek - Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) - Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)

	Riverside Dr.), Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam), Los Angeles River Reach 5 (within Sepulveda Basin), Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin), and Los Angeles–Long Beach Outer Harbor (inside breakwater) Toxicity	- Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin) - Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin) - Decision ID 33930 Los Angeles–Long Beach Outer Harbor (inside breakwater) The City has several concerns with the proposed listings: 1. Section 6.1.5.3 of the Listing Policy states that “Samples used in the assessment must be temporally independent.” However, data collected on the same day within the same waterbody are considered as independent samples without consideration of the fact they represent the same condition. These samples should be evaluated as representative of a single day. 2. In developing the number of samples analyzed and exceeded, the Regional Board appears to count a sample collected as one sample, but count acute and chronic results separately. In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic end points there is only one sample that is identified as not exceeded. One sample should result in only one nonexceedance or one exceedance. 3. For Decision IDs associated with the Los Angeles River watershed, data are included that do not represent current conditions. As described previously, the LAGWRP and DCTWRP upgraded their treatment processes to remove ammonia. Since the NDN processes to remove ammonia were completed, no exceedances for ammonia have been observed since August 2007. All toxicity data prior to August 2007 should be removed from the analysis. 4. A number of the results are based on testing with *Ceriodaphnia dubia* (*C. dubia*). As discussed in the Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document (SCCWRP Technical Report 956 December 2016), the report states (page 18) that during the intercalibration study, multiple laboratories observed *C. dubia* toxicity in laboratory dilution water (which should be non-toxic). Additionally, the report (page 16) found testing variability observed during the intercalibration study for *C. dubia* which had a response that ranged from 16 to 27% effect, and a standard deviation of 19 to 27% effect. The report further indicated that this large variability is not uncharacteristic of the variability observed by others. 5. Toxicity testing results were developed with a statistical approach that is no longer utilized in the NPDES monitoring programs. The LAGWRP, DCTWRP, HWRP and TIWRP NPDES permits require that toxicity endpoints be calculated using the Test of Significant Toxicity (TST) statistical approach. Future data will not be comparable to the listing data. As such, data used for listings should be assessed in a manner consistent with current regulations prior to making a determination of impairment. Given the issues associated with the data analysis and testing methods used as well as the implications of the listings, the City believes that additional efforts are needed to validate and assess whether or not an impairment exists. The City welcomes the opportunity to discuss an approach to properly evaluate toxicity in the affected waterbodies. ***Requested Action: Revise Decision IDs 39159, 64389, 64465, 64489, 64536, and 33930 for toxicity listings from Category 5 to Category 3.***

City of Manhattan Beach

Public Works Department

3621 Bell Avenue, Manhattan Beach, CA 90266
Phone: (310) 802-5313 Fax: (310) 802-5301

March 28, 2017

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Via email: losangeles@waterboards.ca.gov

Attn: Jun Zhu, Environmental Scientist (jzhu@waterboards.ca.gov)

Subject: Comment Letter—Revisions to the Los Angeles Region 303(d) list

Dear Mr. Unger:

On February 8, 2017, the Los Angeles Regional Water Quality Control Board (Regional Board) issued a 30-day Notice of Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. The City of Manhattan Beach (City) submitted a letter to the Regional Board on February 21, 2017 requesting an additional 60 days to review and comment on the proposed changes to the 303(d) List—we understand that at least ten (10) other stakeholders/groups submitted similar requests. On February 24, 2017, the Regional Board issued a Notice of Extension of Comment Deadline with a revised comment deadline of March 30, 2017 and that the public hearing is scheduled for May 4, 2017. While the additional 21 days for review and comment is appreciated, it does not allow sufficient time to conduct a comprehensive review of the Appendix H data and references that support the proposed revisions, accordingly our comments have been necessarily limited to review of the staff report and Appendices A through G.

The City of Manhattan Beach is gratified that its beaches meet the criteria for delisting for indicator bacteria. However, the staff report states that even though the delisting is being proposed, "it is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved." Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to *Category 4a - TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame*. The City is concerned that delisting during all weather condtions may adversely affect our ability to compete for grant funding for multi-benefit regional and green street projects identified in the Beach Cities EWMP to address the Santa Monica Bay Beaches Bacteria TMDL (SMBBB TMDL) during wet weather within the high priority 28th Street Storm Drain System. Since the SMBBB TMDL targets are set differently for wet and dry weather, it would seem logical for the Regional Board to distinguish these conditions in the 303d listing and we ask that the Board revise the proposed delisting Manhattan Beach for indicator bacteria to be specific to dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the beach at the SMB 5-2 28th Street monitoring location remain on the list in Category 4a for wet weather conditions. This will enable the City to be more competitive when applying for grant funding to complete its implementation of the wet weather SMBBB TMDL.

The Regional Board Notice of Extension of Comment Deadline notes that Regional Board staff are aware that "in several instances, Appendix A, the Proposed Updates to the 303(d) List has not fully captured all of the new listing and delisting decisions that are detailed in Appendix G, the Fact Sheets due to system and clerical errors". This has made review of the proposed listing changes quite challenging but we have done our best given the limited time available. The City of Manhattan Beach respectfully provides the attached comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report.

Sincerely,

Stephanie Katsouleas

Stephanie Katsouleas, P.E.
Director of Public Works

Attachment

Copies: Dr. L.B. Nye (LB.Nye@waterboards.ca.gov)

City of Manhattan Beach Comments on Proposed Revisions to 303(d) List

Water Body/Pollutant	Comment	Recommendation
Manhattan Beach/Indicator Bacteria	The the staff report states that even though Manhattan Beach is being proposed for delisting for indicator bacteria, the Santa Monica Bay Bacteria TMDL remains in effect. Likewise, Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to Category 4a (A TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.) The City is concerned that delisting may adversely impact our ability to compete for grant funding for multi-benefit regional and green street projects to address the Santa Monica Bay Beaches Bacteria TMDL during wet weather	Consider delisting of Manhattan Beach for indicator bacteria only during dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the SMB 5-2 28th Street beach remain on the list in Category 4a for wet weather conditions. Delisting of Manhattan Beach for wet weather indicator bacteria should be considered once the final wet weather SMBBB TMDL compliance deadline has passed.
Santa Monica Bay Offshore-Nearshore/Arsenic and Mercury	Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic and Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007. This data predates the last listing cycle and no data collected within the past decade is presented to support the listing. The SWRCB Listing Policy Section 1.1.2.1 states that "data and information previously submitted to the Regional Water Boards, such as Discharge Monitoring Reports, need not be solicited if the data and information remain available to the Regional Boards."	Before making such important new listings Regional Board staff should review all readily available data including data collected within the past decade from the Hyperion Wastewater Treatment Plant NPDES Permit.

Water Body/Pollutant	Comment	Recommendation
Santa Monica Bay Offshore-Nearshore/Sediment Toxicity	On March 26, 2012 USEPA issued a final TMDL for Santa Monica Bay DDT and PCBs which found that "Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list."[1] Contrary to this recommendation the Regional Board has not proposed delisting sediment in Santa Monica Bay for toxicity.	Appendix G Decision ID 34120 should be revised to delist Santa Monica Bay for sediment toxicity based on the review and recommendation by USEPA in developing the Santa Monica Bay DDT and PCBs TMDL. Appendix A should be revised to place a "Y" in the New Delistings column and the "Y" eliminated from the Pollutant Name Change column since there does not appear to be any name change being proposed.
Santa Monica Bay Offshore-Nearshore/DDT and PCBs	The listing for Santa Monica Bay Offshore-Nearshore/DDT and PCBs is included in Attachment B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in Attachment A summary under "other revisions".	The listings for DDT and PCBs should be moved to Category 4a in Attachment C
Santa Monica Bay Offshore-Nearshore/Chordane	The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes.	Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.
Santa Monica Bay Offshore-Nearshore/Polycyclic Aromatic Hydrocarbons (PAHs)	The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters	Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.

[1] US Environmental Protection Agency Region IX. Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs, March 26, 2012.

Water Body/Pollutant	Comment	Recommendation
	for PAHs is not reflected in the Appendix A summary of recommended changes.	
Dominguez Channel (lined portion above Vermont)/Benthic Community Effects	Appendix G Decision ID 66165 is proposing to list the Dominguez Channel concrete-lined section above Vermont Avenue due to degradation of biological populations and communities (Benthic Community Effects) as evidenced by IBI scores below 40, however use of IBI scoring methodologies does not provide a reference that takes into account that concrete lined channels do not typically provide benthic habitat that will support biological populations and communities. The listing policy states that to make this determination the water body must "exhibit significant degradation in biological populations and/or communities <u>as compared to reference sites</u>" . . . . "This condition requires diminished numbers of species or individuals of a single species or other metrics <u>when compared to reference sites</u>." Additionally the listing policy states that "The analysis should rely on measurements from at least two stations." Whereas the data presented to support Decision ID 66165 came from a single station.	Do not list Dominguez Channel lined portion above Vermont for Benthic Community Effects because the analysis is not supported by data consistent with the SWRCB listing policy.
Dominguez Channel (lined portion above Vermont)/Lead	The quality of the data set used to support the original listing does not meet the data quality standards of the SWRCB's listing policy. The listing policy states that "when the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis." This listing was based on a	Decision Recommendation ID 37347 should be revised to state that the water body should be delisted due to inadequate data and because the data reviewed did not demonstrate that applicable water quality standards are being exceeded. Alternatively, Regional Board staff could review the more recent readily available data collected at these same Mass Emission stations as part of the LA County MS4 NPDES

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Water Body/Pollutant	Comment	Recommendation
	data set more than a decade old with no actual detections of lead but where exceedances were presumed to have potentially occurred because the quantitation limit of 5 ug/L was not in all instances sufficiently low to determine compliance with the CTR dissolved lead criterion for continuous concentration in water (where the CTR value ranged from 0.23 to 7.27 ug/L, depending on the associated hardness of the water sample). The data set reviewed was for samples collected between January 2002 and April 2007 at the LACFCD Mass Emission Station S28 where Artesia Boulevard crosses Dominguez Channel and between 2000 and 2001 at S23 near LAX. Lead was not apparently detected in any of the samples above the quantitation limits, rather the identified exceedances of the lead standard were non-detections where the positive quantification limits 5 ug/L were too high to determine compliance with the standard when hardness caused depression of the standard below 5 ug/L. No measured exceedances of the standard were observed in the data set which is more than a decade old and for which more recent data sets exist.	Permit monitoring program CI 6948 NPDES No. CAS004001 and the listing decision revised based on data of quality consistent with the SWRCB's listing policy.
Dominguez Channel (lined portion above Vermont)/Copper and Zinc	Are listed in Appendix B as Category 5 needing a TMDL, when the Dominguez Channel Toxics TMDL is in affect and is addressing these pollutants.	Recategorize Copper and Zinc as Category 4a being addressed by a TMDL and move to Appendix C
Dominguez Channel (lined portion above Vermont)/Diazinon	We are supportive of the proposed delisting for Diazinon.	Consider eliminating the statement in Attachment A under Other Revisions which states "TMDL status changed from TMDL still required to Being Addressed by Completed

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Water Body/Pollutant	Comment	Recommendation
		TMDL" since this pollutant is being proposed for delisting.
Dominguez Channel (lined portion above Vermont)/Nitrogen, ammonia (Total Ammonia)	The Appendix G Fact Sheet Decision ID 35134 continues to support a listing for ammonia. This listing does not appear to be based on all readily available data since Los Angeles County Mass Emissions Station Data on the Dominguez Channel is not included in the data set. Monitoring data from 55 samples collected between November 2006 and July 2013 at LACFCD mass emission station S28 located where the Dominguez Channel crosses Artesia Boulevard in the City of Torrance, show that all 55 samples met the freshwater Basin Plan objective for ammonia. An additional 24 samples collected at LACFCD mass emission station TS19 between November 2008 and April 2011 also met the freshwater Basin Plan objective in every instance. These data were readily available to Regional Board staff since they were reported as part of the LA County MS4 NPDES Permit monitoring program CI 6948 NPDES No. CAS004001.	Delist Dominguez Channel lined portion above Vermont for ammonia and include readily available data reported as part of the LA County MS4 NPDES Permit monitoring program CI 6948 NPDES No. CAS004001 into Decision ID 35134 to support this delisting.
Dominguez Channel (lined portion above Vermont)/Aldrin	Appendix G Fact Sheet Decision ID 34620 for Aldrin recommends delisting due to flaws in the original listing.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Aldrin.
Dominguez Channel (lined portion above Vermont)/ ChemA	Appendix G Fact Sheet Decision ID 34426 for Aldrin recommends delisting due to flaws in the	Attachment A should be updated for Dominguez Channel lined portion above

Water Body/Pollutant	Comment	Recommendation
	original listing because the data used for the original listing was not from this water body.	Vermont Avenue to include a "Y" in New Delistings column for ChemA.
Dominguez Channel (lined portion above Vermont)/ Chlordane	Appendix G Fact Sheet Decision ID 34426 for Aldrin recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chlordane.
Dominguez Channel (lined portion above Vermont)/ Chromium	Appendix G Fact Sheet Decision ID 34430 for Chromium recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chromium and remove the "Y" from the Pollutant Name Change column.
Dominguez Channel (lined portion above Vermont)/ DDT	Appendix G Fact Sheet Decision ID 36720 for DDT recommends due to flaws in the original listing because the data used for the original listing was not from this water body.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for DDT.
Dominguez Channel (lined portion above Vermont)/ Dieldrin	Appendix G Fact Sheet Decision ID 34330 for Dieldrin recommends delisting due to flaws in the original listing because the data used for the original listing was from fish tissue collected in the soft-bottom estuary below Vermont and was incorrectly applied to the lined portion of Dominguez Channel above Vermont.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Dieldrin and remove the "Y" from the Pollutant Name Change column.
Dominguez Channel (lined portion above Vermont)/ Polycyclic Aromatic Hydrocarbons (PAHs)	Appendix G Fact Sheet Decision ID 34431 for PAHs recommends due to flaws in the original listing because the data used for the original listing was not from this water body.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PAHs.
Dominguez Channel (lined portion above Vermont)/ Polycholorinated Biphenyls (PCBs)	Appendix G Fact Sheet Decision ID 34429 for PCBs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body.	Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PCBs.

March 30, 2017

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Via email: losangeles@waterboards.ca.gov

Attn: Jun Zhu, Environmental Scientist (jun.zhu@waterboards.ca.gov)

Subject: Comment Letter—Revisions to the Los Angeles Region 303(d) list

Dear Mr. Unger:

On February 8, 2017, the Los Angeles Regional Water Quality Control Board (Regional Board) issued a 30-day Notice of Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report. On February 24, 2017, the Regional Board issued a Notice of Extension of Comment Deadline with a revised comment deadline of March 30, 2017 and the public hearing scheduled for May 4, 2017.

The City is pleased that Malaga Cove Beach and Bluff Cove Beach are being proposed for delisting for indicator bacteria. The City agrees with the Regional Board Staff Decision Recommendation in Appendix G that Bluff Cove Beach and Malaga Cove Beach should be removed from the 303(d) list for indicator bacteria because applicable water quality standards for the pollutant are not being exceeded. This is supported by Regional Board Resolution No. 2006-008 reviewing the Implementation Plan submitted by Jurisdictional Group 7 for the Santa Monica Bay Beaches Bacteria Wet Weather TMDL which stated:

> "The Implementation Plan submitted by Jurisdictional Group 7 differs from other Implementation Plans because the beaches along the Palos Verdes Peninsula have had historically fewer exceedances than the reference beach used in the Santa Monica Bay Beaches TMDLs to establish the allowable exceedance frequency. Therefore, the antidegradation provision applies, which requires responsible jurisdictions and agencies to maintain existing water quality. . . . The Implementation Plan for Jurisdictional Group 7 adopts a non-integrated approach, since existing water quality is equivalent to compliance with the Santa Monica Bay Beaches Wet Weather TMDL."[1]

[1] California Regional Water Quality Control Board – Los Angeles Region, Resolution No. 2006-008

Please see the City of Palos Verdes Estates' specific comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report, included herewith as Attachment A.

Sincerely,

Director of Public Works/City Engineer

Attachment

Copies: Dr. L.B. Nye (LB.Nye@waterboards.ca.gov)
Anton Dahlerbruch, City Manager for the City of Palos Verdes Estates

Appendix A – City of Palos Verdes Estates Comments on Proposed Revisions to 303(d) List

Water Body/Pollutant	**Comment**	**Recommendation**
Santa Monica Bay Offshore/Nearshore(Arsenic)	Decision No. 67208 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of arsenic. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5.	While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67208 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.
Santa Monica Bay Offshore/Nearshore(Mercury)	Decision No. 67209(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of mercury. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5.	While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67209 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.

Water Body/Pollutant	Comment	Recommendation
Malaga Cove Beach/Indicator Bacteria	Decision No. 32565(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes delisting Malaga Cove Beach from the section 303(d) list for indicator bacteria due to the fact that applicable water quality standards for this pollutant are not being exceeded. The City agrees with the Regional Board Staff Decision Recommendation in Decision No. 32565. However, while Decision No. 32565 has been modified since the last listing cycle in order to make the recommendation to delist, it continues to appear in the list of "original fact sheets" in Appendix G of the February 2017 integrated staff report for the Los Angeles region. Additionally, it is unclear why there is a "Y" in the Pollutant Name Change column in Appendix A since the original fact sheet relating to Decision No. 32565 shows the pollutant name as "indicator bacteria".	Modify the Revision Status entry in Fact Sheet 32565 from "original" to "revised" and move the fact sheet into the revised fact sheet group.
Lunada Bay Beach(Indicator Bacteria and Beach Closures)	The fact sheet for Decision No. 34394 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends that the original "beach closures" listing for Lunada Bay Beach should be revised to an "indicator bacteria" listing. No data is available to support a listing at this location as this is not an accessible beach but is in fact a rocky cove with steep bluff faces that cannot be safely accessed for monitoring. The original listing was for beach closures and Decision ID 34394 changed the pollutant name to indicator bacteria without any providing indicator bacteria data for evidence.	Like the rest of the shoreline areas on the Palos Verdes Peninsula, Lunada Bay should be delisted for indicator bacteria and beach closures due to faulty listing by revising the recommendation in the Fact Sheet for Decision No. 34394 and place a "Y" in the New Delistings column of Appendix A to the February 2017 integrated staff report for the Los Angeles region. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky cove with a steep bluff face that is not readily accessible to the public.

Water Body/Pollutant	Comment	Recommendation
Flat Rock Point Beach Area (Indicator Bacteria and Beach Closures)	Flat Rock Point forms the northern point of Bluff Cove and is part of the same "beach" as Bluff Cove. The fact sheet for Decision ID No. 34628 (located in Appendix G to the February integrated staff report for the Los Angeles Region) is proposing to revise the listing for Flat Rock Point from "beach closures" to "indicator bacteria" however no data to support the listing is provided. Since there is no separate monitoring data set for Flat Rock Point and Flat Rock Point is contiguous with Bluff Cove, Decision ID 32848 and supporting lines of evidence for Bluff Cove should also be applied to Flat Rock Point.	Flat Rock Point Beach Area should be included with Bluff Cove Beach in the fact sheet for Decision ID No. 32848 and delisted along with Bluff Cove Beach. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky point that is not safely accessible for monitoring.
Malaga Cove Beach(DDT and PCBs)	Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Malaga Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay.	Change "source unknown" to "source – Palos Verdes Shelf Superfund Site" for both DDT and PCBs.
Bluff Cove Beach(DDT and PCBs)	Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Bluff Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay.	Change "source unknown" to "source – Palos Verdes Shelf Superfund Site Palos Verdes Shelf Superfund Site" for DDT and PCBs.

Water Body/Pollutant	Comment	Recommendation
Santa Monica Bay Offshore/Nearshore(DDT and PCBs)	Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes DDT and PCBs in the listing for Santa Monica Bay Offshore/Nearshore(a water segment where standards are not met and a TMDL is required but not yet completed); however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in the “other revisions” summary in Appendix A to the February 2017 integrated staff report for the Los Angeles region.	The listings for DDT and PCBs should be moved to Category 4a in Appendix C since there is a USEPA approved TMDL in effect addressing the listings.
Santa Monica Bay Offshore/Nearshore(Chordane)	Decision No. 37492(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for chlordane; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region.	Revise Appendix A to place a “Y” in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for Chlordane.
Santa Monica Bay Offshore/Nearshore(Polycyclic Aromatic Hydrocarbons (PAHs))	Decision No. 32656 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for PAHs; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region.	Revise Appendix A to place a “Y” in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for PAHs.

Water Body/Pollutant	Comment	Recommendation
Wilmington Drain(Lead)	Decision No. 35085 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends delisting the Wilmington Drain for lead based on the weight of evidence. The City agrees with this recommendation due to the fact that LOE No. 90133 describes data collected in Compton Creek, which is unrelated to the Wilmington Drain.	Remove LOE No. 90133 from the Fact Sheet for Decision No. 35085, and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that: "0 of 33 samples exceeded the CRITERIA."
Wilmington Drain/Copper	Decision ID 44676 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) for copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples.	Remove LOE No. 90473 from the Fact Sheet for Decision ID 44676 and revise the supporting evidence statement "2 of 33 samples exceeded the CRITERIA." Also revise the recommendation to Delist from 303(d) List.
Machado Lake(Algae, Ammonia, ChemA, Eutrophic, Odor, Trash)	Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes listings for algae, ammonia, ChemA, eutrophic, odor and trash for Machado Lake (a water segment where standards are not met and a TMDL is required but not yet completed); however all of these pollutant listings are being addressed by USEPA-approved TMDLs.	These listings should be moved to Category 4a in Appendix C to the February 2017 integrated staff report for the Los Angeles region. Additionally, Appendix A should include language under the column for "Other Revisions" for each of these pollutants explaining that: "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL."

THE CITY OF
POMONA

Public Works Department

March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Dr. Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

VIA EMAIL: losangeles@waterboards.ca.gov

RE: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu:

The City of Pomona (City) is pleased to submit for you consideration the attached comments regarding the Regional Board's propose 2016 303(d) list revisions.

Staff notes there are significant changes compared with the 2010 303(d) list. According to our review of those changes, 84% of the metals (copper, lead, selenium, and zinc) fall under the "de-list" or "do not list" categories. These eliminated metals should be sufficient to void the San Gabriel River Metals TMDL by amending the Los Angeles Basin Plan. Further, the City also recommends that three (3) additional metals be removed from the 2016 303(d) list.

The City appreciates the opportunity to comment on this matter. Eliminating the San Gabriel River Metals TMDL will greatly reduce the City's storm water compliance costs. Should you have questions please do not hesitate to contact me at (909) 620-2266.

Sincerely,

Meg McWade

Meg McWade
Public Works Director

Attachment: Comment Letter

cc: Linda Lowry, City Manager
Darron Poulson, Water/Wastewater Operations Director
Julie Carver, Environmental Programs Supervisor

City Hall, 505 So. Garey Ave., Box 660, Pomona, CA 91769 (909) 620-2261, Fax (909) 620-3648
Pomona • Vibrant • Safe • Beautiful

City of Pomona Comments on the Proposed Revisions to the 2016 303(d) List for the San Gabriel River, Los Angeles County Region

Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the San Gabriel River propose to ***de-list***, ***do not de-list***, and ***do not list*** metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the *Total Maximum Daily Loads for Metals and Selenium for the San Gabriel River and Impaired Tributaries* (San Gabriel Metals TMDL) adopted by USEPA Region IX (USEPA) and the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit). The MS4 Permit enables compliance with its waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).

The City is appreciative of the several metals pollutants that Regional Board is proposing to de-list and not to list. A total of 22 metals are reported for all San Gabriel River water quality segments. 19 (84.3%) of them fall under the "de-list" and "do not list" categories.[1] This result should be sufficient to void the San Gabriel River Metals TMDL. 3 additional metals (15.7%) should be de-listed[2], which would raise the total to 22 (100%), for reasons more particularly described below.

The data here strongly demonstrates that that the San Gabriel Metals TMDL should be removed from the Los Angeles Basin Plan.

I. San Gabriel River: Estuary

As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place **copper** on this list. If this is an oversight on the part of the Regional Board there is, nevertheless, ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent:

1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals

[1] copper = 4 (21%); lead = 5 (26.3%); zinc = 6 (31.6%); and selenium = 4 (21%).
[2] copper = 2 (SGR Estuary and Coyote Creek); lead = 1 (SGR R2).

and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/l for hardness is only intended be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it.

2. Regional Board also did not follow the *Water Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried-over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998.

3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. **Copper**, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/l). The limit is 9.4 ug/l. In other words, no exceedance was detected.

Table I. San Gabriel River: Estuary

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	X	-	-	-	-	x	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x	-	-	Yes

Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3.7 ug/l (see Table I(a) below).

Table I(a) from Attachment P of the Los Angeles MS4 Permit

Water Body	WLA Daily Maximum	
	Copper	Selenium
San Gabriel Reach 1	18 μg/L	---
Coyote Creek	0.941 kg/day*	---
San Gabriel River Estuary	3.7 μg/L	---
San Jose Creek Reach 1 and 2	---	5 μg/L

Recommendation to Regional Board: (1) approve staff's recommendation not to list **lead, selenium**, and **zinc** for the estuary; (2) grant the City's request de-list **copper** for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

II. San Gabriel River: Estuary to Firestone

Metals for San Gabriel River from the Estuary to Reach 1 were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/l (shown above in Table 1(a), despite the fact that copper was not listed on the 2010 303(d) list in the first place.

Table II. San Gabriel River: Estuary to Reach 1

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	-	x	-	-	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x		-	Yes

Recommendation to Regional Board: (1) approve staff's recommendation not to list **copper, lead, selenium**, and **zinc** for the estuary; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan

III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)

As shown on Table III below, the 2016 303(d) list rolls-over **lead** from the 2010 303(d) list. **Lead**, however, should be de-listed for the following reasons:

1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced).

2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above.

3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in no exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement.

4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. **Lead,** after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/l). The limit is 3.8 ug/l. In other words, no exceedance was detected.

Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam)

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	x	-	-	-	Yes
Lead	x	-	-	-	x	x	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	-	-	x	-	-	-	Yes

Recommendation to Regional Board: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)

As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit *Attachment P: TMDLs in San Gabriel River Watershed Management Area.* It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table I(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81/34 ug/l; and (2) Coyote Creek lists copper target of 24.71 ug/l and zinc at 144.57 ug/l. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity.

Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona)

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-	-	-	x	-	-	Yes
Lead	-	-	-	x	-	-	Yes
Selenium	-	-	-	x	-	-	Yes
Zinc	-	-	-	x	-	-	Yes

Table I(b) from Attachment P of the Los Angeles MS4 Permit

Water Body	WLA Daily Maximum (kg/day)		
	Copper	Lead	Zinc
San Gabriel Reach 2	---	81.34 µg/L x daily storm volume (L)	---
Coyote Creek	24.71 µg/L x daily storm volume (L)	96.99 µg/L x daily storm volume (L)	144.57 µg/L x daily storm volume (L)

Recommendation to Regional Board: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

V. San Gabriel River: Coyote Creek

The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons:

1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2.

2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied – incorrectly -- to MS4s and other NPDES permittees.

Table V. Coyote Creek

(San Gabriel River Tributary)2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	-	-	-	x	x	Yes
Lead	x	-	x	-	-	-	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	x	-	x	-	-	-	Yes

Recommendation to Regional Board: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

VI. **San Jose Creek Reach 1 (SG Confluence to Temple St.)**

Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below).

Table VI: San Jose Creek Reach 1

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-			x			Yes
Lead	-			x			Yes
Selenium	-		x				Yes
Zinc	-			x			Yes

Recommendation to Regional Board: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

VI. **South San Jose Creek (Los Angeles County)**3

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	-			x			Yes
Lead	-			x			Yes
Selenium	-			x			Yes
Zinc	-			x			Yes

Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.

[3]This is Reach is a new listing under the 2016 303(d) List.

TECS Environmental Compliance Services
106 South Mentor Avenue – 125 • Pasadena, CA 91106 • Tel: 626.396.9424
Fax: 626.396.1916 email: rtahir tecsenv.com

March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Email: losangeles waterboards.ca.gov

Subject: Comment Letter – Revisions to the Los Angeles Region (303(d) List

Dear Mr. Zhu:

Attached are comments submitted on behalf of the City of San Fernando regarding the Regional Board's proposed 2016 303(d) list revisions.

Should you have any questions please feel free to contact me at 626.396.9424 or City of San Fernando Assistant City Manager Chris Macarello at 818.898.1222.

Sincerely,

Ray Tahir

I. Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries[1] propose to *de-list*, *do not de-list*, and *do not list* metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the *Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-MTMDL)* adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E WMPs).

Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:

1. although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and

2. the LAR-MTMDL is based on water quality samples that were conducted before the *Water Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004.

- California Toxic Rule

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as:

> *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.*

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.

Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.

- **California 303(d) Listing Policy (Listing Policy)**

The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.

II. Los Angeles River Reach/Tributary Specific Comments

Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories.

1. Los Angeles River Reach 4

Copper and lead are placed on the "do not de-list" category. Selenium and zinc are placed on the "do not list." As noted on the table below there are no listing issues here.

Table II. LAR Reach 4

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	**List**	**List**	**De-List**	**Don't List**	**Don't De-list**	**Should De-List**	**Yes/No**
Copper	**x**	**-**	**x**	**-**	**-**	**-**	**Yes**
Lead	**x**	**-**	**x**	**-**	**-**	**-**	**Yes**
Selenium	**-**	**-**	**-**	**x**	**-**	**-**	**Yes**
Zinc	**-**	**-**	**-**	**x**	**-**	**-**	**Yes**

2. Los Angeles River Reach 5

Selenium and zinc are recommended for placement on the "do not list" category. Copper and lead, on the other hand, are recommended for placement on the "list" category. However, they should not. The justification reported on the fact sheet for both copper and lead is that *0 of the 12 samples and exceeded the criteria.* This must be in error. How can zero or "none" of the 12 samples have exceeded the criteria?

Based on this information, copper and lead should be on the do not list category.

Table II. LAR Reach 5

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don't List	Don't De-list	Should De-List	Yes/No
Copper	x	x	-	-	x	x	Yes
Lead	x	x	-	-	x	x	Yes
Selenium	-	x	-	x	-	-	Yes
Zinc	-		-	x	-	-	Yes

3. Tujunga Wash (Los Angeles River to Hansen Dam)

The Tujunga Wash is only listed (in the “do not list” category) for copper, carried-over from the previous 303(d) list (2010). According to the 303(d) list fact sheet, no samples were taken to justify placement (viz., 0 of the 12 samples exceeded the criteria).

Based on this information copper should be de-listed.

Table III. Tujunga Wash

2010 303 (d) List		2016 303 (d) List					MS4 Permit Requirement
Pollutant	List	List	De-List	Don’t List	Don’t De-list	Should De-List	Yes No
Copper	x	x	-	-	x	x	Yes
Lead	-	-	-	-	-	-	Yes
Selenium	-	-	-	-	-	-	Yes
Zinc	-	-	-	-	-	-	Yes

Attachment □1

Table 3.1: Minimum number of measured exceedances needed to place a water segment on the section 303(d) list for toxicants. *Null Hypothesis: Actual exceedance proportion < 3 percent.* *Alternate Hypothesis: Actual exceedance proportion > 18 percent. The minimum effect size is 15 percent.*	
Sample Size	List if the number of exceedances equal or is greater than
2 – 24	2□
25– 36	3
37– 47	4
48– 59	5
60– 71	6
72– 82	7
83– 94	8
95– 106	9
107– 117	10
118– 129	11

□Application of the binomial test requires a minimum sample size of 16. The number of exceedances required using the binomial test at a sample size of 16 is extended to smaller sample sizes.

For sample sizes greater than 129, the minimum number of measured exceedances is established where α and f3 < 0.2 and where |α - f3□is minimized.

α = Excel® Function BINOMDIST(n-k, n, 1 – 0.03, TRUE)
f3 □Excel□ Function BINOMDIST(k-1, n, 0.18, TRUE)
where n □the number of samples,
k □minimum number of measured exceedances to place a water on the
section 303(d) list,
0.03 □acceptable exceedance proportion, and
0.18 □unacceptable exceedance proportion.

March 30, 2017

Electronic Submission: losangeles@waterboards.ca.gov

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Comment Letter – Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report

Dear Dr. Zhu,

The City of San Buenaventura (City) appreciates the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as "303(d) list"] which was distributed for public review on February 8, 2017. A separate comment letter is being submitted by Ventura Water, a department of the City, which specifically focuses on the Santa Clara River Estuary proposed listings and the Ventura Water Reclamation Facility.

The City understands that the Los Angeles Regional Water Quality Control Board (Regional Board) is proposing over 200 new waterbody segment-pollutant combination 303(d) listings. The development and implementation of total maximum daily loads (TMDLs) is a significant investment of resources and it is critical that the 303(d) list be based on sound science and methodologies. The City participates in the implementation of several TMDLs in the Santa Clara and Ventura River Watersheds covering a diverse set of pollutants.

The City notes that Ventura County, the Stakeholders Implementing Total Maximum Daily Loads in the Calleguas Creek Watershed, and the Ventura County Agricultural Irrigated Lands Group (VCAILG) will be submitting separate comments regarding the listing changes in Ventura County, Calleguas Creek Watershed, and VCAILG-affected waterbody segments, respectively. The City recognizes the importance of following the State Water Resources Control Board's "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List" ("Listing Policy")[1] when developing the 303(d) list and agrees with those comments from other stakeholders that speak to the process for assessing the quality and quantity of data used to develop proposed listings.

[1] California State Water Resources Control Board, "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List," Adopted September 30, 2004, Amended February 3, 2015.

The City has several concerns regarding the Regional Board's proposed 303(d) list and feels that it requires significant review and modifications before adoption. The City requests that the issues identified in this letter be addressed and the revised, proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed by the affected parties.

The requested modifications fall into two general categories:

1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and/or incorrect interpretation of the data (e.g., lack of temporal representation).
2. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include challenges in identifying the data sets and analysis methods used, inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.

The remaining sections of this letter provide the detailed list of requested changes to the proposed 303(d) list and the rationale for the requests. In summary, the City requests that all waterbody pollutant combinations in **Table 1** below not be listed on the 303(d) list and the errors and inconsistencies identified in the other letters cited above be addressed.

I. REQUESTED MODIFICATIONS TO THE LISTING STATUS

Based on a review of the proposed Category 5 waterbody pollutant combinations, the City has identified several waterbodies that should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in **Table 1**, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification
Santa Clara River Estuary[2]	pH	• No demonstration high pH is a result of waste discharge. A listing is not warranted in light of reference conditions for pH within estuaries.
	Ammonia	• Appropriate data not considered and current data does not meet Listing Policy criteria.
	Nitrogen, Nitrate	• Appropriate data not considered and current data does not meet Listing Policy criteria.

[2] See generally Ventura Water comment letter specifically addressing the Santa Clara River Estuary proposed listings.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody Segment	**Pollutant**	**Justification**
Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	pH	• No demonstration high pH is a result of waste discharge.
Ventura Harbor: Ventura Keys	Arsenic	• Data does not include proper temporal representation.
	Cadmium	• Data does not include proper temporal representation.
	Chlordane	• Data does not include proper temporal representation.
	DDT	• Data does not include proper temporal representation.
	Dieldrin	• Data does not include proper temporal representation.
	PCBs (Polychlorinated biphenyls)	• Data does not include proper temporal representation.
Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses. • Data does not include proper spatial representation.
	Temperature, water	• Analysis does not demonstrate temperature is above natural temperature.
Ventura Harbor: Ventura Keys	Indicator Bacteria	• Data from mouth of Arundell Barranca used in listing assessment.

1. There is no demonstration that high pH is a result of waste discharge.

The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan).[3] The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheets and according to the Basin Plan, "*The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5* ***as a result of waste discharges****.*"[4] However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if no such evidence exists, the Regional Board should remove this proposed listing.[5]

Requested Action:
Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as these high pH values are not the result of waste discharge.

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[3] Water Quality Control Plan Los Angeles Region R4 Basin Plan.
[4] Basin Plan at 3-35 [emphasis added].
[5] Please see additional comments in the Ventura Water comment letter.

2. Listing data lacks proper temporal representation.
There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5.3 of the Listing Policy states that:

> "*Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision.*"

Many of the pollutants listed in **Table 1** included data collected from a single sampling date, which violates the Listing Policy. For instance, all of the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day – February 28, 2007. These pollutants should not be listed because there is no temporal resolution provided.

> **Requested Action:**
> **Remove all listings shown in Table 1 that were based on a single sample collection date.**

3. Benthic Community Effects listing is based on flawed analyses and should be removed.
The benthic community effects listing is based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects where the threshold used to distinguish an impaired reach was identified as a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value in the originating study. The State has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets for numerous other benthic community effects listings (e.g., Decision ID 66264)v, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).*" Despite this, the newly listed benthic community effects for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) utilizes the IBI to assess the waterbody. Therefore, the City requests that this flawed listing be removed until the waterbody can be assessed with a more representative metric such as the CSCI.

In addition to use of an arbitrary metric, the proposed listing for benthic community effects for the Ventura River Reach 1 and 2 lacks proper spatial representation since only two samples were collected from the same sample site ("Station 0 Main Street Bridge, Mainstem Ventura River" according to the Fact Sheets). In addition, temperature is used as a line of evidence to support the benthic community effects listing, however, the temperature listing for this same waterbody segment is also flawed and should be removed as discussed in the comment below.

Requested Action:
Remove the benthic community effects listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) due to use of an outdated metric, lack of spatial resolution, and lack of supporting evidence from the temperature listing.

4. Correct the proposed temperature listings which are based on incorrect criteria.
The temperature listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as COLD is, "*For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature.*"[6] The fact sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives.

Notwithstanding that a deviation from natural temperatures has not been demonstrated, the way the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002.[7] Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures."[8] As such, while temperatures above 21°C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C, which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing.

Using the threshold of 23°C, only 2 samples would exceed the threshold in Ventura River Reach 1 and 2, which would not be enough to meet the listing threshold.

Requested Action:
Remove the temperature listing for Ventura River Reach 1 and 2 based on lack of exceedances.

5. Data from Arundell Barranca mouth is inappropriate to assess Ventura Harbor.
Based on a review of the data provided in the spreadsheet entitled: Peninsula Beach, Ventura Harbor-Keys, and Arundell Barranca Data, site K5 appears to have been included in the analysis of the Ventura Harbor: Ventura Keys assessment. Site K5 is located in the mouth of the Arundell Barranca and is not within Ventura Harbor. A review of the data shows that the indicator bacteria concentrations at this site are much more similar to Arundell Barranca and not representative of the data for the rest of Ventura Harbor.

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[6] Basin Plan at 3-38.
[7] Moyle, Peter B. *Inland fishes of California: revised and expanded.* University of California Press, 2002.
[8] Moyle 2002 at 276 [internal citations omitted].

In 2009, as part of the review of the proposed Harbor Cove TMDL, the City conducted an analysis of indicator bacteria data from Ventura Harbor using what appears to be the same dataset as used in the Regional Board's assessment. While the dataset appears to be the same, the number of samples and exceedances did not match completely (e.g., 103 exceedances of the enterococcus geomean with 510 samples in the City's analysis as compared to 104 exceedances and 537 samples in the Regional Board's analysis). The City could not easily determine what the differences in the calculations were and requests that the Regional Board review the exceedance calculations to ensure that all geomeans were calculated using a minimum of 5 samples and that duplicate samples in the dataset were correctly handled in accordance with the Listing Policy.

Regardless of the potential differences in the calculations, the clear majority of the exceedances are from site K5 (64 of the 103 exceedances in the City's analysis). If site K5 is removed from the Ventura Harbor analysis (and added to the Arundell Barranca analysis so it is in the correct waterbody), based on the City's calculations, insufficient samples exist to list Ventura Harbor: Ventura Keys for fecal coliform or enterococcus. A summary of the City's analysis is shown in **Table 2**.

Table 2. Summary of City's Analysis of Ventura Harbor Indicator Bacteria

Constituent	Number Samples	Number Exceedances	Number exceedances required to List
Total Coliform-Single Sample	636	74	106
Total Coliform-Geomean	440	186	73
Fecal Coliform-Single Sample	636	24	106
Fecal Coliform-Geomean	440	2	73
Enterococcus-Single Sample	595	48	99
Enterococcus-Geomean	408	39	68

Requested Action:
Revise the calculations for Ventura Harbor: Ventura Keys by removing site K-5 which is not located in the Harbor. Revise any Lines of Evidence that no longer support a listing for indicator bacteria and remove the listing if appropriate.

II. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS

Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations are new listings. Additionally, in many cases, data and Quality Assurance Project Plan (QAPP) references in the fact sheets are inconsistent with the data provided for review and it is not always clear what data were used in the analysis presented in the fact sheets. Examples of these inconsistencies and errors are detailed in the Calleguas Creek Watershed Stakeholders, VCAILG, and County of Ventura comment letter. The City requests that the Regional Board do a thorough review of all appendices to ensure that the proposed 303(d) list is internally consistent, the correct data were used for the assessment, and the errors identified in the other comment letters are addressed.

Requested Action:
Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.

The City appreciates the opportunity to comment on the proposed 303(d) list and looks forward to continuing to work with the Regional Board to address these concerns. Thank you for your time and consideration of these comments. If you have questions, please contact Joe Yahner, Environmental Services Manager, at 805-652-4558 or jyahner@cityofventura.net.

Sincerely,

Tulson Clifford
Public Works Director
City of San Buenaventura

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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MARK PESTRELLA, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

March 30, 2017

IN REPLY PLEASE
REFER TO FILE: WM-9

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Jun Zhu

Dear Mr. Unger:

COMMENT LETTER – REVISIONS TO THE LOS ANGELES REGION 303(D) LIST

The County of Los Angeles and the Los Angeles County Flood Control District appreciate the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) List of Impaired Waters in the Los Angeles Region. Enclosed are our comments for your review and consideration.

If you have any questions, please contact me at (626) 458-4300 or ageorge@dpw.lacounty.gov or your staff may contact Mr. Paul Alva at (626) 458-4325 or palva@dpw.lacounty.gov.

Very truly yours,

MARK PESTRELLA
Director of Public Works

ANGELA R. GEORGE
Assistant Deputy Director
Watershed Management Division

GA:ba
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Enc.

cc: County Counsel (Grace Chang, Lillian Salinger, Michael Simon)

THE COUNTY OF LOS ANGELES AND THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT COMMENTS ON THE PROPOSED REVISIONS TO THE 303(d) LIST FOR THE LOS ANGELES REGION

I. Waterbodies With Water Quality Attainment Should Be Delisted As Requested By The Los Angeles County Flood Control District During The 2010 Data Solicitation Period And Pursuant to the 303d Listing Policy

In August 2010 in response to the State Water Resources Control Board's (State Water Board's) data solicitation for the 2012 Integrated Report for Clean Water Act Sections 303(d) and 305(b), the Los Angeles County Flood Control District (LACFCD) submitted all the data and information that it collected since the State's previous data solicitation in 2007. As part of the 2010 data submission, the LACFCD conducted a detailed analysis of the new data and found 15 listed waterbody-pollutant combinations that had attained their water quality standards and met the delisting criteria set forth in Section 4 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (303(d) Listing Policy). To this end, LACFCD provided a detailed analysis of this data and identified those waterbodies that should be delisted pursuant to the *State's 303(d) Listing Policy*. Those waterbody-pollutant combinations are listed below.

WATERBODY	POLLUTANT	Addressed in Current Proposed Revisions?
Coyote Creek	Diazinon	No
Dominguez Channel (lined portion)	Diazinon	Yes
Legg Lake	Ammonia Copper Lead	No
Los Angeles River Reach 1	Diazinon	No
Peck Road Park Lake	Lead Dissolved Oxygen	No
Santa Clara River Reach 6	Chlorphyrifos Diazinon Copper Iron	No
Santa Fe Dam Park Lake	Copper Lead pH	No

As set forth in the above table, none of the identified waterbody-pollutant combinations are currently proposed for delisting as part of the 2016 303(d) list, except for the Dominguez Channel Diazinon, despite meeting the delisting criteria under the *State's Listing Policy*. Based on a review of the fact sheets for these waterbodies in Appendix G, it appears that the post-2007 data and analysis submitted by the LACFCD was not taken into consideration by the Los Angeles Regional Water Quality Control Board (Regional Board).

The County and the LACFCD request that the Regional Board consider the data set forth in the LACFCD's 2010 submission. Attached is a copy of the LACFCD comment letter and technical report from the 2010 data solicitation for your review and consideration. The County and the LACFCD further request that the Regional Board delist these waterbodies as requested.

II. The Regional Board Should Wait For The Completion Of The State's Biointegrity Policy Development Before Listing Waterbodies For Benthic Community Effects

Currently, there is no officially established California water quality objective or guideline for listing waterbodies for benthic community effects. As such, the State Water Board is currently developing statewide biological objectives to assist in addressing this gap. The 2010 State Water Board's initial notice letter[1] for development of these biological objectives states the following:

> *"State and Regional Water Board plans and policies do not contain numeric objectives or guidance for using biological data in regulatory decision-making. Therefore, biological objectives are needed to provide the narrative or numeric benchmarks that describe conditions necessary to protect aquatic life beneficial uses. The initial effort will focus on wadeable perennial streams and rivers."*

Similarly, the CEQA public scoping document[2] released in 2012 for this project states the following:

> *"Benchmarks for identifying biological impairments and interpreting narrative water quality objectives are not formally adopted in Water*

[1] http://www.swrcb.ca.gov/plans_policies/docs/biological_objective/kickoff_ltr.pdf
[2] Pages 6 and 8 of http://www.swrcb.ca.gov/plans_policies/docs/biological_objective/bioobj_ceqa.pdf

Board plans or policies and, therefore, not readily used as enforceable requirements …" [Page 6 of the scoping document]
"The State Water Board will develop [biological objectives and] program of implementation that describes how biological objectives will be incorporated into permits and other regulatory actions, such as assessing attainment of aquatic life beneficial uses for 303(d) listing." [Page 8 of the scoping document]

Thus, there is no established objective in California for assessing biological data, such as benthic macroinvertabrate data, for regulatory decision-making. This includes 303(d) listings.

The State Water Board is currently making progress on compiling available information and conducting necessary scientific studies to develop applicable objectives and implementation policy (also known as Biointegrity Policy). The State Water Board has hired the Southern California Coastal Water Research Project (SCCWRP) and the California Department of Fish and Wildlife to develop technical information to aid development of the policy. To ensure that a range of public interests are represented during the development process, the State Water Board has reached out to interested stakeholders. The County and LACFCD is actively participating in these meetings.

Although the State Water Board is currently developing biological objectives for benthic communities, the Regional Board has listed multiple waterbodies for benthic community impairment prior to the development of those objectives and its implementation guideline. The following table summarizes the waterbodies being proposed for benthic community listings by the Regional Board in the County.

WATERSHED	WATERBODY SEGMENT	CONCRETE CHANNEL?
Ballona Creek	Ballona Creek	Yes
Dominguez Channel	Dominguez Channel	Yes
Los Angeles River	Alhambra Wash	Yes
	Arroyo Seco Reach 3	No
	Los Angeles River Reach 3	Yes
	Los Angeles River Reach 4	Yes
Malibu Creek	Medea Creek Reach 1	No

	Triunfo Creek Reach 1	No
San Gabriel River	San Gabriel River – East Fork	No
Santa Clara River	Santa Clara River Reach 5	No

Adopting these benthic community impairment listings without first awaiting the State Water Board's development of water quality objectives and implementation guidance is premature. First, in assessing biological data and justifying the proposed listings, the Regional Board used the Index of Biological Integrity (IBI) and the California Stream Condition Index (CSCI). The benchmarks/thresholds used are 40 for IBI and 0.79 for CSCI. While IBI and CSCI are available tools for evaluating the relative biological condition of perennial wadeable streams, the associated benchmarks/thresholds used by Regional Board staff for justifying the listings have not been officially adopted by the State Water Board or the Regional Board for purposes of determining 303(d) listings. Thus, to ensure statewide consistency, the appropriate benchmarks should be set by the Biointegrity Policy being developed by the State Water Board.

Second, the CSCI was developed to replace the IBI and is expected to be used in the Biointegrity Policy. Thus, the IBI and its associated benchmark should not be used for assessing stream conditions for purposes of regulatory decisions, such as 303(d) listing.

Third, many of the listings set forth in the table above are for concrete/modified channels, which are being treated the same as natural channels. This is inconsistent with the approach that the State Water Board has been taking in developing the Biointegrity Policy, which provides that in highly altered conditions, the standard should be based on "best attainable conditions". In this regard, the State Water Board's 2012 CEQA Scoping document[3] for biological objectives states the following:

> *"One of the difficulties of defining reference conditions in California is that many waterbodies in the State have been severely altered from their natural condition. Some of these alterations are not a result of the controllable environmental factors…. In highly altered systems where biological conditions are limited by uncontrollable factors, the focus is on expectations for the 'best attainable' conditions."*

[3] Page 3 of http://www.swrcb.ca.gov/plans_policies/docs/biological_objective/bioobj_ceqa.pdf

Concrete/engineered flood control channels in urban environments are among the systems that the State Water Board considers highly altered. For those systems, the State's goal is to establish standards that are reasonably expected to be attainable, which is different than standards for natural channels. The State Water Board is using a gradient approach where the biological expectations for altered stream channels are based on the level of alteration. Since altered stream channels have limited habitat, it is improbable to expect a thriving benthic community in these channels the same way as in natural stream channels. This conclusion is well demonstrated in the stream survey report published in 2016 by the Southern California Stormwater Monitoring Coalition (SMC) – the *2015 Report on the SMC Regional Stream Survey*[4]*, with Special Study on Engineered Channels.*

For the reasons described above, the Regional Board should not list waterbodies, and particularly those with concrete or engineered channels, for benthic impairments until the State Biointegrity Policy is developed and adopted. However, if the Regional Board lists any waterbody for benthic impairment, then the listings should be listed under Category 4c, and not under Category 5, since it is uncertain that these impairments are caused by pollutants.

III. Toxicity Listings Are Based On Unreliable Data and Should Be Removed

Ten County waterbodies are newly listed for toxicity, nine of which are streams or rivers, and one is an estuary. The majority of toxicity data used in the listings are from water toxicity tests conducted using the *Ceriodaphnia dubia* or other species.

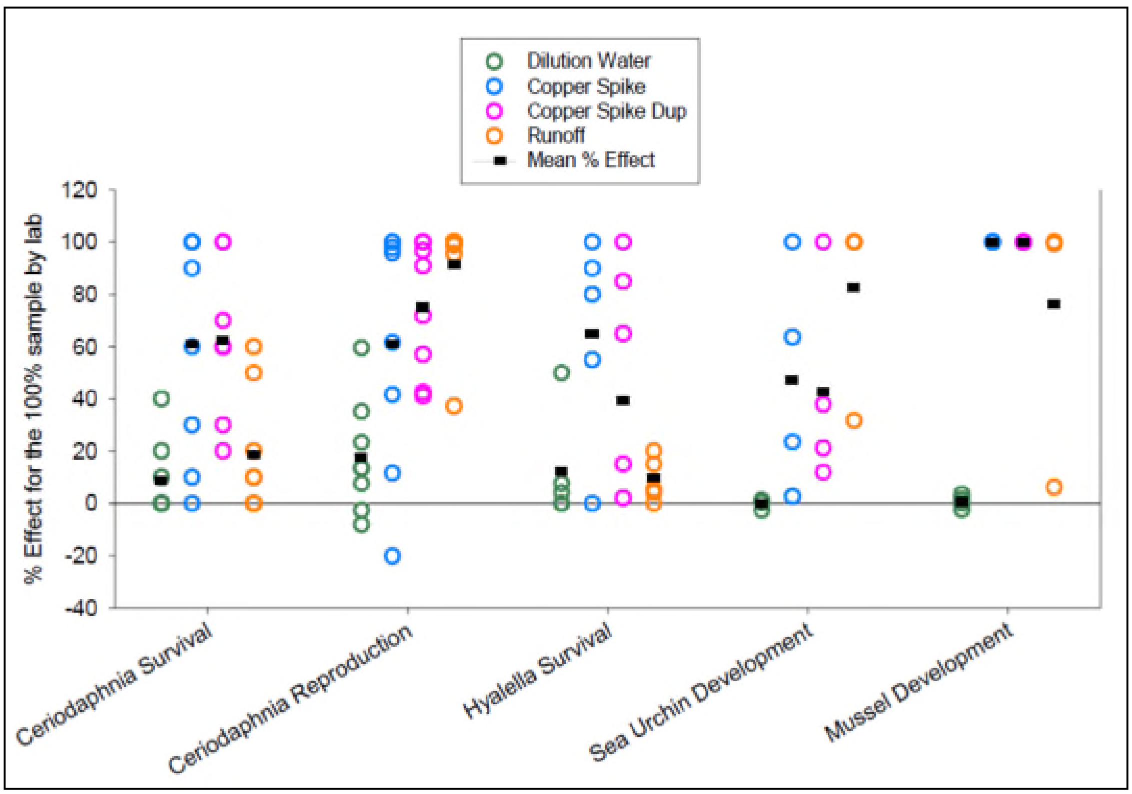
WATERSHED	WATERBODY SEGMENT	TEST SPECIES
Los Angeles River	Bull Creek	C. dubia, Fathead
	LA River Reach 4	
	LA River Reach 5	
	LA River Reach 6	C. dubia, Fathead, Hyalella
San Gabriel River	SG River Estuary	Topsmelt, Fathead
	SG River Reach 3	C. dubia, Fathead
	San Jose Creek Reach 2	

[4] http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/963_2015_SMC_Report_EnginChannels.pdf

	South San Jose Creek	
Santa Clara River	Piru Creek	C. dubia
	SC River Reach 5	C. dubia

These toxicity tests, however, have recently been found to be unreliable by a laboratory intercalibration study conducted by SMC[5]. The study utilized 10 laboratories in Southern California that are certified by the State of California for toxicity testing. (Almost all toxicity tests in Southern California are conducted by these laboratories.) Although standard methods and protocols were followed by all the laboratories, the test results for the same sample varied significantly between laboratories.

The below chart summarizes the results of the study. Each symbol in the chart represents the result from a single laboratory.



[5] SMC Toxicity Testing Laboratory Guidance Document
ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/956_StrmWtrMonitCoalitToxTestingLabGuid.pdf

As can be seen from the chart, there is high variability in the toxicity results between different laboratories for all the test species despite the fact that analytical procedures were performed on identical samples. For example, the results for *Ceriodaphnia survival* vary between 0 percent and 100 percent for the same sample depending on the laboratory used. Also, a sample of lab dilution water, which is expected to be non-toxic was found to be toxic by many labs. Such high magnitudes of inconsistency and incomparability between the labs makes the existing toxicity data invalid or not useful. It is thus very probable that the proposed 303(d) listings for toxicity are the result of false positive toxicity tests, resulting in unimpaired waterbodies being wrongly listed for toxicity.

It is incumbent upon the State to ensure that the laboratories it certifies produce consistent and accurate toxicity test results. The uncertainties and variability reflected in testing results between laboratories, as shown in the SMC study, can have a profound effect on the regulatory actions placed on a waterbody.

For these reasons the proposed water toxicity listings are not supported by reliable data. The County and the LACFCD therefore request that all toxicity listing based off of water toxicity testing be removed from the list. We also request that the State continue to re-evaluate its laboratory certification protocols and address the problems identified by SMC.

IV. The Proposed Temperature Listings Are Based On An Inapplicable Standard And Therefore Should Be Removed

The following four waterbodies in the County are proposed listings for temperature-related impairment: Los Angeles River Reach 3, San Gabriel River Reaches 1 and 2, and Santa Clara River Reach 6. These listings should not be adopted for the following reasons:

First, natural temperatures for waterbodies in the Los Angeles Region are not known. Chapter 3 of the Los Angeles Region Basin Plan states the following for temperature:

> *"For waters designated WARM, water temperature shall not be altered by more than 5°F above the natural temperature. At no time shall these WARM-designated waters be raised above 80°F as a result of waste discharges."*
>
> *"For waters designated as COLD, water temperature shall not be altered by more than 5°F above the natural temperature."*

The current Basin Plan does not have an established "natural temperature" baseline for waterbodies, nor does it have guidance for estimating natural temperatures. This precludes the use of alteration of natural temperature as a basis for assessing waterbodies in the region.

The Regional Board therefore appears to have used the 80°F objective as the basis for the proposed temperature listings. This standard, however, is not appropriate for two reasons: (1) Under the Basin Plan, the 80°F threshold is to be used only when there is evidence that the temperature rise was "as a result of waste discharges." The Regional Board did not provide evidence that any of the temperatures above 80°F were caused by waste discharges. (2) The 80°F threshold was applied to all waterbodies without considering the physical attributes or the historical ambient air temperatures of the waterbodies, which are uncontrollable. In the Los Angeles Region, ambient air temperatures can vary drastically, which would easily alter or raise the temperature above 80°F, especially in concrete channels during warmer months. Concrete channels are very susceptible to fluctuations in temperature due the material's ability to absorb heat. Even if the water is at a reasonable temperature when it enters a concrete channel, the water temperature may naturally rise as it travels through the channel, and not as the result of waste discharges.

Second, Basin Plans of other Southern California Regions, which have similar habitats as in the Los Angeles Region, do not use 80°F as a water quality objective for WARM-designated waters. For example, the Santa Ana Region Basin Plan[6] uses 90˚F during warmer months of the year (June through October) and 78˚F during the rest of the year. The San Diego Region does not have any temperature water quality objectives for WARM-designated waters.

Therefore, the use of 80˚F for purposes of assessing temperature-related impairments and listing waterbodies is unreasonable and unsupported, especially in concrete channels during dry seasons. The Regional Board should not list waterbodies for temperature until applicable standards are established for the Region.

[6] www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/2016/Chapter_4_Feb_2016.pdf

V. Alondra Park Lake Is Not A Water of the United States And Therefore Should Be Removed From The Proposed 303(d) List

Alondra Park Lake is a man-made lake that was created in the late 1940s as part of County's plan to establish Alondra Park. The lake does not receive any runoff discharge from areas outside of the park and is not connected to the Dominguez Channel or any other surface waterbody. The lake's source of water is entirely groundwater that is pumped from the West Coast Groundwater Basin. This water is used to irrigate the park and the nearby golf course.

In addition, Alondra Lake is not identified in the Basin Plan and, thus, does not have any beneficial use designation assigned to it. This confirms that the lake is not a receiving waterbody.

The Section 303(d) list applies only to waters of the United States[7]. Alondra Park Lake is a man-made enclosed lake not connected to any other waterbody. Any listings associated with Alondra Park Lake should therefore be removed from the proposed 2016 303(d) list.

VI. Data Being Used For Legacy Pollutant Listings Do Not Satisfy The Temporal Representativeness Requirements of The State's Listing Policy

The data being used to support proposed listings of waterbody-pollutant combinations for legacy pollutants does not satisfy the temporal requirements of the State's 303(d) Listing Policy as described below. Thus, these proposed listings should be removed.

Section 6.1.5.3 of the State's 303(d) Listing Policy states:

> *"Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision. Samples should be available from two or more seasons or from two or more events . . ."*

[7] 33 U.S.C §1313(d)

Section 6.1.5.6 of the Listing Policy states:

> *"To be considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value."*

Section 3.1 of the Listing Policy requires a minimum of two exceedances to place a waterbody on the 303(d) list for toxic pollutants.

The data used to support some of the new listings was collected only on a single day. Therefore, pursuant to Sections 6.1.5.3 and 6.1.5.6 of the Listing Policy, these samples are not temporally independent and should be combined and considered as a single data point. Moreover, under Section 3.1 of the Listing Policy, a minimum of two exceedances are needed to place a waterbody on a 303(d) list. Thus, the following listings do not meet these Listing Policy guidelines:

WATERSHED	WATERBODY SEGMENT	POLLUTANT(S)
Dominguez Channel	Alondra Park Lake	PCBs
Malibu Creek	Malibou Lake	Dieldrin
Los Angeles River	Echo Park Lake	Chlordane, Dieldrin
	Lincoln Park Lake	PCBs
San Gabriel River	Legg Lakes	DDT, PCBs
	Santa Fe Dam Park Lake	PCBs
Santa Clara River	Castaic Lagoon	PCBs
	Castaic Lake	PCBs
	Elderberry Forebay	Dieldrin, PCBs
	Pyramid Lake	Chlordane, DDT, Dieldrin, PCBs

The County and the LACFCD request that these listings be removed until more samples are collected to satisfy the temporal representativeness of data of the State's Listing Policy.

VII. Legacy Pollutants (PCBs, DDT, Dieldrin, Chlordane) Should be Listed As a Category 4b, Not as Category 5

Many of the pollutants that are being considered for incorporation into the 303(d) list are legacy pollutants that have been banned by the U.S. Environmental Protection Agency (EPA) decades ago and are no longer manufactured or used in the United States. These pollutants include PCBs, DDT, Dieldrin, and Chlordane. PCBs were banned in 1979, DDT in 1980, Dieldrin in 1987, and Chlordane in 1988.

The newly proposed listing includes several waterbodies in the County that are listed for impairments associated with these pollutants:

WATERSHED	WATERBODY SEGMENT	POLLUTANT(S)
Dominguez Channel	Alondra Park Lake	PCBs
Malibu Creek	Malibou Lake	Dieldrin
Los Angeles River	Echo Park Lake	Chlordane, Dieldrin
	Lincoln Park Lake	PCBs
San Gabriel River	Legg Lakes	DDT, PCBs
	Santa Fe Dam Park Lake	PCBs
Santa Clara River	Castaic Lagoon	PCBs
	Castaic Lake	PCBs
	Elderberry Forebay	Dieldrin, PCBs
	Pyramid Lake	Chlordane, DDT, Dieldrin, PCBs

The complete ban on these pollutants three decades ago, which is the strongest regulatory action an agency can take, has effectively addressed the true sources of these pollutants in the environment. Since these chemicals are no longer manufactured or used, the regulatory program already in place by the U.S. EPA is reasonably expected to result in the attainment of the water quality standard for these pollutants over time.

As indicated in comment VI, waterbodies that contain legacy pollutants should not be listed because the data used for their listing does not satisfy the Listing Policy. However, if the Regional Board does list these waterbodies, we request that they be listed as Category 4b, not Category 5, because a regulatory program is already in place to address them.

VIII. The State Should Rely On The Most Updated Guideline to List Waterbodies Based On Fish Tissue Contamination

In assessing waterbodies for fish tissue contamination, the Regional Board used the following two guidelines:

a. The 2008 Office of Environmental Health Hazard Assessment (OEHHA) fish contaminant goal[8], and
b. The 1972 National Academy of Sciences (NAS) guidelines.[9]

The OEHHA guideline, developed in 2008 is not only up-to-date but also specific to California and, thus, reasonable to use for this particular assessment. On the other hand, the NAS guideline is half a century old and out of date. In the absence of an up-to-date NAS guideline, the assessment should be based exclusively on the OEHHA standard's line of evidence.

Based on the OEHHA guideline, the following waterbodies meet water quality standards and, therefore, should be removed from the proposed listing:

- Castaic Lagoon for PCBs
- Elderberry Forebay for Dieldrin
- Pyramid Lake for Chlordane, DDT, Dieldrin, PCBs
- Alondra Park Lake for PCBs
- Echo Park Lake for Chlordane and Dieldrin
- Legg Lakes for DDT and PCBs.

IX. ADDITIONAL COMMENTS

A. Wilmington Drain-Copper should be delisted

Per Appendix G fact sheets, two lines of evidences (LOE) were used to support the listing for copper in Wilmington Drain. However, the information used for the second LOE is data collected in Compton Creek, which is a different waterbody. This data should not be used to evaluate Wilmington Drain. Removal of this LOE would lead to only 2 exceedances out of 33 data points. This would satisfy the delisting criteria of the State's Listing Policy. Therefore, copper should be delisted for Wilmington Drain.

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[8] http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/2008/ref2456.pdf
[9] http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/2006/ref19.pdf

B. The listings in Appendix A should be corrected to reflect the listing and delisting decisions in Appendix G

As already acknowledged in the February 24 Regional Board notice letter, Appendix A does not accurately capture all the listing and delisting decisions detailed in the fact sheets in Appendix G. For example, for Ballona Creek, Chlordane, DDT, Dieldrin, and PCBs were delisted during the previous listing cycle. However, these listings continue to be identified in Appendix A as part of the 2016 303(d) list. This is true for many of the waterbodies summarized in Appendix A. This error should be corrected to avoid any confusion and misinterpretation of the information by the general public.

C. Waterbodies that are on the 303(d) list and being addressed by a USEPA approved TMDL should be moved to Category 4a from Category 5

Many of 303(d)-listed waterbodies from the previous listing cycle now have TMDLs. This requires a change in their status from Category 5 (TMDL required list) to Category 4a (being addressed by US EPA approved TMDL). Some of these status changes are not reflected in the revised list and need correction.

Similarly, some of the newly proposed listings are already being addressed by an existing TMDL for that watershed. In those cases, it is appropriate to put them also under Category 4a as opposed to Category 5. Examples, include:

- LA River Reach 3 and Rio Hondo Reach 2 for Indicator Bacteria, which are being addressed by the Los Angeles River Watershed Bacteria TMDL
- LA River Reach 6 for Copper and Compton Creek for Zinc, which are being addressed by the Los Angeles River Metals TMDL.

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

August 26, 2010

IN REPLY PLEASE
REFER TO FILE: WM-9

Mr. Jeffrey Shu, Environmental Scientist
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

Dear Mr. Shu:

RESPONSE TO WATER QUALITY DATA AND INFORMATION SOLICITATION FOR 2012 CALIFORNIA INTEGRATED REPORT CLEAN WATER ACT SECTIONS 303(D) AND 305(B)

Thank you for the opportunity to submit data and information for the 2012 Integrated Report – Clean Water Act Sections 303(d) and 305(b). The Los Angeles County Flood Control District conducts a minimum of six sampling events (four wet weather and two dry weather) per year at seven mass emission monitoring stations and six tributary monitoring stations in accordance with the Los Angeles County Municipal Stormwater Permit (NPDES Permit No. CAS004001). All data collected under the permit are submitted to the Los Angeles Regional Water Quality Control Board in August of each year. In addition, the Los Angeles County Flood Control District assisted the U.S. Environmental Protection Agency in collecting data for a development of the draft Los Angeles Area Lakes Total Maximum Daily Loads. Enclosed is a compact disk (CD) containing all data collected since the last data solicitation in 2007. Also included in the CD is a copy of this cover letter and the enclosures.

Our analysis of the newly available data and information, collected after the State's last data solicitation cycle in 2007, found that some listed water bodies have attained their water-quality standards and meet the delisting criteria in Section 4 of the State's Water Quality Control Policy for Developing Clean Water Act Section 303(d) List. We, therefore, request that the following water body-pollutant combinations be considered for removal from the 2012 Clean Water Act Section 303(d) List:

- Coyote Creek - Diazinon
- Dominguez Channel lined portion above Vermont Avenue - Diazinon

- Legg Lakes - Ammonia, Copper, and Lead
- Los Angeles River Reach 1 - Diazinon
- Peck Road Park Lake - Lead and Organic Enrichment/Low-Dissolved Oxygen
- Santa Clara River Reach 6 - Chlorpyrifos, Diazinon, Copper, and Iron
- Santa Fe Dam Park Lake - Copper, Lead, and pH

Each water body-pollutant combination is discussed in detail in the enclosed Technical Report.

We look forward to your consideration of these comments. If you have any questions, please contact me at (626) 458-4300 or ghildeb@dpw.lacounty.gov or your staff may contact Ms. Rossana D'Antonio at (626) 458-4325 or rdanton@dpw.lacounty.gov.

Very truly yours,

GAIL FARBER
Director of Public Works

Gary Hildebrand

GARY HILDEBRAND
Assistant Deputy Director
Watershed Management Division

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Enc.

Technical Report:
Data Analysis and Justifications for Delisting Waterbody-Pollutant Combinations

Submitted to:

California State Water Resources Control Board

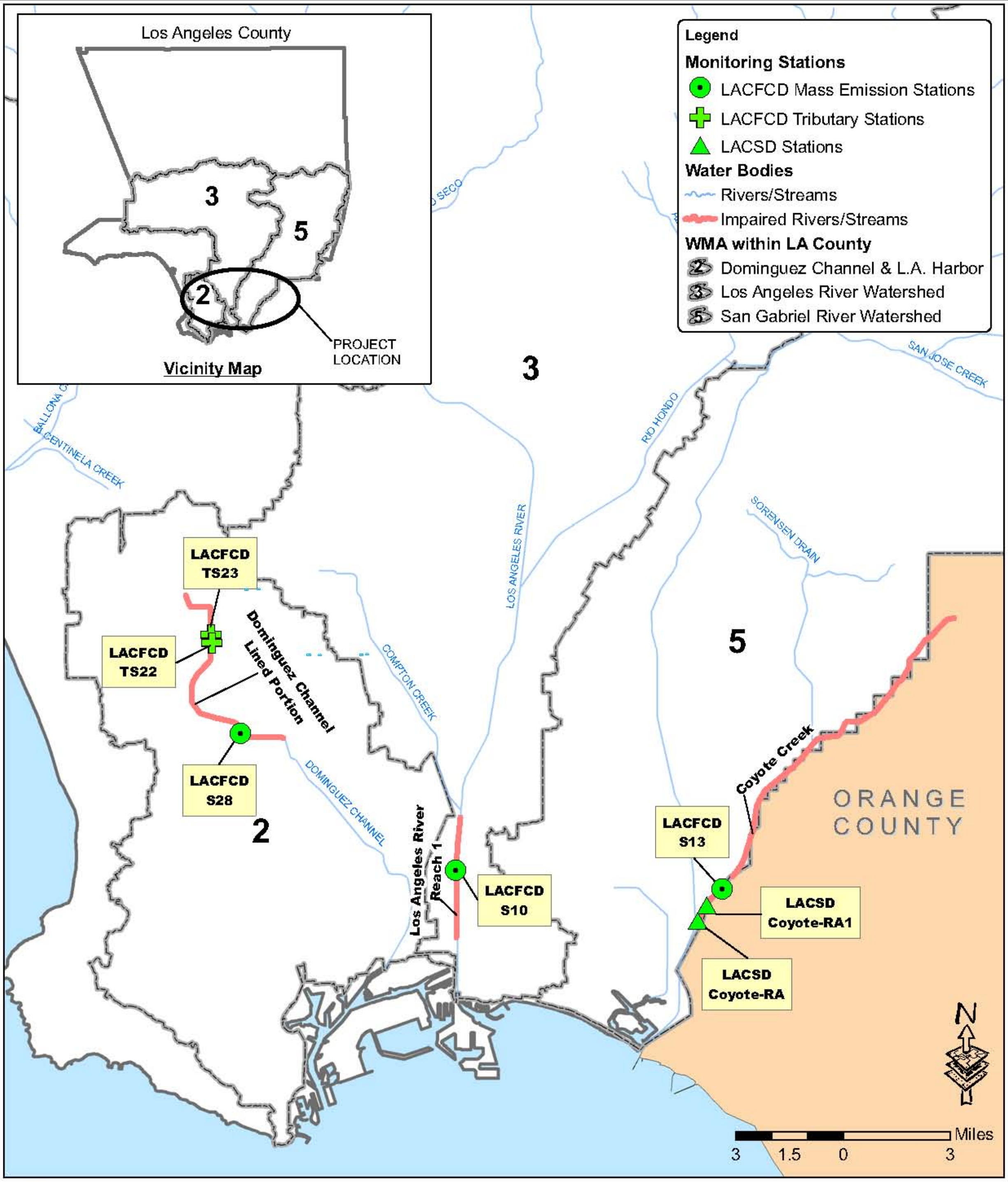
1001 I Street, Sacramento, CA 95814

August 30, 2010

Table of Contents

1. Coyote Creek - Diazinon

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Coyote Creek (see Figure 1). This waterbody reach is concrete-lined channel.
Pollutant	Diazinon
Year First Listed and Evidences Used for the Listing	This waterbodypollutant was initially placed on the 303(d) list in 2006. The evidence used for the original listing indicates that two out of 20 samples of available data exceeded the California Department of Fish and Game (DFG) freshwater criteria for diazinon. No additional information was used at the time of first listing. The analysis for the most recent 2008 listing shows that seven out of 79 shows exceedance of the Chronic Criteria and six out of 79 shows exceedance of the acute criteria.
Applicable Water Quality Objectives	The DFG lists an acute and chronic hazard assessment criterion of 0.16 ug/L and 0.10 ug/L, respectively, for diazinon.
Changes in the Watershed since the First Listing	The U.S. Environmental Protection Agency (EPA) has banned the sales of diazinon in 2005. The data collected for Coyote Creek since 2005 shows the effectiveness of the EPA policy in removing diazinon from receiving water.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	<u>LACFCD station (S13):</u> Los Angeles County Flood Control District's (LACFCD) Mass Emission Monitoring Station (S13) is located on Coyote Creek below Spring Street in the lower San Gabriel River Watershed (see Figure 1). Since the last data solicitation, additional 24 samples were collected between September 2007 and March 2010 at S13 in accordance with the Los Angeles County MS4 permit monitoring program. There were zero exceedances during this period. <u>LACSD Stations (RA1, RA):</u> the Sanitation Districts of Los Angeles County (LACSD) conducted sampling in two receiving water monitoring stations: station <u>RA1</u> located upstream of discharge from Long Beach Water Reclamation Plant and station <u>RA</u> located downstream of discharge from Long Beach Water Reclamation Plant (see Figure 1).
Data Analysis and Justification for de-listing	Of the total 68 samples collected by the LACFCD at S13 from October 2000 through March 2010, there were five exceedances out of 29 samples before the 2005 sales ban (Pre-EPA Ban), and only one out of 39 samples exceeded the diazinon criteria after the sales ban (Post-EPA Ban). The last diazinon exceedance at station S13 was observed on April 7, 2007. Of the total 52 samples collected by the LACSD at RA1 and RA stations, there were three exceedances out of five samples during the pre-EPA ban, while only one exceedance out of 43 samples during the post-EPA ban (see Table 1). The last exceedance of diazinon at these stations was observed on July 18, 2005. In summary, there were 8 exceedances out of 34 samples pre-EPA ban, while there were only 2 exceedances out of 82 samples post-EPA ban. This shows that the EPA policy is very effective in eliminating diazinon from Coyote Creek, and the waterbody has attained its water quality objectives. All supporting data is summarized in Table 1.
Conclusions and Recommendation	After the EPA sales ban of diazinon, Coyote Creek is meeting section 4.1 of the State Listing Policy and should be removed from the 303(d) list.



Map Showing Dominguez Channel Lined Portion, Los Angeles River Reach 1, Coyote Creek and Associated Monitoring Stations

Figure 1

PUBLIC WORKS

July 27, 2010

Table 1. Summary of Diazinon Data in Coyote Creek

	LACFCD	LACSD	Total
Pre-EPA Ban			
Number of Exceedance	5	3	8
Number of Sample	29	5	34
Average of Result (ug/L)	0.06	0.17	0.08
Minimum of Result (ug/L)	0.005	0.05	0.005
Maximum of Result (ug/L)	0.49	0.39	0.49
Water Quality Objectives (ug/L)	0.1	0.1	0.1
Start Date	10/12/2000	07/12/2004	10/12/2000
End Date	12/05/2004	10/04/2004	12/05/2004
Post-EPA Ban			
Number of Exceedance	1	1	2
Number of Sample	39	43	82
Average of Result (ug/L)	0.01	0.05	0.03
Minimum of Result (ug/L)	0.003	0.05	0.003
Maximum of Result (ug/L)	0.147	0.19	0.19
Water Quality Objectives (ug/L)	0.1	0.1	0.1
Start Date	01/07/2005	01/17/2005	01/07/2005
End Date	03/23/2010	02/16/2010	03/23/2010
Total Summary			
Total Number of Exceedance	6	4	10
Total Number of Sample	68	48	116
Total Average of Result (ug/L)	0.03	0.07	0.04
Total Minimum of Result (ug/L)	0.003	0.05	0.003
Total Maximum of Result (ug/L)	0.49	0.39	0.49
Water Quality Objectives (ug/L)	0.1	0.1	0.1
Total Start Date	10/12/2000	07/12/2004	10/12/2000
Total End Date	03/23/2010	02/16/2010	03/23/2010

EPA=Environmental Protection Agency

LACFCD=Los Angeles County Flood Control District

LACSD=Los Angeles County Sanitation Districts

2. Dominguez Channel (Lined Portion Above Vermont Ave.) - Diazinon

Watershed	Dominguez Channel Watershed, Los Angeles County
Waterbody Reach	Dominguez Channel Lined Porting Above Vermont Ave. (see Figure 1 for the location of this particular reach). This waterbody reach is concrete-lined channel.
Pollutant	Diazinon
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was initially placed on the 303(d) list in 2008. The evidence used for the listing indicates that five out of 31 samples collected between January 2002 and April 2007 exceeded the California Department of Fish and Game (DFG) freshwater criteria for diazinon.
Applicable Water Quality Objectives	The DFG lists an acute and chronic hazard assessment criterion of 0.16 ug/L and 0.10 ug/L, respectively, for diazinon.
Changes in the Watershed since the First Listing	The U.S. Environmental Protection Agency (EPA) has banned the sales of diazinon in 2005. Water quality improvement BMPs has been implemented as part NPDES permits. Additional data has been collected. The data collected for Coyote Creek since 2005 shows the effectiveness of the EPA policy in removing diazinon from receiving water.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	<u>LACFCD station (S28):</u> Los Angeles County Flood Control District's (LACFCD) Mass Emission Monitoring Station (S28) is located on Dominguez Channel and Artesia Boulevard in the City of Torrance (see Figure 1). Since the last data solicitation, additional 24 samples were collected between September 2007 and March 2010 at S28 in accordance with the Los Angeles County MS4 permit monitoring program. There were zero exceedances during this period. <u>LACFCD Tributary Stations (TS22, TS23):</u> LACFCD's tributary monitoring stations, TS22 and TS23, are located near a confluent to Dominguez Channel and located approximately 2.5 miles upstream of S28 (see Figure 1). 36 samples were collected at these two stations between November 2008 and March 2010.
Data Analysis and Justification for de-listing	Of the total 55 samples collected by the LACFCD at S28 from October 2000 through March 2010, there were three exceedances out of 16 samples before the 2005 sales ban (Pre-EPA Ban), and only two out of 39 samples exceeded the diazinon criteria after the sales ban (Post-EPA Ban). The last diazinon exceedance at station S28 was observed on October 17, 2005. Of the total 36 samples collected by the LACFCD at TS22 and TS23 stations, there were zero exceedances at these stations since the LAFCD started monitoring in November 2008. In summary, there were three exceedances out of 16 samples during the pre-EPA ban, while there were only 2 exceedances out of 75 samples during the post-EPA ban. This shows that the EPA policy is very effective in eliminating diazinon from Dominguez Channel, and the waterbody has attained its water quality objectives. All supporting data is summarized in Table 2.
Conclusions and Recommendation	After the EPA sales ban of diazinon, Dominguez Channel Lined Portion is meeting section 4.1 of the State Listing Policy for diazinon and should be removed from the 303(d) list.

Table 2. Summary of Data in Dominguez Channel lined portion above Vermont Ave.

	S28	TS22*	TS23*	Total
Pre-EPA Ban				
Number of Exceedance	3			3
Number of Samples	16			16
Max of Result (ug/L)	0.415			0.415
Min of Result (ug/L)	0.003			0.003
Reporting Limit (ug/L)	0.01			0.01
Water Quality Objectives (ug/L)	0.1			0.1
Start Date	01/28/2002			01/28/2002
End Date	12/05/2004			12/05/2004
Post-EPA Ban				
Number of Exceedance	2	0	0	2
Number of Samples	39	18	18	75
Max of Result (ug/L)	0.96	0.003	0.003	0.96
Min of Result (ug/L)	0.003	0.003	0.003	0.003
Reporting Limit (ug/L)	0.01	0.01	0.01	0.01
Water Quality Objectives (ug/L)	0.1	0.1	0.1	0.1
Start Date	01/07/2005	11/04/2008	11/04/2008	01/07/2005
End Date	03/23/2010	03/23/2010	03/23/2010	03/23/2010
Total Summary				
Total Number of Exceedance	5	0	0	5
Total Number of Samples	55	18	18	91
Total Max of Result (ug/L)	0.96	0.003	0.003	0.96
Total Min of Result (ug/L)	0.003	0.003	0.003	0.003
Total Reporting Limit (ug/L)	0.01	0.01	0.01	0.01
Water Quality Objectives (ug/L)	0.1	0.1	0.1	0.1
Total Start Date	01/28/2002	11/04/2008	11/04/2008	01/28/2002
Total End Date	03/23/2010	03/23/2010	03/23/2010	03/23/2010

EPA=Environmental Protection Agency

* Monitoring at tributary stations were activated on October 2008.

3. Los Angeles River Reach 1 - Diazinon

Watershed	Los Angeles River Watershed, Los Angeles County
Waterbody Reach	Los Angeles River Reach 1 (see Figure 1). This waterbody reach is a concrete-lined channel.
Pollutant	Diazinon
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 2006. The evidence used for the listing indicates that two out of 22 samples collected from October 2000 through April 2003 exceeded the California Department of Fish and Game (DFG) freshwater criteria for diazinon. The data submitted by Los Angeles County Flood Control District (LACFCD) for the 2008 data solicitation was not evaluated.
Applicable Water Quality Objectives	The DFG lists an acute and chronic hazard assessment criterion of 0.16 ug/L and 0.10 ug/L, respectively, for diazinon.
Changes in the Watershed since the First Listing	The U.S. Environmental Protection Agency (EPA) has banned the sales of diazinon in 2005. Water quality improvement BMPs has been implemented as part NPDES permits. Additional data has been collected. The data collected for Los Angeles River Reach 1 since 2005 shows the effectiveness of the EPA policy in removing diazinon from receiving water.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	LACFCD station (S10): LACFCD's Mass Emission Monitoring Station (S10) is located on Los Angeles River between Willow Street and Wardlow Road in the City of Long Beach (see Figure 1). 46 samples were collected between October 2003 and March 2010 at S10 in accordance with the Los Angeles County MS4 permit monitoring program. There were zero exceedances during this period.
Data Analysis and Justification for de-listing	Of the total 67 samples collected by the LACFCD at S10 from October 2000 through March 2010, there were two exceedances out of 31 samples before the 2005 sales ban (Pre-EPA Ban), and zero out of 36 samples exceeded the diazinon criteria after the sales ban (Post-EPA Ban). The last diazinon exceedance at S10 was observed on February 11, 2003. This shows that the EPA policy is very effective in eliminating diazinon from Los Angeles River Reach 1, and the waterbody has attained its water quality objectives. All supporting data is summarized in Table 3.
Conclusions and Recommendation	Los Angeles River Reach 1 is meeting section 4.1 of the State Listing Policy for diazinon and should be removed from the 303(d) list.

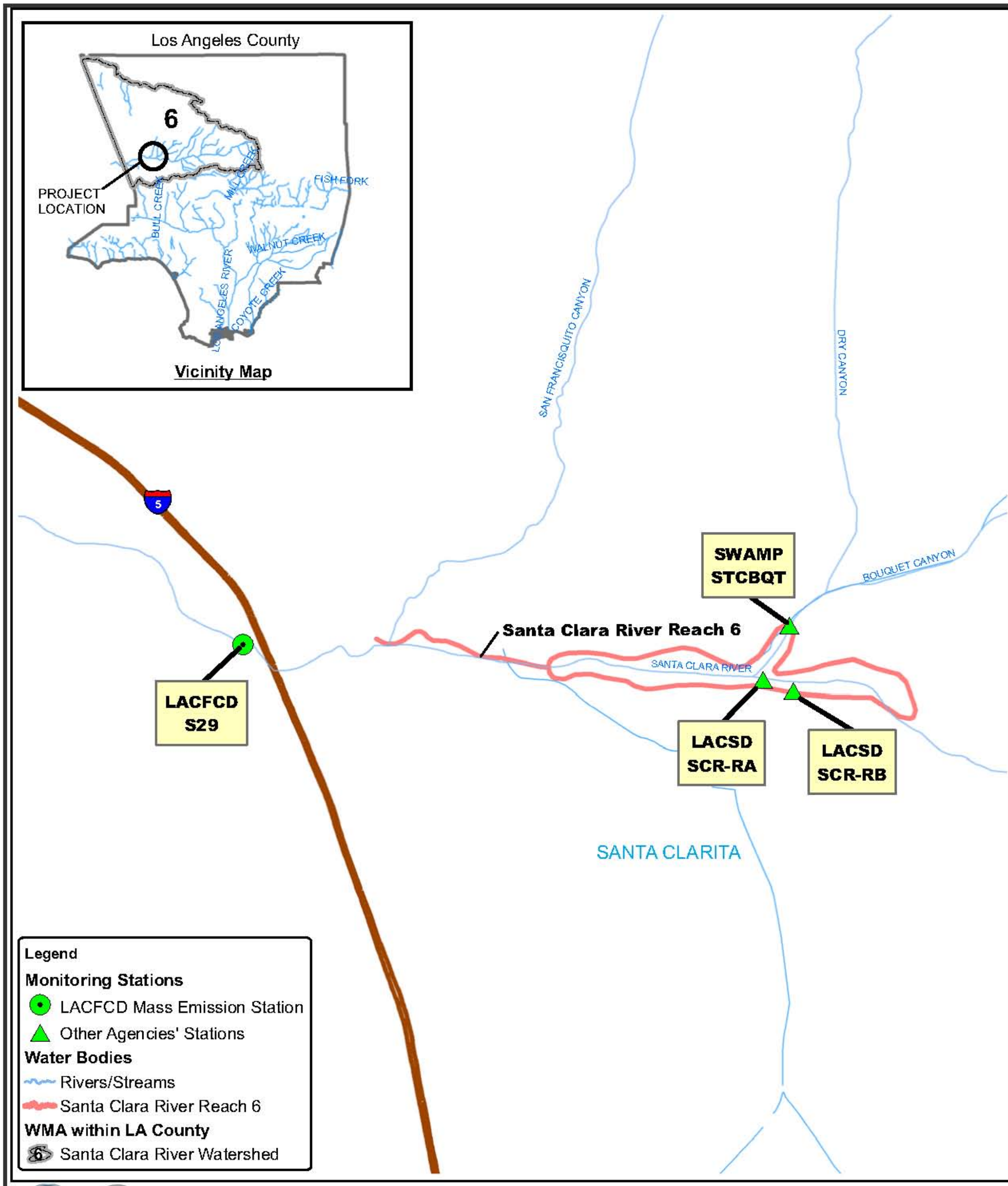
Table 3. Summary of Diazinon Data in Los Angeles River Reach 1

	S10
Pre-EPA Ban	
Number of Exceedance	2
Number of Sample	31
Average of Result (ug/L)	0.024
Max of Result (ug/L)	0.179
Min of Result (ug/L)	0.003
Water Quality Objectives (ug/L)	0.1
Start Date	10/12/2000
End Date	12/05/2004
Post-EPA Ban	
Number of Exceedance	0
Number of Sample	36
Average of Result (ug/L)	0.003
Max of Result (ug/L)	0.003
Min of Result (ug/L)	0.003
Water Quality Objectives (ug/L)	0.1
Start Date	01/07/2005
End Date	03/23/2010
Total Summary	
Total Number of Exceedance	2
Total Number of Sample	67
Total Average of Result (ug/L)	0.013
Total Max of Result (ug/L)	0.179
Total Min of Result (ug/L)	0.003
Water Quality Objectives	0.1
Total Start Date	10/12/2000
Total End Date	03/23/2010

EPA=Environmental Protection Agency

4. Santa Clara River Reach 6 - Diazinon

Watershed	Santa Clara River Watershed, Los Angeles County
Waterbody Reach	Santa Clara River Reach 6 (see Figure 2). This waterbody reach is a soft bottom channel.
Pollutant	Diazinon
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 2006. The evidence used for the listing indicates that 28 out of 29 samples collected between October 2001 and May 2003 exceeded the California Department of Fish and Game (CDFG) freshwater criteria for diazinon. In actuality, however, there were 24 samples with 23 exceedances. The data were collected by the Surface Water Ambient Monitoring Program (SWAMP). These data do not satisfy the section 6.1.4 of the Listing Policy because only two data points out of 24 were reported to be in "Compliant with associated QAPP" for the data set.
Applicable Water Quality Objectives	The CDFG lists an acute and chronic hazard assessment criterion of 0.16 ug/L and 0.10 ug/L, respectively, for diazinon.
Changes in the Watershed since the First Listing	The U.S. Environmental Protection Agency (EPA) has banned the sales of diazinon in 2005. Also, water quality improvement BMPs has been implemented as part NPDES permits and additional data has been collected. The data collected for Santa Clara River Reach 6 since 2005 shows the effectiveness of the EPA policy in removing diazinon from receiving water.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	LACFCD station (S29): Los Angeles County Flood Control District's (LACFCD) Mass Emission Monitoring Station (S29) is located on Santa Clara River (see Figure 2). 48 samples were collected between October 2002 and March 2010 at S29 in accordance with the Los Angeles County MS4 permit. LACSD Stations (RA, RB): the Sanitation Districts of Los Angeles County (LACSD) conducted sampling at two receiving water monitoring stations: station RA located 300 feet upstream of discharge from Saugus Water Reclamation Plant and station RB located 100 feet downstream of discharge from Saugus Water Reclamation Plant (see Figure 2).
Data Analysis and Justification for de-listing	Of the total 48 samples collected by the LACFCD at S29 from October 2002 through March 2010, there were three exceedances out of 13 samples before the 2005 sales ban (Pre-EPA Ban), and only one out of 35 samples exceeded the diazinon criteria after the sales ban (Post-EPA Ban). The last diazinon exceedance at S29 was observed on January 14, 2006. Of the total 27 samples collected by the LACSD at RA and RB stations, there were only one exceedance out of 25 samples during the post-EPA ban. The last exceedance of diazinon at these stations was observed on Februray 7, 2005. In summary, there were three exceedances out of 15 samples during the pre-EPA ban, while there were only two exceedances out of 60 samples during the post-EPA ban. All supporting data is summarized in Table 4. This shows that the EPA policy is very effective in eliminating diazinon from Santa Clara River Reach 6, and the waterbody has attained its water quality objectives.
Conclusions and Recommedation	After the EPA sales ban of diazinon, Santa Clara River Reach 6 is meeting section 4.1 of the State Listing Policy for diazinon and should be removed from the 303(d) list.



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Map Showing Santa Clara River Reach 6 and Associated Monitoring Stations

Figure 2

P:\wmpub\DATAMANAGEMENT\wchu\PDF_Maps\SCR Reach 6

July 27, 2010

Table 4. Summary of Diazinon Data in Santa Clara River Reach 6

	Diazinon			
Pre-EPA Ban	SWAMP*	LACFCD	LACSD	Total
Number of Exceedance	23	3	0	26
Number of Sample	24	13	2	39
Average of Result (ug/L)	1.94	0.10	0.05	1.23
Minimum of Result (ug/L)	0.054	0.003	0.05	0.003
Maximum of Result (ug/L)	6.7	0.43	0.05	6.7
Water Quality Objectives (ug/L)	0.1	0.1	0.1	0.1
Start Date	10/31/2001	10/10/2002	11/01/2004	10/31/2001
End Date	05/17/2003	10/26/2004	12/22/2004	12/22/2004
Post-EPA Ban				
Number of Exceedance		1	1	2
Number of Sample		35	25	60
Average of Result (ug/L)		0.01	0.07	0.03
Minimum of Result (ug/L)		0.003	0.05	0.003
Maximum of Result (ug/L)		0.11	0.51	0.51
Water Quality Objectives (ug/L)		0.1	0.1	0.1
Start Date		01/07/2005	01/17/2005	01/07/2005
End Date		03/23/2010	01/08/2010	03/23/2010
Total Summary				
Total Number of Exceedance	23	4	1	28
Total Number of Sample	24	48	27	99
Total Average of Result (ug/L)	1.94	0.03	0.07	0.51
Total Minimum of Result (ug/L)	0.054	0.003	0.05	0.003
Total Maximum of Result (ug/L)	6.7	0.43	0.51	6.7
Water Quality Objectives (ug/L)	0.1	0.1	0.1	0.1
Total Start Date	10/31/2001	10/10/2002	11/01/2004	10/31/2001
Total End Date	05/17/2003	03/23/2010	01/08/2010	03/23/2010

EPA=Environmental Protection Agency

LACFCD=Los Angeles County Flood Control District

LACSD=Los Angeles County Sanitation Districts

SWAMP=Surface Water Ambient Monitoring Program

*Data is not found from SWAMP database after May 2003 at this location

5. Santa Clara River Reach 6 - Chlorpyrifos

Watershed	Santa Clara River Watershed, Los Angeles County
Waterbody Reach	Santa Clara River Reach 6 (see Figure 2 for the location of this particular reach). This waterbody reach is a soft bottom channel.
Pollutant	Chlorpyrifos
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 2006. The evidence used for the listing indicates that 10 out of 39 samples collected by SWAMP (10), LACFCD (5) and Newhall Land and Farming Co. (24, unable to locate) between August 2002 and April 2003 exceeded the California Department of Fish and Game (CDFG) freshwater criteria for chlorpyrifos. All exceedances were from SWAMP STCBQT Bouquet Canyon Station (see Figure 2 for locations). The SWAMP data used in here do not satisfy the section 6.1.4 of the Listing Policy because only two data points out of 10 were reported to be in "Compliant with associated QAPP" for the data set.
Applicable Water Quality Objectives	CDFG Aquatic life toxicity one hour average: 0.08 ug/l and 4 day average: 0.05 ug/L.
Changes in the Watershed since the First Listing	The U.S. Environmental Protection Agency (EPA) has banned the sales of chlorpyrifos in 2001. Also, water quality improvement BMPs has been implemented as part NPDES permits and additional data has been collected. The data collected for Santa Clara River Reach 6 by LACFCD and LACSD since 2001 shows the effectiveness of the EPA policy in removing chlorpyrifos from receiving water.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	<u>LACFCD station (S29):</u> Los Angeles Flood Control District's (LACFCD) Mass Emission Monitoring Station (S29) is located on Santa Clara River and the Old Road in Santa Clara (see Figure 2). 48 samples were collected between October 2002 and March 2010 at S29 in accordance with the Los Angeles County MS4 permit monitoring program. <u>LACSD Stations (RB):</u> the Sanitation Districts of Los Angeles County (LACSD) conducted sampling in Santa Clara River in a receiving water monitoring station (RB) located 100 feet downstream of discharge from Saugus Water Reclamation Plant (see Figure 2). Three samples were collected by LACSD between July 2009 and January 2010.
Data Analysis and Justification for de-listing	Of the total 48 samples collected by the LACFCD at S29 from October 2002 through March 2010, there were three samples exceeded the chlorpyrifos criteria after the sales ban (Post-EPA Ban). The last chlorpyrifos exceedance at S29 was observed on January 14, 2006. Of the three samples were collected by the LACSD at station RB, there were zero exceedances. In summary, there were three exceedances out of 51 samples during the post-EPA ban. This shows that the EPA policy is very effective in eliminating chlorpyrifos from Santa Clara River Reach 6, and the waterbody has attained its water quality objectives. All supporting data is summarized in Table 5.
Conclusions and Recommendation	Santa Clara River Reach 6 is meeting section 4.1 of the State Listing Policy for chlorpyrifos and should be removed from the 303(d) list.

Table 5. Summary of Chlorpyrifos Data in Santa Clara River Reach 6

	Chlorpyrifos			
Pre-EPA Ban*	SWAMP	LACFCD	LACSD	Total
Number of Exceedance				
Number of Sample				
Average of Result (ug/L)				
Minimum of Result (ug/L)				
Maximum of Result (ug/L)				
Water Quality Objectives (ug/L)				
Start Date				
End Date				
Post-EPA Ban				
Number of Exceedance	10	3	0	13
Number of Sample	10	48	3	61
Average of Result (ug/L)	0.06	0.15	0.04	0.13
Minimum of Result (ug/L)	0.051	0.02	0.015	0.015
Maximum of Result (ug/L)	0.083	3.02	0.05	3.02
Water Quality Objectives (ug/L)	0.05	0.05	0.05	0.05
Start Date	10/31/2001	10/10/2002	07/06/2009	10/31/2001
End Date	03/03/2003	03/23/2010	01/08/2010	03/23/2010
Total Summary				
Total Number of Exceedance	10	3	0	13
Total Number of Sample	10	48	3	61
Total Average of Result (ug/L)	0.06	0.15	0.04	0.13
Total Minimum of Result (ug/L)	0.051	0.02	0.015	0.015
Total Maximum of Result (ug/L)	0.083	3.02	0.05	3.02
Water Quality Objectives (ug/L)	0.05	0.05	0.05	0.05
Total Start Date	10/31/2001	10/10/2002	07/06/2009	10/31/2001
Total End Date	03/03/2003	03/23/2010	01/08/2010	03/23/2010

EPA=Environmental Protection Agency

LACFCD=Los Angeles County Flood Control District

LACSD=Los Angeles County Sanitation Districts

SWAMP=Surface Water Ambient Monitoring Program

*Data was not collected before the EPA ban in 2001

6. Santa Clara River Reach 6 - Copper

Watershed	Santa Clara River Watershed, Los Angeles County
Waterbody Reach	Santa Clara River Reach 6 (see Figure 2 for the location of this particular reach). This waterbody reach is a soft bottom channel.
Pollutant	Copper
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 2008. The evidence used for the listing indicates that 2 out of 20 samples collected by Ventura County Flood Control District between October 2003 and October 2007 exceeded the California Toxics Rule's (CTR) acute and chronic criteria for copper to protect aquatic life in freshwater for dissolved copper. In actuality, however, these samples were collected by Los Angeles Flood Control District (LACFCD), and there were zero exceedances, which would not qualify section 3.1 of the Listing Policy. Another data used for the listing was 15 samples of total copper concentrations, which was compared to the CTR for dissolved copper, causing one exceedance out of 15 samples while compared to the total copper CTR, there are zero exceedances.
Applicable Water Quality Objectives	The CTR criterion for copper in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	The pollutant was wrongly listed based on the insufficient evidence. Further, water quality improvement BMPs has been implemented as part of NPDES permits and additional data has been collected.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	<u>LACFCD station (S29):</u> LACFCD's Mass Emission Monitoring Station (S29) is located on Santa Clara River at the Old Road (see Figure 2). 6 samples collected between October 2002 to April 2003 at S29 were not used or mistakenly neglected in the analysis during the first listing. Additionally, 20 samples were collected between September 2007 and March 2010 at S29 in accordance with the Los Angeles County MS4 permit monitoring program. <u>LACSD Stations (RA, RB):</u> the Sanitation Districts of Los Angeles County (LACSD) conducted sampling at two receiving water monitoring stations: station <u>RA</u> located 300 feet upstream of discharge from Saugus Water Reclamation Plant and station <u>RB</u> located 100 feet downstream of discharge from Saugus Water Reclamation Plant (see Figure 2). 12 samples were collected between April 2007 and January 2010.
Data Analysis and Justification for de-listing	Of the total 48 samples collected by the LACFCD at S29 from October 2002 through March 2010, there were three exceedances out of 48 samples for dissolved copper. Of the total 27 samples collected by the LACSD at RA and RB stations between July 2004 and January 2010, there were zero exceedances for total copper. In summary, there were three exceedances out of 75 samples collected by LACFCD and LACSD from October 2002 through March 2010. Data is summarized in Table 6. Based on these multiple line of evidence, there is sufficient justification that this waterbody is meeting its water quality objectives.
Conclusions and Recommendation	Santa Clara River Reach 6 is meeting section 4.1 of the State Listing Policy for copper and should be removed from the 303(d) list.

Table 6. Summary of Copper Data in Santa Clara River Reach 6

		Copper	
		Dissolved (ug/L)	Total (ug/L)
LACFCD*			
New Data	Number of Exceedance	1	
	Number of Sample	6	
	Average of Result	5.39	
	Minimum of Result	2.55	
	Maximum of Result	8.39	
	Start Date	10/10/2002	
	End Date	10/28/2003	
Ref 2720	Number of Exceedance	2	
	Number of Sample	22	
	Average of Result	6.26	
	Minimum of Result	2.19	
	Maximum of Result	22.6	
	Start Date	10/31/2003	
	End Date	04/02/2007	
New Data	Number of Exceedance	0	
	Number of Sample	20	
	Average of Result	4.09	
	Minimum of Result	0.5	
	Maximum of Result	11.5	
	Start Date	09/21/2007	
	End Date	03/23/2010	
LACSD**			
Ref 2657	Number of Exceedance		0
	Number of Sample		15
	Average of Result		6.76
	Minimum of Result		0.8
	Maximum of Result		29
	Start Date		07/14/2004
	End Date		02/14/2007
New Data	Number of Exceedance		0
	Number of Sample		12
	Average of Result		7.43
	Minimum of Result		4.55
	Maximum of Result		14
	Start Date		04/11/2007
	End Date		01/05/2010
Total Summary			
Total Number of Exceedance		3	0
Total Number of Sample		48	27
Total Average of Result		5.25	7.06
Total Minimum of Result		0.5	0.8
Total Maximum of Result		22.6	29
Total Start Date		10/10/2002	07/14/2004
Total End Date		03/23/2010	01/05/2010

LACFCD=Los Angeles County Flood Control District; LACSD=Los Angeles County Sanitation Districts

*Dissolved fraction data is shown for its appropriateness although total fraction data is also available

**Only total fraction data is available at LACSD stations

7. Santa Clara River Reach 6 - Iron

Watershed	Santa Clara River Watershed, Los Angeles County
Waterbody Reach	Santa Clara River Reach 6 (see Figure 2). This waterbody reach is a soft bottom channel.
Pollutant	Iron
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 2008. The evidence used for the listing indicates that 2 out of 20 samples collected by Ventura County Flood Control District between October 2003 and February 2007 exceeded the U.S. Environmental Protection Agency (EPA) National Recommended Water Quality Criteria for Freshwater Aquatic Life Protection for dissolved iron. In actuality, however, these sampled were collected by Los Angeles Flood Control District (LACFCD), and there were 22 samples. Another data used for the listing was collected in total iron concentrations by the Sanitation Districts of Los Angeles County (LACSD), and there were two exceedances out of 15 samples (instead of referenced 10 samples in the listing).
Applicable Water Quality Objectives	EPA National Recommended Water Quality Criteria for Freshwater Aquatic Life Protection for dissolved iron is 1 mg/L, or 1000 ug/L
Changes in the Watershed since the First Listing	The pollutant was wrongly listed based on the insufficient evidence. Further, water quality improvement BMPs has been implemented as part of NPDES permits and additional data has been collected.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	LACFCD station (S29): LACFCD's Mass Emission Monitoring Station (S29) is located on Santa Clara River at the Old Road (see Figure 2). 5 samples collected between October 2002 to April 2003 at S29 were not used or mistakenly neglected in the analysis during the first listing. Additionally, 21 samples were collected between March 2007 and March 2010 at S29 in accordance with the Los Angeles County MS4 permit monitoring program. LACSD Stations (RA, RB): LACSD conducted sampling at two receiving water monitoring stations: station RA located 300 feet upstream of discharge from Saugus Water Reclamation Plant and station RB located 100 feet downstream of discharge from Saugus Water Reclamation Plant (see Figure 2). 18 samples were collected between April 2007 and March 2010.
Data Analysis and Justification for de-listing	Of the total 48 samples collected by the LACFCD at S29 from October 2002 to March 2010, there were two exceedances for dissolved iron. Of the total 33 samples collected by the LACSD at RA and RB stations, there were two exceedances for total iron. In summary, there were four exceedances out of 81 samples collected by LACFCD and LACSD from October 2002 through March 2010. All Data is summarized in Table 7. Based on these multiple line of evidence, there is sufficient justification that this waterbody is meeting its water quality objectives.
Conclusions and Recommendation	Santa Clara River Reach 6 is meeting section 4.1 of the State Listing Policy for iron and should be removed from the 303(d) list.

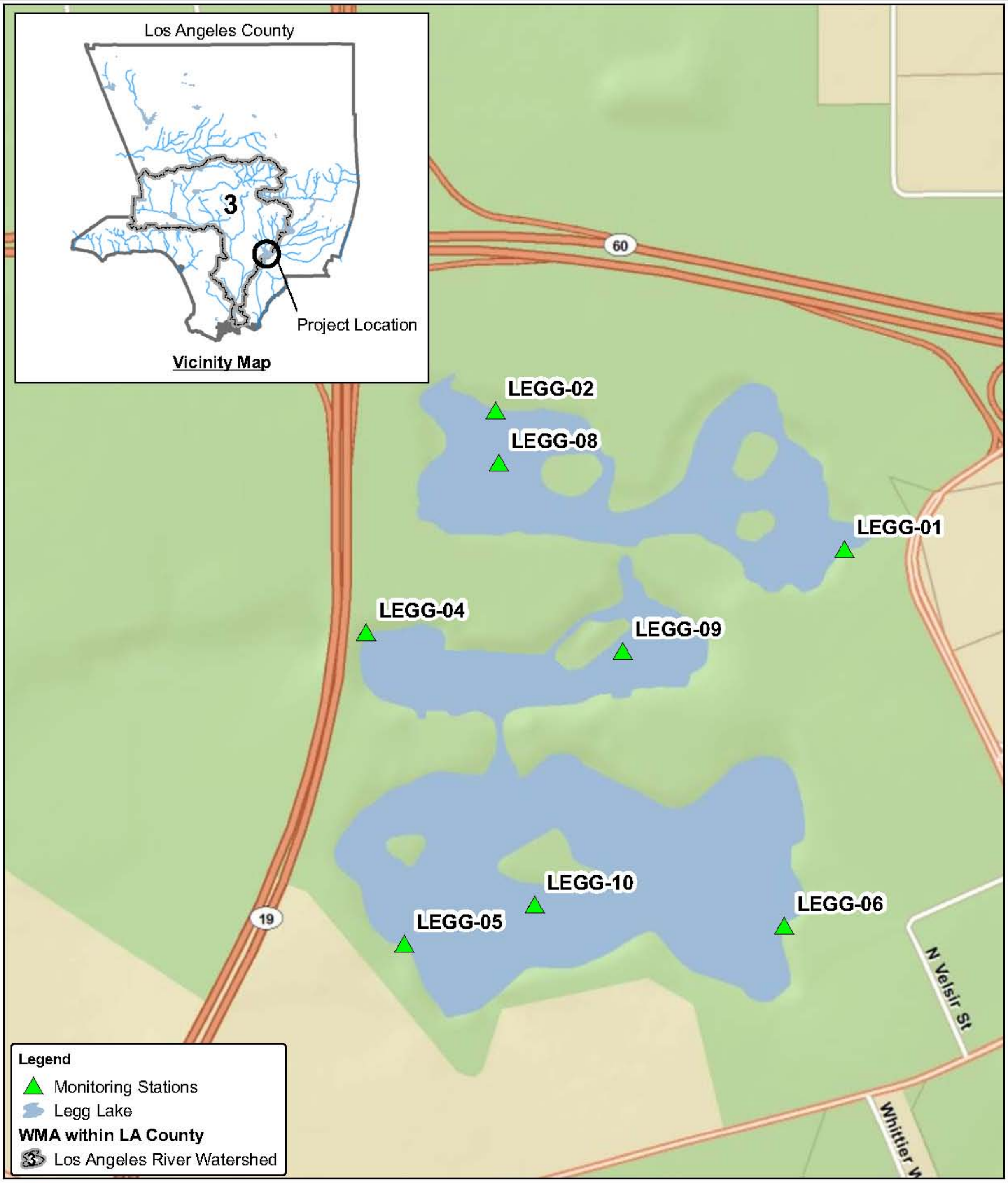
Table 7. Summary of Iron Data in Santa Clara River Reach 6

		Iron	
		Dissolved (ug/L)	Total (ug/L)
LACFCD*			
New Data	Number of Exceedance	0	
	Number of Sample	5	
	Average of Result	190.6	
	Minimum of Result	100	
	Maximum of Result	460	
	Start Date	10/10/2002	
	End Date	04/30/2003	
Ref 2720	Number of Exceedance	2	
	Number of Sample	22	
	Average of Result	454.82	
	Minimum of Result	50	
	Maximum of Result	3635	
	Start Date	10/28/2003	
	End Date	02/22/2007	
New Data	Number of Exceedance	0	
	Number of Sample	21	
	Average of Result	144.43	
	Minimum of Result	50	
	Maximum of Result	434	
	Start Date	04/02/2007	
	End Date	03/23/2010	
LACSD**			
Ref 2657	Number of Exceedance		2
	Number of Sample		15
	Average of Result		4483.80
	Minimum of Result		30
	Maximum of Result		42700
	Start Date		07/14/2004
	End Date		02/14/2007
New Data	Number of Exceedance		0
	Number of Sample		18
	Average of Result		120.94
	Minimum of Result		9
	Maximum of Result		1000
	Start Date		04/11/2007
	End Date		03/16/2010
Total Summary			
Total Number of Exceedance		2	2
Total Number of Sample		48	33
Total Average of Result		291.50	2104.06
Total Minimum of Result		50	9
Total Maximum of Result		3635	42700
Total Start Date		10/10/2002	07/14/2004
Total End Date		03/23/2010	03/16/2010

LACFCD=Los Angeles County Flood Control District; LACSD=Los Angeles County Sanitation Districts
*Dissolved fraction data is shown for its appropriateness although total fraction data is also available
**Only total fraction data is available at LACSD stations

8. Legg Lake - Ammonia

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Legg Lake (see Figure 3). Legg Lakes consist of three interconnected lakes. Its watershed is approximately 1.8 square miles.
Pollutant	Ammonia
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	As defined in the Basin Plan, ammonia criteria is a function of pH and temperature, and are expressed as 1-hr, 4-day, and 30-day averages.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated ammonia impairment at the time of listing. Non-structural BMPs has been implemented and more data has been collected since then as part of the NPDES permits.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), the Regional Board and Los Angeles County Flood Control District (LACFCD) collected 41 ammonia samples between May 2007 and July 2009. There were eight sampling locations (LEGG-1, LEGG-2, LEGG-4, LEGG-5, LEGG-6, LEGG-8, LEGG-9, and LEGG-10) distributed throughout the lakes (see Figure 3).
Data Analysis and Justification for de-listing	Of the 41 samples collected between May 2007 and July 2009, there was only one exceedance for ammonia. Accordingly, during the development of the Los Angeles Lakes Total Maximum Daily Loads (TMDL), EPA concluded that Legg Lake meets ammonia water quality standards and recommended that it be removed from the 303(d) list. Supporting data is summarized in Table 8.
Conclusions and Recommendation	Legg Lake is meeting section 4.1 of the State Listing Policy for ammonia and should be removed from the 303(d) list. This concurs with EPA's findings and recommendations for Legg Lake.



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Map Showing Legg Lake and Associated Monitoring Stations

Figure 3

0.1 0.05 0 0.1 Miles

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Table 8. Summary of Ammonia Data in Legg Lakes

	Ammonia (mg-N/L)
LACFCD	
Number of Exceedances	1
Number of Samples	28
Average Result	0.32
Minimum Result	0.01
Maximum Result	5.76
Start Date	05/18/2007
End Date	07/05/2007
Regional Board	
Number of Exceedances	0
Number of Samples	13
Average Result	0.04
Minimum Result	0.03
Maximum Result	0.07
Start Date	02/03/2009
End Date	07/18/2009
Total Summary	
Total Number of Exceedances	1
Total Number of Samples	41
Total Average Result	0.23
Total Minimum Result	0.01
Total Maximum Result	5.76
Total Start Date	05/18/2007
Total End Date	07/18/2009

LACFCD=Los Angeles County Flood Control District

9. Legg Lake - Copper

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Legg Lake (see Figure 3). Legg Lakes consist of three interconnected lakes. Its watershed is approximately 1.8 square miles.
Pollutant	Copper
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	The California Toxics Rule (CTR) criterion for copper in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated copper impairment at the time of listing. Non-structural BMPs has been implemented and more data has been collected since then as part of the NPDES permits.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), the Regional Board and Los Angeles County Flood Control District (LACFCD) collected 33 copper samples between February 2009 and February 2010. There were eight sampling locations (LEGG-1, LEGG-2, LEGG-4, LEGG-5, LEGG-6, LEGG-8, LEGG-9, and LEGG-10) distributed throughout the lakes (see Figure 3).
Data Analysis and Justification for de-listing	Of the 33 samples collected between February 2009 and February 2010, there were no exceedances of copper. Accordingly, during the development of the Los Angeles Lakes Total Maximum Daily Loads (TMDL), EPA concluded that Legg Lake meets copper water quality standards (i.e., unimpaired) and recommended that it be removed from the 303(d) list. Supporting data is summarized in Table 9.
Conclusions and Recommendation	Legg Lake is meeting section 4.1 of the State Listing Policy for copper and should be removed from the 303(d) list. This concurs with EPA's findings and recommendations for Legg Lake.

Table 9. Summary of Copper Data in Legg Lakes

	Copper (μg/L)
EPA	
Number of Exceedances	0
Number of Samples	6
Average Result	1.34
Minimum Result	0.60
Maximum Result	2.30
Start Date	12/16/2009
End Date	12/16/2009
LACFCD	
Number of Exceedances	0
Number of Samples	18
Average Result	1.03
Minimum Result	0.40
Maximum Result	3.45
Start Date	12/08/2009
End Date	02/17/2010
Regional Board	
Number of Exceedances	0
Number of Samples	3
Average Result	1.18
Minimum Result	0.90
Maximum Result	1.55
Start Date	02/03/2009
End Date	02/03/2009
Regional Board/EPA	
Number of Exceedances	0
Number of Samples	6
Average Result	0.54
Minimum Result	0.50
Maximum Result	0.60
Start Date	07/14/2009
End Date	07/14/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	33
Total Average Result	1.01
Total Minimum Result	0.40
Total Maximum Result	3.45
Total Start Date	02/03/2009
Total End Date	02/17/2010

EPA=Environmental Protection Agency
LACFCD=Los Angeles County Flood Control District

10. Legg Lake - Lead

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Legg Lake (see Figure 3). Legg Lakes consist of three interconnected lakes. Its watershed is approximately 1.8 square miles.
Pollutant	Lead
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	The California Toxics Rule (CTR) criterion for lead in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated lead impairment at the time of listing. Non-structural BMPs has been implemented and more data has been collected since then as part of the NPDES permits.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), the Regional Board and Los Angeles County Flood Control District (LACFCD) collected 33 lead samples between February 2009 and February 2010. There were eight sampling locations (LEGG-1, LEGG-2, LEGG-4, LEGG-5, LEGG-6, LEGG-8, LEGG-9, and LEGG-10) distributed throughout the lakes (see Figure 3).
Data Analysis and Justification for de-listing	Of the 33 samples collected between February 2009 and February 2010, there were no exceedances of lead. Accordingly, during the development of the Los Angeles Lakes Total Maximum Daily Loads (TMDL), EPA concluded that Legg Lake meets lead water quality standards (i.e., unimpaired) and recommended that it be removed from the 303(d) list. Supporting data is summarized in Table 10.
Conclusions and Recommendation	Legg Lake is meeting section 4.1 of the State Listing Policy for lead and should be removed from the 303(d) list. This concurs with EPA's findings and recommendations for Legg Lake.

Table 10. Summary of Lead Data in Legg Lakes

	Lead (µg/L)
EPA	
Number of Exceedances	0
Number of Samples	6
Average Result	0.15
Minimum Result	0.12
Maximum Result	0.18
Start Date	12/16/2009
End Date	12/16/2009
LACFCD	
Number of Exceedances	0
Number of Samples	18
Average Result	0.08
Minimum Result	0.05
Maximum Result	0.165
Start Date	12/08/2009
End Date	02/17/2010
Regional Board	
Number of Exceedances	0
Number of Samples	3
Average Result	0.15
Minimum Result	0.05
Maximum Result	0.21
Start Date	02/03/2009
End Date	02/03/2009
Regional Board/EPA	
Number of Exceedances	0
Number of Samples	6
Average Result	0.06
Minimum Result	0.05
Maximum Result	0.09
Start Date	07/14/2009
End Date	07/14/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	33
Total Average Result	0.10
Total Minimum Result	0.05
Total Maximum Result	0.21
Total Start Date	02/03/2009
Total End Date	02/17/2010

EPA=Environmental Protection Agency
LACFCD=Los Angeles County Flood Control District

11. Peck Road Park Lake - Lead

Watershed	Los Angeles River Watershed, Los Angeles County
Waterbody Reach	Peck Road Park Lake (see Figure 4). The Peck Road Park Lake is in the City of Arcadia.
Pollutant	Lead
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	The California Toxics Rule (CTR) criterion for lead in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated lead impairment at the time of listing. Non-structural BMPs has been implemented and more data has been collected since then as part of the NPDES permits.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), the Regional Board and Los Angeles County Flood Control District (LACFCD) collected 26 lead samples between December 2009 and February 2010. There were five sampling locations (PRPL-8, PRPL-9, PRPL-10, PRPL-11, and PRPL-11B) distributed throughout the lake (see Figure 4).
Data Analysis and Justification for de-listing	Of the 26 samples collected between December 2008 and February 2010, there were zero exceedances. Accordingly, during the development of the Los Angeles Lakes Total Maximum Daily Loads (TMDL), EPA concluded that Legg Lake meets lead water quality standards and recommended that it be removed from the 303(d) list. Supporting data is summarized in Table 11.
Conclusions and Recommendation	Peck Road Park Lake is meeting section 4.1 of the State Listing Policy for lead and should be removed from the 303(d) list. This finding and recommendation concurs with EPA's.

Map Showing Peck Road Park Lake and Associated Monitoring Stations

Figure 4

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Table 11. Summary of Lead Data in Peck Road Park Lake

	Lead (µg/L)
Regional Board/EPA	
Number of Exceedances	0
Number of Samples	6
Average Result	0.16
Minimum Result	0.05
Maximum Result	0.33
Start Date	12/11/2008
End Date	08/05/2009
EPA/LACFCD	
Number of Exceedances	0
Number of Samples	4
Average Result	0.26
Minimum Result	0.05
Maximum Result	0.61
Start Date	11/16/2009
End Date	11/16/2009
LACFCD	
Number of Exceedances	0
Number of Samples	12
Average Result	0.29
Minimum Result	0.05
Maximum Result	1.05
Start Date	12/08/2009
End Date	02/17/2010
EPA	
Number of Exceedances	0
Number of Samples	4
Average Result	0.22
Minimum Result	0.05
Maximum Result	0.46
Start Date	12/14/2009
End Date	12/14/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	26
Total Average Result	0.24
Total Minimum Result	0.05
Total Maximum Result	1.05
Total Start Date	12/11/2008
Total End Date	02/17/2010

EPA=Environmental Protection Agency
LACFCD=Los Angeles County Flood Control District

12. Peck Road Park Lake - Organic Enrichment/Low Dissolved Oxygen

Watershed	Los Angeles River Watershed, Los Angeles County
Waterbody Reach	Peck Road Park Lake (see Figure 4). The Peck Road Park Lake is located in the City of Arcadia.
Pollutant	Organic Enrichment/Low Dissolved Oxygen (DO)
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	Per the Basin Plan, the mean annual DO concentration target should be > 7 mg/L, and the single sample concentration should be $\geq$ 5 mg/L
Changes in the Watershed since the First Listing	DO results from the above assessment may have not been analyzed with the consideration of lake stratification. Subsequently, the DO impairment was listed based on improper data analysis. Recently more data was collected.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA) and the Los Angeles Regional Board have collected DO samples in 2008 and 2009 at five stations (PRPL-8, PRPL-9, PRPL-10, PRPL-11, PRPL-11B) distributed throughout the lake (see Figure 4). The data was collected as part of the Los Angeles Area Lakes Total Maximum Daily Load (TMDL) development.
Data Analysis and Justification for de-listing	Per the 1994 UC Riverside's Urban Lakes Study (referred in the EPA's draft LA Area Lakes TMDLs), the DO concentrations at depths less than 5 meters were around 7 mg/L during the summer months. This study proves that the lake's DO levels are not in violation of the Basin Plan criteria in the epilimnion (surface water above the thermocline). Sampling by Regional Board in June 2008 shows that the DO in the lake is greater than 9 mg/L in the epilimnion (thermocline at 2 meters). Further, a sampling conducted by EPA and Regional Board in August 2009 shows that the DO in the epilimnion is greater than 8 mg/L. Based on evaluation of historical and recent data during the development of LA Area Lakes TMDL, EPA concluded that "DO levels in the epilimnion are typically greater than 7 mg/L and impairment due to low DO is not evident in either the historic or recent sampling events". Further, EPA concluded that though historical data may show lower DO levels in the deeper waters (which might be the reason for the initial listing), no exceedances have been observed relative to the target depths. Data is summarized in Table 12. In summary, DO results collected for the 1996 assessment did not incorporate the depth/stratification effects into the data analysis which led to wrongly listing the DO impairment for the lake. The recent investigation conducted by EPA concluded that the lake is attaining water quality objectives for DO.
Conclusions and Recommendation	Peck Road Park Lake is meeting section 4.1 of the State Listing Policy for DO and should be removed from the 303(d) list. This finding and recommendation concurs with EPA's.

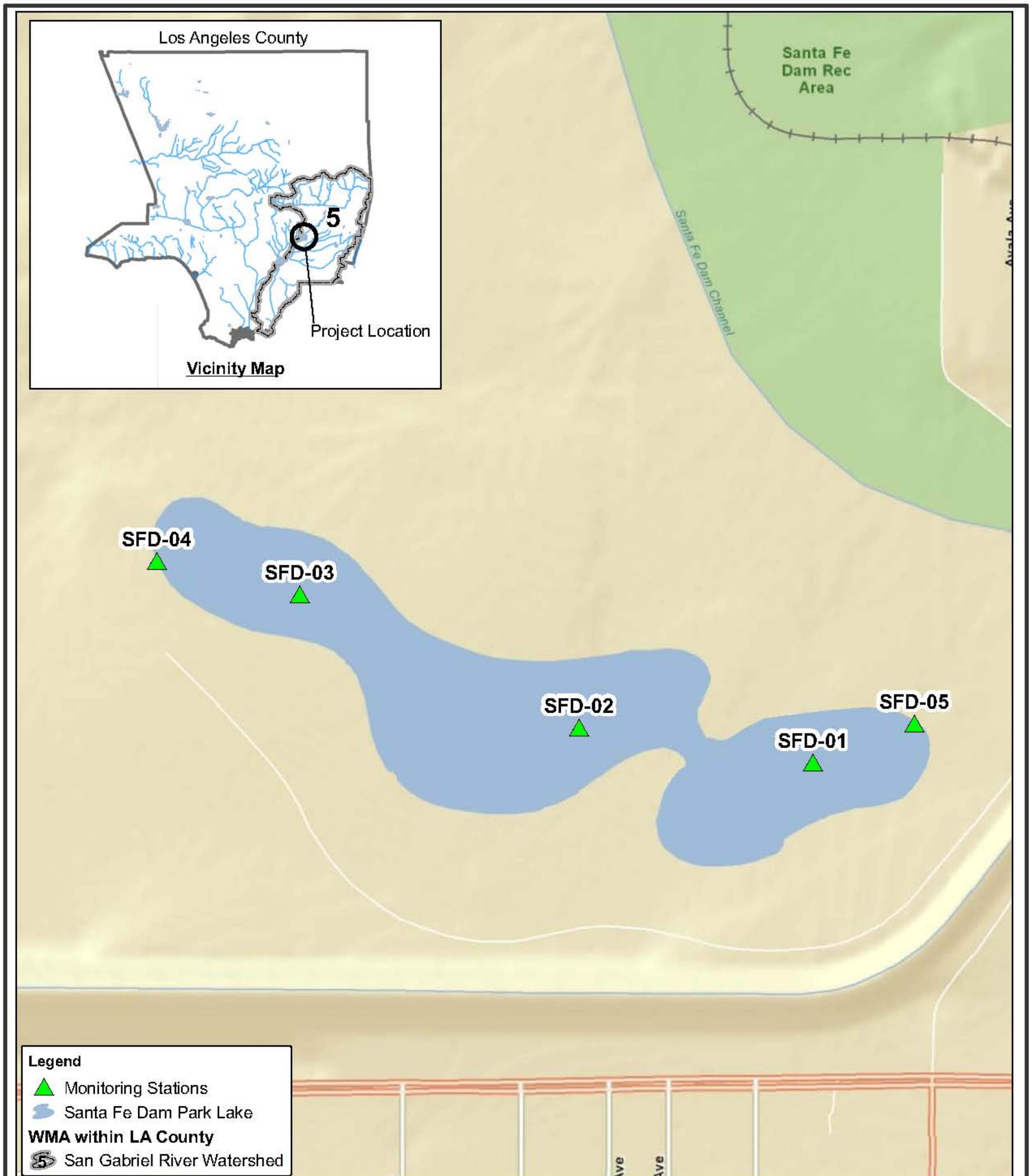
Table 12. Summary of Dissolved Oxygen Data in the Epilimnion in Peck Road Park Lake

	DO (mg/L)
Regional Board/EPA	
Number of Exceedances	0
Number of Samples	13
Average Result	17.54
Minimum Result	9.00
Maximum Result	20.10
Start Date	06/17/2008
End Date	06/17/2008
EPA	
Number of Exceedances	0
Number of Samples	26
Average Result	10.45
Minimum Result	8.84
Maximum Result	12.02
Start Date	08/05/2009
End Date	08/05/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	39
Total Average Result	12.82
Total Minimum Result	8.84
Total Maximum Result	20.10
Total Start Date	06/17/2008
Total End Date	08/05/2009

DO=Dissolved Oxygen
EPA=Environmental Protection Agency

13. Santa Fe Dam Park Lake - Copper

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Santa Fe Dam Park Lake (see Figure 5). This waterbody is a man-made, fully enclosed lake, hydrologically disconnected from the surrounding stream system and has neither stormwater inputs nor outlets.
Pollutant	Copper
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	The California Toxics Rule (CTR) criterion for copper in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated copper impairment at the time of listing. More water quality data has been collected since the first leasting.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), Los Angeles Regional Board, and Los Angeles County Flood Control District (LACFCD) collected 28 samples between March 2009 and February 2010 as part of the Los Angeles Area Lakes Total Maximum Daily Load (TMDL) development. The samples were collected at five stations (SFD-1, SFD-2, SFD 3, SFD-4, and SFD-5) distributed throughout the lake (see Figure 5).
Data Analysis and Justification for de-listing	Of the total 28 samples collected between December 2009 and February 2010, there were zero exceedances. Accordingly, EPA concluded that Santa Fe Dam Park Lake meets the water quality objectives for copper and recommended its removal from the 303(d) List. Supporting data is summarized in Table 13.
Conclusions and Recommendation	Santa Fe Dam Park Lake is meeting section 4.1 of the State Listing Policy for Copper and should be removed from the 303(d) list. This concurs with EPA's findings and recommendation.



Map Showing Santa Fe Dam Park Lake and Associated Monitoring Stations

Figure 5

P:\wmpub\DATA MANAGEMENT\wchu\PDF_Maps\Legg Lake EPA sampling locations\TMDLs

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Table 13. Summary of Copper Data in Santa Fe Dam Park Lake

	Copper (µg/L)
EPA	
Number of Exceedances	0
Number of Samples	8
Average Result	0.81
Minimum Result	0.65
Maximum Result	1.00
Start Date	11/17/2009
End Date	12/14/2009
LACFCD	
Number of Exceedances	0
Number of Samples	12
Average Result	1.05
Minimum Result	0.60
Maximum Result	1.50
Start Date	12/08/2009
End Date	02/17/2010
Regional Board	
Number of Exceedances	0
Number of Samples	8
Average Result	1.58
Minimum Result	1.03
Maximum Result	1.90
Start Date	03/03/2009
End Date	08/03/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	28
Total Average Result	1.13
Total Minimum Result	0.60
Total Maximum Result	1.90
Total Start Date	03/03/2009
Total End Date	02/17/2010

EPA=Environmental Protection Agency
LACFCD=Los Angeles County Flood Control District

14. Santa Fe Dam Park Lake - Lead

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Santa Fe Dam Park Lake (see Figure 5). This waterbody is a man-made, fully enclosed lake, hydrologically disconnected from the surrounding stream system and has neither stormwater inputs nor outlets.
Pollutant	Lead
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	The California Toxics Rule (CTR) criterion for lead in freshwater is hardness dependent for each sample and varies based on the ambient hardness during sampling.
Changes in the Watershed since the First Listing	There was not sufficient data that indicated lead impairment at the time of listing. More water quality data has been conducted since the first listing.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), Los Angeles Regional Board, and Los Angeles County Flood Control District (LACFCD) collected 28 samples between March 2009 and February 2010 as part of the Los Angeles Area Lakes Total Maximum Daily Load (TMDL) development. The samples were collected at five stations (SFD-1, SFD-2, SFD 3, SFD-4, and SFD-5) distributed throughout the lake (see Figure 5).
Data Analysis and Justification for de-listing	Of the total 28 samples collected between December 2009 and February 2010, there were zero exceedances. Accordingly, EPA concluded that Santa Fe Dam Park Lake meets the water quality objectives for lead and recommended its removal from the 303(d) List. Supporting data is summarized in Table 14.
Conclusions and Recommendation	Santa Fe Dam Park Lake is meeting section 4.1 of the State Listing Policy for lead and should be removed from the 303(d) list. This concurs with EPA's findings and recommendation.

Table 14. Summary of Lead Data in Santa Fe Dam Park Lake

	Lead (µg/L)
EPA	
Number of Exceedances	0
Number of Samples	8
Average Result	0.05
Minimum Result	0.05
Maximum Result	0.05
Start Date	11/17/2009
End Date	12/14/2009
LACFCD	
Number of Exceedances	0
Number of Samples	12
Average Result	0.05
Minimum Result	0.05
Maximum Result	0.07
Start Date	12/08/2009
End Date	02/17/2010
Regional Board	
Number of Exceedances	0
Number of Samples	8
Average Result	0.06
Minimum Result	0.05
Maximum Result	0.10
Start Date	03/03/2009
End Date	08/03/2009
Total Summary	
Total Number of Exceedances	0
Total Number of Samples	28
Total Average Result	0.05
Total Minimum Result	0.05
Total Maximum Result	0.10
Total Start Date	03/03/2009
Total End Date	02/17/2010

EPA=Environmental Protection Agency
LACFCD=Los Angeles County Flood Control District

15. Santa Fe Dam Park Lake - pH

Watershed	San Gabriel River Watershed, Los Angeles County
Waterbody Reach	Santa Fe Dam Park Lake (see Figure 5). This waterbody is a man-made, fully nclosed lake, hydrologically disconnected from the surrounding stream system and has neither stormwater inputs nor outlets.
Pollutant	pH
Year First Listed and Evidences Used for the Listing	This waterbody-pollutant was placed on the 303(d) list in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB 1996).
Applicable Water Quality Objectives	Basin Plan: the pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 (i.e., 6.5 < pH < 8.5)
Changes in the Watershed since the First Listing	More data has been collected, and recent evaluations of the data indicate that the elevated pH level in Santa Fe Dam Park Lake is most likely caused by the presence of naturally occurring anions in the lake.
Monitoring Stations and Additional Data Collected since the Last Data Solicitation	The U.S. Environmental Protection Agency (EPA), the Los Angeles Regional Board and the Los Angeles County Parks and Recreation conducted water quality monitoring between March 2009 and December 2009 as part of the Los Angeles Area Lakes Total Maximum Daily Load (TMDL) development. The samples were collected at five stations (SFD-1, SFD-2, SFD 3, SFD-4, and SFD-5) distributed throughout the lake (see Figure 5). In total, 75 pH samples were collected during this period.
Data Analysis and Justification for de-listing	During the 1996 water quality assessment, 95 pH samples were collected. pH ranged from 7.5 to 9.6 with an average value of 8.7. For the 75 samples collected in 2009, the pH ranged from 7.4 to 9.0 with an average of 8.3. Some of the samples have exceeded the target. This data is summarized in Table 15. The Santa Fe Dam Park Lake is an enclosed lake and the only discharges to the lake are groundwater and poteble water. The pH of both the groundwater and potable water feeding the lake was measured to be in the range of 7.5 - 7.7 and, thus, are not sources of high pH in the lake. After evaluating various water quality parameters associated with the lake during the development of the LA Area Lakes TMDLs, EPA concluded that "the elevated pH levels in the Santa Fe Dam Park Lake are likely due to natual conditions, ... the lake meets the pH water quality standard, ... and be removed from the 303(d) list." In summary, elevated pH in Santa Fe Dam Park Lake is not due to anthropogenic sources, and the lake is attaining the pH standard.
Conclusions and Recommendation	The Santa Fe Dam Park Lake meets pH water quality standards and should be removed from the 303(d) list. This concurs with the EPA findings and recommendations.

Table 15. Summary of pH and Other Data in Santa Fe Dam Park Lake

	pH
UC Riverside	
Number of Sample	37
Average of Result	8.75
Min of Result	8.0
Max of Result	9.6
Start Date	08/10/1992
End Date	06/21/1993
EPA	
Number of Sample	8
Average of Result	8.7
Min of Result	8.6
Max of Result	8.8
Start Date	03/03/2009
End Date	08/03/2009
LACDPR	
Number of Sample	21
Average of Result	7.6
Min of Result	7.39
Max of Result	7.96
Start Date	05/04/2009
End Date	05/04/2009
Regional Board	
Number of Sample	46
Average of Result	8.62
Min of Result	7.45
Max of Result	9.02
Start Date	08/03/2009
End Date	12/14/2009
Total Summary	
Total Number of Sample	112
Total Average of Result	8.48
Total Min of Result	7.39
Total Max of Result	9.6
Total Start Date	08/10/1992
Total End Date	12/14/2009

UC = University of California
EPA = Environmental Protection Agency
LACDPR=Los Angeles County Department of Park and Recreation

county of ventura

PUBLIC WORKS AGENCY
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Agency Director

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Christopher E. Cooper, Director

Transportation Department
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Water & Sanitation Department
Michaela Brown, Director

Watershed Protection District
Glenn Shephard, Director

March 30, 2017

Electronic Submission: losangeles@waterboards.ca.gov

California Regional Water Quality Control Board
Los Angeles Region
Attn: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu:

The County of Ventura (County) appreciates the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list] which was distributed for public review on February 8, 2017.

The County understands that the California Regional Water Quality Control Board - Los Angeles Region (Los Angeles Water Board) is proposing over 200 new waterbody segment-pollutant combination 303(d) listings. The development and implementation of Total Maximum Daily Loads (TMDLs) is a significant investment of resources and it is critical that the 303(d) list be based on sound science and methodologies. The County participates in the implementation of many TMDLs in the Calleguas Creek, Santa Clara River, and Ventura River Watersheds addressing a diverse set of pollutants.

The County and the other stakeholders implementing TMDLs in the Calleguas Creek Watershed (CCW TMDL Stakeholders), as well as the Ventura County Agricultural Irrigated Lands Group (VCAILG) will be submitting separate comment letters regarding the proposed listing changes in the Calleguas Creek Watershed and VCAILG-affected waterbody segments. The County supports comments from both CCW TMDL Stakeholders and VCAILG and requests that the Los Angeles Water Board address all identified errors and issues therein.

The County has a number of concerns regarding the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waterbodies and believes that it requires significant review and modification before adoption. The County requests that the issues identified in this letter be addressed and the proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed.

Requested modifications fall into three broad categories:

1. New Category 5 listings should not be listed due to incorrect thresholds applied to the beneficial use, incorrect sample locations, and incorrect interpretation of the data (e.g., mismatched units or lack of temporal representation).
2. Delistings requested previously by the County that have not been incorporated.
3. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives (WQOs), and inconsistent use of thresholds for interpreting narrative objectives.

The remaining sections of this letter provide a detailed summary of requested changes to the 303(d) list and the rationale for the requested actions. In summary, the County requests that all waterbody pollutant combinations in **Table 1** not be listed on the 303(d) list, nitrogen compounds in Santa Clara River Reach 3 be delisted, and the errors and inconsistencies identified in the CCW TMDL Stakeholders Letter be addressed.

I. REQUESTED MODIFICATIONS TO THE LISTING STATUS

Based on a review of the proposed Category 5 waterbody segment-pollutant combinations, the County has identified a number of waterbodies that should be either delisted based on available data or for which proposed new listings should not be listed based on errors in the data evaluation. The requested modifications are shown in **Table 1**, below, with a summary of the justifications for the requested changes. A detailed discussion of each of the justifications follows the table.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification for Not Listing
Boulder Creek (Ventura County)	Chlordane	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).
	Nitrogen, Nitrate	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification for Not Listing
Boulder Creek (Ventura County) - continued	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
	Toxicity	• Data does not include proper temporal representation.
Ellsworth Barranca	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.
Javon Canyon	Benthic Community Effects	• Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.
	Selenium	• Data does not include proper temporal representation.
Los Sauces Creek	Selenium	• Data does not include proper temporal representation.
Madranio Canyon	Benthic Community Effects	• Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses
	Copper	• Data does not include proper temporal representation.
	Selenium	• Data does not include proper temporal representation.
Medea Creek Reach 1 (Lake to Confl. with Lindero)	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.
Padre Juan Canyon	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses. • Benthic Community Effects data do not support listing. • Data does not include proper temporal representation.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification for Not Listing
Padre Juan Canyon	Selenium	• Data does not include proper temporal representation.
Port Hueneme Harbor (Back Basins)	Arsenic	• Data does not include proper temporal representation.
	Cadmium	• Data does not include proper temporal representation.
	Dieldrin	• Data does not include proper temporal representation.
	PAHs (Polycyclic Aromatic Hydrocarbons)	• Data does not include proper temporal representation.
Santa Clara River Estuary	pH	• No demonstration high pH is a result of waste discharge.
Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	pH	• No demonstration high pH is a result of waste discharge.
Santa Clara River Reach 3 (Freeman Diversion to A Street)	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision.
	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
	Cyfluthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification for Not Listing
Santa Clara River Reach 3 (Freeman Diversion to A Street) - continued	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision.
	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Tapo Canyon	DDD	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
	DDE	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the listing. This LOE should be removed since there is a separate LOE specifically for toxicity.
	Nitrogen, Nitrate	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Triunfo Canyon Creek Reach 1	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses.
Ventura Harbor: Ventura Keys	Arsenic	• Data does not include proper temporal representation.
	Cadmium	• Data does not include proper temporal representation.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody Segment	Pollutant	Justification for Not Listing
Ventura Harbor: Ventura Keys - continued	Chlordane	• Data does not include proper temporal representation.
	DDT	• Data does not include proper temporal representation.
	Dieldrin	• Data does not include proper temporal representation.
	PCBs (Polychlorinated biphenyls)	• Data does not include proper temporal representation.
Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses.
	Temperature, water	• Analysis does not demonstrate temperature is above natural temperature.
Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses.
	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
	Toxicity	• Toxicity data from prior to pesticide use restrictions used for listings. More recent data does not show toxicity.
Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	Benthic Community Effects	• Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.
	Temperature, water	• Analysis does not demonstrate temperature is above natural temperature.
Wheeler Canyon/Todd Barranca	Specific Conductivity	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Listing data lacks proper temporal representation.
There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5.3 of the State Water Resources Control Board (SWRCB) Listing Policy[1] states that:

> "*Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision.*"

Many of the pollutants listed in **Table 1** included data collected from a single sampling date. This violates the Listing Policy. For instance, all the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day – February 28, 2007. Because there is no temporal resolution provided for these pollutants they should not be listed.

Requested Action:
Remove all listings shown in Table 1 that were based on a single sample collection date.

1. Benthic Community Effects Listing are based on flawed analyses and should be removed.
The benthic community effects listings are based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects. The threshold used to distinguish an impaired reach was a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value. The state has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).* " Despite this, all of the newly listed benthic community effects in Table 1 utilize the IBI to assess the waterbodies. Therefore, the County is requesting that these flawed listings be removed until the waterbodies can be assessed with a more representative metric such as the CSCI.

In addition, a number of water segments are listed as an exceedance for benthic community effects citing a low CSCI score, however, the original data shows only IBI scores. The Water Board should clearly note whether a CSCI or IBI assessment was

[1] State of California State Water Resources Control Board (SWRCB) Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Amended February 3, 2015. [Referred to hereinafter as Listing Policy]

performed. For instance, the Fact Sheets show that Padre Juan Canyon has 2/2 samples which exceed for benthic community effects using a CSCI score of 0.35 and 0.52 which is below the 0.79 CSCI threshold. However, the raw data shows that an IBI was performed resulting in scores of 40 and 39, which would only represent one exceedance which would not support listing the water body. The Water Board should clearly state where the CSCI scores are that they are referring to. This issue applies to all new benthic community effects listings. More detailed information can be provided upon request.

In addition, many of the benthic community effects listings rely on a single day of sampling which does not provide proper temporal representation as discussed in the previous comment.

Requested Action:

- **Update the Appendix G Fact Sheets to clearly state that an IBI metric was used not the CSCI for all pollutants noted in Table 1.**
- **Remove all listings shown in Table 1 for benthic community effect that use the IBI listing.**

2. There is no demonstration that high pH is a result of waste discharge.

The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Basin Plan. The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheet and according to the Los Angeles Region Basin Plan[2] "*The pH of inland surface waters shall not be depressed below 6. 5 or raised above 8. 5* ***as a result of waste discharges***" [emphasis added]. However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Los Angeles Water Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets, or, if no such evidence exists, the Los Angeles Water Board should remove these proposed listings.

Requested Action:

Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as there is no data provided in the Fact Sheet that demonstrate that these high pH values are the result of waste discharge.

3. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.

Numerous listings were made using WQOs for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d)

[2] Water Quality Control Plan Los Angeles Region R4 Basin Plan.

listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes.

State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U. S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated:

> *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U. S. C. § 1313(c)(3). "*[3]

In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that WQOs applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable WQOs in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing

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[3] Language adapted from the 2014 National Pollutant Discharge Elimination System permit findings for wastewater treatment plants in the Calleguas Creek Watershed.

decision for Los Angeles River Reach 1:

> *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty. "*

Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), WQOs specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to WQOs applicable to the MUN beneficial use.

Requested Action:
Revise all the new listings in the Fact Sheets to ensure none are based on municipal drinking water objectives when the MUN beneficial use does not apply.

4. Agricultural Drain and MS4 outfall monitoring data incorrectly used as basis for listing decisions.

There are some instances where listing decisions are based on data from the Agricultural VCAILG Monitoring Program which include monitoring data from agricultural drains. Santa Clara River Reach 3 (Freeman Diversion to A Street) listings (i.e., chlordane, chlorpyrifos, cyfluthrin, cypermethrin, DDD, DDE, and DDT) were based on multiple lines of evidence, but were primarily listed based on exceedances at VCAILG sample site "S03D_Bards" which is an agricultural drain that drains to Santa Clara River Reach 3. This site was selected to be representative of agricultural discharges to Reach 3 and it is not representative of receiving water conditions. Therefore, any data collected from "S03D_Bard" and other agricultural drain sites cannot be used to list the downstream reach. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains.

In some cases, other lines of evidence cite location "Santa Clara River at Freeman Diversion at 11th Street Drain (tributary to Santa Clara River) at sample location Santa Paula-1" ("Santa Paula-1"). This location is an MS4 outfall location that is designed to characterize urban discharges from City of Santa Paula and is not located in the Santa Clara River's receiving waters. As a result, the data from "Santa Paula-1" location should not be used for listing receiving waters. However, it should be noted that the data linked to the Fact Sheet did not include any data from "Santa Paula-1" so it is unclear what data were evaluated for these listings. Unless receiving water data contain exceedances, none of the constituents for Santa Clara River Reach 3 should be listed.

Requested Action:
Remove all listings shown in Table 1 that were based on Agricultural and MS4 discharge monitoring data not representative of the listed waterbody and

evaluate remaining listings to ensure no other listings are based on agricultural drain or MS4 outfall monitoring rather than receiving water monitoring.

5. Remove toxicity Lines of Evidence (LOE) from pollutant Fact Sheets when a LOE specifically for toxicity already exists.

Numerous pollutants listed for Tapo Canyon (chlordane, DDD, and DDE) include a toxicity LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the Fact Sheet.

Requested Action:
Remove the Lines of Evidence for toxicity for Tapo Canyon in Table because no evidence was provided that these constituents were the cause of toxicity.

6. Reassess mercury listings using correct objective and correct units.

The data used to assess mercury for Santa Clara River Reach 3 and Ventura River Reach 3 are in ng/L (nanograms per liter) and the objective is µg/L (micrograms per liter). The data need to be converted into the same units as the objective before an exceedance can be determined. The County expects that after this calculation has been performed the waterbodies will no longer meet the listing guidelines. Additionally, although a California Toxics Rule objective exists for mercury, an USEPA nationally recommended criteria was used for the assessment. An explanation for the use of a recommended criteria when an established WQO exists should be provided.

Requested Action:
Repeat the mercury analysis after correcting the unit error and clarify the objective used.

7. Correct the proposed temperature listings which are based on incorrect criteria.

The temperature listing for Ventura River Reaches 1 and 2 (Estuary to Weldon Canyon) and Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd) uses an evaluation guideline of 13-21 degrees Celsius (°C) as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as COLD is "*For waters designated as COLD, water temperature shall not be altered by more than 5 degrees F above the natural temperature.*" The Fact Sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives.

Notwithstanding that a deviation from natural temperatures has not been demonstrated, the manner in which the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002[4]. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer", although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures (25, 26). " As such, while temperatures above 21°C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing.

Using the threshold of 23°C, no samples would exceed the threshold in Ventura River Reach 4 and only 2 samples would exceed the threshold in Ventura River Reaches 1 and 2. Neither of these number of exceedances would meet the listing thresholds.

Requested Action:
Remove the temperature listing for Ventura River Reach 1 and 2 as well as Ventura River Reach 4.

8. The toxicity listing for Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr) relies on outdated data

Based on a review of the available data, all the observed toxic samples occurred prior to 2009. Of the 8 exceedances, 3 occurred in 2000/2001 and the rest were in 2006, 2007 and 2008. In the 2006-2008 time period, toxicity was commonly observed due to chlorpyrifos and diazinon which were subsequently restricted. Toxicity in many watersheds has been significantly reduced as a result of these use modifications. The available data shows that no samples exceeded after 2008, indicating that those pesticides or another cause that is no longer present, were the cause of the toxicity. Because of the transient nature of toxicity and the potential that the causes of the toxicity are no longer present, exceedances from prior to the pesticide use bans should not be used as the basis for a listing. The more recent samples since the pesticide use restrictions should be used as a basis for evaluation.

Requested Action:
Do not list Ventura River Reach 3 for toxicity based on exceedances from outdated data.

9. Ensure no J-flagged data were used in the assessment.

The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

[4] Moyle, Peter B. *Inland fishes of California: revised and expanded.* University of California Press, 2002.

> "*When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.* "

All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) list. Specific instances are included in **Table 1**, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

For example, the line of evidence for the Boulder Creek chlordane listing erroneously states that three out of five samples exceed the objectives. . A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. A similar situation also occurred in the Ellsworth Barranca DDE listing.

Both the Boulder Creek and Ellsworth Barranca listings should be removed based on the incorrect assignment of the beneficial use MUN (as discussed earlier) in addition to the use of J-flagged data.

Requested Action:

- **Review all Fact Sheets and Lines of Evidence for the use of J-flagged data and remove any instances where J-flagged data were used.**
- **Delist chlordane for Boulder Creek and DDE for Ellsworth Barranca as well as any other pollutants that lack the minimum number of exceedances required to justify a listing.**

II. REQUESTED DELISTINGS

In June 2015, the County and the Cities of Fillmore and Santa Paula submitted a letter with data and analysis that supported delisting of the Santa Clara River for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded with plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report. The letter is provided as an attachment to this letter. The County requests that the delistings provided in the attached letter be included in the 303(d) list scheduled for adoption on May 4, 2017.

Requested Action:
Delist Ammonia in Santa Clara River Reach 3.

III. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS

Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. As a result, there is concern that not all changes to the 303(d) list that may be considered for adoption were identified in the review. The lack of clarity comes from the following inconsistencies:

- Not all new listings are summarized in Appendix A.
- Appendix B was found to be missing some new and old listings based on a comparison to Appendix G. ß
- Appendix G has fact sheets for some listings noted as new in Appendix A or B identified as old fact sheets from the last listing cycle (e. g. benthic community listings in Javon Canyon). This indicates they were old listings, but a comparison to the 2010 303(d) list identified that they were in fact new listings and the fact sheets were incorrect or located in the wrong location.

Additionally, in many cases, data and Quality Assurance Project Plan references in the Fact Sheets are inconsistent with the data provided for review. Examples of these inconsistencies and errors were detailed in the CCW TMDL Stakeholders' comment letter. The County asks that the Los Angeles Water Board do a thorough review of all appendices to ensure that the Proposed 303(d) List is internally consistent, the correct data were used for the assessment, and the other errors identified in the CCW TMDL Stakeholders' comment letter are addressed.

Requested Action:
Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.

The County appreciates the opportunity to comment on the 303(d) list and looks forward to continuing to work with the Los Angeles Water Board to address these concerns.

Thank you for your time and consideration of these comments. If you have questions or need additional information, please contact Ewelina Mutkowska at (805) 645-1382 or Ewelina.Mutkowska@ventura.org.

Sincerely,

Glenn Shephard

Glenn Shephard, PE
Director
Ventura County Watershed Protection District

Enclosure: *Request for Delisting of Ammonia in Santa Clara River Reach 3*, Los Angeles Regional Water Quality Control Board Letter dated November 10, 2016

Cc: Ashli Desai, Larry Walker Associates
Jeff Pratt, Ventura County Public Works Agency
Arne Anselm, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Watershed Protection District

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CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

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WATERSHED PROTECTION

November 10, 2016

Mr. Peter Sheydai, Interim Director
Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Ms. Roxanne Hughes, City Engineer
City of Fillmore
Central Park Plaza, 250 Central Ave.
Fillmore, CA 93015

Mr. Brian Yanez, Public Works Director
City of Santa Paula Public Works Department
866 E Main St.
Santa Paula, CA 93060

Subject: REQUEST FOR DELISTING OF AMMONIA IN SANTA CLARA RIVER REACH 3

Dear Mr. Clifford, Ms. Hughes and Mr. Yanez:

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is in receipt of the letter from the Ventura County Watershed Protection District and the cities of Fillmore and Santa Paula dated June 4, 2015, with the subject "Reassessment and Delisting of Ammonia and Absence of Impairment for Other Nitrogen Compounds in the Santa Clara River Reach 3" (June 2015 letter), which requested delisting of Santa Clara River Reach 3 for ammonia. In the June 2015 letter, water quality data spanning the period from April 2014 to December 2014 were provided in support of the request for delisting. The Los Angeles Water Board responded to the June 2015 letter by email on October 5, 2015.

The Los Angeles Water Board is in receipt of the subsequent letter from the Ventura County Watershed Protection District and the cities of Fillmore and Santa Paula dated February 16, 2016, with the subject "Request for Official Regional Board Response" (February 2016 letter). The February 2016 letter reiterated the request for delisting and expressed concerns about the scope and timing of the upcoming 2016 listing decisions and, more generally, the implications of delisting decisions relative to regulatory requirements.

The Los Angeles Water Board provides this response to the request for delisting in both the June 2015 and the February 2016 letters and to address the concerns expressed in the February 2016 letter.

Response to Request for Delisting of Santa Clara River Reach 3 for Ammonia

The Los Angeles Water Board assessed the existing Lines of Evidence (LOEs) in the California Water Quality Assessment Database (CalWQA) as well as the water quality data provided in the June 2015 letter for the Santa Clara River Reach 3 Ammonia listing. Our data analysis shows that:

1) There were a total of 40 water quality data points for Santa Clara River Reach 3 during the time period of April 14, 2004 to August 30, 2010, the deadline for submittal of data for the 2012 California Integrated Report. The water quality data came from three data sources:
    a. Thirty-seven water samples were collected at the mass emission station ME-SCR by the Ventura Countywide NPDES Stormwater Monitoring Program.
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    c. One water sample was collected approximately 4 miles upstream of South Mountain Road in Santa Paula by the Southern California Stormwater Monitoring Coalition on June 1, 2010.
2) Water sample collection by these three programs, a through c, above, occurred after March 18, 2004 when the Santa Clara River Nitrogen Compounds TMDL became effective, following which the Fillmore and Santa Paula POTWs ceased discharging to Santa Clara River Reach 3.
3) Per the *Water Quality Control Plan, Los Angeles Region* (1994) as amended (Basin Plan), Santa Clara River Reach 3 is subject to the Early Life Stage (ELS) Provision for determination of the ammonia as nitrogen objective. Therefore, a 30-day average concentration of ammonia was calculated as a function of pH and temperature (°C) as follows:

$$\text{30-day Average Concentration} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85, 1.45 * 10^{0.028*(25-T)}\right)$$

4) Based on Board staff's calculation, one of the 40 ammonia data points (13.5 mg/L, sampled on December 18, 2007) was found to have exceeded the numeric target for the 30-day average concentration of total ammonia as nitrogen (1.7 mg/L) set by the Santa Clara River Nitrogen Compounds TMDL.
5) Pursuant to the State's Listing Policy Section 4.1, the maximum number of measured exceedances allowed to remove a water segment from the section 303(d) list for toxicants (including priority pollutants, metals, chlorine and ammonia) is three when the sample size is between 37 and 47.

Based on the findings described above, the requirement for delisting has been met. Therefore, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report.

We anticipate that the listing and delisting decisions for the 2016 California Integrated Report will be issued for public comment in early 2017. All interested persons will be able to provide comments at that time. The 2016 California Integrated Report would then be presented for approval at a Los Angeles Water Board meeting and/or State Water Board meeting in spring 2017.

However, we note that even once Santa Clara Reach 3 is delisted for ammonia through the 303(d) listing process, the Santa Clara River Nitrogen Compounds TMDL, including the established numeric targets and allocations, are part of the Basin Plan and remain in effect. Please see our additional discussion, below, under "Response to Concerns Regarding Implications of 303(d) Listings."

Response to Concerns Regarding Scope and Schedule for 2016 Integrated Report and Review of Previous Listing Decisions

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As determined by the State Water Board after consultation with the USEPA, the 2012 Integrated Report addressed data in Regions 1, 6 and 7. The 2014 Integrated Report is addressing Regions 3, 5 and 9, and the 2016 Integrated Report will address Regions 2, 4 (Los Angeles) and 8. Despite the new strategy, the State Water Board decided that it would not solicit additional data for the 2014 and 2016 Integrated Reports; instead data submitted for the 2012 Integrated Report (i.e., data prior to August 30, 2010) would be used to develop the 2014 and 2016 Integrated Reports.

In addition, while the Listing Policy changes allow for a Regional Water Board to make decisions "off-cycle" (i.e., not in their assigned Integrated Report year), the State Water Board's November 2013 memorandum states that the Integrated Report process will allow for the "off cycle" decisions "beginning with the next data solicitation."

We recognize that the 2013 procedural changes (as incorporated into the 2015 amendment to the State's Listing Policy) represent a change from previous procedures and from the procedure that was anticipated during the 2010 data solicitation. We also understand stakeholder concerns that the data now being assessed by the Los Angeles Water Board for the 2016 303(d) list will only include data through August 2010.

However, we anticipate that the changes to the procedures included in the 2015 amendment to the Listing Policy, including the grouping of the Regional Water Boards and the requirement that all data be submitted via the California Environmental Data Exchange Network (CEDEN), will significantly improve the efficiency of the listing and delisting process so that even with regional updates only once every six years, California will have a more comprehensive assessment and 303(d) list than in the past.

The Los Angeles Water Board is currently reviewing LOEs and preparing to make decision recommendations for the 2016 303(d) list. The usefulness and appropriateness of making off-cycle listing decisions for the 2018 303(d) list can be considered on a case-by-case basis after we have completed the 2016 303(d) list.

In addition, we note that while listings established prior to the 2004 Listing Policy were not re-assessed in their entirety for the 2006 or 2010 303(d) lists, many re-assessments were made in both lists, as shown in the table below.

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The Los Angeles Water Board agrees that 303(d) listings have important implications in terms of requirements that they are addressed through TMDLs or other programs of water quality improvement and in discharge permits and other Board orders.

The Clean Water Act and implementing regulations require that impairments included on the 303(d) list are addressed in a timely manner through TMDLs or other programs of water quality improvement. TMDLs are a technical regulatory tool to identify the loading capacity of a waterbody for a particular pollutant and allocate that allowable load among the sources of the pollutant in order to restore a waterbody to a condition that fully supports beneficial uses. TMDLs may also be relied upon to ensure ongoing protection of beneficial uses. As such, a waterbody does not need to remain impaired to be addressed by a TMDL in the Basin Plan.

That notwithstanding, the Los Angeles Water Board can, if it deems appropriate based on the weight of the evidence regarding receiving water conditions throughout the waterbody and the water quality of point and nonpoint source discharges, remove targets and allocations from an existing TMDL during a reconsideration of the TMDL. The Los Angeles Water Board can reconsider a TMDL that it has established at any time. In the case of the Santa Clara River Nitrogen Compounds TMDL, the Los Angeles Water Board could, in the future, withdraw or reconsider and modify the TMDL if it deemed appropriate. However, these potential actions would require a more comprehensive analysis than a 303(d) listing decision. A reconsideration of the Santa Clara River Nitrogen Compounds TMDL would require a reassessment of all the available ammonia and nitrate+nitrite data in the Santa Clara River, its tributaries and estuary, and also an evaluation of the eutrophic status and other related effects of nitrogen compounds on the River. Finally, it would require an evaluation of the discharge quality of the various sources of nitrogen compounds to the River relative to their wasteload and load allocations in the TMDL.

In addition, the Los Angeles Water Board would consider the utility of keeping the TMDL, or a revised TMDL, in place in order to ensure the continued progress toward, or maintenance of, attainment of water quality standards in the River. The USEPA's draft March 22, 2012

"Considerations for Revising and Withdrawing TMDLs" recommends keeping effective TMDLs in place:

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Although the 303(d) list does not reflect more recent data at this time, it remains an informative list based on a comprehensive evaluation of data per the Listing Policy criteria, which was subject to public review and comment and final approval by USEPA. Further, as indicated above, based on the findings of our analysis of data from 2004-2010, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report.

Whether a renewed Ventura County MS4 Permit includes provisions to adjust requirements due to improvements in waterbodies that remain on the 303(d) list during the term of the permit can be addressed during development of the permit. The Ventura County MS4 Permit may well allow for the same compliance demonstration pathways as those in the Los Angeles County MS4 Permit, including demonstrating that receiving water limitations are being met in the adjacent and downstream waterbody. Monitoring requirements can also be addressed during permit development.

In closing, we acknowledge and appreciate the hard work and the resources committed by the Ventura County Watershed Protection District and the cities of Fillmore and Santa Paula to improve the water quality in the Santa Clara River and look forward to even more water quality improvement in the future. If you have any questions, please contact Dr. L.B. Nye at (213) 576-6785 or Dr. Jun Zhu at (213) 576-6681.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Nick Martorano, State Water Resources Control Board
Ewelina Mutkowska, Ventura County Watershed Protection District
Caesar Hernandez, City of Santa Paula
David Burkhart, City of Fillmore
Ashli Desai, Larry Walker Associates

March 30, 2017

Electronic Submission: losangeles@waterboards.ca.gov

Los Angeles Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu:

The County of Ventura (County) and the Cities of Fillmore and Santa Paula (Cities) appreciate the opportunity to provide comments on the proposed updates to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list], which was distributed for public review on February 8, 2017. The proposed updates to the 303(d) list did not include delisting of the Santa Clara River Reach 3 for ammonia as recommended by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) in the letter dated November 10, 2016 provided as an attachment to this letter.

In June 2015, the County and the Cities submitted a letter with data and analysis that supported delisting of the Santa Clara River Reach 3 for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded:

> "Based on the findings described above, the requirements for delisting has been met. Therefore, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report." (page 2 of the attached November 10, 2016 letter).

The County and the Cities request that the ammonia delistings be included in the 303(d) list scheduled for adoption on May 4, 2017.

Requested Action: Delist Ammonia in Santa Clara River Reach 3.

The County and the Cities are committed to being stewards to their local waterbodies, and have expended substantial time and resources to comply with these requirements. We are proud of the water quality improvements that are clearly reflected in the data that was submitted to the Los Angeles Water Board staff. The County and the Cities have a long history of working with the Los Angeles Water Board staff to improve water quality in the Ventura County region and believe that it has contributed to the success that has been achieved in improving water quality. We are hoping to continue this collaboration to celebrate the successes in water quality that have occurred in Ventura County through waterbody delistings.

We appreciate your further consideration of this matter. If you have any questions or need additional information, please contact Ewelina Mutkowska with Ventura County Public Works Agency, at (805) 645-1382 or Ewelina.Mutkowska@ventura.org.

Sincerely,

Jeff Pratt, Director Ventura County Public Works Agency	Roxanne Hughes, City Engineer City of Fillmore	John Ilasin, Interim Public Works Director City of Santa Paula

EAM/cs/K:\Programs\CountyStormwaterProgram\040508_TMDLs\Santa Clara\Nutrient\2015 Delisting\2017-03_2016 Integrated Rpt

Enclosure: "Request for Delisting of Ammonia in Santa Clara River Reach 3", Los Angeles Regional Water Quality Control Board Letter dated November 10, 2016

Cc: Samuel Unger, Los Angeles Regional Water Quality Control Board
Nick Martorano, State Water Resources Control Board
Glenn Shephard, Ventura County Watershed Protection District
Arne Anselm, Ventura County Watershed Protection District
Ewelina Mutkowska, Ventura County Public Works Agency
Caesar Hernandez, City of Santa Paula
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CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

November 10, 2016

Mr. Peter Sheydai, Interim Director
Ventura County Watershed Protection District
800 South Victoria Avenue
Ventura, CA 93009

Ms. Roxanne Hughes, City Engineer
City of Fillmore
Central Park Plaza, 250 Central Ave.
Fillmore, CA 93015

Mr. Brian Yanez, Public Works Director
City of Santa Paula Public Works Department
866 E Main St.
Santa Paula, CA 93060

Subject: REQUEST FOR DELISTING OF AMMONIA IN SANTA CLARA RIVER REACH 3

Dear Mr. Clifford, Ms. Hughes and Mr. Yanez:

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is in receipt of the letter from the Ventura County Watershed Protection District and the cities of Fillmore and Santa Paula dated June 4, 2015, with the subject "Reassessment and Delisting of Ammonia and Absence of Impairment for Other Nitrogen Compounds in the Santa Clara River Reach 3" (June 2015 letter), which requested delisting of Santa Clara River Reach 3 for ammonia. In the June 2015 letter, water quality data spanning the period from April 2014 to December 2014 were provided in support of the request for delisting. The Los Angeles Water Board responded to the June 2015 letter by email on October 5, 2015.

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Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Nick Martorano, State Water Resources Control Board
Ewelina Mutkowska, Ventura County Watershed Protection District
Caesar Hernandez, City of Santa Paula
David Burkhart, City of Fillmore
Ashli Desai, Larry Walker Associates

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

March 30, 2017

Mr. Samuel Unger
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

RE: Comments on the 2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters

Dear Mr. Unger:

The CA Department of Water Resources (DWR) appreciates the opportunity to comment on the proposed updates to the 303(d) list. The updates to the 303(d) list propose to add the following pollutants to the following State Water Project (SWP) affiliated locations:

- Dieldrin, chlordane, DDT, and polychlorinated biphenyls (PCB) to Pyramid Lake
- PCBs to Castaic Lake and Castaic Lagoon, and
- Dieldrin and PCBs to Elderberry Forebay.

DWR has the following comments:

1) The proposed pollutant listings lack a clear rationale that supports the recommended listings. A clear rationale, such as recommended food (i.e. fish) exposure levels (Food and Drug Administration for example), Fish Contaminant Goal (FCG), or Advisory Tissue Levels (ATL) for each pollutant should be provided so a clear comparison can be made. Some of the levels for these contaminants are above the FCG, they have not reached the ATL, and in fact, the report labels these contaminants as very low, as compared to the other higher priority contaminants. Absent such comparison, it is difficult to assess the appropriateness for such listings.
2) The PCB data in Table 11 (Summary Report) for Elderberry Forebay does not seem to match that of the proposed listing status. Elderberry Forebay is absent from this Table.
3) Insufficient details are provided for dieldrin, chlordane and DDT. A more comprehensive effort that specifically focuses on these contaminants should be conducted before they are proposed for Pyramid Lake additions to the 303(d) list.
4) Further analysis, including statistical analysis, should be conducted to support this proposed listing. Given the proposed listing recommendations are based on sample analytical data, a statistical analysis to show that sufficient sample size has been obtained for each lake should be provided. Additional considerations for analysis should also include:

- Increasing sampling locations. Were the samples obtained truly representative of the entirety of the lakes, especially those that are the subject of this letter?
- Do the composite samples truly represent averages of the fish caught, or are they additive? Can composites identify anomalies? Can a lake-wide composite be skewed, as a result of one very high data point?
- One-time study involving one year seems insufficient. Studies with longer duration are more appropriate to accurately determine the pollutant levels.

If you have any questions, please contact Leah McNearney, Chief, Water Quality Section at (916) 653-5688.

Sincerely,

Anthony Chu, Chief
Environmental Assessment Branch
Division of Operations and Maintenance
California Department of Water Resources

cc:

Dr. L.B. Nye
Los Angeles Regional Water Quality Control Board
LB.Nye@waterboards.ca.gov

Dr. Jun Zhu
Los Angeles Regional Water Quality Control Board
Jun.Zhu@waterboards.ca.gov

Leah McNearney
Water Quality Section
Environmental Assessment Branch
Division of Operations and Maintenance
California Department of Water Resources
Leah.McNearney@water.ca.gov

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March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

VIA ELECTRONIC MAIL: losangeles@waterboards.ca.gov

Re: Comment Letter - Revisions to the Los Angeles Region 303(d) List

Dear Chair Ruh and Board Members:

On behalf of Earth Law Center (ELC), which works for waterways' rights to flow, we welcome the opportunity to submit these comments in support of inclusion of hydrologically-impaired (*i.e.*, flow-impaired) waterways in the region's Integrated Report. Such waterways or waterway segments include but are not limited to: the Ventura River (Reaches 3 and 4) and the Santa Clara River.

The San Diego Regional Water Quality Control Board (SD RWQCB) recently approved identification of 30 hydrologically impaired waterway segments in Category 4C of their Integrated Report.[1] We urge the Los Angeles RWQCB to follow the lead of the SD RWQCB, as well as U.S. EPA and numerous other states (including California itself), in similarly identifying hydrologically impaired waters in its Integrated Report. We offer below our support for this request.

1. **Full Compliance with Clean Water Act Sections 305(b) and 303(d) Requires Identification of All Hydrologically Impaired Waterways**

   a. ***CWA Section 303(d)***

Clean Water Act (CWA) Section 303(d)(1)(A) requires California to "identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters." This must be a robust listing, with sufficient details about the waterways (including flow) to allow the state to "establish a priority ranking" for the waterways, also required by Section 303(d)(1)(A). In other words, California's 303(d) list must provide a comprehensive list of all impairments. The state's Listing Policy provides some mixed

[1] *See* attached ELC's August 2016 comments on the SD RWQCB hydrologic impairment listings.
[2] SWRCB, "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," p. 3; at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/020315_8_amendment_clean_version.pdf (Listing Policy).
[3] *Id*. at p. 18 (emphasis added).

direction, stating on the one hand that 303(d) list only covers impairments by "pollutants" (rather than also by "pollution," such as flow),[2] but on the other hand stating that Regional Water Board Fact Sheets supporting Section 303(d) listings "shall contain . . . Pollutant *or type of pollution* that appears to be responsible for standards exceedance."[3] The latter path is the appropriate course.

No objection, further, can be made to including flow-impaired waterways on the Section 303(d) list on the basis that the state is not required to prepare TMDLs to address "pollution." First, Section 303(d)(1)(A) makes no mention of limiting the 303(d) list to those waterways requiring Total Maximum Daily Loads (TMDLs). In fact, no mention of TMDLs is made until Section 303(d)(1)(C), which sets requirements on how to manage impaired waterways. Moreover, the state itself does not take this position for waterways impaired by pollutants. Instead, the state lists in Category 5 (what it deems its Section 303(d) list) pollutant-impaired waterways that do, and do not, require TMDLs by state evaluation.[4] Accordingly, the state must include hydrologically impaired waterways, including those impaired by altered flow, on its 303(d) list. This is the path the Los Angeles RWQCB correctly took in listing the Ventura River (Reaches 3 & 4) for "pumping" and "water diversion" impairments.

However, rather than continuing to follow the clear intent of CWA Section 303(d), the Los Angeles RWQCB instead proposes to *delist* the Ventura River (Reach 3) for "pumping,"[5] despite this listing having been properly included on the 303(d) list since 1998. The primary reason given is that "[t]he listing is for a non-pollutant and therefore should be delisted."[6] However, as established above, the CWA requires the listing of both pollutants *and* pollution on the 303(d) list, regardless of whether a TMDL is required. Therefore, we ask that the Ventura River (Reach 3) remain on the 303(d) list.

b. CWA Section 305(b)

The state must also include hydrologically impaired waters in its broader, CWA Section 305(b) report. Section 305(b) requires states to submit biennial[7] reports that "shall" describe the "water quality of all navigable waters," including an analysis of the extent to which the waters protect fish

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[2] SWRCB, "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," p. 3; at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/020315_8_amendment_clean_version.pdf (Listing Policy).
[3] *Id*. at p. 18 (emphasis added).
[4] Even the state does not take that position, choosing instead to include in the Section 303(d) list Category 5 waters that do, and do not, require TMDLs. Listing Policy, *supra*, at Section 2.2, p. 3; *see also* Santa Ana Regional Water Quality Control Board 2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region: Technical Staff Report ("staff report"), p. 9 (stating that "…waterbodies remain in Category 5 until all 303(d)- listed pollutants are addressed by USEPA-approved TMDLs *or by another regulatory program that is expected to result in the reasonable attainment of the water quality standards*….") (emphasis added).
[5] *See* Clean Water Act Sections 303(d) and 305(b) Integrated Report for the Los Angeles Region, "Summary of Regional Board Recommended Changes to the 2012 303(d) List" (Feb. 8, 2017), at: www.swrcb.ca.gov/losangeles/water_issues/programs/303d/2016/Appendix_A.pdf.
[6] *See* Clean Water Act Sections 303(d) and 305(b) Integrated Report for the Los Angeles Region, Public Review Draft, Appendix G ("Fact Sheets"), Decision ID 34271.
[7] We note for the record that the state's Section 303(d) and 305(b) reports are extremely overdue. The 2014 regions (Central Coast, Central Valley, and San Diego Regions) are now almost three years overdue, while the 2016 regions (Los Angeles, Santa Ana, and San Francisco Bay Regions) are now almost one year overdue, contrary to the clear language of the CWA (*see* 33 U.S.C. § 1313(d), 1315(b); 40 C.F.R. § 130.7(d)(1)). *We object strongly to this continued, illegal, statewide delay in complying with CWA Sections 303(d) and 305(b).*

and wildlife, for compilation and submission to Congress.[8] Federal regulations describe this requirement and its purpose, stating that **the Section 305(b) report "serves as the primary assessment of State water quality" and the basis of states' water quality management plan elements, which "help direct all subsequent control activities."**[9] States must use the Section 305(b) report to develop their annual work program under Sections 106 and 205(j).[10] California's Integrated Report accordingly must include an adequate Section 305(b) report if the state is to develop meaningful water quality plans that appropriately direct staff and resources to the most important control activities.

The Section 305(b) report must particularly include information regarding waterway flows to ensure that the fundamental purpose of Section 305(b) in guiding workplanning is met. The provision of information regarding waterway flow is also called for by CWA Section 101, which sets the **national objective of restoring and maintaining the** "**chemical, *physical*, and biological integrity of the Nation's waters**." (Emphasis added.) The U.S. Supreme Court itself explicitly affirmed the importance of addressing physical elements of waterway health such as flow, stating that **the distinction between water quality and quantity under the CWA is "artificial."**[11]

The Staff Report runs afoul of the CWA by ignoring Category 4C entirely for inclusion in either its 303(d) list or its 305(b) report, reporting that *zero* water bodies in the Los Angeles Region are impaired due to altered hydrology under Category 4C.[12] As with other regional water boards, the Los Angeles RWQCB appears to rely on the Listing Policy for this decision, which states that the 303(d) list only includes those water segments that require the development of a TMDL.[13] Here, again, the Staff Report assumes an illegally narrow definition of its requirements under the CWA. The Integrated Report is supposed to include *both* a robust and legally adequate 303(d) list *as well as* a robust and legally adequate 305(b) report. These requirements are combined; they are not the same (*see also* sec. 8). If the State Water Board and Regional Water Boards take the position that pollution-impaired waterways (including flow-impaired waters) cannot be included in the Section 303(d) list, then the Listing Policy – which by definition applies *only* to the Section 303(d) list – is irrelevant. It cannot be used as an excuse to ignore flow impairments entirely. The state in that case must then turn to its requirements under Section 305(b), which broadly require it to report on water quality, including as impacted by altered flow.

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[8] 33 U.S. Code § 1315(b)(1); *see also* 40 CFR § 130.8. Section 305(b)(1) states that the biennial report "shall include": "(A) a description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be required to take into account seasonal, tidal, and other variations, correlated with the quality of water required….;
(B) an analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water; …
(E) a description of the nature and extent of nonpoint sources of pollutants, and recommendations as to the programs which must be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs." As to this last point, the SWRCB itself has recognized flow alterations as a form of nonpoint source pollution, reinforcing the need to properly account for it in the Section 305(b) report. *See, e.g.*, "Hydromodification, Wetlands and Riparian Areas Technical Advisory Committee: Recommendations to the SWRCB" (Dec. 6, 1994), at: http://www.waterboards.ca.gov/water_issues/programs/nps/tacrpts.shtml.
[9] 40 CFR § 130.8(a) (emphasis added).
[10] *Id.*
[11] *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700 (1994).
[12] Staff Report, *supra*, at p. 9.
[13] *See* Listing Policy, p. 3.

Indeed, the Staff Report recognizes that it must consider flow-impaired waterways in its assessment, describing Category 4C as being applicable if "[t]he non-attainment of any applicable water quality standard for the waterbody is the result of pollution and is not caused by a pollutant."[14] No legitimate reason is given for failing to comply with this requirement, however. A legally adequate Section 305(b) report must include waterways impaired by pollution, including hydrologically impaired waterways, whether or not the waterways are also impaired by a pollutant. This information is also critical for the state to set waterway protection priorities properly.

Proper identification of hydrologically impaired waterways is also important if the state is to fully comply not only with Section 305(b), but with CWA Section 303(d) as well. This section not only calls for identification of impaired and threatened waterways, but also requires the state to prepare a "*priority ranking*" of such waters, "taking into account the severity of the pollution" and waterway uses.[15] Flow and other hydrologic alteration data and information are critical to proper prioritization of impaired waters for further staff and resource attention.

Specifically in regards to the Ventura River (Reach 3), in addition to misguidedly delisting this water segment from the 303(d) list for its impairment due to "pumping," the Los Angeles RWQCB staff also fails to reclassify this water segment under Category 4C, finding that "[t]here is no established method for determining impairment due to pollution like pumping so a Category 4C finding is also inappropriate."[16] Once again, this response is misguided, as the state must at minimum include hydrologically impaired waters in its broader, CWA Section 305(b) report, as described above, whether or not there are flow standards or a formal methodology to do so. *See* Sec. 6, below.

Finally, we reiterate that because Section 303(d)(1)(A) broadly requires identification of impairments *regardless* of whether TMDLs are needed, the state's Section 303(d) list should include a robust Category 4C set of listings. State law cannot weaken the requirements of the CWA by artificially limiting the scope of this list.

2. <u>U.S. EPA Guidance and Reports, and the State Water Board Itself, Have Called for Identification of Hydrologically Impaired Waterways in Category 4C of the Integrated Report</u>

U.S. EPA issued formal Integrated Report Guidance (*i.e.,* for the combined Sections 303(d) and 305(b) reports) to states and territories in August 2015; in it, EPA specifically addresses the topic of hydrological impairment.[17] The U.S. EPA Guidance clearly states that

> If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life[18] use is not supported due to hydrologic alteration or habitat

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[14] *Id*. at p. 3.
[15] 33 U.S. Code § 1313(d)(1)(A) (emphasis added).
[16] *See* Clean Water Act Sections 303(d) and 305(b) Integrated Report for the Los Angeles Region, Public Review Draft, Appendix G ("Fact Sheets"), Decision ID 34271.
[17] 2015 EPA Listing Guidance, *supra*, pp. 13-16.
[18] Note here that U.S. EPA specifically calls out protection of aquatic life as a reason to identify flow-impaired waters. The Staff Report similarly calls out aquatic life for specific protection (p. ii), but then ignores the next step of identifying flow impairments that injure aquatic life.

alteration), those causes should be identified and that water should be assigned to Category 4C.[19]

The Guidance specifically references hydrologic alteration as an example of a Category 4C listing.[20] It further references EPA Guidance going back at least to 2006, which similarly said that flow-impaired waters should be identified in the Integrated Report under Category 4C (the 2010 CCKA *et al.* Letter references this 2006 Guidance in support of flow listings; *see* attachment 3).

U.S. EPA and USGS reinforced this mandate in a joint report in February 2016 on flow, stating in part that "EPA recommends reporting impairments due to hydrologic alteration in Category 4c, which are those impairments due to pollution not requiring a TMDL."[21]

Even more specifically, U.S. EPA Region 9 has *directly* told the State Water Board that the Board is "well aware of [EPA's] interest toward listing selected streams for 'flow impairments' (at least under 305(b)) where lines of evidence are strong."[22]

Further, the State Water Board Executive Director himself decided that the state should identify flow-impaired waters in its Integrated Reports, stating that California "would now list for flow alterations" and that "[l]istings would be made under category 4C for impaired [sic] by pollution not a pollutant, and be based on staff's professional judgment as well as the evidence submitted by the data."[23] Again, no reason is given in the Staff Report for ignoring the clear flow impairments throughout the region in light of the CWA, guidance, and state direction.

3. <u>The San Diego RWQCB Has Adopted Numerous Listings for Hydrologic Impairment for Its Current Integrated Report</u>

The SD RWQCB recently adopted an Integrated Report and Staff Report[24] that **identified 30 waterway segments for listing in Category 4C, either with a Category 5 pollutant listing or alone**.[25] Consistent with U.S. EPA Guidance, the SD RWQCB recognized that identifying *all* pollutant and pollution impairments provides a far more accurate picture of the challenges before the state than ignoring key impairments. For example, the Staff Report found that "over 96 percent of streams that exhibited biological degradation had both an associated pollutant(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration (hydromodification, Table 3)." If the Regional Board had ignored such pollution impairments, then virtually all of the impaired streams in the San Diego Region would

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[19] *Id.* at p. 15.
[20] *Id*.
[21] U.S. EPA and USGS, "Draft EPA-USGS Technical Report: Protecting Aquatic Life from Effects of Hydrologic Alteration," Chapter 5 (Feb. 2016); at: https://www.epa.gov/sites/production/files/2016-03/documents/aquatic-life-hydrologic-alteration-report.pdf (U.S. EPA/USGS Report).
[22] Email from Tim Vendlinski, U.S. EPA Region 9 to Diane Riddle, SWRCB (Jan. 7, 2015); available upon request.
[23] Email from Nicholas Martorano, SWRCB to SWRCB/RWQCB staff (July 22, 2013) (referencing decision by Thomas Howard, SWRCB); available upon request. Note that such Category 4C listings can and should be made for waterways that are also listed for other categories, including Category 5 (*see* Sec. 8).
[24] *See* Draft adopted Oct. 12, 2016 at: http://www.waterboards.ca.gov/sandiego/water_issues/programs/303d_list/.
[25] http://www.waterboards.ca.gov/sandiego/water_issues/programs/303d_list/docs/IR_RB_StaffReport_R9_07-11-16_Clean.pdf, Table 3.

have been under-assessed, likely resulting in misallocation of limited resources and attention. ELC commented to the San Diego Board in support of these listings; these comments are attached.[26]

4. California Has Identified Hydrologically Impaired Waterways in the Past

In California, "pumping" and "water diversion" are currently listed as causes of impairment for Ventura River Reaches 3 and 4, in the Los Angeles Region. Additionally, Ballona Creek Wetlands is currently listed as impaired by "Hydromodification," among other impairments. All three water body segments are currently listed for these specific flow-related impairments in Category 5.[27] California's history of identifying flow-related impairments under Section 303(d) should be considered precedential. And as explained herein and by Santa Barbara Channelkeeper in its comment letter, there is no basis for delisting Reach 3 of the Ventura River.

5. Numerous Other States Have Identified Hydrologically Impaired Waterways in Categories 4C and 5

Many states around the country have followed U.S. EPA Guidance and the CWA by properly identifying flow-impaired waterways in their Integrated Reports. These include, but are not limited to, Western states such as Idaho, Montana, Wyoming, Washington and New Mexico.[28] One listing methodology that may be of particular interest to the Los Angeles is that used by Ohio, which identifies waters impaired by flow alteration by linking biological community degradation with upstream dams. Notably, a number of these states regularly include flow-impaired waterways on their 303(d) list as well as their 305(b) Report. ELC has collected a significant amount of information on other states' hydrologic impairment listings and processes (and provided this to the State Water Board); this can be made readily available to the Los Angeles Board if desired.

6. Flow Standards Are Not Required to Identify Hydrologically Impaired Waterways in Category 4C

Most, if not all, of the states that identify hydrologic (including flow) impairments make those listing decisions based on best professional judgment and the information before them. Flow standards are not required to be developed first. Even the State Water Board has stated that flow listings could be done "based on staff's professional judgment as well as the evidence submitted by the data," and that they "would likely be mostly narrative . . . unless there are specific numeric targets for flow in place."[29] In other words, the state itself has recognized that flow criteria are not necessary for flow impairment listings. ELC has compiled significant information collected on various states' hydrologic impairment listing strategies and would be pleased to provide this additional information if desired.

U.S. EPA addresses the process of identifying hydrologically impaired waters in its 2015 EPA Listing Guidance, stating that:

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[26] Also found at: http://bit.ly/SDRWQCB (note attachments to this letter as well for further supporting information).
[27] http://www.swrcb.ca.gov/losangeles/water_issues/programs/303d/2008/Final%20303(d)/Appendix_E_08Aug09.pdf.
[28] *See* detailed memorandum on this topic prepared by ELC for the SWRCB at: http://bit.ly/303d305b.
[29] Email from Nicholas Martorano, SWRCB to SWRCB/RWQCB staff (July 22, 2013); available upon request.

> if States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C. Examples of hydrologic alteration include: a perennial water is dry; no longer has flow; has low flow; has stand-alone pools; has extreme high flows; or has other significant alteration of the frequency, magnitude, duration or rate-of-change of natural flows in a water; or a water is characterized by entrenchment, bank destabilization, or channelization. Where circumstances such as unnatural low flow, no flow or stand-alone pools prevent sampling, it may be appropriate to place that water in Category 4C for impairment due to pollution not caused by a pollutant. In order to simplify and clarify the identification of waters impaired by pollution not caused by a pollutant, States may create further sub-categories to distinguish such waters.[30]

Note that this description of the process for identifying flow impairments does *not* require adoption of flow standards as a prerequisite for listing.

The SD RWQCB Staff Report also addressed this topic in their just-approved Staff Report and Integrated Report, similarly stating that:

> where a water segment exhibited significant degradation in biological populations and/or communities as compared to reference site(s) the San Diego Water Board assessed the segment for inclusion in Category 4c using data and information as prescribed in USEPA's 2015 Guidance . . .. Where in-stream data was lacking, stream segments were evaluated using desktop aerial reconnaissance for potential in-stream habitat and hydrologic alteration associated with channel modifications, stream diversion or augmentation, and to evaluate the level of associated development and use of best management practices to mitigate hydromodification.[31]

7. Sound Public Policy Dictates that Flow-Impaired Waterways Must Be Identified

States, including California, have identified and are identifying flow-impaired waterways in their Integrated Reports not only because the Clean Water Act calls for it and U.S. EPA Guidance reinforces it. They also do so because it makes smart policy sense. Why would a state limit the amount of information it releases, information that could help it make better decisions about how to prioritize its resources? If the main problem with a waterway is not temperature or dissolved oxygen but flow, for example, then that information should be available so the best permitting and resource allocation decisions can be made to protect affected waterways.

Identification of flow-impaired waterways is also important because those listings help the public exercise their own responsibility to help improve waterway health. U.S. EPA agreed in its Guidance, stating that "a variety of watershed restoration tools and approaches to address the

[30] 2015 EPA Listing Guidance, *supra*, p. 15.

[31] SD RWQCB, "Clean Water Act Sections 305(b) And 303(d) Integrated Report for The San Diego Region (July 2016); at: http://www.waterboards.ca.gov/sandiego/water_issues/programs/303d_list/docs/IR_RB_StaffReport_R9_07-11-16_Clean.pdf, pp. 13-14.

source(s) of the impairment" exist even in the absence of TMDLs, increasing the importance of full and complete identification for impaired waterways.[32]

Hydrologic impairment listings also can and should be used in CEQA analyses of proposed projects that could further impact the flow of identified waterways, thus preventing additional damage to already-impacted waterways and fish. ELC has prepared and submitted extensive comments to the state on the numerous policy benefits of properly identifying flow-impaired waterways.[33]

8. <u>Water Bodies Can and Should Be Placed in *All* Relevant Categories of Identification</u>

The Staff Report states that "[t]o meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five *non-overlapping* categories based on the overall beneficial use support of the water segment…."[34] This statement appears to limit the RWQCB to placing water bodies in only one category, an interpretation presumably reflected in the recommendation to include zero listings in Category 4C.

This approach is simply incorrect. U.S. EPA has been quite clear that water bodies can be placed into multiple categories, and in fact should be in order to provide the best available information to U.S. EPA and Congress. As explained by the SD RWQCB in its Staff Report:

> It is important to note that USEPA recommended in its 2015 guidance that "States assign all of their surface water segments to **<u>one *or more* of five reporting categories</u>**"....[35]

U.S. EPA reiterated this point in its joint report with USGS, stating that "EPA's guidance has noted that **assessment categories *are not mutually exclusive*, and waters may be placed in more than one category (for example, categories 4C and 5)**."[36] Accordingly, flow impairments should be reflected in Category 4C *whether or not* there is a pollutant present, the approach taken recently by the SD RWQCB. Otherwise, the state is conflating the Section 303(d) and 305(b) reports rather than combining them, ignoring its Section 305(b) responsibilities in the process.[37] Because the state must comply with *both* Sections 305(b) and 303(d), it must provide information relevant to all categories applicable to a single water body.[38] The Integrated Report does not meet these mandates.

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[32] For an analysis of water governance tools that could effectively restore flows to California waterways, *see* Linda Sheehan *et al*., "California Water Governance for the 21st Century" (2017), available at: http://bit.ly/CAwatergovernance.
[33] Letter from ELC, CCKA to SWRCB, "Inclusion of Impairments Due to Low Flow in the California 2012 Section 303(d) List" (May 15, 2013); at: http://bit.ly/SWB303d.
[34] Staff Report, *supra*, p. 8 (emphasis added).
[35] SD RWQCB, *supra*, p. 14 (emphasis added).
[36] U.S. EPA/USGS Report, *supra*, Ch. 5 (emphasis added).
[37] 33 U.S.C. §§ 1315(b), 1313(d); 40 C.F.R. §§ 130.7, 130.8.
[38] This is consistent with the statutory intent of the CWA, which distinguishes the related Section 305(b) reports and Section 303(d) lists. In 2002, the EPA for the first time released guidance calling for a single "Integrated Report" merging Section 305(b) water quality reports and Section 303(d) lists. *See* U.S. EPA, 2002 Integrated Water Quality Monitoring and Assessment Report Guidance.

9. Readily Available Data Exist and Have Been Provided in Support of the Listing of Waterways as Hydrologically Impaired

As evident based on substantial, readily available information, the lines of evidence for hydrologic impairment are strong for numerous Los Angeles Region waterway segments, including but not limited to Reach 3 of the Ventura River (specifically for "pumping," as currently listed) as well as the Santa Clara River (particularly Reaches 1 and 2).[39] Federal regulations state that states must evaluate "all existing and readily available information" in developing their 303(d) lists and prioritizations.[40] The SWRCB's Executive Director reinforced the breadth of this requirement in a memorandum on the scope of listing regulations at 40 CFR § 130.7(b)(5).[41] This information must include flow, a position recently reinforced by U.S. EPA, who stated that the integrated reporting format is key to "acknowledge the important role of flow in contributing to water-body impairments."[42]

Data Supporting Listing of the Ventura River (Reaches 3 and 4)

Excessive pumping contributes to the severe dewatering of the Ventura River (Reach 3), imperiling endangered steelhead trout and other aquatic species. Therefore, the Los Angeles RWQCB must not delist this waterway for "pumping" as is currently proposed.

As support, ELC incorporates by reference those comments prepared by Santa Barbara Channelkeeper on the Los Angeles Region's 2012 Integrated Report[43] and 2016 Integrated Report,[44] both of which summarize the extensive body of evidence establishing the link between pumping on Reach 3 (as well as Reach 4) of the Ventura River and resulting negative biological impacts, including to steelhead trout. ELC also incorporates by reference numerous additional documents that highlight the negative effects of excessive pumping on Reach 3 (as well as Reach 4) of the Ventura River, including from U.S. EPA Region 9 (finding in its Draft TMDL for Reaches 3 and 4 of the Ventura River that "low flows due to pumping and diversion activities likely exacerbate the flow and water quality conditions in Reaches 3 and 4"),[45] the National Marine Fisheries Service (NMFS) (finding in a 2007 Draft Biological Opinion that "[w]ater withdrawals from surface diversions and subsurface pumping have affected the timing and magnitude of the Ventura River flows ... and has decreased the quantity and quality of critical habitat for steelhead")[46], and the Los

[39] See Attachment 1 for detailed information drawn from such sources.
[40] 40 CFR § 130.7(b)(5).
[41] At: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/impaired_waters_list/clarification_30jan07.pdf (placing "no limits" on the data that can be provided to the RWQCBs for development of the Integrated Report's 303(d) and 305(b) lists).
[42] U.S. EPA/USGS Report, *supra*, Ch. 5.
[43] *See* Santa Barbara Channelkeeper, "Comment Letter—303(d) List portion of the 2012 California Integrated Report" (Feb. 5, 2015), available at: http://bit.ly/2o8pL5P.
[44] *See* letter from Santa Barbara Channelkeeper to the LA RWQCB on 2016 Revisions to the Los Angeles Region 303(d) List (Mar. 2017; available upon request).
[45] U.S. EPA Region 9, Ventura River Reaches 3 and 4 - Total Maximum Daily Loads For Pumping & Water Diversion-Related Water Quality Impairments (Draft Dec. 2012), at: https://www3.epa.gov/region9/water/tmdl/pdf/ventura-river-reaches3-4_tmdl.pdf.
[46] National Marine Fisheries Service, 2007 Draft Biological Opinion for the Army Corps of Engineers' permitting of the City of Ventura's proposed Foster Park Well Facility ("FPWF") repairs.

Padres National Forest Ojai Ranger District (describing the historic impacts low flows have upon steelhead trout populations in the Ventura River watershed in a report on steelhead restoration).[47]

Together, this data demonstrates that pumping impairs beneficial uses in Reach 3 of the Ventura River, particularly those beneficial uses related to aquatic life and habitat. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d).

This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. Reach 3 of the Ventura River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival.

Based on the readily available data and information, the evidence is sufficient to support the continued listing of Reach 3 of the Ventura River on the 303(d) list due to "pumping." Thus, the proposed delisting of the "pumping" impairment on Reach 3 must not proceed. The Los Angeles RWQCB staff has not provided sufficient information to justify this delisting, nor have they addressed the above evidence that clearly validates the "pumping" listing as it originally occurred. Similarly, this evidence supports the continued listing (as currently proposed) of Reach 3 as impaired due to "water diversion," and of Reach 4 as impaired due to both "water diversion" and "pumping."

Data Supporting Listing of the Santa Clara River

Since at least 2013, ELC and partners have submitted detailed information establishing a clear impairment due to altered flows on the Santa Clara River (in particular Reaches 1 and 2, located downstream of the Vern Freeman Diversion Dam). In May 2013, we submitted a "shortlist" of ten California waterways being drained dry for inclusion on the 303(d) list, along with supporting evidence (*see* Attachment 2). The Santa Clara River was one of those waterways. As described in the submitted evidence:

> The Santa Clara River is Southern California's last major free flowing waterway and is home to 17 species listed as threatened or endangered under the state and federal Endangered Species Acts. At River mile 10.5, United Water Conservation District (United) diverts almost all of the River's flows outside of large storm events. United, USGS, and local agency data show that water diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses, deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds.[48] In addition to impacting beneficial uses associated with the provision of adequate steelhead habitat, surface water withdrawals also destroy downstream native riparian and endangered bird

[47] Ventura Watershed Analysis - Focused for Steelhead Restoration, Los Padres National Forest Ojai Ranger District, Prepared by Sara Chubb (Forest Fishery Biologist) (1997), available at: http://friendsofventurariver.org/wp-content/themes/client-sites/venturariver/docs/ventura-river-watershed-steelhead-restoration-los-padres.pdf.

[48] Letter from Jason Weiner (Ventura Coastkeeper) to Jeffrey Shu (SWRCB), Public Solicitation of Water Quality Data and Information for 2012 Integrated Report (Aug. 30, 2010).

habitat, degrade the ecological integrity of the River's estuary, and impair a plethora of cultural and recreational beneficial uses downstream.[49]

Additional readily available information further supports the imperative to list the Santa Clara River as impaired due to altered flows. This includes documents published by NMFS (describing in a Final Biological Opinion the negative biological impacts of the Vern Freeman Diversion Dam, which can deplete the Santa Clara River of all its flows and jeopardizes the existence of endangered Southern California steelhead trout),[50] the Santa Clara River Trustee Council and The Nature Conservancy (describing Santa Clara River flow reductions caused by water diversions and groundwater pumping and the resulting impact on steelhead trout),[51] the Los Angeles RWQCB (describing the historic decline of steelhead trout in the Santa Clara River, as well as flow impacts from water diversions and hydromodification in its "State of the Watershed" report),[52] and others.

Severely reduced flows below the Vern Freeman Diversion Dam
Photo courtesy of Wishtoyo Chumash Foundation

Together, this data demonstrates that reduced flows impair beneficial uses in the Santa Clara River, particularly those beneficial uses related to aquatic life and habitat. This is most clearly true in Reaches 1 and 2 of the Santa Clara River, where over-diversion and other flow impacts (due in large part to the Vern Freeman Diversion Dam) can cause the waterway to go completely dry. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d).

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[49] "Ten California Waterways Being Drained Dry - Using the Clean Water Act to Resuscitate Disappearing Waterways" (May 2013).

[50] National Marine Fisheries Service, Final Biological Opinion to Reclamation Re: Approve United Water Conservation District's Proposal to Operate the Vern Freeman Diversion and Fish Passage Facility (Jul. 23, 2008), at: http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/south_central_southern_california/nmfs_bo_vern_freeman___fish_passage_facility_7-23-08.pdf.

[51] Matt Stoecker and Elise Kelley, "Santa Clara River Steelhead Trout: Assessment and Recovery Opportunities" prepared for the Santa Clara River Trustee Council and The Nature Conservancy (Dec. 2005), at: http://www.stoeckerecological.com/reports/SantaClaraReport.pdf.

[52] Los Angeles Regional Water Quality Control Board, State of the Watershed - Report on Surface Water Quality: The Santa Clara River Watershed, p. 13 (Nov. 2006) at: www.waterboards.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/AdminRecordOrderNoR4_2012_0175/Section%2010_References-Part%20I_COMPLETED.pdf.

This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. The Santa Clara River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based on the readily available data and information, the evidence is sufficient to support the listing of the Santa Clara River (particularly Reaches 1 and 2) on the 303(d) list for impairment caused by altered flow. This evidence also supports including Santa Clara River on the 305(b) report.

***

In sum, we once again urge the Los Angles RWQCB to follow the lead of the SD RWQCB, as well as U.S. EPA and numerous other states, in identifying flow- and otherwise hydrologically-impaired waters in the region's Integrated Report. To do so, the staff report must be revised to support the continued listing of Reach 3 of the Ventura River as impaired due to pumping (as done in previous years), as well as by listing the Santa Clara River (particularly Reaches 1 and 2) as impaired due to altered flows.

Thank you for the opportunity to submit these comments. If you have any questions or would like additional information, please do not hesitate to contact us.

Sincerely,

Grant Wilson
Interim Director, ELC
gwilson@earthlaw.org
510-566-1063

Attachment 1: Comment Letter from ELC to San Diego RWQCB, "Comment – CWA Section 305(b)/303(d) Integrated Report" (Aug. 8, 2016)
Attachment 2: "Ten California Waterways Being Drained Dry" (May 2013)
Attachment 3: Letter from CCKA *et al* to State Water Resources Control Board, "Re: Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report [Clean Water Act Sections 305(b) and 303(d)]" (Aug. 30, 2010)

Attachment 1

earth LAW CENTER
FIGHTING FOR NATURE'S RIGHTS

P.O. Box 610044, Redwood City, CA 94061
tel (650) 877-2710
www.earthlawcenter.org

August 8, 2016

Henry Abarbanel, Chair and Board Members
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, California 92108

VIA ELECTRONIC SUBMITTAL: sandiego@waterboards.ca.gov

Re: Comment – CWA Section 305(b)/303(d) Integrated Report, Attn: Xueyuan Yu

Dear Chair Abarbanel and Board Members:

On behalf of Earth Law Center (ELC), I welcome the opportunity to submit these comments on the above-referenced CWA Section 305(b)/303(d) Integrated Report (Report). ELC has been working at the state and national levels for a number of years to ensure that waterbodies impaired by "pollution," particularly altered flow and hydrology, are represented in either Category 5 or Category 4C of the 305(b)/303(d) Integrated Report. Our recent comment letter to U.S. EPA and USGS in support of such listings is attached.

We write today in support of your proposal to list waterways as impaired due to hydromodification and habitat alteration in Category 4C, as discussed in the July 2016 Draft Staff Report[1] at pages 12-17. As noted in the Staff Report, on August 13, 2015 U.S. EPA released guidance on Integrated Reporting and Listing Decisions that reaffirmed the duty to list in Category 4C those waters impaired by "pollution."[2] In this guidance, U.S. EPA notes that "[w]hile TMDLs are not required for waterbody impairments assigned to Category 4C, States can employ a variety of watershed restoration tools and approaches to address the source(s) of the impairment," raising the importance of full and complete listing identification for these impaired waterways. The Staff Report echoes EPA's finding, stating that Category 4C listed waters "may be a priority for restoration by a Regional Water Board."

We further support your staff's work, consistent with U.S. EPA guidance and regulations, to identify flow-impaired stream segments where in-stream data was lacking, using such tools as

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[1] At: http://www.waterboards.ca.gov/sandiego/water_issues/programs/303d_list/docs/IR_RB_StaffReport_R9_07-11-16_Clean.pdf.

[2] Memorandum from U.S. EPA, Office of Wetlands, Oceans, and Watersheds Information to Water Division Directors, Regions 1 – 10, Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions (August 13, 2015), at: https://www.epa.gov/sites/production/files/2015-10/documents/2016-ir-memo-and-cover-memo-8_13_2015.pdf. *See also* U.S. EPA, "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act," p. 56 (July 29, 2005), at: http://bit.ly/2aIVP8h.

“desktop aerial reconnaissance for potential in-stream habitat and hydrologic alteration associated with channel modifications, stream diversion or augmentation.”

Finally, we support staff’s assertion that it is “important to note that USEPA recommended in its 2015 guidance that ‘States assign all of their surface water segments to *one or more* of five reporting categories’.” (Emphasis added.) In other words, a stream segment can be listed for *both* impaired hydrology and pollutant contamination, rather than one or the other.

Specific listing of all waters impaired by “pollution” gives a far more accurate picture of the challenges facing state agencies and Californians than ignoring pollution impairments. For example, the Staff Report states that “over 96 percent of streams that exhibited biological degradation had both an associated pollutant(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration (hydromodification, Table 3).” If pollution impairments were ignored, then virtually all of the impaired streams in the San Diego Region would be under-assessed, likely resulting in misallocation of limited resources and attention.

The Clean Water Act calls on the nation to protect the chemical, biological *and physical* integrity of our waters. The full and proper identification of all impaired waterways, including for altered flow and hydrology, is an important step in meeting this mandate. We urge the San Diego Regional Water Quality Control Board to adopt the proposed listings for habitat alteration/hydromodification, as described in Table 3 of the Draft Staff Report and elsewhere. Thank you for the opportunity to submit these comments.

Sincerely,

Linda Sheehan

Linda Sheehan
Executive Director
lsheehan@earthlaw.org

attachments

Attachment 2

Ten California Waterways Being Drained Dry

Using the Clean Water Act to Resuscitate Disappearing Waterways *(May 2013)*

In August 2010, environmental, tribal, and fishing groups submitted more than one thousand pages of detailed studies, data, and analysis to inform the Board's development of the 2012 Clean Water Act Section 303(d) List. As detailed in that letter, and at the August 2012 Water Board informational item on this matter, California is legally required to include on its Section 303(d) list *all* of the waterways for which "readily available" data indicate impairment, including impairments due to alterations in natural flow.

Other states have begun this essential task of identifying water bodies impaired by altered flows, with support by U.S. EPA. Within California, U.S. EPA's Bay Delta Action Plan[i] anticipates flow listings, noting that "identifying those impairments and identifying the cause (whether it is a "pollutant" for purposes of Section 303(d) or some other cause) is a critical part of the Clean Water Act response to the Estuary's problems."

Given California's current struggles with water, and the challenges to come with climate change, every tool must be used to prevent further damage and to restore degraded waterways to full health. California must begin a process of identifying and listing flow-impaired waterways in its 2012 303(d) list, as detailed in our 2010 scoping letter and the 2012 flows listing informational hearing.

To help begin this Board effort, we have developed a shortlist of waterways that are clearly and incontrovertibly impaired, and for which low flows are so clearly a cause that there are no reasonable arguments against their 303(d) listing for flow, in either Category 4C or 5. Preference was given in this initial shortlist to mainstem waterways as opposed to tributaries, as mainstem flow issues are more likely to impact entire watersheds and regions. At a minimum, these critically impaired waterways should be included on the draft 2012 303(d) List and released for public review at Regional and State Water Board hearings.

We worked closely with local groups to create this list based on the following criteria, among others:[ii]

a. Significant data was submitted by August 2010 as part of the CWA 2012 303(d) scoping process, or is otherwise readily available (e.g., such as in government databases), and demonstrates altered flows such that impairment could not be dismissed as either naturally occurring or episodic.
b. Local stakeholders are invested in the health of the waterway, and could inform and participate in restoration of the health of the listed waterway.
c. Prior formal recognition of flow issues with the waterway by State Water Board, Department of Fish and Wildlife, or other state or local agencies.
d. Ongoing or potential injury to threatened or endangered species.
e. Waterways within the National or California Wild and Scenic River System, or Class I streams (habitat for fishery resources) or Class II streams (habitat for aquatic non-fish vertebrates and/or aquatic benthic macroinvertebrates).
f. Waterways where listing would help prevent waste, unreasonable use or unreasonable method of use of water, or unreasonable diversion or method of diversion of water.

Listed from north to south, our proposed "top ten" candidates for which altered flow is a basis for listing on California's 2012 Section 303(d) List are as follows:

1. **Scott River** (Region 1) Sections of the Scott River are completely dewatered during summer months, while other sections are severely flow-impaired. Adjudicated water rights alone are sufficient to allow complete dewatering of the Scott River during the summer and early fall. In

addition, a shift from surface diversions, which are naturally self-limiting, to groundwater wells has made worse the apparent over-appropriation of water in the watershed.[iii, iv]

2. **Shasta River** (Region 1) The hydrology of the Shasta River is strongly affected by surface water diversions, groundwater pumping, and Dwinnell Dam. Seven major diversion dams and numerous smaller structures located on the Shasta River substantially and rapidly reduce flows in the main stem when they are in operation. In addition, Dwinnell Dam, located at about river mile 40, has dramatically altered the flow regime in all seasons of the main stem river. During various times of the year, no water is released from Dwinnell Dam for fish in the Shasta River. These flow alterations have adversely affected salmonid populations in the river.[v]

3. **Eel River** (Region 1) Historic land use, including pervasive logging and road construction that reduced shade, vastly increased sedimentation and altered hydrology and soils, is exacerbated in many areas by unregulated dry-season diversions related to marijuana cultivation. As a result, Eel River and its tributaries suffer from low flows that often produce temperatures lethal to listed fish species.[vi]

4. **Mattole River** (Region 1) A detailed study of the Mattole River Basin found that lack of adequate late summer and early fall stream flow is recognized as one of the most important limitations on salmonid habitat in the Mattole River basin. In recent years, juvenile salmonids have become stranded in pools due to excessively low flows, causing mortality and necessitating fish rescue operations.[vii]

5. **Mark West Creek** (Region 1) Ten years ago all 28 miles of Mark West Creek had water in the summer. Today, because of increased diversions, only approximately 3½ miles have water. Mark West Creek provides important habitat to steelhead trout and endangered coho salmon, whose populations are being adversely affected by elevated water temperatures.

6. **Napa River** (Region 2) Numerous studies referenced in the development of AB 2121 Instream Flow Guidelines for Northern Coastal Streams, among other places, illustrate the significantly degraded habitat of the Napa River, which can only be restored with a focus on reversing severely reduced natural flows.[viii]

7. **San Joaquin River, inflow to the Delta** (Region 5)[ixx] The San Joaquin River was selected as a shortlist priority in light of the data contained in the proceedings being held on potential revisions to the Bay-Delta Water Quality Control Plan to increase flows from the San Joaquin River into the Delta. Current flows are wholly inadequate, as the state and federal wildlife agency, EPA, and NGO analyses show (as well as the SWRCB's own analyses and peer reviews).

8. **San Francisco Bay-Delta, outflow to Suisun Bay and San Francisco Bay** (Region 5) In addition to the above information, one of the key findings of the SWRCB's 2010 Public Trust flows report is that Delta outflow is significantly impaired, and that substantially greater outflow is needed to protect Public Trust fishery populations. This is especially true in the spring and fall months. Consideration should also be given to listing other portions of the Delta as flow-impaired, again in light of the data/information and agency processes described above.

9. **Salinas River** (Region 3) "Channel alteration and changes in flow regime have caused a virtual loss of the anadromous life history of three steelhead in the Salinas River." More generally, "flows in lower reaches for adult and juvenile steelhead passage are often lacking," with "[g]roundwater pumping related to agricultural activities . . . caus[ing] the loss of surface flow in winter and spring."[xi] This detailed analysis concluded that "unless the Salinas River channel and flow move back towards their more normal range of variability, steelhead cannot be restored."

10. **Santa Clara River** (Region 3) The Santa Clara River is Southern California's last major free flowing waterway and is home to 17 species listed as threatened or endangered under the state and federal Endangered Species Acts. At River mile 10.5, United Water Conservation District (United) diverts almost all of the River's flows outside of large storm events. United, USGS, and local agency data show that water diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses, deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds. [xii] In addition to impacting beneficial uses associated with the provision of adequate steelhead habitat, surface water withdrawals also destroy downstream native riparian and endangered bird habitat, degrade the ecological integrity of the River's estuary, and impair a plethora of cultural and recreational beneficial uses downstream.

Contacts for Additional Data & Information

(1) and (2): for Scott and Shasta River and other flow listings in the Klamath Basin, contact Konrad Fisher (konrad@klamathriver.org) at Klamath Riverkeeper or Craig Tucker (ctucker@karuk.us) with the Karuk Tribe.

(3): for Eel River listing, contact Zeke Grader (zgrader@ifrfish.org) with PCFFA, Darren Mierau (dmierau@caltrout.org) with CalTrout, or Scott Greacen (scott@eelriver.org) with Friends of the Eel River.

(4): for Mattole River listing, contact Brian Johnson (bjohnson@tu.org) with Trout Unlimited or Hezekiah Allen (Hezekiah@mattole.org) with Mattole Restoration Council.

(5) and (6): for Sonoma waterways, contact Don McEnhill (don@russianriverkeeper.org) with Russian Riverkeeper.

(7) and (8): for San Joaquin River and Delta, contact (among others) Bill Jennings (deltakeep@aol.com) with California Sportfishing Protection Alliance or Zeke Grader (zgrader@ifrfish.org) with PCFFA.

(9): for Salinas River, contact Steve Shimek (exec@montereycoastkeeper.org) with Monterey Coastkeeper.

(10): for Santa Clara River, contact Jason Weiner (jweiner.venturacoastkeeper@gmail.com) with Ventura Coastkeeper, Ron Bottorff (bottorffm@verizon.net) with Friends of the Santa Clara River or Cameron Yee (cyee@causenow.org) with CAUSE.

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[i] U.S. EPA. August 2012. Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary: EPA's Action Plan, p. 9, *available at* http://www2.epa.gov/sites/production/files/documents/actionplan.pdf.

[ii] Criteria 4-6 are taken from the State Water Board's AB 2121 Enforcement Priorities, Appendix G, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/instream_flows/docs/ab2121_0210/adopted050410instreamflowpolicy.pdf.

[iii] National Research Council (NRC). 2004. Endangered and Threatened Fishes in the Klamath River Basin – Causes of Decline and Strategies for Recovery. The National Academies Press, Washington, DC.

[iv] S.S. Papadopulos & Associates Inc. 2012. Groundwater Conditions in Scott Valley, California. Report prepared for the Karuk Tribe, Happy Camp, CA.

[v] Lestelle, L. 2012. Effects of Dwinnell Dam on Shasta River salmon and considerations for prioritizing recovery actions. Report prepared for the Karuk Tribe, Happy Camp, CA.

[vi] Higgins, Patrick, Consulting Fisheries Biologist. Feb. 2010. Evaluation of the Effectiveness of Potter Valley Project National Marine Fisheries Service Reasonable and Prudent Alternative (RPA): Implications for the Survival and Recovery of Eel River, Coho Salmon, Chinook Salmon, and Steelhead Trout.

[vii] Klein, Randy D., Hydrologist. March 2007. Hydrologic Assessment of Low Flows in the Mattole River Basin 2004-2006, p. 1.
[viii] Letter from Patrick Higgins, Consulting Fisheries Biologist to SWRCB. April 2, 2008. *Comments on Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams,* pp. 13-15 (in Appendix A).
[ix] For both of the Region 5 sets of waterways, there are agency processes ongoing to address flow issues. However, the lengthy time frame and uncertain future of these processes, and the sensitive and declining health of these waterways, demands that we use all available tools to (at a minimum) prevent waterway health from deteriorating further as these processes play out. Formal listing as "flow impaired" on the 303(d) list would provide invaluable assistance in this regard.
[x] Based on the agency, NGO and academic testimony presented at the State Board's 2010 "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem" hearing and State Board's Phase I SED hearing, as well as Fish and Wildlife's 2010 "Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta," we believe the Merced, Tuolumne, Stanislaus and San Joaquin Rivers would all qualify to be listed as flow impaired.
[xi] *Id*.
[xii] Letter from Jason Weiner, Ventura Coastkeeper to Jeffrey Shu, SWRCB. Aug. 30, 2010. Public Solicitation of Water Quality Data and Information for 2012 Integrated Report.

Attachment 3

CALIFORNIA COASTKEEPER. ALLIANCE

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COASTAL ENVIRONMENTAL RIGHTS FOUNDATION

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Coalición de Salud Ambiental

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the watershed project

california water impact network

California Sportfishing Protection Alliance
"An Advocate for Fisheries, Habitat and Water Quality"

AQUALLIANCE
DEFENDING NORTHERN CALIFORNIA WATERS

RRWPC
Russian River Watershed Protection Committee

August 30, 2010

Jeffrey Shu, State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

VIA ELECTRONIC AND U.S. MAIL: jshu@waterboards.ca.gov

RE: **Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report [Clean Water Act Sections 305(b) and 303(d)]**

Dear Mr. Shu:

The undersigned organizations have been active for many years on programs and issues affecting the quality and flow of the waters of the State. Our organizations have performed water monitoring and watershed surveys, and conducted outreach among a diverse group of citizens around California, to determine the most pressing issues for state waterway health. We welcome the opportunity to submit these comments in light of these significant and ongoing efforts.

We present in this letter two general themes of proposed listings. First, we highlight some examples of traditional "pollutant"-based "Category 5"[1] listings that are being proposed to you separately. This Category of listings has been the focus of the State Water Resources Control Board's (State Board) 303(d) list to date. We urge the State Board's careful attention to these and the other Category 5 listings proposed by the identified commenters as well as the undersigned organizations and others. The adoption of such proposed listings will help ensure clean, healthy waterways throughout the State.

Second, we highlight additional groups of listings that also identify impaired and threatened waters that should be listed under Category 4 (particularly 4C) or Category 5. Our analysis reveals three such groups that regularly impair designated beneficial uses but that have received inadequate attention in the state's 303(d) process to date. These are: altered natural flows in surface waters, groundwater contamination and excessive groundwater withdrawals that impact surface water health, and anthropogenic climate change-caused impacts to surface waters. Impaired and threatened waterways from these groups of listings must be included in the 2012 303(d) list to ensure compliance with the Clean Water Act, and to achieve full restoration of the health of the waters of the state.

[1] Category references from U.S. EPA, "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act" (July 29, 2005), available at: http://www.epa.gov/owow/tmdl/2006IRG/report/2006irg-report.pdf (2006 Guidance), and SWRCB, "Staff Report: 2010 Integrated Report Clean Water Act Sections 303(d) and 305(b)" (April 19, 2010) (2010 Integrated Report Staff Report), available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/2010ir0419.pdf.

Table of Contents

I. FEDERAL AND STATE MANDATES REQUIRE 303(D) LIST IDENTIFICATION OF ALL IMPAIRED AND THREATENED CALIFORNIA WATER BODIES.

A. Impaired or Threatened Water Bodies Must Be Identified on the 303(d) List Regardless of Whether Impacted by "Pollutants" or "Pollution."

Section 303(d) of the Federal Clean Water Act represents the Act's "safety net."[2] It is the bedrock component of the Clean Water Act, the backstop to ensure that the goals of the Act can be achieved when initial efforts fail. At the advent of implementation of Section 303(d) in the late 1990s, U.S. EPA Assistant Administrator for Water Robert Perciasepe called the TMDL program "crucial to success because it brings rigor, accountability, and statutory authority to the process."[3]

Section 303(d) requires states to address comprehensively all human activities that affect the chemical, physical, and biological integrity of the nation's waters.[4] Section 303(d) is widely recognized as an essential means to achieving the Clean Water Act's goal of restoring waters so that they are safe for swimming, fishing, drinking, and other "beneficial uses" that citizens enjoy, or used to be able to enjoy.[5]

Section 303(d) first requires the State Water Board to identify waters that do not meet, or are not expected to meet by the next listing cycle, water quality standards after the application of certain technology-based controls. Specifically, Section 303(d)(1)(A) states as follows:

> Each State shall identify those waters within its boundaries for which the effluent limitations required by section 1311(b)(1)(A) and section 1311(b)(1)(B) of this title are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

In other words**,** if a water body's standards are not being met in the water body, then it *must* be listed under the state's Section 303(d) list. This is a separate and distinct task from the effort of determining whether or not total maximum daily loads (TMDLs) are required, as discussed in CWA Section 303(d)(1)(C):

> Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those

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[2] Houck, Oliver A., *The Clean Water Act TMDL Program* 49 (Envtl. Law Inst. 1999).

[3] Memorandum from Robert Perciasepe, Assistant Administrator for Water, U.S. EPA, to Regional Administrators and Regional Water Division Administrators, U.S. EPA, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)" (August 8, 1997).

[4] *See* 33 U.S.C. §§ 1251 *et seq*. and 33 U.S.C. § 1313(d).

[5] 33 U.S.C. § 1313(d)(1) and (2); *see also* 40 C.F.R. § 130.7(b)(1). California law defines an existing use as one that has occurred since 1975 and recognizes 23 designated or beneficial uses for water bodies, including uses such as freshwater replenishment, and migration of aquatic organisms. (2002 California 305(b) Report on Water Quality, Appendix A, State Water Resources Control Board, August, 2003. Available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/305b.shtml.

> pollutants which the Administrator identifies under section 1314(a)(2) of this title as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

This means that a water body is listed on the 303(d) list if beneficial uses are being impaired, and a TMDL is developed if they are being impaired by a "pollutant" (including a combination of pollutants and pollution).

"Pollutant" is defined in CWA Section 502(6).[6] Courts have interpreted the definition of "pollutant" expansively, stating that it "encompass[es] substances not specifically enumerated but subsumed under the broad generic terms" listed in Section 502(6).[7] Similarly, courts have stated that the definition of pollutant is "meant to leave out very little."[8]

"Pollution" is also defined in CWA Section 502, as "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." U.S. EPA has found that "pollution" must result in a 303(d) listing if it results in impairment, and will result in a TMDL if pollutants are also present:

> In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard and to support water quality management actions necessary to address the cause(s) of the impairment.[9]

The mandate to list impaired waterways under Section 303(d)(1)(A) regardless of the cause of impairment is consistent with the reasoning of *Pronsolino v. Nastri*.[10] The Ninth Circuit Court of Appeals found that the source of the impairment at issue is irrelevant to listing, and that decisionmakers may consider only the issue of whether the water body is impaired in determining whether to list it. This position is also supported by the National Research Council (NRC), which found that the TMDL program "should encompass all stressors, both pollutants

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[6] The definition of "pollutant" in Section 502(6) includes: "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." Several other items are specifically excluded; flow alteration is not one of those items.

[7] *U.S. PIRG v. Atlantic Salmon of Maine* (U.S. Dist. Ct. Maine, Aug. 2001), available at http://www.med.uscourts.gov/Site/opinions/kravchuk/2001/MJK_08282001_1-00cv150_USPIRG_v_Heritage.pdf, citing *United States v. Hamel*, 551 F.2d 107 (6th Cir. 1977).

[8] *Id.*, citing *Sierra Club, Lone Star Chapter v. Cedar Point Oil Co.*, 73 F.3d 546, 566-568 (5th Cir. 1996), *cert. denied*, 519 U.S. 811 (1996).

[9] 2006 Guidance at 56.

[10] *Pronsolino v. Nastri*, 291 F.3d 1123, 1137-38 (9th Cir. 2002), cert. denied, 123 S. Ct. 2573 (2003) ("Water quality standards reflect a state's designated *uses* for a water body and do not depend in any way upon the source of pollution").

and pollution, that determine the condition of the waterbody."[11] The NRC found this step to be important in part because "activities that can overcome the effects of 'pollution' and bring about water body restoration – such as habitat restoration and channel modification – should not be excluded from consideration during TMDL plan implementation."[12]

In its 2006 Guidance informing states on how to prepare their biennial report on water quality (the states' "305(b)/303(d) Integrated Report"), U.S. EPA recommended a division of impaired water body segments into Categories as follows:[13]

- Category 4: Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed;
- Category 5: Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

California adopted the following, similar state categories for impaired waterways:[14]

- Category 4a: A water segment for which ALL its 303(d) listings are being addressed; and 2) at least one of those listings is being addressed by a USEPA approved TMDL.
- Category 4b: A water segment for which ALL its 303(d) listings are being addressed by action(s) other than TMDL(s).
- Category 4c: A water segment that is impaired or affected by non-pollutant related [*i.e.*, "pollution"] cause(s).
- Category 5: A water segment where standards are not being met and a TMDL is required but not yet completed for at least one of the pollutants being listed for this segment.

Categories "4" and "5" together represent the state's "303(d) List," as *both* categories encompass the total of the state's impaired or threatened waterways under Section 303(d)(1)(A). Category 5 waters require a TMDL. This Category includes waters impaired only by pollutants and those impaired both by pollutants and "pollution" (in which case consideration of the "pollution" would be given in the TMDL development for the waterway). Category 4 also includes impaired waters, but categorizes them as not requiring development of a TMDL,[15] though other actions may be taken to improve their health, as noted below.

California's 2008/2010 303(d) list of impaired waters, adopted by the State Water Board on August 4, 2010, contains Category 4A, 4B, and Category 5 waters. However, **the state's 2008/2010 303(d) list fails to include *any* Category 4C waters**, a glaring omission given the numerous pollution-related impairments facing many of the state's threatened and impaired waterways. The State Board must rectify this oversight in the state's 2012 303(d) list.

[11] National Research Council, "Assessing the TMDL Approach to Water Quality Management," p. 4 (Nat'l Academy Press, Wash. D.C., 2001) (emphasis added).
[12] *Id*.
[13] 2006 Guidance at pp. 46 *et seq*. (emphasis added).
[14] *See* 2010 Integrated Report Staff Report at 20 (emphasis added).
[15] As noted below, we would argue that flow alterations can and should require development of a TMDL even if present without pollutants; there is precedent for this position in California.

In sum, the 2012 303(d) list must identify *all* impaired and threatened waters, whether impaired by pollutants and/or pollution – not only so that they may be addressed as required by the TMDL process,[16] but also so they may be restored to health as well through other programs and policies. For example, California's Porter-Cologne Water Quality Control Act requires that Basin Plans include a program of implementation that describes how water quality standards will be attained.[17] Where standards are not being attained – such as where flow alterations have been identified as impairing waterway beneficial uses – these implementation plans must incorporate strategies for achieving waterway health. Implementation of this state mandate, along with the TMDL program mandates where applicable, will ensure that water bodies whose health is threatened and impaired – in Categories 4(a)-(c) *and* Category 5 – are restored to health.

B. The State Must Use and Consider All Readily Available Information

The body of regulations and guidance that bear on 303(d) listing are unambiguous about the information that should be considered in making listing decisions: *all of it*. Federal regulations state clearly that "[e]ach State shall assemble and evaluate all existing and readily available water quality-related data and information to develop the [303(d)] list."[18] The regulations further mandate that local, state and federal agencies, members of the public, and academic institutions "should be *actively* solicited for research they may be conducting or reporting."[19] Furthermore, EPA's 2006 Guidance explicitly states that U.S. EPA's review of California's list will include an "assess[ment of] whether the state conducted an adequate review of all existing and readily available water quality-related information."[20] To that end, the 2006 Guidance also requires states to provide "[r]ationales for any decision to not use any existing and readily available data and information."[21]

Accordingly, and the State Board's data solicitation notice notwithstanding,[22] any and all existing and readily available data and information must be considered to determine the health of the state's increasingly-degraded water bodies.

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[16] *See supra* n. 15 regarding TMDLs for flow-related impairments in California, and *see infra* regarding requirements to develop TMDLs that consider flows when waterways are also listed due to pollutant impairments. *See also* SWRCB, "A Process for Addressing Impaired Waters in California" (July 2005), available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/iw_guidance.pdf.

[17] Water Code Section 13241 reads: "Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance…." Section 13242 follows that: "The program of implementation for achieving water quality objectives shall include, but not be limited to:

(a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.

(b) A time schedule for the actions to be taken.

(c) A description of surveillance to be undertaken to determine compliance with objectives."

It is both the law and good public policy for the state to take action to ensure that waterways identified as impaired, including those impaired by pollution, are restored to health.

[18] 40 C.F.R. § 130.7(b)(5).

[19] 40 C.F.R. § 130.7(b)(5)(iii) (emphasis added).

[20] 2006 Guidance at 29.

[21] *Id*. at 18.

[22] SWRCB, "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report – Surface Water Quality Assessment and List of Impaired Waters" (Jan. 10, 2010; updated May 24, 2010), http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/data_solicitation_ir2012v2.pdf.

II. THE UNDERSIGNED ORGANIZATIONS URGE THE STATE WATER BOARD TO LIST ALL WATERWAYS IMPAIRED BY "POLLUTANTS."

The 2008/2010 303(d) list adopted by the State Board on August 4, 2010 shows a 64% increase from the number of listings in 2006. This number likely reflects both a growing number of severely polluted waterways in California and an improvement in the Board's ability to assess a larger number of waterways and pollutants. We applaud the State Water Board for its efforts to assess a larger number of waterways and sources and causes of impairments and expect to see the 2012 303(d) list capture an even larger number of impairments.

The 2012 list can improve upon the 2008/2010 list by including additional new listings as needed, and in particular those waterways impaired by trash and bacteria. In order to rectify this, the State Water Board must ensure that the 2012 List reflects water quality data and information submitted by Waterkeeper and other groups monitoring local water quality. We bring to the Board's attention just some of the numerous water quality issues in watersheds from the Oregon border to San Diego that have yet to be addressed by the State Board's 303(d) List, and incorporate by reference the related data submissions by local Waterkeepers and the undersigned organizations. This information is by no means comprehensive, but provides the Water Board with examples of additional listings that should be carefully reviewed for inclusion in the 2012 303(d) list.

<u>North Coast</u>

Humboldt Baykeeper's Citizen Monitoring Program has collected water quality data from sites throughout the Humboldt Bay, Mad River, and Little River watersheds since 2005. Numerous waterbodies in the Humboldt Bay, Mad River, and Little River watersheds have quite high levels of fecal coliform (*E. coli*), particularly after major rain events. High fecal coliform levels have resulted in posted closures of several local beaches by the Ocean Monitoring Program of the Humboldt County Division of Environmental Health.[23] These beaches include Moonstone Beach County Park (at the outlet of Little River), and Mad River Mouth North (at the outlet of Widow White Creek and Mad River). The County has sampled ocean waters since 2003, and has documented exceedences of fecal coliform and/or Enterococcus at both Moonstone Beach County Park and Mad River Mouth North.[24] Moonstone Beach County Park is on the 303(d) list for indicator bacteria, but Humboldt Baykeeper's Citizen Monitoring Program is the only source of water quality data upstream from these beaches were water pollution due to indicator bacteria is of concern. This water quality data warrants several additional listings, as described in Humboldt Baykeeper's 303(d) comment letter.

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[23] http://co.humboldt.ca.us/hhs/phb/environmentalhealth/oceanmonitoringprogram/.

[24] http://co.humboldt.ca.us/hhs/phb/environmentalhealth/oceanmonitoringprogram/waterqualitytestresults-archive.asp.

Central Coast

From July 2008 to March 2010 San Francisco Baykeeper conducted *Enterococcus* monitoring near storm drains in San Francisco Bay's Oakland Inner Harbor.[25] The data collected reflected exceedences of Basin Plan water quality standards for *Enterococcus*,[26] and showed that contact recreation in the vicinity of these storm drains poses serious risks.[27] Accordingly, Oakland Inner Harbor should be designated as impaired for Indicator Bacteria. In addition, polybrominated diphenyl ethers (PBDEs) are present in Bay sediments, are accumulating in Bay organisms, and are known to negatively impact aquatic life. For these and other reasons, Baykeeper found that the Regional Board should consider a PBDE listing for San Francisco Bay in this 2012 listing cycle. Please refer to San Francisco Baykeeper's independent letter in response to the State Board's data solicitation for further information regarding Indicator Bacteria concentrations and PBDE toxicity in San Francisco Bay.

Despite Santa Barbara Channelkeeper's (SB Channelkeeper) submission of data and photographic evidence reflecting a serious trash problem in San Pedro Creek, the Creek was not listed for trash on the 2010 303(d) List. SB Channelkeeper's data for 2012, which was collected in compliance with the State Water Board's SWAMP guidance on rapid trash assessments, confirms that trash impairs over half the streams monitored in the Santa Barbara and Goleta Area.[28] The State Water Board should review this carefully, and consider other data submitted on trash listings so that another listing cycle does not go by without action to address this important water quality issue.

Ventura Coastkeeper (VCK) conducted water quality monitoring throughout the Santa Clara River, Ormond Beach, Calleguas Creek, and Nicholas Canyon Creek watersheds from June 2009 to August 2010. VCK found based on this information that trash listings for Nicholas Canyon Creek, San Jon Barranca, the Ormond Beach Lagoon, the Santa Clara River Estuary, and Santa Clara River Reaches 1, 3, 4a, and 5 are warranted. Additionally, VCK found the following exceedences that warrant listing on the 2012 303(d) list: Santa Clara River Estuary for flow, dissolved oxygen, pH, phosphate, and nitrate; Santa Clara River Reach 3 for *E. coli*; Ormond Beach wetlands for pH, nitrate, and *E. coli*; San Jon Barranca for *E. coli*; and Santa Clara River Reaches 1 and 2 for flow.

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[25] Under this standard, only two stations satisfied the geometric mean objective during the summer and none satisfied the objective during the winter. In addition, none of the stations achieved compliance with the "no sample greater than 104 MPN/100ml" objective within a given 30-day sampling period during either the summer or winter monitoring seasons.
[26] Pursuant to the San Francisco Bay Basin Plan, the *Enterococcus* objectives include a geometric mean of less than 35 MPN/100 ml and states that no sample should exceed 104 MPN/100 ml.
[27] San Francisco Bay is only subject to bacteriological monitoring at designated beaches, although contact recreation occurs routinely throughout the Bay, including Oakland Inner Harbor.
[28] Atascadero, Bell, Cieneguitas, Maria Ygnacio, Phelps Ditch (El Encanto Creek), San Jose, and San Pedro Creeks. *See* Santa Barbara Channelkeeper's 2012 303(d) Comment Letter responding to the State Water Board's request for data.

South Coast

From July of 2007 through February of 2010 Orange County Coastkeeper (OCCK) conducted water monitoring at a total of seven sites on San Juan, San Mateo and Cristianitios Creeks in Orange and San Diego County. All of these Creeks are under the authority of the San Diego Regional Water board. After analyzing the data from this monitoring in accordance with the current state guidelines for developing 303d listings, OCCK found that there are sufficient exceedences of basin plan objectives for ammonia, nitrate, phosphate, and cadmium to warrant additional impairment listings on the 2012 impaired waters list.

The Inland Empire Waterkeeper sampled 10 sites on a weekly basis from July 2008 through November 2009 under contract with the Santa Ana Regional Water Quality Control Board. The project included four locations on San Timoteo Creek (one site perpetually dry), four locations on Warm (Twin) Creek and two locations on City Creek; all of which drain to Reach 4 of the Santa Ana River.[29] The primary focus was *E. coli* bacteria indicators, but samples were also taken for pH, conductivity, dissolved oxygen, flow rate, temperature, metals, minerals, nutrients, PCBs, organochlorine pesticides, TDS, hardness, and COD. Five sites contained *E. coli* bacteria levels during the warm season or cool season (or both) that exceed the proposed geo-mean basin plan objective. All nine sites had a minimum of two exceedences; ranging from the most natural mountain stream, up to as many as twelve in a highly urban concrete channel.

San Diego Coastkeeper is submitting information about trash collected at beach cleanups to seek the listing of all 21 San Diego County beaches. Volunteer data shows the annual removal of more than 200 pounds of trash from 9 out of 21 beaches from Oceanside to Imperial Beach. Data indicates pervasive and widespread debris impairment along the San Diego shoreline as well as nearby watersheds which drain into coastal waters.[30] San Diego Coastkeeper is also submitting ambient water quality data for nine of the eleven watersheds in San Diego County. San Diego has collected data on conventional constituents (pH, DO, temperature) as well as other key water quality indicators (including, but not limited to, nitrogen, phosphorus, toxicity, *E. coli*, *Enterococcus*) for over three dozen sites across San Diego County each month. Data indicate that exceedences of objectives are widespread and require management action.

III. THE STATE MUST IDENTIFY AND LIST ALL WATER BODIES THREATENED OR IMPAIRED BY ALTERATIONS IN NATURAL FLOW.

U.S. EPA requires waterways with flow-related impairments to be listed on the state's 303(d) list, typically (though not exclusively) in Category 4C ("water segment that is impaired or affected by non-pollutant related cause(s)"). If pollutants are also present, the waterway must be listed in Category 5. As discussed further below, we contend that despite U.S. EPA inclination to assess flow alterations as "pollution" to be listed in Category 4C (which should *at a minimum* be populated with flow listings for California in the 2012 list), there is also support for listing such impairments in Category 5 and preparing TMDLs to address them.

[29] *See* final report at: http://www.iewaterkeeper.org/iewaterkeeper/work/projects/UpperSARWaterQuality/.
[30] Please refer to San Diego Coastkeeper's 2012 303(d) Letter to the SWRCB on trash impairments.

A. The State Water Board Must Address Impacts to Beneficial Uses of Water Bodies Caused By Alterations in Natural Flows.

The health of rivers, streams, creeks and other waterways is inextricably linked to the volume, frequency, magnitude, timing, and duration of flows.[31] "[W]ater quantity is closely related to water quality; a sufficient lowering of the water quantity in a body of water could destroy all of its designated uses, be it for drinking water, recreation, navigation, or . . . a fishery."[32] As the U.S. Supreme Court has held,

> there is recognition in the Clean Water Act itself that reduced stream flow, *i.e.,* diminishment of water quantity, can constitute water pollution. First, the Act's definition of pollution . . . encompasses the effects of reduced water quantity. *33 U.S.C. 1362(19).* This broad conception of pollution – one which expressly evinces Congress' concern with the physical and biological integrity of water – refutes petitioners' assertion that the Act draws a sharp distinction between the regulation of water 'quantity' and water 'quality.'[33]

The state's ability to ensure healthy waterways hinges in part on its ability to identify waterways impaired or threatened by altered natural flow, and to take targeted action to restore and maintain necessary flow regimes.

Water quality standards encompass both the designated uses of a water body and the water quality criteria established to protect those uses, as well as antidegradation requirements. Altered natural flows (usually reduced flows) may impact a water body's beneficial uses in a number of ways, causing a violation of standards that prompts 303(d) listing. For example, if a river is designated for use as a coldwater fishery, but reduced flows have resulted in increased temperatures and lowered water depths such that the river can no longer support fish, low flows clearly have impacted the water body's designated use.[34] Where low flows in rivers, creeks, and stream have impaired a beneficial use, the water quality standards have been violated, and the water body segment must be listed under Section 303(d).[35]

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[31] MacDonnell, Lawrence J., "Return to the River: Environmental Flow Policy in the United States and Canada. Journal of the American Water Resources Association" 45(5):1087-1099 (2009), DOI: 10.1111/j.1752-1688.2009.00361 *citing* Poff, N.L., *et al.,*"The Natural Flow Regime: A Paradigm for River Conservation and Restoration," *BioScience* 47:769-784 (1997); Poff, N.L., "Managing for Variation to Sustain Freshwater Ecosystems," *Journal of Water Resources Planning and Management* 135:1-4 (2009).

[32] *PUD No.1 v. Washington Department of Ecology*, 511 U.S. 700, 719 (May 31, 1994).

[33] *Id. See also* U.S. EPA, **"**Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act" (July 21, 2003) ("2004 Guidance"), available at: http://www.epa.gov/owow/tmdl/tmdl0103/2004rpt_guidance.pdf *(2004 (*"Low flow can be a man-induced condition of a water (i.e., a reduced volume of water) which fits the definition of pollution. Lack of flow sometimes leads to the increase of the concentration of a pollutant (e.g., sediment) in a water.")

[34] For example, adult coho salmon migrate at water temperatures of 45 to 59ºF, a minimum water depth of approximately seven inches, and streamflow velocities less than eight ft/sec. National Marine Fisheries Service, "Magnuson-Stevens Reauthorization Act Klamath River Coho Salmon Recovery Plan," p. 4 (July 2007), available at: http://www.swr.noaa.gov/salmon/MSRA_RecoveryPlan_FINAL.pdf. Research has demonstrated that upstream migration of Klamath River Chinook salmon is suppressed at mean daily water temperatures above 23.5°C if temperatures are falling.

[35] Attachment 2 provides photos and other information of waterways in California so impacted, such as the Scott River.

For example, in the Russian River Watershed, excessive water diversions have turned fish-bearing creeks such as Mark West Creek and Macaama Creek into dry stream beds.[36] In the Klamath River Watershed, high diversion rates from agricultural developments limit flow levels in river mainstems and tributaries, which raise water temperatures and lower water quality, making segments of the Scott and Shasta Rivers unsuitable for rearing juvenile coho salmon.[37]

In addition, excessive withdrawals, water diversions and dams can concentrate pollutant loadings, resulting in higher in-stream concentrations and impacts. For example, rivers in the Klamath watershed are impaired by toxic algae, temperature, and nutrient pollution caused by dams, cattle grazing and irrigated agriculture.[38] All of these problems are made significantly worse by reduced natural flows. In 2006, U.S. EPA formally recognized that dam impacts to flow caused the impairment of the Klamath River by toxic blue green algae *Microcystis aeruginosa*, a liver toxin and known tumor promoter.[39]

1. Altered Flows Must Be Identified as *Causes* of Impairment, Not Solely *Sources* of Impairment

The State Water Board has identified altered natural flows in its just-adopted 303(d) list as a potential *source* of impairment of dozens of water body-segment pollutant combinations. However, California generally has avoided its responsibility to recognize reduced natural flows, streamflow alterations, water diversions, or similar flow issues as *independent causes* of impairment that require listing of the waterway for "flow alterations" under Category 4C *at a minimum*, or Category 5 where appropriate.[40] This failure to address flow alterations directly is a serious omission by the State Water Board and must be addressed in the 2012 303(d) List.

The *source* of impairment provides available information tied to the impaired segment that generally describes the type of *activity* that has resulted in the impairment. Typical examples in California's 303(d) list include, but are not limited, to the following: range grazing, silviculture, agriculture, construction/land development, urban runoff/storm sewers, mine tailings, onsite wastewater systems (septic tanks), and marinas and boating. This information is generally used to help sort out which parties will be allocated responsibility for addressing the contamination at issue.

By contrast, altered natural flows can be the *cause* of impairment of a water body – just as altered concentrations of various contaminants (dissolved oxygen, mercury, temperature, etc.)

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[36] *See* Appendix A and A-1 for more information.
[37] NMFS, "Magnuson-Stevens Reauthorization Act Klamath River Coho Salmon Recovery Plan Prepared by The National Marine Fisheries Service Southwest Region," p. 32 (July 10, 2007), available at: http://www.swr.noaa.gov/salmon/MSRA_RecoveryPlan_FINAL.pdf.
[38] *See* SWRCB, "2010 California 303(d) List of Water Quality Limited Segments: Category 5," North Coast RWQCB, available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml.
[39] http://www.klamathriver.org/media/pressreleases/Press-Release-032008.html.
[40] Exceptions include Regional Water Quality Control Board 4's listing of Ballona Creek Wetlands as impaired by "Hydromodification" and "Reduced Tidal Flushing," and applicable segments of the Ventura River as impaired by "Pumping" and "Water Diversion." *See infra* n. 48.

similarly *cause* impairment. The *sources* of the listings for "altered natural flows" would then be activities such as agriculture, mining, construction, grazing, etc. The parties undertaking these activities would then be contacted to take action to reduce the impacts of their various operations on waterway flow.

This distinction is important if the actual impairment of a water body is to be properly addressed. For example, if natural flows in a creek that has been designated as "cold freshwater habitat" have been diverted to the point that the shallow water becomes too warm to be adequate fish habitat, the water body should be listed as impaired in Category 5 because of *both* low natural flow *and* elevated temperature, rather than improperly listed only for elevated temperature, with flow alteration as a mere "source" of impairment. If the creek is solely listed as impaired because of elevated temperature, the mitigating action could be (for example) solely planting trees along the banks to create shade. If a creek is listed because of both flow and temperature impairments, responsive actions are much more likely to include increased flows as well as increased shade, which would provide for a healthier outcome for the stream and its inhabitants overall.[41]

EPA's 2006 Guidance specifically describes "lack of adequate flow" as a *cause* for listing an impaired or threatened segment on the 303(d) list,[42] distinguishing it from listings of *sources* contained in separate summary tables.[43] A number of states accordingly include flow alterations as a cause of impairment in their 303(d) lists. Specifically, **U.S. EPA has compiled nationwide data submitted by states showing that 56,981 miles of rivers and streams, 517,857 acres of lakes, reservoirs and ponds, 299 square miles of bays and estuaries, and 33,054 acres of wetlands nationwide have been listed on states' 303(d) lists as impaired by "Flow Alterations."**[44] This corresponds to listings for over 100 water bodies nationwide in the District of Columbia, Idaho,[45] Michigan, Wyoming, Ohio and California.[46]

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[41] Of course, the listing should also ideally include the "sources" of both the temperature and low flows impairments, such as agriculture or other activities.

[42] "Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization." 2006 Guidance at 56.

[43] *See* U.S. EPA, "National Causes of Impairment" versus "National Probable Sources Contributing to Impairment," available at: http://iaspub.epa.gov/waters10/attains_nation_cy.control#causes.

[44] *See* U.S. EPA, "Specific State Causes of Impairment That Make Up the National Flow Alteration(s) Cause of Impairment Group," available at: http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.cause_detail?p_cause_group_name=FLOW%20ALTERATION%28S%29. *See also* details of flow impairment listings at U.S. EPA, "Impaired Waters , Cause of Impairment Group: Flow Alteration(s)," available at: http://iaspub.epa.gov/tmdl_waters10/attains_impaired_waters.control?p_cause_group_id=545. For information on the status of data collection by state for these tables, *see* U,S, EPA, "Status of Available Data Used in This Report," available at: http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T#status_of_data.

[45] Idaho's 2008 Integrated Report shows more than 100 waterbody-pollutant segment listings for low flow alterations and other flow regime alterations under its "Section 4C Waters Impaired by Non-Pollutants." Idaho 2008 Integrated Report: "Section 4c Waters Impaired by Non-Pollutants," http://www.deq.state.*Id*.us/water/data_reports/surface_water/monitoring/integrated_report_2008_final_sec4c.pdf.

[46] *See* U.S. EPA, "Watershed Assessment, Tracking and Environmental Results: Specific State Causes of Impairment That Make Up the National Flow Alteration(s) Cause of Impairment Group," (last updated August 12, 2010), available at: http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.cause_detail_303d?p_cause_group_id=545. Conversation with Douglas Norton, U.S. EPA Headquarters (August 9, 2010).

2. Waterways Impaired by Altered Flows Must at a Minimum Be Listed in Category 4C of the 303(d) List, and Also May Be Listed in Category 5

As discussed above, U.S. EPA's and California's Category 4C *must* be populated with all waterways that are impaired or threatened solely due to the presence of non-pollutants. At a minimum, then, *all* flow-related impairments in California *must* be included in the Category 4C portion of the 2012 303(d) list. We would argue as well, however, that many if not all of these impairments could be included in Category 5.[47]

In California, "Pumping" and "Water Diversion" are listed as the sole causes of impairment for the water body segment Ventura River Reach 4.[48] This water body segment is listed specifically in Category 5 and requires a TMDL by 2019, even though Pumping and Water Diversion are the *only* causes of impairment. Water Diversion is specifically identified as a "Pollutant" in the Fact Sheet[49] describing this listing, as is the case with Pumping.[50]

California's choice to list, and most recently uphold the listing of, flow-caused impairments as a "pollutant" under Category 5 is not prohibited by the definition of "pollutant" or by U.S. EPA guidance. First, courts have interpreted the definition of "pollutant" broadly, as noted above, stating that it is "meant to leave out very little."[51] Second, U.S. EPA Guidance, while favoring a position that flow-related impairments are "pollution," does so in a less than

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[47] Idaho, which deferred to EPA's preference that flows be included in Category 4C, tried to provide a rationale for EPA's preference on flows as follows: "A pollutant is a substance, such as bacteria or sediment, that is identifiable and in some way quantifiable. Some unnatural conditions that impair water quality, such as flow alteration, human-caused lack of flow, and habitat alteration, are considered pollution, but are not caused by quantifiable pollutants. Temperature, while not a substance, is considered a pollutant, as changes in water temperature are quantifiable." Idaho DEQ, "Surface Water: Water Quality Improvement Plans (TMDLs), available at: http://www.deq.state.Id.us/water/data_reports/surface_water/tmdls/overview.cfm#Pollution. This loyal though somewhat strained reasoning ignores the fact that flow itself, as well as its impacts, is most certainly quantifiable – as are Pumping and Water Diversion, for which California waters have been listed in Category 5 as discussed below.

[48] SWRCB, "2010 California 303(d) List of Water Quality Limited Segments: Category 5," "Ventura River Reach 4 (Coyote Creek to Camino Cielo Road)," available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml?wbid=CAR4022002119990203090836. Ventura River Reach 3 had an identical listing in 2006, also with a 2019 TMDL, though Indicator Bacteria was added as a cause of impairment in the 2010 list update. SWRCB, "2006 CWA Section 303(D) List of Water Quality Limited Segments Requiring TMDLS," Region 4: "Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)," available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r4_06_303d_reqtmdls.pdf.

[49] Supporting Information, 2010 Integrated Report, Ventura River Reach 4: Water Diversion, http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/01015.shtml#7310.

[50] Supporting Information, 2010 Integrated Report, Ventura River Reach 4: Pumping, http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/01015.shtml#7308.

[51] *See supra* n. 8. The definition of "pollutant" in Section 502(6) includes: "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." Several other items are specifically excluded; flow alteration is not one of those items. Arguably, the actions taken by industrial, municipal and agricultural operations (*i.e.* essentially all activities that could impact flow) could be viewed as the discharge of "waste," which is undefined in Section 502 but which could readily be interpreted as the by-product of "operations"; *i.e.* changes in the health of the waterway to its detriment.

definitive manner and without analysis, leaving room for California to make its own determination. For example, the 2004 Guidance states simply that "EPA does not *believe* that flow, or lack of flow, is a pollutant as defined by CWA Section 502(6)."[52] The 2006 Guidance similarly simply asserts without further support or discussion that "[e]xamples of circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization."[53]

In sum, California can and should protect its waterways as fully as possible, including through the complete identification and listing of waterways impaired by the *cause* of natural flow alterations. Other states have shown leadership in this regard, and California's waters are no less precious or threatened.

Moreover, to ensure full protection and restoration of the waterways' beneficial uses, the identified waters should be placed on the 303(d) list under Category 5 (most certainly if there are additional pollutant impairments), and at a minimum in Category 4C. Section 510 of the Clean Water Act sets a floor but no ceiling for state action to protect and enhance the health of waters of the United States. California should make full use of this provision, and should leverage its prior flow-related listings in Category 5 into a comprehensive effort to address *all* flow-related impairments under the federal Section 303(d) listing and TMDL program, as well as under state law and other programs.

B. The State Must Use and Consider All Readily Available Information Related to Identifying Natural Flow-Related Impairments.

Under federal law[54] and the California Listing Policy, the State and Regional Water Boards must "actively solicit, assemble, and consider <u>all</u> readily available data and information,"[55] including from local, state and federal agencies, for purposes of developing the 303(d) list. This includes but is not limited to: reports of fish kills; dilution calculations; and "<u>predictive models for assessing the physical, chemical, or biological condition</u> of streams, rivers, lakes, reservoirs, estuaries, coastal lagoons, or the ocean."[56]

Accordingly, the State Water Board must examine and consider all readily available information that could inform 303(d) decisions related to alterations in natural flow. This includes but is not limited to the following:

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[52] U.S. EPA, "Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act," p. 8 (July 21, 2003) (emphasis added), available at: http://www.epa.gov/owow/tmdl/tmdl0103/2004rpt_guidance.pdf. It also states, as quoted above, that reduced water volume "fits the definition of pollution" – which could be the case for essentially any water impairment, including more traditional "pollutants."

[53] 2006 Guidance, *supra* n. 1, at 56.

[54] 40 CFR 130.7.(b)(5), see http://law.justia.com/us/cfr/title40/40-21.0.1.1.17.0.16.8.html.

[55] SWRCB, *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) (Sept. 2004), Section 6.1.1" Definition of Readily Available Data and Information (emphasis in original), available at http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/ffed_303d_listingpolicy093004.pdf.

[56] *Id*. (emphasis added).

- Data collected through the Department of Fish and Game's Instream Flow Program[57]
- Information compiled pursuant to programs and funding by the Ocean Protection Council[58]
- The findings of the recently-adopted State Water Board report on Delta flow criteria requirements (attached)[59]
- All comments, information and associated data sets submitted to the State Water Board during the development of its AB 2121 "Policy for Maintaining Instream Flows in Northern California Coastal Streams"[60]
- Flow data released by the California Department of Water Resources,[61] including data from the Water Data Library[62] generally and the Interagency Ecological Program[63] in particular, as well as and outside compilations of DWR data organized by waterbody segments[64]
- Data in the Klamath Resource Information System (KRIS);[65]
- Information and datasets presented at "My Water Quality" meetings,[66] including data from the Department of Natural Resources presented at the August 11, 2010 meeting
- Data contained in CalFish, the California Cooperative Anadromous Fish and Habitat Data Program,[67] especially the Passage Assessment Database.[68]

Note that Federal agencies, such as the U.S. Fish and Wildlife Service,[69] Federal Energy Regulatory Commission,[70] NOAA (particularly the National Marine Fisheries Service[71] and

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[57] *See* DFG Instream Flow Program, http://www.dfg.ca.gov/water/instream_flow_docs.html. *See also* DFG Water Rights Program, http://www.dfg.ca.gov/water/water_rights_docs.html.
[58] This includes but is not limited to Instream Flow Analysis – Santa Maria River, http://www.opc.ca.gov/2009/05/instream-flow-analysis-santa-maria-river/, Instream Flow Analysis – Big Sur River, http://www.opc.ca.gov/2009/05/instream-flow-analysis-big-sur-river/, and Instream Flow Analysis – Shasta River, http://www.opc.ca.gov/2009/05/instream-flow-analysis-shasta-river/.
[59] SWRCB, "Final Report on Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem" (Aug. 3, 2010) (Delta Flow Report), available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/final_rpt.shtml.
[60] As required by California Water Code § 1259.4 (AB 2121), available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/instream_flows/.
[61] DWR, California Data Exchange Center, http://cdec.water.ca.gov/.
[62] DWR, Water Data Library, http://www.water.ca.gov/waterdatalibrary/.
[63] Interagency Ecological Program, http://www.water.ca.gov/iep/.
[64] "CA DWR CDEC Interface," a compilation of data from DWR's California Data Exchange Center, available at: http://acme.com/jef/flow/cdec.html.
[65] http://www.krisweb.com/index.htm.
[66] http://www.waterboards.ca.gov/mywaterquality/monitoring_council/meetings/index.shtml.
[67] www.calfish.org;
[68] http://www.calfish.org/portals/0/Programs/CalFishPrograms/FishPassageAssessment/tabid/83/Default.aspx. This letter incorporates by reference the comments of Heal the Bay with respect to required 303(d) listings needed for beneficial uses impaired by fish passage barriers. The same legal and policy requirements that call for 303(d) listing of water bodies impaired by altered natural flows also apply to listings for water bodies impaired by fish barriers. The Water Board should review the Passage Assessment Database, which has extensive information on barriers, to ensure that all impaired waterways are properly included on the Section 30(d) list. *See also* CCKA's compilation of fish barriers impacting the RARE beneficial use at: http://www.cacoastkeeper.org/programs/mapping-initiative/fish-barriers.
[69] *See, e.g.*, U.S. FWS, Water and Fishery Resources Program, http://www.fws.gov/cno/fisheries/.
[70] *See* http://elibrary.ferc.gov/idmws/search/fercgensearch.asp to search for details of California hydropower projects, which would provide further information on flows.
[71] California is in the Fisheries Service's Southwest Region; *see* http://swfsc.noaa.gov/ for data and publications.

analyses such as the Magnuson-Stevens Reauthorization Act Klamath River Coho Salmon Recovery Plan[72]), USGS[73] and U.S. EPA, must also be "*actively*" solicited for data and information.[74]

This and other flow information can provide invaluable insight into the "physical, chemical, or biological condition" of the state's waterways as required by federal law and state Policy. It should be considered carefully in developing a comprehensive Category 4C list as well as Category 5 listings that appropriately include impairments caused by altered natural flows, and combinations of altered natural flows and pollutants.

C. Specific Listing Proposals for Impairments Caused by Reduced Natural Flows

Numerous beneficial uses are impaired by the altered flows, including but not limited to GWR (groundwater recharge discussed separately below), COLD (cold freshwater habitat), MIGR (fish migration), SPWN (fish spawning) and RARE (preservation of rare and endangered species). In addition to the data described elsewhere in this letter and other readily available data sources, data and information for a number of many flow-impaired waterways can be found through KRIS.[75] This letter also includes and incorporates by reference the flow-related listing proposals provided in the detailed comments submitted by Heal the Bay,[76] the Natural Resources Defense Council (NRDC),[77] and Ventura County Coastkeeper.[78]

Please note that the waterways described below, in addition to the flow-related listing proposals incorporated by reference, are just *some* of the numerous flow-impaired waterways throughout the state. <u>This list is by no means a comprehensive assessment</u>. The final 2012 303(d) list should include *all* of the waterways that "readily available" data indicate are threatened or impaired due to alterations in natural flow.

1. <u>Rivers, Creeks and Streams</u>

Carmel River and San Clemente Creek

As documented in a white paper prepared for the Carmel River Steelhead Association, significantly reduced flows in the Carmel River and its tributaries, particularly San Clemente

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[72] National Marine Fisheries Service, "Magnuson-Stevens Reauthorization Act Klamath River Coho Salmon Recovery Plan" (July 2007), available at: http://www.swr.noaa.gov/salmon/MSRA_RecoveryPlan_FINAL.pdf.
[73] *See* USGS, "What kinds of water data does the U.S. Geological Survey gather?" available at: http://www.usgs.gov/faq/index.php?action=artikel&cat=102&id=1148&artlang=en.
[74] Listing Policy, Section 6.1.1: Definition of Readily Available Data and Information (emphasis added).
[75] Klamath Resource Information System, http://www.krisweb.com/index.htm.
[76] Letter from W. Susie Santilena, Heal the Bay to Jeffrey Shu, SWRCB, Public Solicitation of Water Quality Data and Information for 2012 Integrated Report (Aug. 20, 2010).
[77] Letter from Doug Obegi, NRDC, to Jeffrey Shu, SWRCB, Public Solicitation of Water Quality Data and Information for 2012 Integrated Report (Aug. 27, 2010).
[78] Letter from Jason Weiner, Ventura County Coastkeeper, to Jeffrey Shu, SWRCB, Public Solicitation of Water Quality Data and Information for 2012 Integrated Report (Aug. 30, 2010) (incorporated herein by reference).

Creek, are placing serious stress on native steelhead populations.[79] This white paper, which includes a comprehensive bibliography of information, should be considered along with DFG data in assessing the Carmel River and San Clemente Creek for listing as impaired by water diversions/flow alterations.

Eel River

A comprehensive assessment of Eel River conditions shows significant impairment as a result of low flows.[80] The report found that:

> low flows . . . often produce temperatures lethal to listed fish species in the Eel River and beneficial to predatory pikeminnow, resulting in a compounding adverse effect on salmonids. Based on available science, increasing flows in the Eel River to 68-265 cfs in the summer will produce corresponding temperature benefits for salmonids that will likely support survival of the species. Bradbury et al (1995) point out that <u>Pacific salmon cannot be recovered without having access to habitat similar to that with which they co-evolved</u>; therefore, to ensure longer term salmonid recovery, access to refugia above the PVP must be provided.[81]

The report recommended that "[i]If summer flow levels were maintained at the 76 to 166 cfs . . . surface water temperatures would drop due to effects described above, increased volume and decreased transit time and steelhead could successfully rear . . . in the mainstem."[82] The flow conditions in the Eel have clearly impaired the health of the river and its associated beneficial uses, and accordingly the waterway must be listed.

Gualala River

The "National Marine Fisheries Service (NMFS, 2001), the California Department of Fish and Game (CDFG, 2002) and Brown et al. (1994) have found that coho salmon are at risk of extinction throughout Mendocino and Sonoma County."[83] With native species facing extinction, healthy water flows should be of paramount importance. However, "CDFG 2001 habitat typing surveys [citation] found that extensive reaches of the Gualala River and its tributaries lacked surface flows."[84] As in the Russian River, water diversions continue despite the serious and

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[79] *See* Appendix A.
[80] Patrick Higgins, Consulting Fisheries Biologist, "Evaluation of the Effectiveness of Potter Valley Project National Marine Fisheries Service Reasonable and Prudent Alternative (RPA): Implications for the Survival and Recovery of Eel River Coho Salmon, Chinook Salmon, and Steelhead Trout" (Feb. 2010) (included in Appendix A under "Eel River").
[81] *Id*. at p. 39 (emphasis added).
[82] *Id*.
[83] Letter from Patrick Higgins, Consulting Fisheries Biologist to Allen Robertson, California Department of Forestry and Fire Protection, "Negative Declaration for Sugarloaf Farming Corporation dba Peter Michael Winery" (Dec. 12, 2003)
[84] *Id*. at p. 10.

significant impairments in the Gualala, prompting a recent public trust lawsuit.[85] Significant data and information on the Gualala River is provided in Appendix A.

Mark West Creek

Ten years ago all 28 miles of Mark West Creek had water in the summer. Today, because of increased diversions, only 3½ miles have water. DFG flow records of Mark West Creek dating back to the 1960s show that the lowest summer stream flow has historically been 2 cfs, and Summer 2010 is measuring on average at approximately that level. The Russian Riverkeeper[86] has photo-documented this decline. Data and information on the serious and escalating impairments to this creek are provided in Appendix A-1[87] and on the Friends of the Mark West Watershed website.[88]

Mattole River

A detailed study of the Mattole River Basin found that:

> Lack of adequate late summer and early fall streamflow is recognized as one of the most important limitations on salmonid habitat in the Mattole River basin (NCWAP, 2000). In recent years, juvenile salmonids have become stranded in pools due to excessively low flows, causing mortality and necessitating fish rescue operations.[89]

Additional support for a flow-related listing of the Mattole River is found in Appendix A.

Napa River

Studies referenced in AB 2121 comments illustrate the significantly degraded habitat of the Napa River, which can only be restored with a focus on reversing severely reduced natural flows.[90] Research shows that "even in good years. . . 80% of tributary habitat surveyed was marginally functional or non-functional."[91] The Napa River "was formerly a very important nursery area for older age juvenile steelhead (Anderson 1969) . . . and that habitat is now completely non-functional for rearing. Therefore, all indications are that lack of older age steelhead rearing habitat is limiting the population."[92] Moreover, low water years (which are to

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[85] Center for Biological Diversity, "Lawsuit Imminent over Water Diversions Killing Salmon and Steelhead in Russian and Gualala Rivers," (Nov. 17, 2009), available at: http://www.biologicaldiversity.org/news/press_releases/2009/russian-river-11-17-2009.html.
[86] www.russianriverkeeper.org.
[87] Appended separately from Appendix A due solely to formatting requirements.
[88] http://www.markwestwatershed.org/Cornell_Winery_PrimerDocsDirectory.html.
[89] Randy D. Klein, Hydrologist, "Hydrologic Assessment of Low Flows in the Mattole River Basin 2004-2006," p. 1 (March 2007), *see* Appendix A.
[90] Letter from Patrick Higgins, Consulting Fisheries Biologist to SWRCB, "Comments on *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams"* (April 2, 2008), pp. 13-15 (in Appendix A).
[91] Letter from Patrick Higgins, Consulting Fisheries Biologist to Thomas Lippe, Living Rivers Council (Aug. 17, 2010), p. 5 (included in Appendix A under "Napa River").
[92] *Id*.

be expected and built into water planning) are "depressing smolt production" due to a continued lack of attention to sufficient flows.[93]

Navarro River

As described in more detail in Appendix A, "diversions from the Navarro River and its tributaries, primarily for agricultural purposes, have significantly impaired instream fish and wildlife beneficial uses, to the point where the river was literally pumped dry" on past occasions.[94] Numerous data sets indicate growing impacts from cumulatively increasing water diversions in this already heavily-drained area.

Redwood and Maacama Creeks

As described in detail in Appendix A, in Maacama Creek "[s]tanding crops of fall fish show a major reduction in many years, suggesting that low flow conditions are limiting, and these low flow conditions are likely linked to agricultural water use."[95] "[A]lmost 70% of habitats in Redwood Creek [are] dry (Figure 12) and all other streams showed signs of dewatering related to diversion of surface water and likely contributed to by over-use of groundwater."[96] Additional assessments have found that

> in undisturbed Pacific Northwest streams, pool frequencies range from 37% to greater than 80% (Murphy et al. 1984 and Grette 1985) and CDFG (2004) rates frequencies greater than 40% as functioning for salmon and steelhead. Figure 12 shows that pool frequencies were under 10% on Redwood and Foote Creeks in some reaches and only about 25% of most Maacama Creek reaches. Pool depths are similarly compromised (Figure 13) with none over three feet deep in Foote Creek and the majority on Redwood Creek as well.[97]

This report concludes that "Coho salmon are at very high risk of extinction in the Russian River basin, yet NMFS (2008) considers their gene resources to be of extremely high importance for rebuilding of the entire CCC ESU. Expensive recovery efforts to restore Russian River coho salmon using captive broodstock from Green Valley Creek is failing to re-establish breeding populations in any Russian River tributary (NMFS 2008)."[98] Because "the biggest problem is over-consumption of water,"[99] listing of these waterways as impaired by natural flow alterations/water diversions is an important step in ensuring their return to good health.

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[93] *Id*.
[94] Letter from Patrick Higgins, Consulting Fisheries Biologist to SWRCB, "Comments on *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams*," p. 15 (April 2, 2008).
[95] Letter from Patrick Higgins, Consulting Fisheries Biologist to Traci Tesconi, County of Sonoma, "Pelton House Winery Application #PLP05-0010," (Dec. 29, 2008), p. 12 (included in Appendix A).
[96] *Id*. at p. 13.
[97] *Id*. at pp. 12-13.
[98] *Id*. at p. 19.
[99] *Id*. at p. 20.

Russian River

As illustrated in documents attached as Appendix A[100] and elsewhere,[101] the Russian River is increasingly impaired due to flow alterations. Numerous technical analyses have found that "[l]egal and illegal diversions pose significant risk to the last streams where coho still persist in the Russian River."[102]

Salinas River

As described in more detail in Appendix A, "channel alteration and changes in flow regime have caused a virtual loss of the anadromous life history of three steelhead [distinct population segments] in the Salinas River."[103] More generally, "flows in lower reaches for adult and juvenile steelhead passage are often lacking,"[104] with "[g]roundwater pumping related to agricultural activities . . . caus[ing] the loss of surface flow in winter and spring."[105] This detailed analysis concluded that "unless the Salinas River channel and flow move back towards their more normal range of variability steelhead cannot be restored."[106]

Santa Clara River

As described in more detail in the comments submitted by Ventura Coastkeeper,[107] which are incorporated here by reference, USGS, county and local agency data show that enough water is diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses to deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds. These activities impact the beneficial uses for this river as habitat for fish, necessitating a listing caused by water diversion. Moreover, as discussed in the Ventura Coastkeeper letter, the river is also impaired for fish passage since the United Conservation Water District put in an impassable fish barrier.

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[100] *See* Letter from Patrick Higgins, Consulting Fisheries Biologist to SWRCB, "Comments on *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams"* (April 2, 2008), pp. 16-20 (included in Appendix A under "Navarro River"). *See also* Merenlender, Adina et al, "Decision support tool seeks to aid stream-flow recovery and enhance water security," 62 *California Agriculture* 148 (Oct.-Dec. 2008), *available at*: http://ucanr.org/repository/cao/landingpage.cfm?article=ca.v062n04p148&fulltext=yes.

[101] *See supra* n. 85, "Lawsuit Imminent Over Water Diversions Killing Salmon and Steelhead in Russian and Gualala Rivers" (data associated with filing should be closely examined).

[102] Higgins, *supra* n. 100 at p. 16.

[103] Letter from Patrick Higgins, Consulting Fisheries Biologist to Curtis Weeks, Monterey County Resources Agency, Comments on Salinas River Channel Maintenance Project (CMP) 404 Permit Application and Mitigated Negative Declaration, p. 4 (Aug. 6, 2009).

[104] *Id*. at p. 5; *see also* Letter from Patrick Higgins, Consulting Fisheries Biologist to SWRCB, "Comments on *Draft Policy for Maintaining Instream Flows in Northern California Coastal Streams"* (April 2, 2008).

[105] *Id*.

[106] *Id*. at p. 17.

[107] Letter from Jason Weiner, Ventura Coastkeeper to Jeffrey Shu, SWRCB, Public Solicitation of Water Quality Data and Information for 2012 Integrated Report (Aug. 30, 2010).

Scott River and Shasta River

In summer 2009, agricultural irrigation and dewatering caused record low flows in the Scott and Shasta River watersheds, flows that will continue to impair these waterways because they are associated with increased usage for agriculture and other, non-situational sources.[108] Extensive photo documentation of the activities producing this flow impairment and its impact on fish habitat was collected by Klamath Riverkeeper and others.[109] The Pacific Coast Federation of Fishermen's Associations and Environmental Law Foundation have already brought a public trust action[110] against the State Water Board and Siskiyou County regarding flows in the Scott River. Information associated with that lawsuit should be considered in the determination that the river is and will continue to be impaired due to low flows associated with withdrawals. Additional instream flow analyses are being conducted by Humboldt State University under the oversight of the California Ocean Protection Council.[111]

Documentation of the impacts of low flows in these waterways is extensive and included in Appendix A and other readily available data sources. For example, the Scott River Sediment and Temperature TMDL process several years ago produced substantial evidence of impaired beneficial uses resulting from low flows, including reaches that now regularly go dry, placing the Scott River salmon and steelhead stocks at "high risk of extinction"[112] Similarly, the recent Shasta River Watershed Dissolved Oxygen and Temperature process produced information supporting the conclusion that "[t]he need for a baseline minimum flow with most reaches of the Shasta River, and the importance to salmon . . . of maintaining minimum flows even during low water years, cannot be over-stated."[113] Properly listing these water bodies as impaired by flows, in addition to the other listed causes for their impairment, will ensure the appropriate attention is paid to addressing alterations in natural flow that are devastating the rivers' beneficial uses.

2. The Sacramento-San Joaquin Delta

Finally, *all* of the Delta waterways examined in the State Water Board's recently-adopted "Final Report on Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem" should be considered for flow impairments. This Report concluded unequivocally

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[108] See attached documentation in Appendix A.
[109] Klamath Riverkeeper, "Scott and Shasta Rivers 2009 Flow Emergency," available at: http://picasaweb.google.com/klamathriverkeeper/ScottAndShastaRivers2009FlowEmergency#.
[110] "Fishing and Conservation Groups Sue over Poor Water Management on Northern California's Scott River" (June 24, 2010) (press release), available at: http://www.envirolaw.org/documents/ScottRiverPTDSuitPressRelease062410.pdf; *see also* Petition for Writ of Mandamus and Complaint for Declaratory and Injunctive Relief (Sup. Ct. Sacramento, June 23, 2010), at: http://www.envirolaw.org/documents/WRITPETITIONCOMPLAINT.pdf.
[111] CA Ocean Protection Council, "Instream Flow Analysis – Shasta River," available at http://www.opc.ca.gov/2009/05/instream-flow-analysis-shasta-river/.
[112] Letter from PCFFA *et al* to Tam Doduc, SWRCB, "Joint Comments on the Proposed Action Plan for the Scott River Watershed Sediment and Temperature TMDL," Attachment A - Scott TMDL Related Data, Photos and Maps Regarding Flow and Temperature Problems (June 12, 2006) (included in Appendix A).
[113] Letter from Pacific Coast Federation of Fishermen's Associations and the Institute for Fisheries Resources to SWRCB, "Comment Letter - Shasta River Watershed DO and Temperature TMDLs," p. 4 (Oct. 29, 2006) (included in Appendix A).

that **"[r]ecent Delta flows are insufficient to support native Delta fishes for today's habitats."**[114] More specifically, the Report found that:

> In order to preserve the attributes of a natural variable system to which native fish species are adapted, many of the criteria developed by the State Water Board are crafted as percentages of natural or unimpaired flows. These criteria include:
>
> - 75% of unimpaired Delta outflow from January through June;
> - 75% of unimpaired Sacramento River inflow from November through June; and
> - 60% of unimpaired San Joaquin River inflow from February through June.
>
> It is not the State Water Board's intent that these criteria be interpreted as precise flow requirements for fish under current conditions, but rather they reflect the general timing and magnitude of flows under the narrow circumstances analyzed in this report. In comparison, historic flows over the last 18 to 22 years have been:
>
> - approximately 30% in drier years to almost 100% of unimpaired flows in wetter years for Delta outflows;
> - about 50% on average from April through June for Sacramento River inflows; and
> - approximately 20% in drier years to almost 50% in wetter years for San Joaquin River inflows.[115]

In other words: (a) the Delta is always impaired for flow in drier years and potentially impaired seasonally in wetter years, (b) the Sacramento River is regularly flow impaired, and (c) the San Joaquin River is always flow impaired. Note that this comparison is based on averages over the past two decades; flow data from more recent years (available from the citations above and other readily available sources) would likely skew these results towards more, not less, impairment, as noted in the Report quote above.

Accordingly, *all* Delta waterways for which the Report has found flow-related impairments of beneficial uses should be listed in the 2012 303(d) list as impaired by water diversion, flow alteration, and/or other appropriate cause, with the specific sources (agriculture, etc.) clearly delineated.

D. The State Must Specifically Identify and List All Surface Waters That Can No Longer Provide the Beneficial Use of "Groundwater Recharge" Due to Reduced Flows

"Groundwater recharge" is defined as the use of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers. "Groundwater recharge" is listed as a beneficial use for 2,167 hydrologic units/areas in eight out of nine of the Regional Basin Plans for surface waters around the state: North Coast: 109, San Francisco Bay: 23, Central Coast: 396, Los

[114] Delta Flow Report, *supra* n. 59, at p. 5 (emphasis added).
[115] *Id.*

Angeles: 222, Central Valley: 0,[116] Lahontan: 1009, Colorado River: 93, Santa Ana: 98, San Diego: 217.[117] Despite the widespread recognition of "groundwater recharge" as a beneficial use by Regional Water Boards, the protection of this use has been rarely acknowledge or addressed by the 303(d) listing process. This must be rectified in the 2012 list.

The State Water Board's map of high-use groundwater basins and hydrogeological areas depicts vulnerable groundwater recharge basins in every region of California.[118] In many of California's river basins, agricultural and other users divert surface stream flows to the extent their actions impair the groundwater recharge beneficial use. Similarly, in river basins with a hydrologically connected groundwater aquifer that is being pumped, large scale groundwater pumping depletes the connected surface waterway, further diverting percolation from the stream into the aquifer and impairing the "groundwater recharge" beneficial use of impacted surface water.[119] The State can and should incorporate such listings in the 2012 list, *i.e.* where readily available data provides the information needed to identify water bodies for which designated "groundwater recharge" uses are threatened or impaired.

IV. THE STATE WATER BOARD MUST COMPREHENSIVELY ADDRESS GROUNDWATER CONTAMINATION AND WITHDRAWALS THAT IMPAIR OR THREATEN SURFACE WATERS.

The State's 303(d) list must reflect instances where contaminated groundwater discharges to rivers, estuaries and other surface waters is the cause or source of surface water impairment. California's Section 303(d) list must also reflect instances where excessive withdrawals and pumping of groundwater impairs and threatens surface waters, including rivers, creeks, estuaries, and wetlands, such as through reduced flows.[120]

Actions to address groundwater sources of surface water impairment with specificity are feasible and have been undertaken by California and other states during the course of 303(d) listing and TMDL development. California and other states have shown that it is feasible—and often necessary—to identify and address groundwater sources of surface water impairment with high levels of specificity during the development of a TMDL. The State Water Board should require Regional Water Boards to identify the name of groundwater sources of surface water impairment, including the name of groundwater basins, point source discharges from cleanup and dewatering operations, and other relevant sources; assess and measure groundwater loading

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[116] The Central Valley Regional Water Quality Control Board explains that there are surface waters that have the beneficial use of Groundwater Recharge, but that they have not yet been identified: "NOTE: Surface waters with the beneficial uses of Groundwater Recharge (GWR),Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in this plan. Surface waters of the Sacramento and San Joaquin River Basins falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board." *See* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.

[117] *See* Chapter 2 of Basin Plans for Regions 1-9 at http://www.waterplan.water.ca.gov/waterquality/basin_plan.cfm.

[118] http://www.waterboards.ca.gov/water_issues/programs/gama/docs/hydro_areas.pdf.

[119] J. Daubert, R. Young, *Managing an Interrelated Stream-Aquifer System, Economics, Institutions, Hydrology,* Colorado Water Resources Research Institute, Technical Report #47, p. 1 (April 1985). Available at: http://www.cde.state.co.us/artemis/ucsu6/UCSU6141347INTERNET.pdf.

[120] A detailed discussion of flow impacts to water quality can be found in Section III.

to surface waters during the development of TMDLs; and assign wasteload allocations to groundwater sources of impairment to surface waters, to the extent possible. Please refer to Appendix B for a synopsis of TMDLs in California and elsewhere that address how to manage groundwater loadings with specificity.

A. The State Water Board Has a Duty to Address Groundwater-Related Sources of Impairment to Surface Waters under Section 303(d) of the Clean Water Act.

1. The hydrological connectivity of surface waters and groundwater triggers the Board's legal mandate under Section 303(d) of the Clean Water Act.

Because of the pervasive hydrological connectivity of surface waters and groundwater, polluted groundwater can substantially impact the quality of surface waters.[121] Streamflow may recharge alluvial aquifers, and groundwater conversely can provide substantial amounts of flows into lakes, streams, and rivers.[122] The hydrological connectivity is widely interpreted—by U.S. EPA, courts, and several states, including California—as triggering a regulatory duty under the Clean Water Act.

For example, U.S. EPA has stated that "in general, collected or channeled pollutants conveyed to surface water via groundwater can constitute a discharge subject to the Clean Water Act."[123] The determination of whether a discharge to ground water can be subject to regulation under the Clean Water Act is a determination that involves an ecological "judgment about the relationship between surface waters and groundwaters."[124]

Courts have also found that hydrologically connected groundwater and surface waters can trigger regulatory duties with respect to contaminated groundwater under the federal Clean Water Act.[125] In 2006, U.S. Supreme Court Justice Kennedy wrote in his concurring and oft-cited *Rapanos* opinion that water bodies will "come within the statutory phrase 'navigable

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[121] United States Geological Survey, Ground Water and Surface Water: A Single Resource, Circular 1139, available at: http://pubs.usgs.gov/circ/circ1139/ ("*USGS: Single Resource*"). *See also* R. Thomas, *Comment: The European Directive on the Protection of Groundwater, A Model for the United States,* 26 Pace Envtl. L. Rev. 259, 264 (Winter 2009) ("*Groundwater Protection Model*") ("… groundwater does not exist in isolation from other bodies of water; it is an integral part of the hydrological cycle and discharges into lakes and streams. Such "tributary" groundwater is vital for maintaining surface water supplies and sustaining surface ecosystems"); William M. Alley, "Tracking U.S. Groundwater: Reserves for the Future," *Environment*, pp. 10, 15 (Apr. 2006); *see also* William M. Alley *et al.,* "Flow and Storage in Groundwater Systems," 296 *Sci*. 1985, 1990 (2002).

[122] *See* Aiken, J. David, The Western Common Law of Tributary Groundwater: Implications for Nebraska. (2004) at p. 545, available at http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1032&context=ageconfacpub. *See also USGS: Single Resource*: USGS finds that groundwater contribution to surface waters has been shown to range from 10% to over 90% across the U.S., with an estimated average of over 40%.

[123] EPA, *National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations* 66 Fed. Reg. 2960, 3017 (Jan. 12, 2001).

[124] 66 Fed. Reg. at 3018 (emphasis added.)

[125] *See e.g. Greater Yellowstone Coalition v. Larson,* 641 F. Supp. 2d 1120, 1138 (D. Idaho 2009) ("[t]here is little dispute that if the ground water is hydrologically connected to surface water it can be subject to 401 certification."); *Coldani v. Hamm*, 2007 WL 2345016, at 9 (E.D. Cal. Aug. 16, 2007) ("the court finds that because Coldani has alleged that Lima Ranch polluted groundwater that is hydrologically connected to surface waters that constitute navigable waters, he has sufficiently alleged a claim within the purview of the CWA [citations]")

waters,'" and thereby fall under the Clean Water Act, if they "significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'"[126]

The Ninth Circuit Court of Appeals has also repeatedly interpreted the Clean Water Act to include regulation of groundwater hydrologically connected to surface waters.[127] In *Northern Plains Resource Council v. Fidelity Exploration* the Ninth Circuit found that even the discharge of "unaltered" groundwater into a river could be considered a pollutant and subject to water quality standards where the company's discharge altered the river's water quality.[128] The *Northern Plains Resource Council* opinion went on to explain that:

> Were we to conclude otherwise, and hold that the massive pumping of salty, industrial waste water into protected waters does not involve discharge of a "pollutant," even though it would degrade the receiving waters to the detriment of farmers and ranchers, we would improperly "undermine the integrity of [the CWA's] prohibitions."[129]

Section 303(d) of the Clean Water Act, in particular, has been recognized by U.S. EPA and several states as a proper tool for addressing groundwater contaminant loading to surface waters and other groundwater-related sources of impairment. EPA has identified four potential sources of groundwater-related impairment of surface water for states' 303(d) Lists (though others are possible): "Groundwater Loadings," "Groundwater Withdrawals," "Contaminated Groundwater," and "Saltwater Intrusion."[130] EPA records reflect that several states, including California, have adopted 303(d) lists that include groundwater loadings or withdrawals as a source of impairment: **to date, 181 miles of rivers and streams, 158 square miles of bays and estuaries, 3,045 acres of wetlands, and 98,009 acres of lakes, reservoirs and ponds have been listed nationally as impaired in part due to groundwater sources of impairment.**[131]

2. Public policy concerns of efficiency and public health weigh heavily in favor of proactively addressing groundwater contamination of surface waters through the 303(d) process.

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[126] *Rapanos v. United States*, 547 U.S. 715, 779-780 (2006) (Kennedy, J., concurring).
[127] *N. Cal. River Watch v. City of Healdsburg*, 496 F.3d 993, 1000 (9th Cir. 2007) (court found that water that seeped into the river through both the surface wetlands and the underground aquifer and had significant effect on "the chemical, physical, and biological integrity" of the Russian River sufficient to confer jurisdiction under the Act pursuant to Justice Kennedy's substantial nexus test.); *Northern Plains Resource Council v. Fidelity Exploration and Dev. Co*., 325 F.3d 1155, 1162 (9th Cir. 2003).
[128] *Northern Plains Resource Council v. Fidelity Exploration and Dev. Co*., 325 F.3d 1155 (9th Cir. 2003).
[129] *Id*., citing *APHETI*, 299 F.3d at 1016.
[130] *See* U.S. EPA, "National Summary of State Information: National Probable Sources Contributing to Impairments," available at: http://iaspub.epa.gov/waters10/attains_nation_cy.control#causes, and U.S. EPA, "Specific State Probable Sources That Make Up the National Groundwater Loadings/Withdrawals Probable Source Group," available at: http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.source_detail?p_source_group_name=GROUNDWATER%20LOADINGS/WITHDRAWALS.
[131] *Id*. California has also recognized groundwater sources of impairment on its 303(d) List. The most recent 2010 303(d) List contains 27 waterbody-segment pollutant combinations that identify groundwater loadings as potential sources of impairment.

There are considerable practical reasons to address groundwater loadings with as much specificity as possible. For example, rapid mixing, dilution, and dispersal of pollutants, which are factors that often mitigate surface water contamination, do not occur with polluted groundwater,[132] resulting in much lengthier persistence of pollutants and their harmful effects. Moreover, the costs, difficulties, and uncertain benefits of remediation weigh strongly in favor of efficient agency action to address groundwater pollution.[133]

Additionally, addressing groundwater contamination of surface waters is necessary to protect public health.[134] Discharges from septic systems and agricultural runoff can cause waterborne diseases and chemicals found in groundwater, including pesticides, gasoline additives such as MTBE, arsenic, and other hazardous wastes, present significant threats.[135]

The state's pending public health crisis fueled by nitrate-polluted groundwater provides a particularly compelling example. Nitrate, the most common groundwater contaminant in California in drinking water can cause "blue baby syndrome," lead to miscarriages and death in infants, and may cause certain types of cancers. A recent California Watch report found that the number of California wells that exceeded the health limit for nitrates jumped from nine in 1980 to 648 in 2007. To date, the State Board has not been able to effectively regulate and ensure the cleanup of nitrates. The 303(d) process was designed to do just that and should be applied to address nitrate and other pervasive groundwater contaminants that impact surface waters. Such efforts will at the same time help establish much-needed improvements in groundwater quality itself.

B. The State Must Use All Readily Available Data to Specifically Identify Surface Waters Impaired by Contaminated Groundwater Loadings.

As discussed above, under federal law[136] and the California Listing Policy, the State and Regional Water Boards must "actively solicit, assemble, and consider all readily available data and information, including drinking water source assessments and existing and readily available water quality data and information reported by local and state agencies."[137] Information regarding groundwater impairments that contaminate surface waters, groundwater hydrological connections with surface waters, and groundwater withdrawals that impact surface waters is essential in the compilation of a complete 303(d) list that correctly identifies pollutants and sources that can then be effectively prioritized.[138] Further, groundwater data can provide valuable clues to uncover the existence of hydrologically-connected, impaired surface water bodies that the state may otherwise have missed.

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132 2006 Guidance.
133 *Id*.
134 *See* Harter, T. & Rollins, L., *Watersheds, Groundwater and Drinking Water: A Practical Guide,* University of California, Agriculture and Natural Resources, Publication 3497 (2008).
135 *Supra* n. 121, *Groundwater Protection Model* at 263.
136 40 CFR 130.7(b)(5), see http://law.justia.com/us/cfr/title40/40-21.0.1.1.17.0.16.8.html
137 *See* CA Listing Policy, Section 6.1.1 Definition of Readily Available Data and Information
138 40 CFR 130.7(b)(4).

The State's own 2002 305(b) Report contains an extensive catalog of efforts and available data to monitor groundwater quality in California."[139] It is worth noting that the most recent groundwater quality assessment included in the State's 305(b) Report will be a *decade* old in 2012. By contrast, EPA's 2006 Guidance contemplates the completion of such assessments every two years:

> by April 1 of all even numbered years, a description of the water quality of all waters of the state (including, rivers/stream, lakes, estuaries/oceans and wetlands). States may also include in their section 305(b) submittal a description of the nature and extent of ground water pollution and recommendations of state plans or programs needed to maintain or improve ground water quality.[140]

Updated monitoring and assessment of groundwater quality is highly relevant to the state's proper assessment of the overall health of its waterways as called for by the federal Clean Water Act. These and other readily available sources of information and data on groundwater contamination and withdrawals must be integrated into the State Water Board's analysis of impairment sources of surface waters in its biennial Integrated Report (303(d) list and 305(b) report).[141] A brief discussion of data that should be incorporated immediately in the current data scoping for the 2012 303(d) List is provided below.

First, the State Water Board should assess its own data from its Groundwater Ambient Monitoring and Assessment (GAMA) Program and Underground Storage Tank, Land Disposal, and Spills, Leaks, Investigations, and Cleanup Programs in its biennial 303(d) analysis. The GeoTracker GAMA Groundwater Database contains groundwater data searchable by chemical and is readily available, highly relevant and compatible to specify groundwater loadings to listed surface waters. Additionally, the California Water Quality Monitoring Council, which is co-chaired by Cal-EPA and the Natural Resources Agency and managed by the State Water Board, is very close to completing an interactive suite of databases to be released shortly on groundwater quality. This portal of information compiles existing groundwater quality data from USGS and others that similarly should be examined for 303(d) listing implications.

The State Water Board should also closely collaborate with and solicit groundwater quality data held by other state agencies, most notably the Department of Pesticide Regulation (DPR) and California Department of Public Health (DPH). DPR's Ground Water Protection Program[142] maintains a well inventory program that contains information about the collection and analysis of data on wells sampled for pesticides by state and local agencies, as well as DPR's own monitoring of pesticides that have the potential to pollute groundwaters.[143] Under the Safe Drinking Water Act, each state is required to assess drinking water sources, including

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[139] SWRCB, 2002 Integrated Report, Chapter IV: Groundwater Quality Assessment, available at: http://www.swrcb.ca.gov/water_issues/programs/tmdl/305b.shtml.
[140] 2006 Guidance at 9.
[141] *See* 2006 Guidance for details on U.S. EPA requirements for the inclusion of updated groundwater data in the state's biennial Integrated Report (http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2006IRG_index.cfm).
[142] *See* California Department of Pesticide Regulation, Groundwater Protection Programs website at http://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm.
[143] Well Inventory Reports on Ground Water Testing for Pesticides from 1986-2008, and other data and information is available at http://www.cdpr.ca.gov/docs/emon/grndwtr/wellinv/wirmain.htm.

groundwater wells. California DPH is currently implementing these requirements as part of the Drinking Water Source Assessment and Protection Program (DWSAP), which includes an assessment of 14,326 groundwater sources.[144] Several other state agencies implement groundwater-related monitoring and assessment programs, such as the Department of Water Resources (DWR) and Department of Toxic Substances Control (DTSC); these must be solicited for data as well.

Local groundwater management districts and banks also must be solicited for information on the contamination and overuse of groundwater basins and aquifers that are hydrologically connected to impaired surface waters. The Santa Clara Valley Water District, for example, monitors groundwater quality for common inorganic constituents and identifies which contaminants exceed Regional Water Quality Control Board agricultural water quality objectives.[145] There are also nine local groundwater management districts[146] in California that maintain groundwater data, as well as watermasters[147] and other local entities that maintain data and information about groundwater water quality.

Additionally, federal agencies that implement groundwater-related monitoring and assessment programs, such as U.S. EPA and the United States Geological Survey (USGS),[148] must be "actively solicited" for information. In 2007, USGS conducted an analysis of California's well water quality that examined the presence of 11 contaminants in groundwaters including arsenic, atrazine, benzene, nitrate, radon, and uranium.[149] California Coastkeeper Alliance created two interactive maps depicting groundwater polluted by nitrates and arsenic, primarily relying on these USGS data.[150] Other independent researchers have developed excellent maps of nitrate and other incidences of groundwater pollution that may impact surface waters.[151] This and related information should be carefully scanned for related impacts to hydrologically-connected surface water bodies.

Finally, data on groundwater withdrawals and pumping that impairs or threatens surface water beneficial uses similarly must be solicited and considered. The State Water Board's Water Rights division has such data, which could be cross-referenced with streamflow and other data from numerous other sources.[152] The Santa Clara Valley Water District monitors groundwater elevation and maintains a database of elevation data, searchable by location or well number.[153]

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[144] *See* California Department of Health, Drinking Water Source Assessment and Protection Program, January 1999. Available at http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWSAPGuidance/DWSAP_document.pdf.
[145] Table 3-3a, Santa Clara Valley Water District, 2008 Groundwater Quality Report.
[146] A list of groundwater management district can be found at DWR, Water Facts: Groundwater Management Districts or Agencies in California, available at http://www.dpla2.water.ca.gov/publications/waterfacts/water_facts_4.pdf.
[147] *See* Chino Basin Watermaster Engineering Reports: http://www.cbwm.org/rep_engineering.htm.
[148] *See, e.g.*, USGS Groundwater Information Pages, http://water.usgs.gov/ogw/ and information on what type of data USGS collects at http://www.usgs.gov/faq/index.php?action=artikel&cat=102&id=1148&artlang=en.
[149] Excerpt of California data available at http://www.cacoastkeeper.org/document/ca-domestic-well-water-quality.pdf.
[150] *See* http://www.cacoastkeeper.org/programs/mapping-initiative/nitrates-in-groundwater-maps and http://www.cacoastkeeper.org/programs/mapping-initiative/arsenic-in-groundwater-maps.
[151] *See* California Watch Report, *Nitrate Contamination Spreading in California Communities* (May 13, 2010), available at: http://www.californiawatch.org/nitrate-contamination-spreading-california-communities.
[152] *See* Section III. above for additional sources of flow- and pumping-related data. Future data collected pursuant to SB X7 6 (2009), which establishes collaborations to collect groundwater elevations statewide, will provide

If the State Water Board declines to use such readily available data and information related to groundwater loadings that threaten or impair surface waters, the Board *must* submit a formal "rationale" for the decision in its Assessment Methodology.[154] EPA requires that states' submissions of 303(d) Lists include an Assessment Methodologies section, which includes a "rationale for any decision to not use any existing and readily available data and information."[155] We urge the Water Board, however, to fully exercise its authority and mandate to comprehensively assess and report on the health of all waterways in the state, as required by the 2006 Guidance and Clean Water Act Sections 303(d) and 305(b).

C. The State Water Board Must Ensure that Groundwater Sources of Surface Water Impairment Are Specifically Identified in All Affected Regions of California.

The State Water Board has made progress in identifying groundwater "sources" of surface water impairment in its 303(d) assessment and listing process.[156] Whereas the 2006 303(d) List contained only two references to groundwater as a source of impairment,[157] the 2010 303(d) List contains 27 water body-pollutant segments which identify groundwater as a source of impairment. This type of information is extremely useful in prioritizing waters for action and setting appropriate loads.

Despite the Board's progress, though, groundwater sources of contamination are not identified consistently throughout California's nine regions, nor is there enough information included about groundwater loadings on the List as with other listed sources of impairment. The majority of groundwater-related listings in the 2010 303(d) List are limited to Regions 3 and 4, with only one listing each in Regions 5, 6, and 8. Further, where the Board has identified groundwater contamination as a source of impairment, the groundwater basins and the extent of contaminant loading has not been identified specifically.

The problem of contaminated groundwater loadings to surface waters is not limited to 27 waterbody-pollutant segments, nor is it limited to Regions 3 and 4; it is a pervasive issue that must be proactively addressed throughout the State's 303(d) Listing Process. There are myriad examples spanning the entire state of contaminated groundwater impacts to surface waters. For example, researchers working in San Francisco Bay found that excess levels of certain dissolved

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additional information (DWR is in the process of launching the California Statewide Groundwater Elevation program).

[153] Santa Clara Valley Water District Online Groundwater Elevation Query, available at: https://gis.valleywater.org/GroundwaterElevations/index.asp.

[154] 40 CFR 130.7(b)(6)(iii); U.S. EPA 2006 Guidance, Section C.2, p. 18 ("The assessment methodology should be consistent with the state's WQSs and include a description of the following as part of their section 303(d) list submissions … Rationales for any decision to not use any existing and readily available data and information."). Note that EPA's subsequent Guidance documents for 2008 and 2010 incorporate the 2006 Integrated Reporting Guidance.

[155] 2006 Guidance at 18.

[156] *See* discussion of Source versus Cause in Section III. above.

[157] "Groundwater withdrawal" was listed as a source of impairment of a surface water in only one listing in 2006 (Mendota Pool in Region 5). Lake Tahoe listed "groundwater loadings" as a source of impairment. See www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/state_06_303d_reqtmdls.pdf.

metals in the Bay resulted in large part from groundwater seepage.[158] Similarly, nitrate contamination of groundwaters in California Central Coast valleys, such as Salinas, has become a national example of how fertilizers can impact public health and water quality.[159] For example, the Salinas River is severely impaired by nutrients and nitrates, flows of which often originate from groundwater tainted by irrigation releases.[160] In 2007, the Central Coast Regional Quality Control Board staff investigated reports of heavily nutrient-contaminated discharges from greenhouses near the City of Carpinteria, finding that such discharges of groundwater contribute to existing nutrient impairments in the Carpinteria Salt Marsh and its tributary streams.[161]

Data from the Malibu Watershed,[162] Los Osos,[163] and San Francisco Bay Area[164] demonstrate another pervasive form of surface water pollution caused by groundwater: septic tank releases that reach coastal waters, estuaries and other surface waters. For example, a recent Stanford study found that contaminated groundwater discharging from a small stretch of Stinson Beach was contributing as much nutrient flux to nearshore coastal waters as *all* local creeks and streams in the Bolinas Lagoon drainage.[165]

Southern California surface waters are particularly impacted by contaminated groundwater and excessive withdrawals and pumping. In particular, a number of Orange

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[158] Spinelli, G.A. *et al*., "Groundwater seepage into northern San Francisco Bay: Implications for dissolved metals budgets," *Water Resources Research*, 38(10.1029/2001WR000827) (2002). The researchers sought to quantify groundwater seepage and bioirrigation rates in the area to determine their roles in transporting dissolved metals from benthic sediments to surface waters. After applying their groundwater flow seepage model to northern San Francisco Bay, the researchers found that "benthic fluxes of dissolved metals to the surface waters could account for a relatively large amount (<60%) of the unknown sources of dissolved cobalt and a relatively small amount (<4%) of the unknown sources of dissolved silver, cadmium, copper, nickel, and zinc." *Id*. at 1 (Abstract).

[159] Robert E. Criss "Fertilizers, water quality, and human health," *Environmental Health Perspectives*. FindArticles.com. Aug 23, 2010. http://findarticles.com/p/articles/mi_m0CYP/is_10_112/ai_n15688580/.

[160] *See* USGS, J. Kulongoski, K. Belitz, *Ground-Water Quality Data in the Monterey Bay and Salinas Valley Basins, California, 2005—Results from the California GAMA Programs*, Data Series 258, available at: http://pubs.usgs.gov/ds/2007/258/pdf/DS_258.pdf.

[161] Staff concluded that the discharges were either the result of sump pumping activities conducted by greenhouse operators or groundwater leaching into the storm drain system and then Arroyo Paradon creek. These discharges of groundwater contribute to existing nutrient impairments in the Carpinteria Salt Marsh and its tributary streams. Data and information on file with Santa Barbara Channelkeeper.

[162] Santa Monica Bay Restoration Commission, "Risk assessment of septic systems in lower Malibu Creek watershed" (2001) (Characterizes vulnerability of Malibu Creek and Lagoon and Surfrider Beach to contamination from on-site septic systems in the Malibu Civic Center).

[163] Central Coast Regional Water Quality Control Board, "Los Osos Water Quality Project and Status of Sewer Project" (October 2005), available at: http://www.swrcb.ca.gov/rwqcb3/water_issues/programs/los_osos/docs/master_docs/ 2005_10_los_osos_water_quality_impacts_and_status_of_sewer_project.pdf ("Los Osos septic tanks are causing severe environmental problems in Morro Bay and surrounding areas. This is a surface water (Morro Bay National Estuary) problem in addition to a groundwater problem").

[160] Alexandria B. Boehm, Gregory G. Shellenbarger, Adina Paytan, "Groundwater Discharge: Potential Association with Fecal Indicator Bacteria in the Surf Zone" *Environmental Science & Technology* 38 (13), 3558-3566 (2004) (this work establishes a mechanism for the subterranean delivery of fecal indicator bacteria pollution to the surf zone from the surficial aquifer and presents evidence that supports an association between groundwater discharge and FIB). See http://www.stanford.edu/~aboehm/research.htm for this and additional information.

[165] N. de Sieyes, *et al*., "Submarine Groundwater Discharge to a High-Energy Surf Zone at Stinson Beach, California, Estimated Using Radium Isotopes," *Estuaries and Coasts*, DOI 10.1007/s12237-010-9305-2 (Apr. 2010).

County’s coastal creeks and waterways receive significant amounts of groundwater and have been seriously impacted by contamination.[166] The Chino Basin, one of the largest groundwater basins in Southern California,[167] contains a high concentration of dairies that contribute high concentrations of salts and nitrates that degrade the water quality of Orange County's groundwater basin, and ultimately, the Santa Ana River, resulting in significant water treatment costs for residents.[168]

The State Water Board’s “Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List” makes clear that for each water body-pollutant combination proposed for the 303(d) list, the Regional Water Quality Control Board must prepare fact sheets. These fact sheets must identify a pollutant’s potential source, and “the source category should be identified as specifically as possible.”[169] As Regional Water Boards increasingly identify groundwater loadings as a source of surface water impairments, the State Water Board should encourage this progress and work to ensure that the Regional Boards specify the name, location, size, and other identifying data for the groundwater basins at issue as much as possible in the proposed 2012 303(d) list. This information is necessary in order to identify, analyze, and clean up ground water sources of surface water impairment.

This progression in increasing specificity of information is contemplated by U.S. EPA, which recommends in its 2006 Integrated Report Guidance that states use a combination of monitoring and assessment techniques to “increase the percentage and types of waters assessed,”[170] waters that “may include, but are not limited to . . . *ground water*.”[171]

As described in Appendix B, there is significant precedent around the country for actively using groundwater data to ensure the proper identification of the extent and sources of surface water impairments, and cleaning up all of those sources (including the groundwater), with the goal of ensuring healthy waterways. The state can and should follow this path to healthy waterways. To do this, the state *must* update its 2002 Groundwater Quality Assessment[172] in the 2012 Integrated Report. Further, the State Water Board, in close collaboration with Regional Water Boards, must go beyond recognizing where groundwater contamination is a possible source of impairment. The State and Regional Water Boards should proactively identify, analyze, and clean up groundwater sources of surface water impairment to ensure the full health of both its groundwater and surface water bodies.

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[166] *See* “Orange County Water District adopts resolution targeted at dairies in Chino Basin” *U.S. Water News Online* (December 1999), available at http://www.uswaternews.com/archives/arcpolicy/9oracou12.html.
[167] The Chino Basin contains approximately 5,000,000 acre-feet of water. *See* Chino Basin Watermaster Overview http://www.cbwm.org/overview.htm.
[168] *Supra* note 166.
[169] 2006 Guidance at p. 19 (Section 6.1.2.2(K)).
[170] *Supra* n. 1, 2006 Guidance, at Appendix: Data Elements for 2006 Integrated Water Quality Monitoring and Assessment Report and Documentation for Defining and Linking Segments to the National Hydrography Dataset, p. A-8, available at: http://www.epa.gov/owow/tmdl/2006IRG/report/2006irg-appendix.pdf.
[171] *Id*.at A-1 (emphasis added).
[172] http://www.swrcb.ca.gov/water_issues/programs/tmdl/305b.shtml.

D. The State Must Specifically Identify Surface Waters Impaired by Excessive Groundwater Withdrawals and Pumping.

As described in detail in Section III. above, Clean Water Act Section 303(d) lists must also reflect instances where excessive withdrawals and pumping of groundwater impair and threaten surface waters, particularly through flow alterations. Large-scale pumping and withdrawals of groundwater for agricultural irrigation threaten entire hydrological systems in many areas of California and reduce surface water flows to the detriment of a waterway's beneficial uses.[173]

For example, Northern California's Scott River is so dependent on groundwater that the Legislature amended the California Water Code to formally declare that "by reason of the geology and hydrology of the Scott River, it is necessary to include interconnected ground waters in any determination of the rights to the water of the Scott River as a foundation for a fair and effective judgment of such rights."[174] The State Water Board's assessment of groundwater withdrawal impacts on surface water quality is equally necessary.

The expansion of groundwater-fed agriculture in the Scott Valley is draining the connected, once-mighty Scott River dry. Decreased base flow during summer months increases water temperature and decreases surface water depth, velocity, connectivity which prevents the necessary pollutant load reductions from being realized.[175] Severely reduced flows in the Scott River from groundwater pumping recently prompted legal action by the Pacific Coast Federation of Fisherman's Association and Environmental Law Foundation.[176] In summer 2009, reduced flows in the Scott Valley caused the salmon population to drop down to 81 adults, down from many tens of thousands decades earlier.[177] The groups filed suit against the State Water Board and Siskiyou County for violating the public trust doctrine by allowing unchecked groundwater use to the detriment of the Scott River and several dependent special status fish and wildlife. In addition to having a public trust duty, the State has a legal duty under Section 303(d) of the Clean Water Act to address all sources of surface water impairment.

The lesson of the Scott River and other affected surface waters is that when excessive groundwater withdrawals outpace water recharge, groundwater overdraft occurs, which can directly impact surface waters by diminishing the amount of groundwater that flows into surface waters.[178] Pumping groundwater without regard to streamflow can "turn gaining streams into

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[173] Macdonnel, *supra* n. 31 at 1090, citing Glennon, R., *infra* n. 179.
[174] Cal. Water Code Section 2500.5(b) (2005).
[175] *See* para. 21-22, Pet. for Writ of Mandamus and Complaint for Declaratory and Injunctive Relief filed on June 23, 2010 by Environmental Law Foundation, Pacific Coast Federation of Fisherman's Association, Institute of Fisheries Resources ("PCFFA Scott River Petition") available at http://www.envirolaw.org/documents/WRITPETITIONCOMPLAINT.pdf.
[176] *Id*.
[177] *See* entire PCFFA Scott River Petition, *supra* n. 110. *See also* text and photo accompanying "A Watery Balancing Act" http://www.sfgate.com/cgi-bin/blogs/lsheehan/detail?entry_id=66993.
[178] *See* Glennon, R., *Water Follies: Groundwater Pumping and the Fate of America's Freshwaters*, p. 32 (Island Press, Washington, D.C 2004) ("Along coastal areas, overdrafting may cause the intrusion of salt water into the aquifer, rendering the water no longer potable. This problem is quite serious in California, Florida, and South Carolina."). *See also* Howard J., Merrifield M., *Mapping Groundwater Dependent Ecosystems in California* (2010)

losing streams, and perennial streams into intermittent streams."[179] This alteration to a water body's natural flow creates a cascade of negative impacts on aquatic life and ecosystems, and can destroy a water body's beneficial uses.

Nationally, by far the largest number of groundwater-related impairments of surface waters occurs as a result of groundwater withdrawals, including 97,546 acres of lakes, reservoirs, and ponds, and 3,456 acres of wetlands.[180] As described in Appendix B, other states are taking action to protect surface waters from harmful groundwater withdrawals. For example, in 2000, the Washington Supreme Court upheld the state Department of Ecology's denial of applications for new groundwater withdrawals that would diminish protected stream flows in *Postema v. Pollution Control Hearings Board*.[181] The Michigan Legislature is currently considering a bill that would codify the applicability of the public trust doctrine to groundwater[182] to protect water supplies and connected surface waters from excessive groundwater withdrawals.[183]

Despite a growing movement nationwide to address groundwater withdrawals that affect the health of surface waters, "Groundwater withdrawal" is listed as a source of impairment of a surface water body in only two listings in the State Water Board's 2010 List (Blosser Channel in Region 3 and Mendota Pool in Region 5).[184] Belying these limited listings, satellite-based findings show that large-scale groundwater withdrawals in California[185] are draining surface waters around the state. California's annual statewide overdraft is estimated by the Department of Water Resources to be approximately 1.4 million acre-feet on average, with the majority of overdraft occurring in the San Joaquin Valley and Central Coast.[186] Since October 2003, the aquifers that supply Central Valley and the Sierra Nevada have lost nearly enough water combined to fill Lake Mead.[187] More than 75 percent of this is due to groundwater pumping in the southern Central Valley, primarily to irrigate crops.[188]

PLoS ONE 5(6): e11249. doi:10.1371/journal.pone.0011249, available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0011249.

[179] *Supra* note 122, Aiken at 546.

[180] U.S. EPA, "Specific State Probable Sources that make up the National Groundwater Loadings/Withdrawals Probable Source Group," available at: http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.source_detail?p_source_group_name=GROUNDWATER%20LOADINGS/WITHDRAWALS.

[181] *Postema v. Pollution Control Hearings Board*, 11 P.3d 726 (Wash. 2000).

[182] Michigan law already recognizes the doctrine's applicability to surface waters. *See e.g.*, Article IX, Sec. 40 of the Michigan Constitution of 1963; MCL 324.30111; 324.32502; 324.32505, etc.). The Great Lakes - St. Lawrence River Basin Water Resources Compact (codified at MCL 324.34201) also explicitly recognizes that "the Waters of the Basin are precious natural resources shared and held in trust by the states."

[183] Proposed House Bill No. 5319, available at http://www.legislature.mi.gov/documents/2009-2010/billintroduced/House/pdf/2009-HIB-5319.pdf.

[184] "Domestic ground water" use is also listed twice; *see* http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml.

[185] University of California – Irvine, "California's troubled waters: Satellite-based findings reveal significant groundwater loss in Central Valley," *Science Daily* (Dec. 15, 2009), retrieved August 2, 2010, from http://www.sciencedaily.com/releases/2009/12/091214152022.htm.

[186] California Department of Water Resources, "California's Ground Water," Bulletin 118, Update 2003, Sacramento, CA (2003).

[187] *Id.*

[188] *Id.*

The State Water Board can and must ensure full compliance with Sections 303(d) and 305(b), and the 2006 Guidance, by listing these and other surface waters impaired by low flow caused by excessive groundwater withdrawals and pumping.[189]

V. THE STATE WATER BOARD MUST INCLUDE IN ITS 2012 303(D) LIST ANTHROPOGENIC CLIMATE CHANGE-DRIVEN SOURCES AND IMPAIRMENTS OF CALIFORNIA WATERWAYS.

Global climate change is altering the biological, chemical, and physical properties of California waterways. Projected impacts in California provide an added impetus for the State Water Board to take swift action on flows and groundwater, as described above. For example, California's total water demand is projected to increase by up to 12% or more between 2000 and 2050, and the impacts of climate change will greatly increase the number of areas where water demands will exceed supplies.[190]

Climate change will not only increase the number and severity of existing waterway impairments, it will also drive new sources and causes of impairments. Data and information in the California Climate Change Adaptation Strategy[191] and other analyses generated by the state[192] strongly suggest that climate change will have demonstrable impacts on beneficial uses of California waterways. The most immediate impairments, and those with the strongest causal connection to global climate change, are driven by four principal dynamics: oceanic and estuarine carbon absorption, sea level rise, air and water temperatures increases, and shifting precipitation patterns.

We respectfully request that the State Water Board ensure that the 303(d) list identifies climate change driven-impairments to waterway health, and consider including reference data and information contained herein in your pending "Guidance Document on Climate Change."[193] An initial identification of climate change-driven impairments is provided below as a starting point for the State Water Board's analysis of surface waters that should be included on the 2012 303(d) List as either threatened or impaired:

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[189] Excessive groundwater withdrawals can also cause groundwater levels to decline below sea level, causing seawater to intrude into fresh water aquifers. Saltwater intrusion into groundwater aquifers is likely to become a pressing threat in many watersheds as sea level rises. (*See* AMEC Earth & Environmental (2005) Santa Clara River Enhancement and Management Plan. 260 p. Prepared for the Ventura County Watershed Protection District and Los Angeles Department of Public Works, Santa Barbara, Riverside, San Diego, California.) This threat is described in more detail in the climate change section below.

[190] Natural Resources Defense Council, *Water Facts: Climate Change, Water, and Risk: Current Water Demands Are Not Sustainable,* p. 2 (July 2010) ("NRDC Climate & Water Risk"). Available at http://www.nrdc.org/global-Warming/watersustainability/.

[191] The California Climate Adaptation Strategy, released in December 2009, summarizes the best known science on climate change impacts in California and outlines possible solutions that can be implemented within and across state agencies to promote resiliency. California Natural Resources Agency, "2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2006," (CA Climate Adaptation Strategy), available at www.climatechange.ca.gov/adaptation.

[192] *See* documents referenced in Section IV.A.

[193] *See* http://www.waterboards.ca.gov/water_issues/programs/climate/index.shtml#.

Ocean Acidification:
- o decreased pH of oceanic and estuarine waters
- o acidification impacts to nearshore coastal waters, bays and estuaries

Sea level rise:
- o salinity intrusion into groundwaters hydrologically connected to surface waters
- o salinity intrusion into estuaries, bays, and coastal rivers
- o increased contaminant flows in waterways surrounding wastewater treatment plants and sewer outfalls
- o habitat alterations

Air and water temperature increases:
- o rivers, streams, and creeks: climate change-driven temperature listings
- o decrease in dissolved oxygen
- o loss of temperature-dependant beneficial uses (*e.g.* cold freshwater habitat)

Shifting precipitation patterns:
- o decreased reservoir levels and spring-fall flows (increased water temperature, decreased dilution of pollutants)
- o increase in winter flows, flooding, and runoff (increase in sedimentation and pollutant runoff)

These and other climate change-driven impacts are discussed in more detail below.

A. The State Must Use All Readily Available Data to Identify Climate Change-Driven Sources and Causes of Surface Waters Impairment.

As noted above, the State and Regional Water Boards must "actively solicit, assemble, and consider all readily available data and information," including information reported by local, state, and federal agencies.[194] Given the global and quickly-evolving nature of climate change, the State Water Board should also consider information from international bodies, such as the Water Quality Section of the Intergovernmental Panel on Climate Change's Assessment Report, which provides a useful overview of projected and already-occurring impacts to water quality. Additionally, local, state, and federal agencies have amassed a tremendous amount of regionally-scaled studies and analyses regarding climate change impacts to California water quality that have not yet been integrated into the State's biennial 303(d) (or 305(b)) data collection. In particular, there is a significant amount of modeling and data on how climate change will impact the water quality and water supply of the San Francisco-San Joaquin Delta that should be considered.

More specifically, the State Water Board must examine and consider all readily available information that could inform 303(d) decisions related to climate change-driven impacts to California waterways, including but by no means limited to the following:

- o Pertinent reports from the Department of Water Resources' (DWR) Integrated Regional Water Management Climate Change Document Clearinghouse.[195] This Clearinghouse

[194] *See* CA Listing Policy, Section 6.1.1 Definition of Readily Available Data and Information.
[195] A complete list of climate change publications written by DWR is available at http://www.water.ca.gov/climatechange/articles.cfm.

references dozens of pertinent reports that detail projected climate impacts to water quality, flow and species, including several recent DWR reports on how impaired water bodies and water quality will be impacted by climate change, including sea level rise;

- Analysis in the *California Water Plan Update 2009*[196] on how impaired water bodies and water quality will be impacted by climate change;
- Information from DWR's *Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water*[197] on waterways hydrologically connected to groundwater basins and on waterways vulnerable to sea level rise;
- Data and information in the Public Policy Institute of California's *Adapting Water Management to Climate Change*[198] on sea level rise and temperature impairments, as well as information on changes in the timing and amount of precipitation;
- Information regarding impairments stemming from salinity intrusion, inundation of wastewater treatment plants, and other impairments stemming from sea level rise in the Pacific Institute's *The Impacts of Sea-Level Rise on the California Coast*;[199]
- Ocean carbon data from NOAA's Pacific Marine Environmental Laboratory[200] and the U.S. Department of Energy's Carbon Dioxide Information Analysis Center;[201] and
- Data on changes in precipitation and temperature in the California Climate Tracker,[202] which is maintained by the Western Regional Climate Center, which would be extremely useful to identify related climate change-driven impairments as described below.

Information specific to the San Francisco-San Joaquin Delta includes, but is not limited to:

- Water quality monitoring data in the Central Valley Watershed Monitoring Directory, a joint effort by the San Francisco Estuary Institute (SFEI), the Central Valley Regional Water Quality Control Board Surface Water Ambient Monitoring Program (SWAMP) and the U.S. EPA;[203]
- Water quality and water supply studies from the CALFED Bay-Delta Program;[204] including the Delta Regional Ecosystem Restoration Implementation Plan models;[205]
- Reports and resources from the Water Quality, Supply and Reliability Workgroup of the California Partnership for the San Joaquin Valley;[206]

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[196] California Department of Water Resources (DWR), *California Water Plan Update 2009* (October 2009), available at http://www.waterplan.water.ca.gov/cwpu2009/index.cfm.
[197] DWR, *Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water* (October 2008), available at http://www.water.ca.gov/climatechange/docs/ClimateChangeWhitePaper.pdf.
[198] Public Policy Institute of California, *Adapting Water Management to Climate Change* (November 2008), available at http://www.ppic.org/content/pubs/report/R_1108JLR.pdf.
[199] California Climate Change Center, The Impacts of Sea-Level Rise on the California Coast ("Impacts of Sea Level Rise on CA"), May 2009, available at www.pacinst.org/reports/sea_level_rise/report.pdf.
[200] *See* Pacific Marine Environmental Laboratory homepage at http://www.pmel.noaa.gov/co2/OA/.
[201] Global Ocean Data Analysis Project, http://cdiac.ornl.gov/oceans/.
[202] *See* California Climate Tracker at http://www.wrcc.dri.edu/monitor/cal-mon/. Abatzoglou, J.T., K.T. Redmond, L.M. Edwards, "Classification of Regional Climate Variability in the State of California," *Journal of Applied Meteorology and Climatology*, 48, 1527-1541 (2009).
[203] Central Valley Watershed Monitoring Directory: http://www.centralvalleymonitoring.org/.
[204] CALFED Bay-Delta Program: http://www.science.calwater.ca.gov/science_index.html.
[205] Delta Regional Ecosystem Restoration Implementation Plan at http://www.science.calwater.ca.gov/drerip/drerip_index.html.
[206] California Partnership for the San Joaquin Valley Water Quality, Supply and Reliability Document Library http://www.sjvpartnership.org/wg_doc_lib.php?wg_id=10.

- The SWRCB's Final Report on Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem and studies supporting the recently-adopted Delta flow criteria;[207] and
- DFG biological opinions on Delta smelt and other endangered species.

The State Water Board should solicit, assemble and consider all readily available data relating to climate change-driven impairments for the 2012 303(d) List, with a particular focus on developing appropriate 303(d) listings for which a large amount of data currently exists, such as for ocean acidification impairments and climate change-driven Delta waterway impairments. The Board should also use and consider data regarding potential sources and causes of impairment cased by climate change-driven sea level rise, warming and shifting precipitation. Finally, the Board should augment its "Climate Change and Water Resources" website with data and information regarding the aforementioned climate change-driven impairments.[208]

B. The State Water Board Must Take Immediate Action to Ensure That the 2012 303(d) List Reflects Data on Climate Change-Driven Impairments Related to Ocean Acidification.

There is a significant amount of data and information currently available with requisite specificity for assessing which waterways are impaired by ocean acidification for the 2012 303(d) List. The State must collect data regarding the pH of bays, estuaries, the ocean, near-coastal areas, and coastal shorelines, and list waterways impaired or threatened by ocean acidification. The State Board must take action to ensure that the 2012 303(d) List contains pertinent data and lists impaired waterways as appropriate. If the State declines to do so, it must submit a "rationale" for not doing so, as required by the Clean Water Act, though we urge the State to implement its responsibilities and authorities fully in ensuring comprehensive listings.

Ocean acidification, a decrease in ocean pH fueled by the ocean's absorption of carbon dioxide, threatens the seawater quality of California's bays and estuaries. The ocean absorbs about half of all anthropogenic carbon dioxide emissions, an estimated 22 million tons of carbon dioxide (CO_2) every day.[209] When CO_2 dissolves in seawater it forms carbonic acid, which decreases ocean pH and causes "ocean acidification."[210] Global average surface pH has already decreased by approximately 0.1 units, and is expected to decrease by another 0.3-0.4 units by the end of the century, depending on future levels of atmospheric carbon dioxide.[211]

The latest science indicates that ocean acidification impacts to the seawater quality of California bays, estuaries and near coastal areas may already be occurring, and are projected to

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[207] http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/
[208] *See* http://www.waterboards.ca.gov/water_issues/programs/climate/index.shtml.
[209] Feely, R. A., C. L. Sabine, K. Lee, W. Berelson, J. Kleypas, V. J. Fabry, and F. J. Millero. "Impact of anthropogenic CO2 on the CaCO3 system in the oceans," *Science* 305:362-366 (2004).
[210] Orr, J.C. *et al*. "Research Priorities for Understanding Ocean Acidification," *Oceanography*, 22(4): 182 (2009).
[211] Hauri, Claudine, Gruber, N, Lachkar, Z., Plattner, G. Abstract. "Accelerated acidification in eastern boundary current systems," Goldschmidt Conference Abstracts (2009); citing Orr, J.C., V.J. Fabry, O. Aumont, L. Bopp, S.C. Doney, R.A. Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, et al, "Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms," 437 *Nature* 681-86 (2005), http://www.nature.com/nature/journal/v437/n7059/full/nature04095.html.

accelerate.[212] In 2008, scientists discovered high levels of acidified ocean water within 20 miles of the Pacific Coast.[213] Given that atmospheric levels of carbon dioxide have increased drastically in the last half century, and are likely to increase further, such acidification trends are projected to increase, a trend that should be considered in projecting "threatened" waterways in particular.[214] Natural upwelling in nearshore waters, coupled with oceanic uptake of anthropogenic CO_2, mean that "ocean acidification has already decreased mean surface water pH in the California Current System to a level that was not expected to happen for open-ocean surface waters for several decades."[215] Projections indicate that the Humboldt Current System, another eastern boundary upwelling system that impacts ocean waters off of California, may be subject to the same conditions.[216]

There is precedent both for listing waterways impaired or threatened by atmospheric sources of pollution and for listing waterways impaired for pH. U.S. EPA maintains a list of waterways impaired for pH under the 303(d) program, with more than 3,500 waterbodies so listed as of May 2010.[217] Section 303(d) of the Clean Water Act also has been interpreted by both U.S. EPA and states to cover waterways impaired by atmospheric sources of pollution (such as carbon deposits). Specifically, in March 2007, EPA issued information on listing waters impaired by mercury from atmospheric sources under Section 303(d) of the Clean Water Act.[218] Subsequent to EPA's action, in October 2007, a group of Northeast states established the Northeast Regional Mercury TMDL, a regional cleanup plan to reduce mercury entering the states' watershed from a range of pollution sources, including atmospheric deposition of mercury.[219]

In response to legal action from the Center for Biological Diversity directly on the issue of climate change, the U.S. EPA solicited public comment on how to address listing of waters as threatened or impaired for ocean acidification under the 303(d) program.[220] <u>California need not wait for EPA's issuance of guidance on listing waters impaired by ocean acidification. The State should immediately assemble and consider all readily available evidence regarding waters impaired by ocean acidification and list waters accordingly</u>.

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[212] Byrne, R. H., S. Mecking, R. A. Feely, and X. Liu (2010), "Direct observations of basin-wide acidification of the North Pacific Ocean," 37 *Geophys. Res. Lett.* (2010), L02601, doi:10.1029/2009GL040999, http://www.agu.org/journals/ABS/2010/2009GL040999.shtml.
[213] Feely, R. A., C. L. Sabine, J. M. Hernandez-Ayon, D. Ianson, and B. Hales, "Evidence for upwelling of corrosive "acidified" water onto the continental shelf," *Science* 320:1490-1492 (2008), http://www.sciencemag.org/cgi/content/abstract/sci;320/5882/1490. *See also* Hauri *et al.* at p. 66.
[214] *Id. See also* http://www.sciencedaily.com/releases/2008/05/080522181511.htm.
[215] Hauri *et al.* at p. 69.
[216] *Id.*
[217] *See* Environmental Protection Agency Watershed Assessment, Tracking & Environmental Results webpage, Specific State Causes of Impairment That Make up the National pH/Acidity/Caustic Conditions Cause of Impairment, available at: http://iaspub.epa.gov/tmdl_waters10/attains_nation_cy.cause_detail_303d?p_cause_group_id=1188.
[218] Hooks, Craig, EPA Office of Wetlands, Oceans, and Watersheds, "Memorandum: Listing Waters Impaired by Atmospheric Mercury Under Clean Water Act Section 303(d): Voluntary Subcategory 5m for States with Comprehensive Reduction Programs" (March 8, 2007).
[219] New England Interstate Water Pollution Control Commission, "Northeast Regional Mercury Total Maximum Daily Load," p. 32 (October 24, 2007), available at http://www.neiwpcc.org/mercury/mercurytmdl.asp.
[220] *See* EPA's Federal Register Notice at http://www.epa.gov/owowwtr1/tmdl/oceanfrMarch_2010/.

C. The State Water Board Must Use and Consider Data on Sea Level Rise, Warming, and Precipitation Changes That Cause or Are Potential Sources of Impairments.

Projections of climate change-driven sea level rise, increased temperature, and shifting precipitation patterns will continue to have a major impact on California's water quality. The water quality impacts of climate change-driven sea level rise will be felt throughout California. In particular, a change in sea level will substantially alter San Francisco Bay-Delta conditions, where water surface elevations and associated fluctuations drive Bay-Delta hydrodynamics, which in turn dictate the location and nature of physical habitat and the quantity and quality of water.[221] Even under modest sea level rise and climate warming projections, an increase in the frequency, duration, and magnitude of water level extremes is expected in the Delta, to the detriment of numerous waterway beneficial uses.[222]

As for ocean acidification, we respectfully request that the State Water Board review and assess whether water bodies are impaired or threatened by climate change and also to list climate change as a potential source of impairment, where appropriate, on the 2012 303(d) List.[223] As outlined at the beginning of this section, we bring the following impairments to the Board's attention, although review of climate change impairments should by no means be limited to the impairments described below.

1. <u>Sea Level Rise</u>

Climate change is projected to result in sea level rise in California of 16 inches by 2050 and 55 inches by the end of the century.[224] In the Bay Area, 180,000 acres of shoreline are vulnerable to flooding by 2050, putting 21 wastewater treatment plants at risk of inundation.[225] Sea level rise also will substantially impair California's waterways by causing saltwater intrusion into estuaries and hydrologically connected groundwaters, inundating or eroding habitats, altering species composition, changing freshwater inflow, and impairing water quality.

a. Saltwater intrusion of hydrologically connected groundwaters.

Saltwater intrusion into aquifers is a man-made problem in many places in California, resulting from over-pumping and excessive withdrawals from groundwater aquifers.[226] Pumping coastal aquifers in excess of natural recharge rates draws down the surface of the aquifer, allowing surface water to move inland into a freshwater aquifer and contaminate it with salts.[227] When the ocean has a higher water elevation, it causes the saltwater wedge to intrude further

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[221] CALFED Bay-Delta Program Independent Science Board, Memorandum: *Sea Level Rise and Delta Planning* (September 6, 2007).
[222] *Id*. at 2.
[223] *See* discussion in Section III. above regarding "causes" versus "sources" of impairment.
[224] California Climate Change Center, "Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment (Draft Paper)," available at www.energy.ca.gov/2009publications/CEC-500-2009-014/CEC-500-2009-014-D.PDF.
[225] *Id*.
[226] *Impacts of Sea Level Rise on CA* at 80.
[227] *Id*.

inland.[228] Seawater intrusion is already problematic in California's coastal aquifers throughout Central and Southern California, including the Pajaro and Salinas Valleys and aquifers in Orange and Los Angeles Counties. Groundwater supplies in the Santa Clara Subbasin are also vulnerable to salinity intrusion.[229]

Overdraft and saltwater intrusion into groundwater aquifers will be accelerated and made worse by sea level rise. Where these groundwater aquifers are hydrologically connected to surface waters, and thus affect the water quality of those surface waters, the State Water Board should list climate change/sea level rise as a source or cause of impairment so that appropriate remedial action can be taken.

b. Salinity intrusion into estuaries

Sea-level rise and changes in the intensity of storm events will impact low-lying coastal areas and result in the loss or inundation of coastal wetlands and dune habitat, resulting in salt water intrusion and loss of freshwater habitat for fish and wildlife.[230] Changes in salinity from reduced freshwater inflow will affect fish, wildlife and other aquatic organisms in intertidal and subtidal habitats. Increasing rates of saltwater intrusion into groundwater that impacts the beneficial uses of connected surface waters will need to be addressed in water quality management decisions, including the 303(d) List.[231]

c. Increased contamination from inundation of wastewater treatment facilities and sewer outfalls.

A recent Pacific Institute study found that a 1.4 meter sea level rise makes 28 wastewater treatment plants vulnerable to inundation: 21 plants around the San Francisco Bay and 7 other plants on the Pacific coast.[232] The combined capacity of these plants is 530 million gallons per day.[233] Some wastewater treatment plants are preparing for projected inundation,[234] but many more are not taking any action. Inundation from sea level rise, as well as an increased number of extreme weather events, could damage pumps and other treatment plant equipment and interfere with discharges from outfalls sited on coast and bay shorelines.[235] This will lead to an increased

[228] *Id.*
[229] Santa Clara Valley Water District, "Groundwater Quality Report," p. 19 (2008) ("Saltwater intrusion of the Santa Clara Subbasin shallow aquifer zone adjacent to the southern shore of the San Francisco Bay has been studied and monitored for many years by the District. Although the contamination has been somewhat widespread in the shallow aquifer zone, fortunately, the lower aquifer has not been affected significantly.")
[230] *CA Climate Adaptation Strategy* at 73.
[231] *Id.* at 70.
[232] *Impacts of Sea Level Rise on CA* at 62-63, *see* Figure 24: Wastewater treatment plants on the Pacific coast vulnerable to a 100-year flood with a 1.4m sea-level rise.
[233] *Id.* at 63.
[234] In 2009, the City of Morro Bay commissioned a *Wastewater Treatment Plant Flood Hazard Analysis* and concluded that the existing wastewater treatment plant (WWTP) was subject to inundation from the Morro Creek watershed. The City recommended that the new site for a WWTP be developed with the placement of engineered fill to raise the new site above the 100-year flood elevation. *See* City of Morro Bay and Cayucos Sanitary District Wastewater Treatment Plant Upgrade Project, Facility Master Plan Draft Amendment No. 2, p. 12 (July 2010).
[235] *Id.* at 63.

number of untreated and partially treated sewage discharges and increased contamination and impairment of proximate waterways.

Discharges from sewage treatment plants already impair waterbodies throughout California. Pathogen impairments, which are linked to discharges from wastewater treatment plants among other sources, represent the second highest number of impairments for California waterways.[236] High concentrations of bacteria such as fecal coliform and E. coli raise the risk of waterborne diseases and starve fish of the oxygen they require, destroying several beneficial uses for affected waterbodies.

d. Sea level rise-caused habitat alterations

EPA records show 699 waterbody-segments listed nationwide as impaired due to "habitat alteration." This habitat alteration impairment group captures numerous impacts to waterways, including but not limited to alterations to wetland habitats, habitat barriers, degraded habitat and other forms of habitat alterations. Projected sea level rise similarly could result in a large number of habitat alteration impairments, both directly from sea level rise alteration to coastal wetland and other habitats, and indirectly by prompting construction of hard structures on the coastline such as seawalls and levees.

For example, according to the report *Impacts of Sea Level Rise on the California Coast* rising seas threaten to substantially modify or destroy wetland habitats.[237] More specifically:

> Vast areas of wetlands and other natural ecosystems are vulnerable to sea level rise. An estimated 550 square miles, or 350,000 acres, of wetlands exist along the California coast, but additional work is needed to evaluate the extent to which these wetlands would be destroyed, degraded, or modified over time. A sea level rise of 1.4 m would flood approximately 150 square miles of land immediately adjacent to current wetlands, potentially creating new wetland habitat if those lands are protected from further development."[238]

2. <u>Air and water temperature increases</u>

a. Warming of streams and rivers

New research shows that water temperatures are increasing in many streams and rivers throughout the United States,[239] with less water available for ecosystem flow and temperature needs in spring and summer.[240] In many low- and middle-elevation streams today, summer temperatures often approach the upper tolerance limits for salmon and trout; higher air and water

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236 http://iaspub.epa.gov/waters10/state_rept.control?p_state=CA&p_cycle=.
237 *Impacts of Sea Level Rise on CA* at 27.
238 *Id*. at 17.
239 Kaushal et al., "Rising stream and river temperatures in the United States," *Frontiers in Ecology and the Environment*, 2010; 100323112848094 DOI: 10.1890/090037; University of Maryland Center for Environmental Science, "Rising water temperatures found in US streams and rivers" (April 7, 2010), available at: http://www.sciencedaily.com/releases/2010/04/100406101444.htm.
240 *CA Climate Adaptation Strategy* at 80.

temperatures will exacerbate this problem.[241] Thus, climate change might require dedication of more water, especially cold water stored behind reservoirs, to simply maintain existing fish habitat.[242] The 303(d) List should reflect instances where scientific evidence suggests that climate change is a cause or source of temperature impairments. Doing so would ensure that appropriate mitigating and prevention measures can be taken.

b. Decrease in dissolved oxygen

An inverse correlation between water temperature and the amount of dissolved oxygen in a waterbody is well-known and understood by water quality managers. Many California waterbodies that are impaired for temperature are also impaired because of low dissolved oxygen. Where waterbodies experience unnaturally high temperatures, the amount of dissolved oxygen can drop to levels that negatively impact water quality and aquatic species. Studies suggest that climate change-driven warming of streams, rivers, and other waterways could similarly decrease dissolved oxygen levels.[243] This is a phenomena the State Water Board must track and address in its 303(d) list, as appropriate.

3. <u>Shifting precipitation patterns</u>

Observational records and climate projections provide abundant evidence that freshwater resources are vulnerable and have the potential to be strongly impacted by climate change.[244] The decrease in precipitation and increase in potential evapotranspiration will have a significant affect on California's "available precipitation," which means water falling as rain or snow.[245] Projections suggest that precipitation will decline five inches per year by 2050 in California.[246] The Department of Water Resources projects that the Sierra Nevada snowpack may be reduced from its mid-20th century average by 25 to 40 percent by 2050.[247]

a. Longer low flow conditions

Climate change should be specifically identified as the source of low flow conditions where data so indicate. For example, projected declines in summer stream flows may impair Delta waterways through low-flow conditions and higher stream water temperatures.[248] As freshwater inputs decrease, Delta water quality may also be degraded as saltwater intrudes further upstream from the Pacific Ocean.[249] Salinity intrusion, low-flow conditions and higher

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241 *Id.*
242 *Id.*
243 *See* IPCC Assessment Report, Working Group II: "Impacts, Adaptation and Vulnerability," Section 4.3.10 available at http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=173.; B. A. Cox and P. G. Whitehead, "Impacts of climate change scenarios on dissolved oxygen in the River Thames, UK, Hydrology Research," 40(2-3): 138–152 © IWA Publishing 2009 doi:10.2166/nh.2009.096.
244 Climate Change and Water: Intergovernmental Panel on Climate Change Technical Report VI – June 2008, available at:
http://www.ipcc.ch/publications_and_data/publications_and_data_technical_papers_climate_change_and_water.htm.
245 *NRDC Climate & Water Risk* at 2.
246 *Id.*
247 CA Climate Adaptation Strategy at 82.
248 *Id.* at 86.
249 *Id.*

stream water temperatures are all sources and causes of waterway impairment that could and should be addressed under the State Water Board's 2012 303(d) process.

The California Natural Resources Agency made an initial determination that mitigating these impacts requires more freshwater releases from upstream reservoirs.[250] The State Water Board should work with the Central Valley Regional Water Quality Control Board to examine data on climate change-driven impairments of Delta waterways and tributaries so that impaired waterways can be correctly identified and appropriate mitigating actions can be implemented to restore waterway health.

b. Increased contamination from stormwater runoff

Many models project higher contaminant concentrations in waterways as less frequent but more intense rainfall patterns change water quality.[251] An increased number and severity of extreme weather events and storm surges are also predicted. These climate change-driven phenomena will increase runoff and flooding, thus exacerbating levels of storm water pollution and sediment runoff.

* * *

Thank you for the opportunity to provide this information in support of a comprehensive 2012 Section 303(d) list that meets the mandates of the Clean Water Act. California's 303(s) list cannot be limited to "traditional" Category 5 listings. To comply with the Act, and to help lead the state to achieving its goals of clean waters with healthy flows and biodiverse aquatic ecosystem, the 2012 303(d) list must also include waterways impaired or threatened by: altered natural flows in surface waters, groundwater contamination and excessive groundwater withdrawals that impact surface water health, and anthropogenic climate change-caused impacts to surface waters. The data and information contained and referenced in this letter, as well as extensive other databases and peer-reviewed reports that are readily available to the State and Regional Water Boards, should provide more than adequate support for the listing of numerous waterways that are impaired and threatened and that therefore require the state's attention under the Clean Water Act and Porter-Cologne.

If you have any questions, please do not hesitate to contact us.

[250] *Id.*
[251] *CA Climate Adaptation Strategy* at 82.

Sincerely,

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March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Dr. Jun Zhu
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Jun.Zhu@waterboards.ca.gov

VIA EMAIL

Re: Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu,

On behalf of Heal the Bay, we submit the following comments on the *Revisions to the Los Angeles Region 303(d) List* (Revised List or 303(d) List). Heal the Bay is an environmental organization with over 15,000 members dedicated to making the coastal waters and watersheds of greater Los Angeles safe, healthy, and clean. We appreciate the opportunity to provide comments on the Revised List.

Data/Information Collection and Timing Delay

In late 2014, Heal the Bay commented on the State Water Resources Control Board's (State Board's) *Proposed Amendment to the Water Quality Control Policy for Developing the Clean Water Act Section 303(d) List*. While we appreciated the chance to comment and the State Board's explanations in their Response to Comments, there are a few concerns that we continue to have regarding the new amendment and its effect on the Revised List.

First, we understand that California is an expansive state and that the State Board's resources are limited in comparison. In this sense we understand but are disappointed that California must implement the "Rotating Basin Approach," when coming into compliance with requests for biennial updates for the federal Clean Water Act's Section 303(d). This will effectively reduce regional updates on impaired waters from every two to every six years.

Compounded on this is the surprising discovery that the State Board is discussing either listing or delisting bodies of water in Region 4 with information and data collected *prior to August 30, 2010* – almost seven years ago. This would be on par with a college admissions officer selecting a prospective student for a university based on their academic performance in 5th Grade. It would have seemed wiser to have at least updated and

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appended further data and information and possibly re-solicited water quality data from regional stakeholders during the years long interim with respect to whether water bodies are placed on or removed from the Revised List.

Considering this discrepancy in timing from data submittal to listing and delisting proposals, we ask that the State Board and Environmental Protection Agency (EPA) *not* delist any bodies of water that are currently on the *2010 Integrated Report* until more current data is received. This will eliminate the possibility of delisting a water body that is currently impaired, as there is no way to know the condition of the waters in question using data solely from 2010 or before. To err on the side of caution when dealing with our state waters will be in the best interest of our water quality standards and beneficial uses. This seems like a reasonable, precautionary request and is supported by the State Board during the adoption of the policy.

Taken from the State Board Hearing Transcript from Sept. 30, 2004, Board Member Nancy H. Sutley states, "If it's on the list . . . then you have to have some information that says that they [fish] are not dying now and the waterbody is not currently impaired . . .." Though Board Member Sutley is referring to listings that were made by mistake, the principle behind it should still hold true. The intent was to say that information and data on waters should *currently* show that water quality standards are met and that the body of water is not *currently* impaired before being removed from the list. Board Member Sutley goes further to suggest that boards should affirm a lack of *current* impairment before delisting bodies of water by stating she was "Okay with not adding [additional] language [to the Listing Policy] as long as we're all in agreement and that's the direction of the regional boards that you have to look at the current conditions as well [before de-listing]."

This very point is represented in the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (State Listing Policy)(Adopted Sept. 30, 2004 and Amended February 3, 2015) in Section 4.11, which states, "When making a delisting decision based on the situation-specific weight of evidence, the Regional Water Board must justify its recommendation by [Bullet 1] Providing any data or information including *current conditions* supporting the decision." We argue that there is no way to demonstrate current conditions with information and data that is aged seven years or more. Because of this it seems in line with State Listing Policy that no waterbodies be delisted for the current 303(d) List. During the next listing/delisting cycle, which will be in 2022, staff will be able to make a more accurate judgement on impairment simply because their information will be more up to date.

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It is Misleading to Entitle this Current Edition the "2016" 303(d) List

It seems off-track and misleading to title this 303(d) list the *2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters* (Integrated Report) when it only contains information from 2010. Since the State Water Board's original 2010 solicitation for data was intended for the 2012 list we think it would be much more constructive and accurate to have the current list in question labeled exactly as such and be called the *2012 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters*.

If any individual was filing their income taxes using tax information from a certain year, it would remain labeled as the tax return from the original time period, regardless of how long of an extension the individual received. Considering compliance with state and federal law, we could find no mention within the Federal Clean Water Act or the State Listing Policy of how the Integrated Report should be named, only how often it should submitted. Since the EPA is well aware of the new "rotating basin approach," and due to the fact that California has successfully amended its own State Listing Policy, we believe there to be no compliance issues for the more accurate renaming.

In addition, it was made clear in the Integrated Report's "Staff Report" (February 2017) that the 303(d) List for Regions from Group 2 (Regions 3, 5, and 9), which was intended to be passed in 2014, has yet to be approved by the State Board or the EPA. If the State Board were to rename the 2014 Integrated Report the 2012 Integrated Report as well because it has yet to be approved, this would make clear to everyone exactly where the listing's value lies—by titling both lists from Basin Group 2 and 3, the revised 2012 Integrated Report. This would file nicely with California's Basin Group 1 (Regions 1, 6, and 7), which would identically be called the 2012 Integrated Report. This is also consistent with the original notice and request for data, titled "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report—Surface Water Quality Assessment and List of Impaired Waters."

Further advantages of this titling would be that future inspection researchers unfamiliar with past reports would know that the listings would correspond much closer to the data from 2010. Looking towards the future, this more accurate labeling will help in clarifying reporting methods. It signifies when agencies made a clean break from when small windows of data were analyzed in favor of the current California Environmental Data Exchange Network (CEDEN) system, which uses a constant, up-to-date stream of information and allows for a more thorough and accurate 303(d) list for Region 4 in 2022. This would also make it crystal clear when the State of California "changed over" to the new "Rotating Basin Approach" in regards to fulfilling their obligations to Section 305(b) of the Clean Water Act.

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The Optimistic Possibilities of CEDEN in 303(d) Listings

As mentioned above, the State Board does have an opportunity going forward with CEDEN concerning water bodies in California. We are heartened to see that despite the fact that Region 4's 303(d) list will not be updated until 2022, that the list will be based on information up until 2021. This reduced lag time will only work to benefit the waters and beneficial uses of California's bodies of water.

Further, as the State Board mentions in its *Comment Summary and Responses for the Proposed Amendment to the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* from January 26, 2015, "Requiring the use of CEDEN will ensure the data used for the 303(d) listing process is of a high quality and includes the necessary information for efficient assessments." It is true that the use of this database is likely to streamline the process for the staff of the Regional Boards, the State Board, the EPA, and any agency that wants to submit pertinent data.

Heal the Bay noticed that the State Board scheduled CEDEN workshops in 2015 to "facilitate greater understanding of the needs of CEDEN users, develop tools to enhance the utility of CEDEN, and provide training on using the CEDEN system." We ask that the State Board provide more workshops now and in the coming years in anticipation of the current and future use of CEDEN by Region 4 Stakeholders. The people and water environment of California only stand to gain from thorough instruction given to invested stakeholders and the data they will provide.

Concerns with Individual Category 4a Delistings from the 303(d) List

Delisting Hermosa Beach and Manhattan Beach for Indicator Bacteria

Beyond our concerns mentioned above with *any* impaired water delistings from the prior 2010 303(d) List, Heal the Bay feels strongly that both Hermosa and Manhattan Beach should remain on the 303(d) List and maintain their current TMDL for Indicator Bacteria. Looking at our past Beach Report Card data, even data solely from the supposed window ending on August 30, 2010 and before, we find it puzzling that either beach would be in consideration for delisting. In 2010 itself, our Hermosa Beach site by Herondo Street outfall was noted for single sample exceedances for *Enterococcus* for 17.6% of samples taken. Averaging exceedances from 2008 to present 2016, the Herondo storm drain outfall has shown *Enterococcus* exceedances 12% of the time. Concerning Manhattan Beach, their 28th Street outfall has shown *Enterococcus* exceedances 10% of the time since 2008.

Both of these beaches are popular swimming and recreation areas and eliminating the TMDL would create the potential for impacts on human health and aquatic life. We would

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highly recommend waiting to remove both beaches from the 303(d) list until data from the past decade can be assessed. Like we discussed above, where uncertainty exists with regards to delisting bodies of water, decisions should be made in favor of protecting water quality, human health and the environment.

Heal the Bay realizes the huge endeavor these 303(d) listings are for all agencies involved. Please be assured that our organization looks forward to working with the Regional Board, the State Board, and the EPA in the future as the 303(d) listing process is further streamlined and more accurate and immediate assessments of our waterways are provided for listings.

Thank you for your consideration of these comments. If you have any questions please feel free to contact us at (310) 451-1500.

Sincerely,

Steven Johnson
Water Resources Policy Analyst
Heal the Bay

March 30, 2017

Mr. Samuel Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Attn: Ms. Jun Zhu

Dear Mr. Unger:

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

The Los Angeles Department of Water and Power (LADWP) would like to thank the Los Angeles Regional Water Quality Control Board (LARWQCB) for the opportunity to comment on the Revisions to the Los Angeles Region 303(d) List (Revisions).

LADWP is the largest municipally-owned utility in the nation, which serves a 465 square-mile area in Los Angeles with approximately four million residents and a portion of the Eastern Sierras in Owens Valley. Its mission is to provide essential public services (water and power) for grid reliability and public health and safety in an efficient and environmentally responsible manner. LADWP owns its electrical generation, distribution, and transmission systems as well as its 233-mile, gravity fed Los Angeles Aqueduct, which brings water to the City of Los Angeles (City). LADWP's Power System supplies more than 23 million megawatt hours of electricity a year, and LADWP is responsible for maintaining and replacing 3,507 miles of overhead transmission circuits spanning five western states. LADWP's Water System supplies approximately 177 billion gallons of water annually and an average of 446 million gallons per day to its residential and business customers.

LADWP has comments in several areas, as follows:

1. Elderberry Forebay should not be listed for dieldrin or PCBs.
2. The 303d listing recommendations should be updated to include current data and information.
3. The proposed listings for "benthic community effects" are premature at this time, particularly for proposed listings in modified channels.

LADWP's detailed comments can be found below.

1. Elderberry Forebay should not be listed for dieldrin or PCBs.

LADWP's largest hydroelectric facility is the Castaic Power Plant, which is critical to the reliability of the electrical grid in the Los Angeles Basin. This facility along with the Elderberry Forebay was built in 1960 as part of a Federal Energy Regulatory Commission (FERC) project with the Department of Water Resources , and is operated under a FERC license. The Elderberry Forebay was built strictly for the operation of the plant as a storage component for the water that passes through the plant to generate electricity. This hydroelectric plant is known as a pass-through facility. Water from Pyramid Lake flows down a gradient through the Los Angeles Tunnel and seven penstocks to turn seven turbines in order to produce electricity. The water enters Elderberry Forebay after the turbines where it is then either discharged to Castaic Lake or pumped back to Pyramid Lake.

LADWP has noted that the LARWQCB has proposed to add Elderberry Forebay to the revised 303(d) list for dieldrin and PCBs. However, activities at the plant do not use or add products that would contribute dieldrin or PCBs to its discharges into Elderberry. In fact, Elderberry Forebay is not open to the public and therefore does not have any beneficial uses beyond being an operating body of water for the hydro plant. Its only use is for the pushing of the turbine blades to generate electricity. In 2008 the United States Environmental Protection Agency (USEPA) released its final version of its "National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule" (Water Transfer Rule) codifying (40 CFR 122.3(i)) that water transfers are excluded from the regulation of the Clean Water Act (CWA). The 40 CFR 122.3 (i) expressly states "Water transfers mean an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. USEPA's legal interpretation of the CWA concluded that Congress did not intend to subject water transfers where there is "no addition" of pollutants to the NPDES permit process because the pollutants were already in the waters being transferred and are not added. This ruling was put in place precisely for hydroelectric plants like the Castaic Power Plant that are considered pass-through facilities. Since this body of water is isolated from all public recreation and access and the water that passes through the Castaic Power Plant is used only to generate electricity, it seems inappropriate to include the Elderberry Forebay in the new 303(d) listing.

With respect to Dieldrin, as stated in LADWP's Castaic Dieldrin Source Control Study sent to the LARWQCB in May 2010, LADWP contends that since the Castaic Power Plant has never used nor ever had a use for dieldrin, it cannot be the source of dieldrin in Elderberry Forebay. The source study points out that many of the tributaries that flow into the State Water Project, specifically those in the San Joaquin Valley, are agricultural areas where for years traditional pesticides (including dieldrin) have been used. Dieldrin was also an ingredient in several types of vector control measures used to mitigate vectors residing subsurface. These components, termed "legacy pesticides," primarily reside in the sediment/soil and are believed to be periodically liberated into the surrounding waterways. *Catskill Mountains Chapter of Trout Unlimited, Inc. v. EPA (Catskill III)* (2nd Cir. 2017), states that a water being transferred through a hydroelectric plant is not a discharge of a pollutant. In addition, as has been mentioned earlier, the Elderberry Forebay is only used for the operations of the plant, and therefore discharges from the Forebay would not be considered a discharge of a pollutant.

Additionally, LADWP ceased the use of PCBs in the electrical equipment at Castaic Power Plant in the 1980s, and thus the hydroelectric plant is not a source. Furthermore, the NPDES Annual Monitoring Reports for Castaic Power Plant have shown "non-detect" for all PCB sampling over the last 20 years.

Since the Elderberry Forebay is used and was built solely for the operation of the Castaic Power Plant hydroelectric facility, and since it is a pass-through that transfers water without any addition of pollutants, it would seem appropriate to remove the Elderberry Forebay from this 303(d) list. Therefore, LADWP respectfully requests that the Elderberry Forebay be removed from the current 303(d) list.

2. The 303(d) listing recommendations should be updated to include current data and information.

The LARWQCB Staff Report supporting the current listing recommendations notes that "Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed. [...] Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021." (Staff Report at p. 6)

LADWP is concerned that many of the data upon which proposed listings are based are more than ten (10) years old. However, some of the proposed listings are based on only two or three data points. Although LADWP understands and recognizes the resource limitations faced by the LARWQCB, we respectfully suggest that basing listings on datasets that do not include the most recent information, particularly when only a couple of samples are available to describe conditions in the region's water bodies, does not seem to be effective. Such limited data cannot be considered to describe current conditions appropriately.

3. The proposed listings for "benthic community effects" are premature at this time, particularly for proposed listings in modified channels.

LADWP notes that several of the proposed listings for "benthic community effects" are based upon limited data (2 or 3 samples) that were collected nine or more years ago, and that some of the proposed listings are based upon "index of biotic integrity" (IBI) scores. More importantly, many of the water bodies proposed for listing for benthic community effects are engineered or modified channels, and it is not scientifically or technically appropriate to expect that modified channels will achieve the CSCI or IBI scores that are observed in reference channels. The proposed listings do not consistently or clearly establish a link between the biological condition and the pollutant(s) that may be responsible for the biological condition; in fact, it is not clear that the pollutant measurements (available only for some proposed listings) were collected at the same time as the biological data. Finally, some of the samples upon which the proposed listings are based were collected downstream of and shortly after major wildfires; these data are likely representative of temporary disturbed conditions and may not be representative of typical conditions.

State Water Board staff are currently working on developing a statewide policy or plan for biological integrity. This process has moved away from using the IBI and is now developing metrics for the California Stream Condition Index (CSCI) and an Algae Stream Condition Index (ASCI). This process has not reached consensus on how engineered or modified channels should be assessed, or what appropriate expectations for these channels should be. In fact, the State Water Board is currently convening a Science Advisory Panel to address this issue and many others, and the State Water Board's "Wadeable Stream Biostimulatory and Biointegrity Science Plan," dated February 2017, acknowledges that "Developed landscapes are associated with an increase of many stressors in streams, such as elevated contaminant and nutrient concentrations, altered flow regimes, sedimentation, and habitat degradation. Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards. In these circumstances, the range of CSCI or ASCI scores may be constrained in channels in developed landscapes."

Because the State's policy is in development, no longer uses the IBI, has not clearly established a link between the presence of pollutant(s) and the biological condition, and has not produced direction regarding how benthic integrity should be assessed in modified streams, LADWP respectfully suggests that it is premature to list the region's water bodies for "benthic community effects". LADWP therefore requests that the LARWQCB decline to list the region's water bodies for benthic community effects at this time.

LADWP appreciates the opportunity to provide comments on the Revisions and looks forward to working with LARWQCB staff in this process. Should you have any questions regarding this letter, please contact me at (213) 367-0436 or Ms. Chloé Grison of the Wastewater Quality and Compliance Group at (213) 367-1339.

Sincerely,

Katherine Rubin
Manager of Wastewater Quality and Compliance

CG:vf
c: Ms. Chloé Grison

March 30, 2017

Rene Purdy, Section Chief Regional Programs
Los Angeles Regional Water Quality Control Board

Electronically Transmitted to
losangeles@waterboards.ca.gov

Attention Jun Zhu:

Subject: **Comment Letter – Revisions to the Los Angeles Region 303(d) list**

The Lower Los Angeles River (LLAR) Watershed Committee appreciates this opportunity to provide comments regarding the pending 303(d) list changes applicable to the LLAR Watershed. The LLAR Watershed Committee is limited its comments to the potential listing of Iron in Compton Creek.

The LLAR Watershed Committee requests the Regional Board suspend the recommendation on Iron because of the following:

- Reliance on data gathered during 2006-2010 is not appropriate when more recent data collected as part of the extensive monitor programs of the CIMPs is now available.
- Dissolved concentrations of iron do not exceed the narrative objectives.

The LLAR Watershed Committee appreciates the Regional Board's attention to detail and the efforts to protect the Lower Los Angeles River Watershed. Thank you for your time and consideration.

Sincerely,

Grissel Chavez, Chair Lower Los Angeles River Watershed Group

Artesia
Bellflower
Cerritos
Diamond Bar
Downey
Hawaiian Gardens
La Mirada
Lakewood
Long Beach
Norwalk
Pico Rivera
Santa Fe Springs
Whittier

Lower San Gabriel River Watershed Committee

March 30, 2017

Rene Purdy, Section Chief Regional Programs
Los Angeles Regional Water Quality Control Board

Electronically Transmitted to
losangeles@waterboards.ca.gov

Attention Jun Zhu:
Subject: **Comment Letter- Revisions to the Los Angeles Region 303(d) list**

The Lower San Gabriel River (LSGR) Watershed Committee appreciates this opportunity to provide comments regarding the pending 303(d) list changes applicable to the LSGR Watershed. Comments will be limited to three pollutants proposed to be added to the 303(d) list.

The LSGR Watershed Committee recognizes the recommendation regarding Temperature in Reach 1 and Reach 2 of the San Gabriel River and requests that the Regional Board take into consideration the characterization the of these Reaches of the San Gabriel River in its determination of temperature as a pollutant. As described as a Water Quality Objective:

> *"the natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature d**oes not adversely affect** beneficial uses."*

Beginning upstream, Reach 2 is a 7-mile stretch from the outlet of the Whittier Narrows Dam and ends where the Sab Gabriel River crosses Firestone Blvd. Reach 2 is confined by engineered levees and rip-rap. The river remains a soft-bottom channel and during dry-weather has no measurable flow reaching Reach 1 due to having the most productive spreading grounds in Los Angeles County.

Reach 1 is a 10-mile stretch beginning at Firestone Blvd in Downey and extends to the confluence of the San Gabriel River with Coyote Creek. It is a heavily urbanized reach with a concrete bottom. Two significant POTWs discharge into this Reach. During dry weather, these POTWs discharge vastly more water than enters the river channel though the combined MS4 outfalls. The volume of the POTW discharge will quickly render any potentially elevated temperature from discharges of MS4 outfalls as negligible.

The Committee believes that a Water Quality Objective for Temperature in these Reaches is not applicable.

In regards to Iron and Malathion in Coyote Creek; the LSGR Watershed Committee requests the Regional Board suspend the recommendation of Iron and Malathion due to monitoring data inconsistent with recent water body improvements. The LSGR Watershed has made a considerable effort in developing and implementing its Coordinated Integrated Monitoring Program (CIMP) and suggest monitoring data should reflect more recent and current outfall conditions and that any conclusions should be drawn from a more current and comprehensive data set. The LSGR believes this request is justified when considering that Iron and Malathion are derived from nationally Recommended Water Quality Standards and not based on an established EPA TMDL or conditions characteristic of Southern California waters.

The LSGR Watershed Committee appreciates the Regional Board's attention to detail and the efforts to protect the Lower San Gabriel Watershed. Thank you for your time and consideration.

Sincerely,

Lower San Gabriel River Watershed

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GRACE ROBINSON HYDE
Chief Engineer and General Manager

March 30, 2017
File No. 31-370.40.4A

Via Electronic Mail

Dr. Jun Zhu
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Dr. Zhu:

Comments on the February 2017 Proposed 2016 Los Angeles Region
<u>Clean Water Act Section 303(d) List of Impaired Waters</u>

The Sanitation Districts of Los Angeles County (Sanitation Districts) appreciate the opportunity to comment on the February 2017 proposed 2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters (Draft List) prepared by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Sanitation Districts are a consortium of 24 independent special districts serving the wastewater and solid waste management needs of over five million people and 3,300 industries in Los Angeles County, California. The Sanitation Districts currently operate and maintain over 1,400 miles of trunk sewers and 11 wastewater treatment plants that collectively treat over 450 million gallons per day of wastewater. Of the 11 wastewater treatment plants, nine are located in the Los Angeles Region. Seven of the these treatment plants discharge to inland surface waters in the San Gabriel River, Santa Clara River, and Rio Hondo watersheds; one discharges to the Pacific Ocean; and one does not discharge to surface waters but instead solely supplies recycled water for irrigation.

The Sanitation Districts commend Regional Board staff for their diligent implementation of the State Water Resources Control Board's (State Board's) Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) to produce a Draft List that is generally well-documented and scientifically valid. In addition, the Sanitation Districts greatly appreciate the efforts of the Regional Board staff to make the listing process more transparent, particularly by making the data used to assess listings available on the Regional Board's website and by producing clear fact sheets on each water body/pollutant combination. Staff were also very helpful in addressing questions and meeting with us during the preparation of these comments and their assistance was greatly appreciated.

However, the Sanitation Districts have concerns on some aspects of the Draft List, particularly where the listing thresholds used in the Staff Report appear to differ from receiving water quality objectives contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) or other regulatory programs. Additionally, there appear to be data errors that impact some listing decisions. General comments relating to these concerns are provided below and detailed specific comments for each listing are provided in Attachment 1 and appendices to this letter.

1. Data Were Incorrectly Attributed to Some Reaches

The Draft List contains a number of newly proposed listings based, in part, on data collected from incorrect reaches. Specific listings where this appears to have occurred include the benthic community and toxicity listings for Santa Clara River Reach 5; the temperature listing for Santa Clara River Reach 6; the toxicity, DO, and iron listings for Rio Hondo Reach 2; and the toxicity listing for San Jose Creek Reach 2.

2. Not All of the Data Submitted for Listing Consideration Were Used in Making the Listing Decision

The Draft List contains a number of newly proposed listings where only a subset of the data submitted for listing consideration were evaluated; these data are included in the data files appended to the Staff Report but were not used in the listing analysis. Specific listings where this appears to have occurred include the toxicity listing for Santa Clara River Reach 5 and the temperature listing for Santa Clara River Reach 6.

3. The Draft List Includes Inappropriate Impairment Listings for "Benthic-Macroinvertebrate Bioassessments"

The Draft February 2017 version of the 2016 303(d) List contains a number of newly proposed listings for "Benthic-Macroinvertebrate Bioassessments." The proposed listings are based on application of the Southern California Coastal Index of Biological Integrity (SCIBI) and, in some cases, the California Stream Condition Index (CSCI). These include listings for Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1. The Sanitation Districts believe these proposed listings should be removed, for the reasons listed below.

Listings Based on the SCIBI and CSCI Are Inconsistent With State Policy. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) indicates that water bodies should only be listed for degradation of biological populations if they have significant degradation **relative to reference sites** [emphasis added]. Although the scientists that developed the SCIBI attempted to incorporate reference conditions into the index itself, the reference conditions used to develop the index did not include any low elevation, low gradient locations in Los Angeles County similar to the Los Angeles River and the Santa Clara River reaches of concern.[1] Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI.

Section 6.1.5.8 of the Listing Policy also states that when "evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall…**evaluate physical habitat data** and other water quality data, when available, to support conclusions about the status of the water segment." [Emphasis added.] All of the reaches mentioned in this comment letter represent reaches that have undergone various levels of physical habitat modifications and there is no indication that an evaluation of the physical habitat was conducted. It is well recognized by the scientific community that a single standard or threshold is not applicable to all waterbodies of the State due to unmanageable

[1] Ode, P.R., A.C. Rehn, J.T. May. 2005. A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams. Environmental Management Vol. 35, No 4, pp. 493-504.

non-pollutant physical habitat alterations that would preclude many streams from ever having biological assemblages similar to reference. The threshold used as the listing criterion for these reaches is therefore likely inappropriate for these modified waterbodies.

Appropriate Thresholds for Interpretation of the CSCI Have Not Yet Been Determined. The State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 used in the Draft List is the 10th percentile of the reference pool and was used as an arbitrary point of reference for a regional monitoring program with no regulatory vetting. Use of this threshold for impairment listings would result in 10% of the unimpaired reference streams being erroneously listed as impaired. Additionally, it is well recognized by the scientific community that a single standard or threshold will not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition/modifications are likely to preclude many streams from ever having biological assemblages similar to reference.

The Sanitation Districts believe that it is inappropriate to make impairment decisions using the SCIBI and premature to rely on the improved, but still limited CSCI for making impairment decisions, particularly in reaches where surrounding development and instream physical habitat limitations are recognized. Therefore, the Sanitation Districts respectfully recommend that the Regional Board delay making decisions regarding benthic macroinvertebrate community impairments in this listing cycle, and instead continue to work with stakeholders, scientists, and the State Board that are currently engaged in efforts to address these and other issues as part of the Biointegrity/Bio-stimulatory Policy.

4. The Draft List Includes Inappropriate Impairment Listings for Temperature

The Draft List contains a number of newly proposed listings for temperature. The Sanitation Districts believe the proposed temperature listings for San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 should be removed because the impairment listings are inconsistent with the Basin Plan water quality objective for temperature, which states, "at no time shall these WARM-designated waters be raised above 80°F **as a result of waste discharges.**" [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80°F standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80°F are not caused by wastes discharged but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change. Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.

Additionally, the Sanitation Districts believe that the proposed temperature listing for Santa Clara River Reach 6 is inappropriate. Measurements for this listing were taken immediately downstream of the Saugus Water Reclamation Plant (WRP), where tertiary treated effluent is discharged along one bank of the Santa Clara River bed. The flow remains isolated from the main channel of the Santa Clara River and percolates rapidly into the soil; groundwater resurfaces downstream near Reach 5 of the Santa Clara River. The predominant natural condition of this stretch of river is dry and would not be expected to support aquatic life without the Saugus WRP discharge; therefore, application of the 80°F water quality objective is unnecessary and inappropriate. The only reasonable alternative for meeting the water quality objective would be to eliminate the discharge flows; however, the California Department of Fish and Wildlife would likely prohibit that option, due to the effluent's contribution to the groundwater and subsequent downstream flows. Upon resurfacing near Reach 5, the water temperature averages 69°F, demonstrating that elevated temperatures in this isolated discharge area are not detrimental to beneficial uses in reaches where water occurs naturally in the river. Finally, elevated ambient temperatures regularly exceed 90 °F during the summer months, and heavily influence both the Saugus WRP discharge and the immediate downstream receiving water location. As indicated for the other temperature listings, the water quality objective for temperature in the Los Angeles Region Basin Plan clearly distinguishes between temperature exceedances caused by “waste discharges” and those associated with other causes. However, the Draft List does not contain any analysis to distinguish the relative contributions by the temperatures of the ambient air and wastes discharged on the receiving water.

5. Thresholds Used For Toxicity Impairment Listings Are Inconsistent With Basin Plan Objectives

The Draft List contains a number of newly proposed listings for toxicity that include San Gabriel River Estuary, San Gabriel River Reach 3, Rio Hondo Reach 2, and Santa Clara River Reach 5. These listings should be removed for the reasons below.

The Acute Toxicity Impairment Criterion is Inconsistent With the Basin Plan Water Quality Objective for Acute Toxicity

The Staff Report fact sheets for the specific listings mentioned above state that “<100% survival (acute) was considered an exceedance.” However, the Basin Plan states that “the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.” Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective.

The Chronic Toxicity Impairment Criterion is Inconsistent With Water Quality Objective Interpretations Provided in NPDES Permits

The Staff Report fact sheets for the specific listings mentioned above indicate that a single NOEC result of less than 100% receiving water represents an exceedance of the water quality objective. Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In a number of these permits, a footnote associated with the Receiving Water Monitoring Requirements Table of the Monitoring and Reporting Program states; “The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as ‘Pass’ or ‘Fail’.”[2] [Emphasis added.]

In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as “toxic” using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24

[2] Pomona WRP - ORDER R4-2014-0212-A01 NPDES NO. CA0053619, Long Beach WRP - ORDER NO. R4-2015-0123 NPDES NO. CA0054119, Los Coyotes - ORDER NO. R4-2015-0124 NPDES NO. CA0054011, San Jose Creek WRP - ORDER R4-2015-0070 NPDES NO. CA0053911, Saugus WRP- ORDER R4-2015-0072 NPDES NO. CA0054313, Valencia WRP- ORDER R4-2015-0071 NPDES NO. CA0054216, Whittier Narrows WRP ORDER R4-2014-0213-A01 NPDES NO. CA0053716

measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would eventually result in more and more non-toxic stream reaches being erroneously listed over time. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1%.

6. Specific Comments on Individual Reach/pollutant Listing Decisions

In addition to these general comments, the Sanitation Districts have comments on some specific listing decisions. As stated above, detailed comments are provided in the appendices to this letter. Because the implications of erroneous listings are substantial, the Sanitation Districts urge the Regional Board to consider this information in making the appropriate changes to the Draft List.

In conclusion, the Sanitation Districts would like to thank the Regional Board for its efforts up to this point in revising the proposed 2016 303(d) List. We urge the Regional Board to consider the information and analysis contained in this letter to complete the development of a scientifically and legally defensible list with a sound and consistent basis. If you have any questions regarding our comments or the information and data we are providing to you, please contact Phil Markle at (562) 908-4288, extension 2808, pmarkle@lacsd.org.

Very truly yours,

Philip L. Friess

Philip L. Friess
Department Head
Technical Services

PLF:PJM:nm
Attachments

cc: LB Nye, Jun Zhu, Kangshi Wang, Regional Board, Los Angeles Region

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Sanitation Districts of Los Angeles County
2016 303(d) List Fact Sheets

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Fact Sheet #1

Water Body: **San Gabriel River Estuary**
Pollutant: **Toxicity**
Listing: **List on 303(d) List (TMDL Required List)**
Comment & Recommendation: **Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for toxicity be made to the 303(d) list for the San Gabriel River Estuary, based on one line of evidence: 14 of 113 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.

- Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Using the temporal range indicated (June 2006 through May 2010), only six of 120 samples failed the thresholds specified in the fact sheet. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 11 or more exceedances are observed when 120 samples are available.

- Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin Plan objective. Applying a 90% threshold, none of the 120 samples would have exceeded the water quality objective. Therefore, this reach fails to meet the listing criteria for toxicity.

- The full set of data appended to Appendix G of the Staff Report, including those that fell outside the indicated temporal range, contain a total 151 discrete toxicity tests. Sixteen failed the <100% acute survival threshold. Using a conservative 90% acute survival threshold, there are no toxicity exceedances, and the number of measured exceedances is insufficient to place this water segment on the section 303(d) list.

Fact Sheet #1

Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.

All of the San Gabriel River toxicity “exceedances” indicated in the Regional Board Staff Report were acute toxicity results of <100% survival in undiluted receiving water; the lowest result in the data tables was a percent survival of 90%. However, as described in the subsections below, the 100% threshold is inconsistent with the Basin Plan and other documentation supplied by the Regional Board, with criteria used for other acute toxicity listings, and with the results of statistical testing.

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.

In the Basin Plan and Sanitation Districts NPDES permits, the narrative acute toxicity receiving water quality objective is numerically defined: “the average survival in the undiluted receiving water for any three (3) consecutive 96-hour static, static-renewal, or continuous flow bioassay tests shall be at least 90%, and (ii) no single test producing less than 70% survival.” Furthermore, the Water Quality Objective/Criterion reference provided in the Staff Report indicates that “the power to detect differences drops quickly below 15%, therefore care should be taken when declaring samples less than 15% different from the control as toxic.” Following this reference, an exceedance of the water quality objective would be potentially questionable if the survival response was greater than 85%. Finally, the Sanitation Districts NPDES permits specify the use of a laboratory method with minimum test acceptability criteria of 90% for non-toxic control survival in the freshwater fish acute test, indicating that percent survival in undiluted receiving water of 90% or greater would be consistent with an expected response in a non-toxic sample.

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.

Regional Boards across California use a variety of thresholds to determine is acute toxicity water quality objectives are being met. However, based on a review of approved listing decisions from across California, a threshold of less than 100% was never used. Below is summary of criteria utilized to evaluate percent effect/response acute data:

Region 2

“Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test.” (Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, Section 3.3.18).
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch3.shtml#3.3.18

“Statistical evaluation and a default threshold of 80% of the control value were used to establish whether the sediment exhibited significant toxicity adversely impacting aquatic organisms.” (Proposed 2016 Section 303(d) and 305(b) Integrated Report, Region 2, Appendix G, Line of Evidence (LOE) for Decision ID 43948, Toxicity, Lagunitas Creek)
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/00653.shtml#43948

Region 3

“Statistical evaluation (alpha = 0.05) and a default threshold of 80% of the control value were used to establish whether water exhibited significant toxicity adversely impacting aquatic organisms.” (Final 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report, Region 3, Line of Evidence (LOE) for Decision ID 28270, Toxicity, Kirker Creek).
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01826.shtml#28270

Fact Sheet #1

Region 4

"There shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board."
Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, Page 3-38.
http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf

"Non-toxic if greater than or equal to 80% survival; moderately toxic if between 50 to 80% survival; and highly toxic if less than 50% survival." (Draft 2016 Section 303(d) and 305(b) Integrated Report, Region 4, Line of Evidence (LOE) for Decision ID 43062, Toxicity, Dominguez Channel Estuary (unlined portion below Vermont Ave).
http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d/2016/Appendix_G/00134.shtml#43062

"Toxicity was defined as a reduction of the NOEC below 100% and was considered significant if the effect on the sample exposure was greater than 25%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 4, Line of Evidence (LOE) for Decision ID 28344, Toxicity, Dominguez Channel (lined portion above Vermont Ave)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01077.shtml#28344

Region 5

"Significant toxicity is defined as a statistically significant (p<0.5) increase in mortality (>=20%) compared to the laboratory control." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 5, Line of Evidence (LOE) for Decision ID 26730, Unknown Toxicity, Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01204.shtml#26730

Region 8

"Survival of organisms during toxicity bioassays no less than 80%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 8, Line of Evidence (LOE) for Decision ID 27875, Sediment Toxicity, Elsinore, Lake)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/00489.shtml#27875

Region 9

"Samples were found to exhibit toxicity when the No Observed Effect Concentration (NOEC) or median lethal concentration (LC50) for any given species was estimated to be less than 100% of the test sample concentration." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 9, Line of Evidence (LOE) for Decision ID 28361, Toxicity, Agua Hedionda Creek)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01602.shtml#28361

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.

Although the data summary provided as part of the 303(d) data submission included only percent survival results, control data were included when the data were submitted as part of routine NPDES compliance reports. Using the control data, the Sanitation Districts staff conducted statistical analyses for the acute toxicity data included in the Staff Report and found that no statistically significant differences were observed between the control and undiluted receiving water samples.

Fact Sheet #1

The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.

When a sample fails a chronic toxicity test, additional samples may be collected during the same calendar month in an effort to confirm the result and identify potential toxicants. Application of a single test failure chronic toxicity water quality objective provides a disincentive for this type of proactive monitoring and is at odds with the intent of chronic toxicity testing.

Chronic toxicity is intended to assess potential aquatic life impacts associated with long-term exposures. Therefore, it is analogous to the Criterion Continuous Concentration (CCC) used for estimating "safe" chemical concentrations for long-term exposure as opposed to the Criterion Maximum Concentration (CMC) that is intended to protect against short-term exposure. In EPA's Region 9 and 10 Toxicity Training Tool, the CCC is defined as "the highest in-stream concentration of a toxic or an effluent to which organisms can be exposed indefinitely without causing unacceptable effects such as the exceedance of a chronic water quality criterion."[1] This same document also recommends "direct application of 1.0 TUc as the monthly compliance level for NPDES discharges without a mixing zone or dilution allowance. In conjunction and limited to this discharge situation, because: (1) there are no values below 1.0 TUc and (2) an arithmetic average is sensitive to extremely large and small values, the median is favored as the better measure of central tendency for the monthly compliance level."

Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In the Long Beach WRP NPDES permit, footnote 25 of Table E-6 of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail.'"[2] [Emphasis added.]

In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would, over time, result in more and more non-toxic stream reaches being erroneously listed. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1%.

Since the data set used for assessing the San Gabriel River Estuary does not include multiple tests conducted during the same month, the individual test result is the also the monthly median. Therefore, this correction will have no impact on the listing decision for toxicity in the San Gabriel River Estuary, but may have a significant impact in other reaches.

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[1] Denton DL, Miller JM, Stuber RA. 2007. EPA Regions 9 and 10 toxicity training tool (TTT). November 2007. San Francisco, CA: https://www.epa.gov/sites/production/files/documents/ToxTrainingTool10Jan2010.pdf

[2] Pomona WRP - ORDER R4-2014-0212-A01 NPDES NO. CA0053619, Long Beach WRP - ORDER NO. R4-2015-0123 NPDES NO. CA0054119, Los Coyotes - ORDER NO. R4-2015-0124 NPDES NO. CA0054011, San Jose Creek WRP - ORDER R4-2015-0070 NPDES NO. CA0053911, Saugus WRP- ORDER R4-2015-0072 NPDES NO. CA0054313, Valencia WRP- ORDER R4-2015-0071 NPDES NO. CA0054216, Whittier Narrows WRP ORDER R4-2014-0213-A01 NPDES NO. CA0053716

Fact Sheet #2

Water Body: San Gabriel River Reach 3
Pollutant: Toxicity
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 3 of the San Gabriel River, based on one line of evidence using two datasets: 2 of 38 samples exceeded the objective in a dataset related to a previously conducted TMDL study and 13 of 75 samples exceeded the objective in a second dataset comprised of routine receiving water tests conducted as part of an NPDES permit. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.

- Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. No data related to the TMDL study were provided; therefore, the number of tests and exceedances reported (2 of 38) could not be independently verified and were assumed to be accurate. For the dates indicated (June 2006 through May 2010), 13 exceedances were associated with only 66 samples. Combining the two datasets resulted seven acute and eight chronic toxicity exceedances out of 104 samples.

- Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no acute toxicity samples in the dataset exceeded the water quality objective and 8 of 104 total samples exceeded the objective. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 104 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity.

- The Staff Report considered each chronic toxicity test result as an independent data point, even when multiple bioassays were conducted within a single month. However, the San Jose Creek (SJCWRP) and Whittier Narrows Water Reclamation Plant (WNWRP) permits state that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 6 toxicity exceedances out of a total of 96 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 96 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity.

- The full set of data (sets 1 and 2) appended to Appendix G of the Staff Report for all dates, including those outside the indicated temporal range, contain a total of 119 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 6 chronic exceedances out of 110 results. This total

Fact Sheet #2

does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list.

Use of a <100% Survival Effect Water Quality Objective Threshold Is Inappropriate and Unsupported for Acute Toxicity Testing.

Seven of 15 San Gabriel River toxicity "exceedances" indicated in the Regional Board Staff Report were based on acute toxicity results of <100% survival in undiluted receiving water; the lowest result in the data tables was 97.5% survival. However, as described in the subsections below, the 100% threshold is inconsistent with the Basin Plan and other documentation supplied by the Regional Board, with criteria used for other acute toxicity listings, and with the results of statistical testing.

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.

In the Basin Plan and Sanitation Districts NPDES permits, the narrative acute toxicity receiving water quality objective is numerically defined: "the average survival in the undiluted receiving water for any three (3) consecutive 96-hour static, static-renewal, or continuous flow bioassay tests shall be at least 90%, and (ii) no single test producing less than 70% survival." Furthermore, the Water Quality Objective/Criterion reference provided in the Staff Report indicates that "the power to detect differences drops quickly below 15%, therefore care should be taken when declaring samples less than 15% different from the control as toxic." Following this reference, an exceedance of the water quality objective would be potentially questionable if the survival response was greater than 85%. Finally, the Sanitation Districts NPDES permits specify the use of a laboratory method with minimum test acceptability criteria of 90% for non-toxic control survival in the freshwater fish acute test, indicating that percent survival in undiluted receiving water of 90% or greater would be consistent with an expected response in a non-toxic sample.

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.

Regional Boards across California use a variety of thresholds to determine if acute toxicity water quality objectives are being met. However, based on a review of approved listing decisions from across California, a threshold of less than 100% was never used. Below is summary of criteria utilized to evaluate percent effect/response acute data:

Region 2

"Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival [in a single test], 10 percent of the time, of test organisms in a 96-hour static or continuous flow test."

(Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, Section 3.3.18).
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch3.shtml#3.3.18

"Statistical evaluation and a default threshold of 80% of the control value were used to establish whether the sediment exhibited significant toxicity adversely impacting aquatic organisms." (Proposed 2016 Section 303(d) and 305(b) Integrated Report, Region 2, Appendix G, Line of Evidence (LOE) for Decision ID 43948, Toxicity, Lagunitas Creek)
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/00653.shtml#43948

Fact Sheet #2

Region 3

"Statistical evaluation (alpha = 0.05) and a default threshold of 80% of the control value were used to establish whether water exhibited significant toxicity adversely impacting aquatic organisms." (Final 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report, Region 3, Line of Evidence (LOE) for Decision ID 28270, Toxicity, Kirker Creek).
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01826.shtml#28270

Region 4

"There shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board."
Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, Page 3-38.
http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf

"Non-toxic if greater than or equal to 80% survival; moderately toxic if between 50 to 80% survival; and highly toxic if less than 50% survival." (Draft 2016 Section 303(d) and 305(b) Integrated Report, Region 4, Line of Evidence (LOE) for Decision ID 43062, Toxicity, Dominguez Channel Estuary (unlined portion below Vermont Ave).
http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d/2016/Appendix_G/00134.shtml#43062

"Toxicity was defined as a reduction of the NOEC below 100% and was considered significant if the effect on the sample exposure was greater than 25%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 4, Line of Evidence (LOE) for Decision ID 28344, Toxicity, Dominguez Channel (lined portion above Vermont Ave)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01077.shtml#28344

Region 5

"Significant toxicity is defined as a statistically significant (p<0.5) increase in mortality (>=20%) compared to the laboratory control." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 5, Line of Evidence (LOE) for Decision ID 26730, Unknown Toxicity, Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01204.shtml#26730

Region 8

"Survival of organisms during toxicity bioassays no less than 80%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 8, Line of Evidence (LOE) for Decision ID 27875, Sediment Toxicity, Elsinore, Lake)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/00489.shtml#27875

Region 9

"Samples were found to exhibit toxicity when the No Observed Effect Concentration (NOEC) or median lethal concentration (LC50) for any given species was estimated to be less than 100% of the test sample concentration." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 9, Line of Evidence (LOE) for Decision ID 28361, Toxicity, Agua Hedionda Creek)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01602.shtml#28361

Fact Sheet #2

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.

Although the data summary provided as part of the 303(d) data submission included only percent survival results, control data were included when the data were submitted as part of routine NPDES compliance reports. Using the control data, the Sanitation Districts staff conducted statistical analyses for the acute toxicity data included in the Staff Report and found that no statistically significant differences were observed between the control and undiluted receiving water samples.

The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.

When a sample fails a chronic toxicity test, additional samples may be collected during the same calendar month in an effort to confirm the result and identify potential toxicants. Application of a single test failure chronic toxicity water quality objective provides a disincentive for this type of proactive monitoring and is at odds with the intent of chronic toxicity testing.

Chronic toxicity is intended to assess potential aquatic life impacts associated with long-term exposures. Therefore, it is analogous to the Criterion Continuous Concentration (CCC) used for estimating "safe" chemical concentrations for long-term exposure as opposed to the Criterion Maximum Concentration (CMC) that is intended to protect against short-term exposure. In EPA's Region 9 and 10 Toxicity Training Tool, the CCC is defined as "the highest in-stream concentration of a toxic or an effluent to which organisms can be exposed indefinitely without causing unacceptable effects such as the exceedance of a chronic water quality criterion."[1] This same document also recommends "direct application of 1.0 TUc as the monthly compliance level for NPDES discharges without a mixing zone or dilution allowance. In conjunction and limited to this discharge situation, because: (1) there are no values below 1.0 TUc and (2) an arithmetic average is sensitive to extremely large and small values, the median is favored as the better measure of central tendency for the monthly compliance level."

Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In the Whittier Narrows WRP NPDES permit, footnote 22 of Table E-5a of the Monitoring and Reporting Program states of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail.'"[2] [Emphasis added.]

In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or

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[1] Denton DL, Miller JM, Stuber RA. 2007. EPA Regions 9 and 10 toxicity training tool (TTT). November 2007. San Francisco, CA: https://www.epa.gov/sites/production/files/documents/ToxTrainingTool10Jan2010.pdf

[2] Pomona WRP - ORDER R4-2014-0212-A01 NPDES NO. CA0053619, Long Beach WRP - ORDER NO. R4-2015-0123 NPDES NO. CA0054119, Los Coyotes - ORDER NO. R4-2015-0124 NPDES NO. CA0054011, San Jose Creek WRP - ORDER R4-2015-0070 NPDES NO. CA0053911, Saugus WRP- ORDER R4-2015-0072 NPDES NO. CA0054313, Valencia WRP- ORDER R4-2015-0071 NPDES NO. CA0054216, Whittier Narrows WRP ORDER R4-2014-0213-A01 NPDES NO. CA0053716

Fact Sheet #2

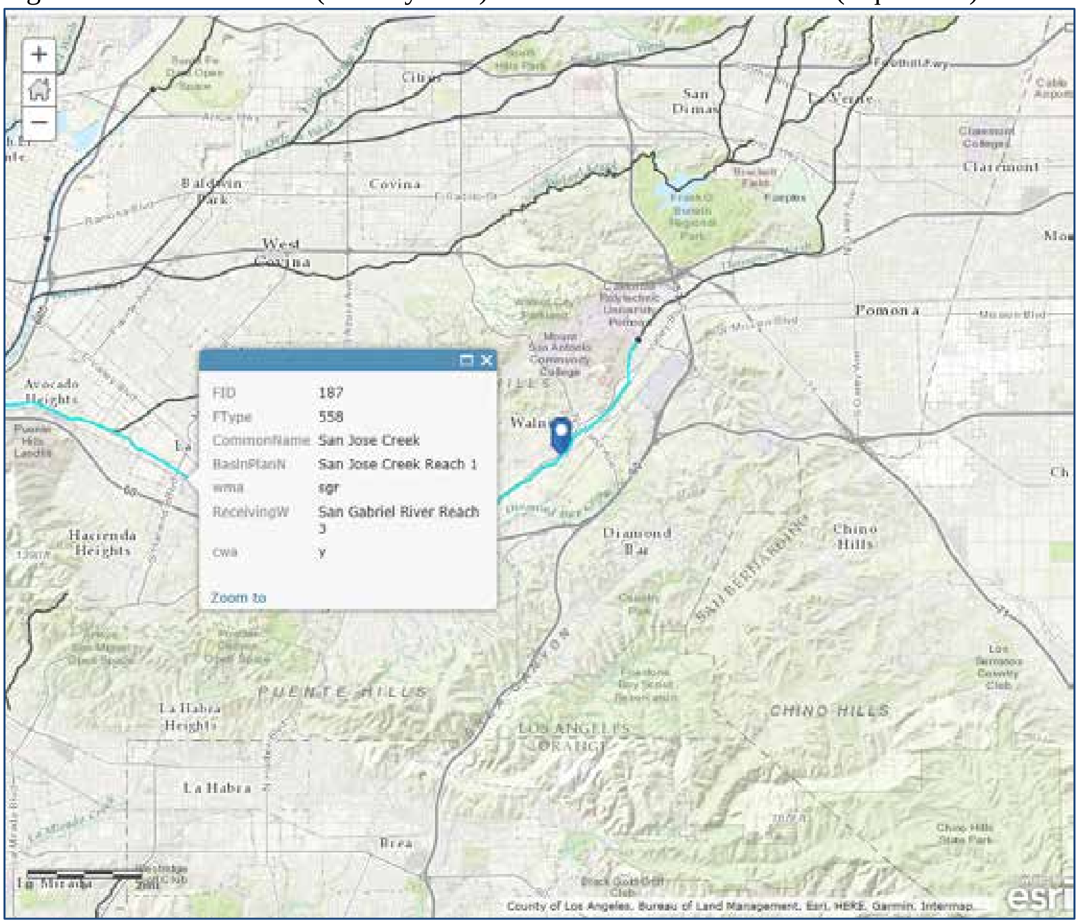
more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would, over time, result in more and more non-toxic stream reaches being erroneously listed. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1%.

Fact Sheet #3

Water Body:	**San Jose Creek Reach 2**
Pollutant:	**Toxicity**
Listing:	**List on 303(d) List (TMDL Required List)**
Comment & Recommendation:	**Apply Data to Reach 1**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the San Jose Creek, based on one line of evidence: 8 of 24 samples exceeded the objective. The Sanitation Districts believe this proposed listing is inappropriate and should be moved to Reach 1. All cited toxicity data is from receiving water station RC (N 34° 01' 8.6" W 117° 50' 27.7") for the Pomona Water Reclamation Plant, which is located in Reach 1 of San Jose Creek (Figure 1). This reach is already listed for toxicity under section 303(d).

Figure 1. Station Pom-RC (Blue Symbol) and San Jose Creek Reach 1 (Aqua Line)



Fact Sheet #4

Water Body: **Rio Hondo Reach 2**
Pollutant: **Toxicity**
Listing: **List on 303(d) List (TMDL Required List)**
Comment & Recommendation: **Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the Rio Hondo, based on one line of evidence: 5 of 31 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.

- Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. All cited toxicity data are from receiving water station RD1 for the Whittier Narrows Water Reclamation Plant (WNWRP). This sampling location (N 34° 02' 26.5" W 118° 04' 27") is in Reach 3 of the Rio Hondo, not Reach 2 (Figure 1).

- Using the data for the temporal range indicated (June 2006 through May 2010), 7 of 33 samples failed the thresholds specified in the fact sheet.

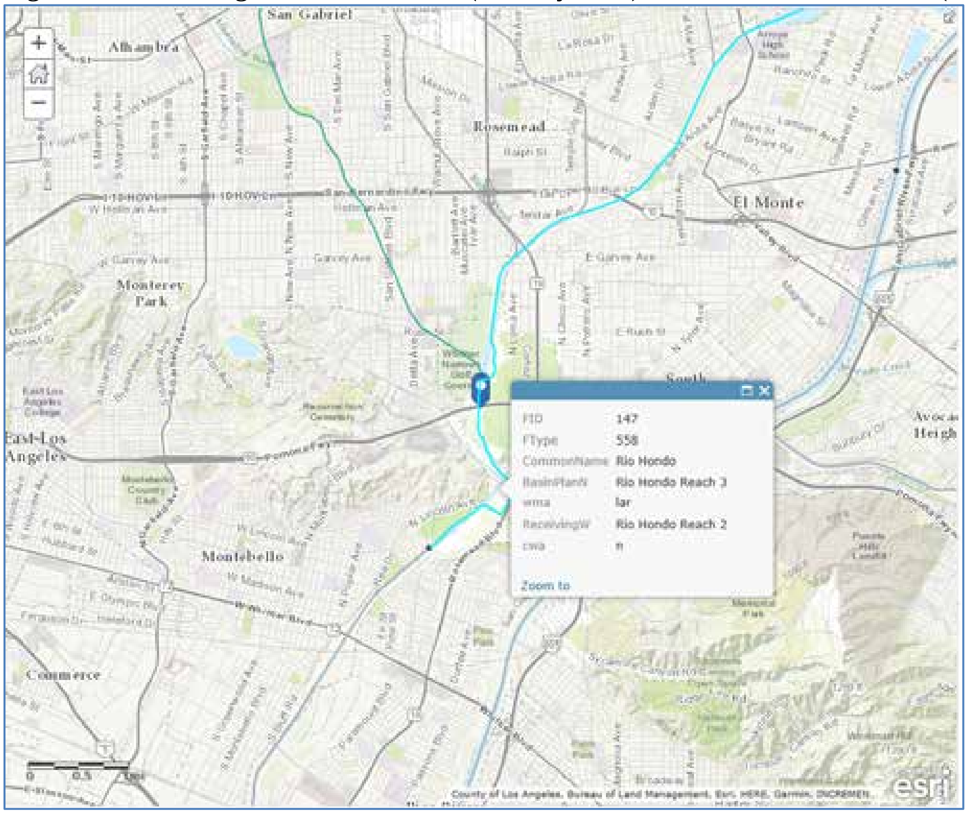
- Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no samples exceeded the acute toxicity water quality objective.

- The Staff Report considered each chronic toxicity test result as independent data, even when multiple bioassays were conducted within a single month. However, the WNWRP permit states that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 2 toxicity exceedances out of 31 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 3 or more exceedances are observed when 31 samples are available. Therefore, Reach 2 of the Rio Hondo fails to meet the listing criteria for toxicity.

- The full set of data appended to Attachment G of the Staff Report, including those that fell outside the indicated temporal range, contains a total 38 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 2 chronic exceedances out of 36 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list.

Fact Sheet #4

Figure 1. Monitoring Station WN-RD1 (Blue Symbol) and Rio Hondo Reach 3 (Aqua Line)



Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.

Three of the Rio Hondo toxicity "exceedances" indicated in the Regional Board Staff Report were acute toxicity results of <100% survival in undiluted receiving water; the lowest result in the data tables was a percent survival of 90%. However, as described in the subsections below, the 100% threshold is inconsistent with the Basin Plan and other documentation supplied by the Regional Board, with criteria used for other acute toxicity listings, and with the results of statistical testing.

> *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.*
>
> In the Basin Plan and Sanitation Districts NPDES permits, the narrative acute toxicity receiving water quality objective is numerically defined: "the average survival in the undiluted receiving water for any three (3) consecutive 96-hour static, static-renewal, or continuous flow bioassay tests shall be at least 90%, and (ii) no single test producing less than 70% survival." Furthermore, the Water Quality Objective/Criterion reference provided in the Staff Report indicates that "the power to detect differences drops quickly below 15%, therefore care should be taken when declaring samples less than 15% different from the control as toxic." Following this reference, an exceedance of the water quality objective would be potentially questionable if the survival response was greater than 85%. Finally, the Sanitation Districts NPDES permits specify the use of a laboratory method with minimum test acceptability criteria of 90% for non-toxic control survival in the freshwater fish acute test, indicating that percent survival in undiluted receiving water of 90% or greater would be consistent with an expected response in a non-toxic sample.

Fact Sheet #4

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.

Regional Boards across California use a variety of thresholds to determine is acute toxicity water quality objectives are being met. However, based on a review of approved listing decisions from across California, a threshold of less than 100% was never used. Below is summary of criteria utilized to evaluate percent effect/response acute data:

Region 2

"Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test." (Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, Section 3.3.18). http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch3.shtml#3.3.18

"Statistical evaluation and a default threshold of 80% of the control value were used to establish whether the sediment exhibited significant toxicity adversely impacting aquatic organisms." (Proposed 2016 Section 303(d) and 305(b) Integrated Report, Region 2, Appendix G, Line of Evidence (LOE) for Decision ID 43948, Toxicity, Lagunitas Creek) http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/00653.shtml#43948

Region 3

"Statistical evaluation (alpha = 0.05) and a default threshold of 80% of the control value were used to establish whether water exhibited significant toxicity adversely impacting aquatic organisms." (Final 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report, Region 3, Line of Evidence (LOE) for Decision ID 28270, Toxicity, Kirker Creek). http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01826.shtml#28270

Region 4

"There shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, Page 3-38. http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf

"Non-toxic if greater than or equal to 80% survival; moderately toxic if between 50 to 80% survival; and highly toxic if less than 50% survival." (Draft 2016 Section 303(d) and 305(b) Integrated Report, Region 4, Line of Evidence (LOE) for Decision ID 43062, Toxicity, Dominguez Channel Estuary (unlined portion below Vermont Ave). http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d/2016/Appendix_G/00134.shtml#43062

"Toxicity was defined as a reduction of the NOEC below 100% and was considered significant if the effect on the sample exposure was greater than 25%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 4, Line of Evidence (LOE) for Decision ID 28344, Toxicity, Dominguez Channel (lined portion above Vermont Ave) http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01077.shtml#28344

Region 5

"Significant toxicity is defined as a statistically significant ($p<0.5$) increase in mortality (>=20%) compared to the laboratory control." (Final California 2012 Integrated Report (303(d) List/305(b)

Fact Sheet #4

Report), Region 5, Line of Evidence (LOE) for Decision ID 26730, Unknown Toxicity, Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01204.shtml#26730

Region 8
"Survival of organisms during toxicity bioassays no less than 80%." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 8, Line of Evidence (LOE) for Decision ID 27875, Sediment Toxicity, Elsinore, Lake)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/00489.shtml#27875

Region 9
"Samples were found to exhibit toxicity when the No Observed Effect Concentration (NOEC) or median lethal concentration (LC50) for any given species was estimated to be less than 100% of the test sample concentration." (Final California 2012 Integrated Report (303(d) List/305(b) Report), Region 9, Line of Evidence (LOE) for Decision ID 28361, Toxicity, Agua Hedionda Creek)
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01602.shtml#28361

Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.

Although the data summary provided as part of the 303(d) data submission included only percent survival results, control data were included when the data were submitted as part of routine NPDES compliance reports. Using the control data, the Sanitation Districts staff conducted statistical analyses for the acute toxicity data included in the Staff Report and found that no statistically significant differences were observed between the control and undiluted receiving water samples.

The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.

When a sample fails a chronic toxicity test, additional samples may be collected during the same calendar month in an effort to confirm the result and identify potential toxicants. Application of a single test failure chronic toxicity water quality objective provides a disincentive for this type of proactive monitoring and is at odds with the intent of chronic toxicity testing.

Chronic toxicity is intended to assess potential aquatic life impacts associated with long-term exposures. Therefore, it is analogous to the Criterion Continuous Concentration (CCC) used for estimating "safe" chemical concentrations for long-term exposure as opposed to the Criterion Maximum Concentration (CMC) that is intended to protect against short-term exposure. In EPA's Region 9 and 10 Toxicity Training Tool, the CCC is defined as "the highest in-stream concentration of a toxic or an effluent to which organisms can be exposed indefinitely without causing unacceptable effects such as the exceedance of a chronic water quality criterion."[1] This same document also recommends "direct application of 1.0 TUc as the monthly compliance level for NPDES discharges without a mixing zone or dilution allowance. In conjunction and limited to this discharge situation, because: (1) there are no values below 1.0 TUc and (2) an arithmetic average is sensitive to extremely large and small values, the median is favored as the better measure of central tendency for the monthly compliance level."

[1] Denton DL, Miller JM, Stuber RA. 2007. EPA Regions 9 and 10 toxicity training tool (TTT). November 2007. San Francisco, CA: https://www.epa.gov/sites/production/files/documents/ToxTrainingTool10Jan2010.pdf

Fact Sheet #4

Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In the Whittier Narrows WRP NPDES permit, footnote 22 of Table E-5 of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail.'"[2] [Emphasis added.]

In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would, over time, result in more and more non-toxic stream reaches being erroneously listed. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1%.

[2] Pomona WRP - ORDER R4-2014-0212-A01 NPDES NO. CA0053619, Long Beach WRP - ORDER NO. R4-2015-0123 NPDES NO. CA0054119, Los Coyotes - ORDER NO. R4-2015-0124 NPDES NO. CA0054011, San Jose Creek WRP - ORDER R4-2015-0070 NPDES NO. CA0053911, Saugus WRP- ORDER R4-2015-0072 NPDES NO. CA0054313, Valencia WRP- ORDER R4-2015-0071 NPDES NO. CA0054216, Whittier Narrows WRP ORDER R4-2014-0213-A01 NPDES NO. CA0053716

Fact Sheet #5

Water Body:	**Santa Clara River Reach 5**
Pollutant:	**Toxicity**
Listing:	**List on 303(d) List (TMDL Required List)**
Comment & Recommendation:	**Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 5 of the Santa Clara River, based on one line of evidence: 2 of 2 samples exceeded the objective. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.

- Inappropriate data were utilized. Toxicity results were reported for sites SCR 1272 and SCR 14156. However, SCR 14156 is in Reach 6 of the Santa Clara River and should not be included in an evaluation of Reach 5 (Figure 1).

- Incomplete data were utilized. The ”Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County 2005-2010” dataset should be included in this analysis as it was provided in response to the call for data, readily available, and used in other current listing recommendations. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report.

- The Los Angeles Region Basin Plan states, “the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.” Therefore, a single-test threshold of less than 70% survival should be used to determine impairments. Applying this threshold (or even a more conservative 90% threshold) to the appropriate and complete dataset that excludes site SCR 14156 and includes Sanitation Districts data, there were five chronic toxicity exceedances out of 90 valid toxicity tests. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list.

Fact Sheet #5

Figure 1. Santa Clara River Reach 5 and RWB4 Stormwater Monitoring Council CY2008 CY2009 Sampling Locations

Fact Sheet #5

The Los Angeles Region Basin Plan Establishes Acute Toxicity Thresholds

The Los Angeles Region Basin Plan states, "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments. However, even if a more conservative 90% survival single-test threshold were to be applied, no tests in the data set would exceed this threshold.

The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.

When a sample fails a chronic toxicity test, additional samples may be collected during the same calendar month in an effort to confirm the result and identify potential toxicants. Application of a single test failure chronic toxicity water quality objective provides a disincentive for this type of proactive monitoring and is at odds with the intent of chronic toxicity testing.

Chronic toxicity is intended to assess potential aquatic life impacts associated with long-term exposures. Therefore, it is analogous to the Criterion Continuous Concentration (CCC) used for estimating "safe" chemical concentrations for long-term exposure as opposed to the Criterion Maximum Concentration (CMC) that is intended to protect against short-term exposure. In EPA's Region 9 and 10 Toxicity Training Tool, the CCC is defined as "the highest in-stream concentration of a toxic or an effluent to which organisms can be exposed indefinitely without causing unacceptable effects such as the exceedance of a chronic water quality criterion."[1] This same document also recommends "direct application of 1.0 TUc as the monthly compliance level for NPDES discharges without a mixing zone or dilution allowance. In conjunction and limited to this discharge situation, because: (1) there are no values below 1.0 TUc and (2) an arithmetic average is sensitive to extremely large and small values, the median is favored as the better measure of central tendency for the monthly compliance level."

Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In the Valencia WRP permit, footnote 30 associated with the Receiving Water Monitoring Requirements Table (Table E-5a) of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail.'"[2] [Emphasis added.]

In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or

[1] Denton DL, Miller JM, Stuber RA. 2007. EPA Regions 9 and 10 toxicity training tool (TTT). November 2007. San Francisco, CA: https://www.epa.gov/sites/production/files/documents/ToxTrainingTool10Jan2010.pdf

[2] Pomona WRP - ORDER R4-2014-0212-A01 NPDES NO. CA0053619, Long Beach WRP - ORDER NO. R4-2015-0123 NPDES NO. CA0054119, Los Coyotes - ORDER NO. R4-2015-0124 NPDES NO. CA0054011, San Jose Creek WRP - ORDER R4-2015-0070 NPDES NO. CA0053911, Saugus WRP- ORDER R4-2015-0072 NPDES NO. CA0054313, Valencia WRP- ORDER R4-2015-0071 NPDES NO. CA0054216, Whittier Narrows WRP ORDER R4-2014-0213-A01 NPDES NO. CA0053716

Fact Sheet 5

more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would, over time, result in more and more non-toxic stream reaches being erroneously listed. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1%.

Fact Sheet #6

Water Body:	**Santa Clara River Reach 5**
Pollutant:	**Benthic Community Effects**
Listing:	**List on 303(d) List (TMDL Required List)**
Comment & Recommendation:	**Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 5 of the Santa Clara River, based on two lines of evidence: Southern Coastal California Index of Biotic integrity (SCIBI) and California Stream Condition Index (CSCI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow.

- The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to the reaches in the upper Santa Clara River. For this and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool.

- Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Specifically, several Santa Clara River sites have been shown to fall outside the experience of the CSCI model.

- Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable non-pollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings.

- The CSCI analysis for this listing used data from both Reach 5 and Reach 6 of the Santa Clara River. The CSCI analysis of the data collected from the Reach 5 location actually met the 0.79 threshold proposed by the Regional Board.

- Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.

- The proposed listing fails to associate the alleged impairment with other pollutants, namely toxicity and iron, which were listed as co-occurring.

Fact Sheet #6

SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.

Section 3.9 of the Listing Policy states:

> "A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities **as compared to reference site(s)** and is associated with water or sediment concentrations of pollutants including but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]

While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low elevation/low gradient streams commonly found in the alluvial plains of the Los Angeles Region.[1,2] It was developed using data from 275 sites, ranging from Monterey County to the Mexican border but not a single reference location represented low elevation and low gradient streams. Santa Clara River Reach 5 is an extremely low gradient (less than 0.5%), low elevation, large coastal water body; therefore, the reference pool used for development of the SCIBI is not representative of natural conditions relevant to this reach. As described in more detail below, technical experts have acknowledged the limitations of the SCIBI (and other IBIs) and indicated that it is critical that reference conditions represent the full range of environmental gradients where an index will be used.[3] Consequently, the State Water Board has supported and funded the development of the CSCI scoring tool; this new, predictive index represents a substantial increase in the applicability of indices.

The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a peer-reviewed published paper, he concluded that the SCIBI did not adequately address reference conditions in low elevation sites and was "not completely effective at controlling for an elevation gradient."[4] Dr. Ode was also the co-author of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams, which notes that, "A crucial component to the development of assessment tools is understanding biological expectations at reference sites that consist of natural, undisturbed systems.[5] These reference systems set the biological condition benchmarks for comparisons to the site(s) being evaluated." They also clearly note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity."

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[1] Ode, P.R., A.C. Rehn, J.T. May. 2005. A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams. Environmental Management Vol. 35, No 4, pp. 494, Figure 1. Copy included in Appendix B.

[2] Carter, J.L. and V.H. Resh. (2005). Pacific Coast Rivers of the Coterminous United States. pp. 541-590 *in*: A.C. Benke and C.E. Cushing (eds.), Rivers of North America. Elsevier Academic Press. Boston, MA.

[3] Mazor, R.D., A.C. Rehn, P.R. Ode, M. Engeln, K.C. Schiff, E.D. Stein, D.J. Gillett, D.B. Herbst, and C.P. Hawkins. (2016). Bioassessment in complex environments: Designing an index for consistent meaning in different settings. Freshwater Science 35(1): 249-271. Copy included in Appendix B.

[4] Ode, P.R., C.P. Hawkins, R.D. Mazor, Comparability of Biological Assessments Derived from Predictive Models and Multimetric Indices of Increasing Geographic Scope, J. N. Am. Benthol. Soc., 2008, 27(4):967-985.p. 982. Copy included in Appendix B.

[5] Ode, P.R., K. Schiff. Recommendations for the Development and Maintenance of a Reference Condition Management Program to Support Biological Assessment of California's Wadeable Streams: Report to the Surface Water Ambient Monitoring Program. Southern California Coastal Water Research Project, Technical Report 581. March 2009. Copy included in Appendix B.

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Furthermore, a memorandum prepared by Jerry Diamond of Tetra Tech, one of the leading national technical experts on bioassessments, confirmed that adequate reference sites are not available to assess benthic macroinvertebrate populations for low gradient and low elevation streams in the LA Region.[6] Dr. Diamond is the author of several technical reports prepared for the LA Regional Board on tiered aquatic life uses (TALU) based on bioassessments.[7,8] Dr. Diamond states that there is "high uncertainty regarding appropriate reference conditions for low gradient and low elevation streams in this region [Southern California]," and that "low elevation streams lacked a clear reference conditions in this region [Southern California]." He further states that a technical advisory committee for a US EPA-funded project on TALU "identified a lack of appropriate reference sites for low elevation/low gradient streams as a critical data gap." The technical advisory committee consisted of regional experts from California Fish & Wildlife, State Water Board, other Regional Boards, US EPA Region 9, and universities. Dr. Diamond also worked with SCCWRP and the LA Regional Board in facilitating two workshops on TALU for Southern California. Dr. Diamond states, "In the most recent stakeholder workshop…there was agreement that low gradient (rather than low elevation) was perhaps the most critical factor distinguishing stream biology in the region and that the reference condition for low gradient streams (many but not all of which occur at low elevation) is a critical data gap...."[9]

Other scientific experts concur with Dr. Diamond's conclusions. As part of a 2009 study examining low gradient streams in California, including sites within Reach 5 of the Santa Clara River, Raphael D. Mazor of SCCWRP stated, "Several biomonitoring efforts in California specifically target low-gradient streams, as these habitats are subject to numerous impacts and alterations…even though the applicability of assessment tools created and validated in high-gradient streams have not been tested."[10] The study found that "As a consequence of these differences [substrate material, bed morphology, and distribution of microhabitats], traditional bioassessment approaches in California that were developed in high-gradient streams with diverse microhabitats have limited applications in low-gradient reaches,"[10] and "Caution should be used when applying sampling methods for assessment tools that were calibrated for specific habitat types (e.g., high gradient streams) to new habitats (e.g., low gradient streams)."[10] The study also concluded that "…observation of the sites in this study suggests that the lack of stable microhabitats (e.g., riffles and vegetated margins) may account for the reduced number of macroinvertebrates, as few species are adapted to the shifting sandy substrate found in most low gradient streams in California."[10] Moreover, the State Water Board, Surface Water Ambient Monitoring Program, California Department of Fish and Game, and others recognize the limitations of the SCIBI regarding reference sites. They have identified application of TALU and the selection of more representative/appropriate regional reference locations as being necessary components to the state's bioassessment program.[5,7] This sentiment was shared in an evaluation of California's bioassessment program. Specifically, "The National Research Council's review makes clear that all states need better biological endpoints, adequate monitoring and assessment, and

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[6] Diamond, Jerry. Reference Conditions and Bioassessments in Southern California Streams. July 31, 2009. Memorandum to Phil Markle of the Sanitation Districts. Copy included in Appendix B.

[7] Schiff, K. and Diamond, J., Identifying Barriers to Tiered Aquatic Life Uses (TALU) in Southern California, Southern California Coastal Water Research Project, Technical Report 590. June 2009. Copy included in Appendix B.

[8] Tetra Tech, Revised Analyses of Biological Data to Evaluate Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams. Prepared for EPA Region 9 and California Regional Water Quality Control Board, Los Angeles Region. 2006. Tetra Tech, Inc., Owings Mills, MD. Copy included in Appendix B.

[9] For a report summarizing the outcome of the workshops, see Schiff, K. and Diamond, J., Identifying Barriers to Tiered Aquatic Life Uses (TALU) in Southern California, Southern California Coastal Water Research Project, Technical Report 590. June 2009. Copy included in Appendix B.

[10] Mazor, Raphael D.; Schiff, Kenneth; Ritter, Kerry; Rehn, Andy; and Ode, Peter; Bioassessment Tools in Novel Habitats: An Evaluation of Indices and Sampling Methods in Low-Gradient Streams in California, Environ. Monit. Assess., DOI 10.1007/s10661-009-1033-3. Copy included in Appendix B.

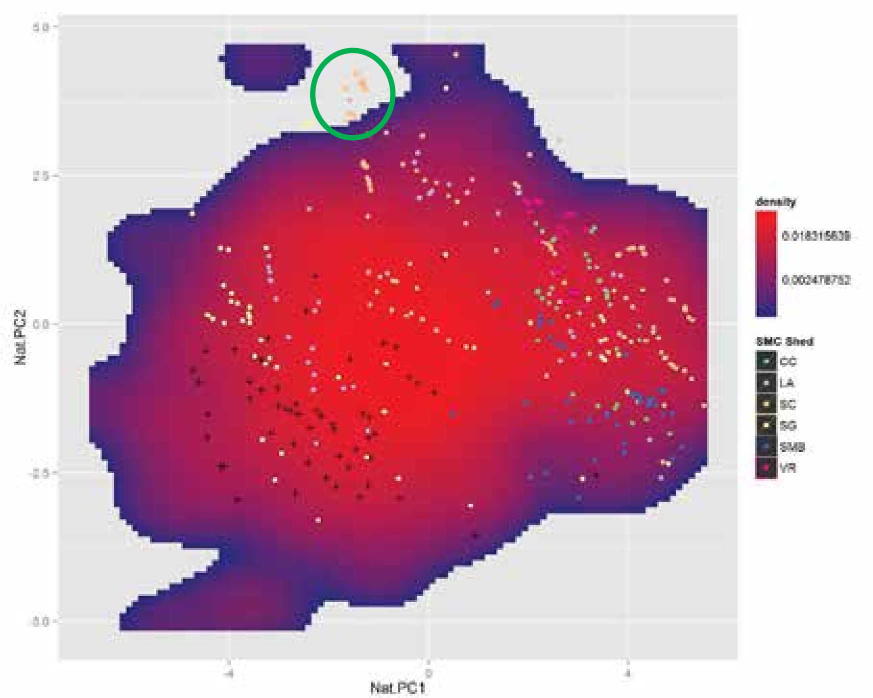
Fact Sheet #6

tiered aquatic life uses (TALU) in order to develop and refine appropriate and effective water quality standards that result in more accurate and appropriate protection for biological resources."[11]

CSCI Improves on the SCIBI But Some Limitations Remain

The State Board is developing the CSCI scoring tool that is intended to replace the flawed IBI scoring tools statewide. The CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI. Reliance upon this modeled reference condition has significantly improved the applicability and resolution of the bioassessment scoring tools; however, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. A number of these environmental gradients exist, alone or in combination. Figure 1 shows the use of a data density approach to quantify the availability of data to determine reference conditions; red areas indicate a higher density of reference locations, darker/blue areas indicate fewer reference locations, and gray indicates sites that may be outside the experience of the CSCI.[12] Several of the Santa Clara River sites (orange symbols circled in Figure 1) fall outside of CSCI reference conditions. In these situations, it has been suggested that the CSCI could be used in conjunction with an alternative (i.e., non-threshold based) assessment option (i.e., upstream-downstream comparison).[13]

Figure 1. CSCI Reference Density Cloud (Santa Clara River Sites Within Green Circle).



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[11] Yoder, C.O. and Plotnikoff, R. (2009). Evaluation of the California State Water Resource Control Board's Bioassessment Program. Final Report to EPA-OST and Region IX. Copy included in Appendix B.
[12] Ode, P.R., Rehn, A.C., Mazor, R.D., and Schiff, K.C. (2012) Building the Technical Foundation for Biological Objectives. Presentation to the California Aquatic Bioassessment Workgroup, November 7, 2012. Copy included in Appendix B.
[13] California Biological Objectives Science Advisory Panel. (2012). Science Advisory Panel Response, October 18, 2012. Copy included in Appendix B.

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Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established

The State Board is determining numeric translators to address the narrative biological objective that includes "bioassessment." However, the State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 is the 10th percentile of the reference pool and was used as a point of reference for a regional monitoring program. However, by this definition, 10% of California's identified reference pool would be considered impaired.

Furthermore, it is well recognized by the scientific community that a single standard or threshold should not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference.[14,15] In fact, as part of California's biological objectives program, SCCWRP has developed a workplan to identify and evaluate the constraint these traditionally unmanageable features may place on biological indices.[16] For example, the Southern California Stormwater Monitoring Coalition (SMC) found that engineered (i.e. modified) channels appear to be in worse ecological health than natural channels based on macroinvertebrate and algae assemblages and that tradeoffs between ecological health and flood protection may be unavoidable.[15] This impact of unmanageable stressors is not limited to engineered channels; studies have shown that hydrological alterations attributable to reaches with as little as 5% coverage by impervious surfaces in the localized watershed are associated with unhealthy biological communities.[17] These and many other examples clearly illustrate the infeasibility of a single criterion with statewide applicability.

As such, utilization of an undeveloped and unsupported standard (e.g. CSCI <0.79) is premature. Given the substantial resources the State is investing in the development of numerical translators, Regional Boards should allow the State to complete the process before determination of impairment and listings, as appropriate.

CSCI Data from Within Reach 5 of the Santa Clara River Show No Impairment

The proposed listing cites one dataset for the CSCI. This dataset inappropriately aggregates two stations (SCR 14156 and SCR 1272) that are approximately 5 miles from each other (Figure 2). Section 6.1.5.2 of the Listing Policy states:

> "Samples collected within 200 meters of each other should be considered samples from the same station or location. However, samples less than 200 meters apart may be considered to be spatially independent samples if justified in the water body fact sheet."

These two stations are too far apart to justify aggregation. Furthermore, SCR 14156 is in Reach 6 of the Santa Clara River and should not be considered as a line of evidence in any proposed Reach 5 listing. The single station with Reach 5, SCR 1272, had a CSCI score of 0.91. **Thus, the only CSCI score in this Reach is above the proposed threshold of impairment**.

[14] Waite, I.R. J.G. Kennen, J.T. May, L.R. Brown, T.F. Cuffney, K.A. Jones, and J.L. Orlando. (2012). Comparison of stream invertebrate response models for bioassessment metrics. Journal of the American Water Resources Association 48. Copy included in Appendix B.
[15] Southern California Stormwater Monitoring Coalition (SMC). 2017. 2015 Report on the Stormwater Monitoring Coalition Regional Stream Survey. SCCWRP Technical Report 963. Southern California Coastal Water Research Project. Costa Mesa, CA. Copy included in Appendix B.
[16] Mazor, R., Sutula, M., Stein, E., Rehn, A., and Ode, P. (2017) Draft Work Plan. Predicting Biological Integrity of Streams Across a Gradient of Development in California Landscapes. Copy included in Appendix B.
[17] Stein, E.D., Sengupta, A., Mazor, R.D., and McCune, K. (2016). Application of Regional Flow-ecology to Inform Management Decision in the San Diego River Watershed. Southern California Coastal Water Research Project Technical Report #948. Copy included in Appendix B.

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Figure 2. Santa Clara River Reach 5 and Monitoring Stations Used in Listing

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The Proposed Listing Fails to Evaluate Physical Habitat Data

Section 6.1.5.8 of the listing policy states:

> "When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall
> - Evaluate bioassessment data from other sites, and compare to reference condition.
> - Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."

EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303d lists and recommends that, in all cases where physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[18] Likewise, the SMC identified habitat stressors among the highest priority for evaluation in relation to depressed benthic community assemblages.[15] The need to consider physical habitat is apparent in the low gradient Santa Clara River where sediment and leaf litter/detritus loads are naturally deposited in the channel, filling up the available spaces between rocks. These habitats support a much different population of invertebrates (more detritus feeders and fewer predators) than the rocky/sandy reference conditions, and do not necessarily indicate an "impaired" population.

The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants

The Listing Policy states:

> "A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities as compared to reference site(s) and **is associated with** water or sediment concentrations of pollutants including but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]

In the fact sheets supporting its impairment decisions for each of these listings, the LA Regional Board stated that the alleged impairment in benthic community composition in Reach 5 was justified by being "associated" with impairments for two pollutants, iron and toxicity simply because these constituents co-occurred. However, based on further investigations, it is apparent that these constituents would not be associated with benthic community impairment because the iron would not be bioavailable and no impairment exists for toxicity.

- Iron
  - The 1.0 ppm iron criterion used as the basis for the proposed iron impairment in this reach is a 4-day average threshold taken from the 1976 USEPA "Red Book" and was updated using the 1985 Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. However, iron was detected only sporadically at levels above 1.0 ppm, and concentrations below the point source discharge were consistently low, suggesting that the 4-day average threshold of 1.0 mg/L is likely achieved.

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[18] U.S. EPA (Environmental Protection Agency). (2010). Causal Analysis/Diagnosis Decision Information System (CADDIS). Office of Research and Development, Washington, DC. Available online at https://www.epa.gov/caddis. Last updated September 23, 2010

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   - Furthermore, the bioavailable form of iron is ferrous iron and only exists at low pH levels. The pH in Reach 5 averages 7.9 with a 5th percentile pH of 7.5. In ambient waters with sufficient dissolved oxygen and a pH above 7.0, iron will rapidly oxidize to a non-bioavailable form and would not be responsible for impacts to aquatic life.In fact, the Red Book includes a disclaimer that "data obtained under laboratory conditions suggest a greater toxicity for iron than that obtained in natural ecosystems."
- Toxicity
   - SCCWRP has concluded that sub-lethal water column toxicity is a poor indicator of benthic community impairment.[19] Furthermore, the data do not support a toxicity listing (Fact Sheet #5). Station SCR 14156 is in Reach 6 of the Santa Clara River and should not be included in this analysis. Conversely, the readily accessible ”Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County 2005-2010” dataset should be included in this analysis. Using the complete and appropriate dataset, six of 91 Santa Clara River Reach 5 toxicity tests exceed the objective, which fails to meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list for toxicants as specified in table 3.1 of the Listing Policy.

[19] Southern California Stormawater Monitoring Coalition (SMC). 2015. Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition’s Regional Stream Survey. SCCWRP Technical Report 844. Southern California Coastal Water Research Project. Costa Mesa, CA. Copy included in Appendix B.

Fact Sheet #7

Water Body:	**Los Angeles River Reach 3**
Pollutant:	**Benthic Community Effects**
Listing:	**List on 303(d) List (TMDL Required List)**
Comment & Recommendation:	**Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 3 of the Los Angeles River, based on a weight of evidence approach using Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow.

- The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to Los Angeler River Reach 3. For this, and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool. No CSCI results have been used for this listing, but a more detailed assessment of the CSCI can be found in Fact Sheet #6.

- Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.

SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.

Section 3.9 of the Listing Policy states:

> "A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities **as compared to reference site(s)** and is associated with water or sediment concentrations of pollutants including but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]

While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low elevation/low gradient streams commonly found in the alluvial plains of the Los Angeles Region.[1,2] It was developed using data from 275 sites, ranging from Monterey County to the Mexican border but not a single reference location represented low elevation and low gradient streams. Los Angeles River Reach 3 is a low gradient, low elevation, large coastal water body; therefore, the reference pool used for development of the SCIBI is not representative of natural conditions relevant to this reach. As described in more detail below, technical experts have acknowledged the limitations of the SCIBI (and other IBIs) and indicated that it is critical that reference conditions represent the full range of environmental gradients where an index will be used.[3]

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[1] Ode, P.R., A.C. Rehn, J.T. May. 2005. A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams. Environmental Management Vol. 35, No 4, pp. 494, Figure 1. Copy included in Appendix B.

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Consequently, the State Water Board has supported and funded the development of the CSCI scoring tool; this new, predictive index represents a substantial increase in the applicability of indices.

The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a peer-reviewed published paper, he concluded that the SCIBI did not adequately address reference conditions in low elevation sites and was "not completely effective at controlling for an elevation gradient."[4] Dr. Ode was also the co-author of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams, which notes that, "A crucial component to the development of assessment tools is understanding biological expectations at reference sites that consist of natural, undisturbed systems".[5] These reference systems set the biological condition benchmarks for comparisons to the site(s) being evaluated." They also clearly note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity."

Furthermore, a memorandum prepared by Jerry Diamond of Tetra Tech, one of the leading national technical experts on bioassessments, confirmed that adequate reference sites are not available to assess benthic macroinvertebrate populations for low gradient and low elevation streams in the LA Region.[6] Dr. Diamond is the author of several technical reports prepared for the LA Regional Board on tiered aquatic life uses (TALU) based on bioassessments.[7,8] Dr. Diamond states that there is "high uncertainty regarding appropriate reference conditions for low gradient and low elevation streams in this region [Southern California]," and that "low elevation streams lacked a clear reference conditions in this region [Southern California]." He further states that a technical advisory committee for a US EPA-funded project on TALU "identified a lack of appropriate reference sites for low elevation/low gradient streams as a critical data gap." The technical advisory committee consisted of regional experts from California Fish & Wildlife, State Water Board, other Regional Boards, US EPA Region 9, and universities. Dr. Diamond also worked with SCCWRP and the LA Regional Board in facilitating two workshops on TALU for Southern California. Dr. Diamond states, "In the most recent stakeholder workshop…there was agreement that low gradient (rather than low elevation) was perhaps the most critical factor distinguishing stream biology in the region and that the reference condition for low gradient streams (many but not all of which occur at low elevation) is a critical data gap...."[9]

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[6] Diamond, Jerry. Reference Conditions and Bioassessments in Southern California Streams. July 31, 2009. Memorandum to Phil Markle of the Sanitation Districts. Copy included in Appendix B.

[7] Schiff, K. and Diamond, J., Identifying Barriers to Tiered Aquatic Life Uses (TALU) in Southern California, Southern California Coastal Water Research Project, Technical Report 590. June 2009. Copy included in Appendix B.

[8] Tetra Tech, Revised Analyses of Biological Data to Evaluate Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams. Prepared for EPA Region 9 and California Regional Water Quality Control Board, Los Angeles Region. 2006. Tetra Tech, Inc., Owings Mills, MD. Copy included in Appendix B.

[9] For a report summarizing the outcome of the workshops, see Schiff, K. and Diamond, J., Identifying Barriers to Tiered Aquatic Life Uses (TALU) in Southern California, Southern California Coastal Water Research Project, Technical Report 590. June 2009. Copy included in Appendix B.

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Other scientific experts concur with Dr. Diamond's conclusions. As part of a 2009 study examining low gradient streams in California, Raphael D. Mazor of SCCWRP stated, "Several biomonitoring efforts in California specifically target low-gradient streams, as these habitats are subject to numerous impacts and alterations…even though the applicability of assessment tools created and validated in high-gradient streams have not been tested."[10] The study found that "As a consequence of these differences [substrate material, bed morphology, and distribution of microhabitats], traditional bioassessment approaches in California that were developed in high-gradient streams with diverse microhabitats have limited applications in low-gradient reaches,"[10] and "Caution should be used when applying sampling methods for assessment tools that were calibrated for specific habitat types (e.g., high gradient streams) to new habitats (e.g., low gradient streams)."[10] The study also concluded that "…observation of the sites in this study suggests that the lack of stable microhabitats (e.g., riffles and vegetated margins) may account for the reduced number of macroinvertebrates, as few species are adapted to the shifting sandy substrate found in most low gradient streams in California."[10] Moreover, the State Water Board, Surface Water Ambient Monitoring Program, California Department of Fish and Game, and others recognize the limitations of the SCIBI regarding reference sites. They have identified application of TALU and the selection of more representative/appropriate regional reference locations as being necessary components to the state's bioassessment program.[5,7] This sentiment was shared in an evaluation of California's bioassessment program. Specifically, "The National Research Council's review makes clear that all states need better biological endpoints, adequate monitoring and assessment, and tiered aquatic life uses (TALU) in order to develop and refine appropriate and effective water quality standards that result in more accurate and appropriate protection for biological resources."[11]

CSCI Improves on the SCIBI But Some Limitations Remain

The State Board is developing the CSCI scoring tool that is intended to replace the flawed IBI scoring tools statewide. The CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI. Reliance upon this modeled reference condition has significantly improved the applicability and resolution of the bioassessment scoring tools; however, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. A number of these environmental gradients exist, alone or in combination. In these situations, it has been suggested that the CSCI could be used in conjunction with an alternative (i.e., non-threshold based) assessment option (i.e., upstream-downstream comparison).[12]

The Proposed Listing Fails to Evaluate Physical Habitat Data

Section 6.1.5.8 of the listing policy states:

> "When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall
>
> - Evaluate bioassessment data from other sites, and compare to reference condition.

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[10] Mazor, Raphael D.; Schiff, Kenneth; Ritter, Kerry; Rehn, Andy; and Ode, Peter; Bioassessment Tools in Novel Habitats: An Evaluation of Indices and Sampling Methods in Low-Gradient Streams in California, Environ. Monit. Assess., DOI 10.1007/s10661-009-1033-3. Copy included in Appendix B.
[11] Yoder, C.O. and Plotnikoff, R. (2009). Evaluation of the California State Water Resource Control Board's Bioassessment Program. Final Report to EPA-OST and Region IX. Copy included in Appendix B.
[12] California Biological Objectives Science Advisory Panel. (2012). Science Advisory Panel Response, October 18, 2012. Copy included in Appendix B.

Fact Sheet #7

- Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."

EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303d lists and recommends that, in all cases where physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[13] Likewise, the SMC identified habitat stressors among the highest priority for evaluation in relation to depressed benthic community assemblages.[14] The need to consider physical habitat is evident in low gradient engineered channels such as the Los Angeles River Reach 3, an environment that experts agree is unlikely to have biological assemblages similar to reference regardless of water quality.

[13] U.S. EPA (Environmental Protection Agency). (2010). Causal Analysis/Diagnosis Decision Information System (CADDIS). Office of Research and Development, Washington, DC. Available online at https://www.epa.gov/caddis. Last updated September 23, 2010

[14] Southern California Stormawater Monitoring Coalition (SMC). 2015. Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey. SCCWRP Technical Report 844. Southern California Coastal Water Research Project. Costa Mesa, CA. Copy included in Appendix B.

Fact Sheet #8

Water Body: **Medea Creek Reach 1**
Pollutant: **Benthic Community Effects**
Listing: **List on 303(d) List (TMDL Required List)**
Comment & Recommendation: **Do Not List – Water Quality Objectives Being Achieved**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 1 of the Medea Creek, based on a weight of evidence approach using California Stream Condition Index (CSCI) and Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow.

- Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable non-pollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings.

- Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.

- The proposed listing fails to associate the alleged impairment with other pollutants, namely trash and selenium, which were listed as co-occurring.

Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established

The State Board is developing the CSCI scoring tool and numeric translators to address the narrative biological objective that includes "bioassessment." However, the State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 is the 10th percentile of the reference pool and was used as a point of reference for a regional monitoring program. However, by this definition, 10% of California's identified reference pool would be considered impaired.

Furthermore, it is well recognized by the scientific community that a single standard or threshold should not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. For example, the Southern California Stormwater Monitoring Coalition (SMC) found that engineered (i.e. modified) channels appear to be in worse ecological health than natural channels based on macroinvertebrate and algae assemblages and that tradeoffs between ecological health and flood protection may be unavoidable.[1] This impact of unmanageable stressors is not only limited to engineered channels; studies have shown that hydrological alterations attributable to reaches with as little as 5% coverage by impervious surfaces in the localized watershed is associated with unhealthy biological

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[1] Southern California Stormwater Monitoring Coalition (SMC). 2017. 2015 Report on the Stormwater Monitoring Coalition Regional Stream Survey. SCCWRP Technical Report 963. Southern California Coastal Water Research Project. Costa Mesa, CA. Copy included in Appendix B.

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communities.[2] These and many other examples clearly illustrate the infeasibility of a single criterion with statewide applicability.

As such, utilization of an undeveloped and unsupported standard (e.g. CSCI <0.79) is premature. Given the substantial resources the State is investing in the development of numerical translators, Regional Boards should allow the State to complete the process before determination of impairment and listings, as appropriate.

The Proposed Listing Fails to Evaluate Physical Habitat Data

Section 6.1.5.8 of the Listing Policy states:

> "When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall
> - Evaluate bioassessment data from other sites, and compare to reference condition.
> - Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."

EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303d lists and recommends that, in all cases where physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[3] Likewise, the SMC identified habitat stressors among the highest priority for evaluation in relation to depressed benthic community assemblages.[4] These stressors include features such as channel alteration, impervious surface proliferation in the watershed, and unique geological conditions. Medea Creek is impacted by at least two of these three examples. The channel is shored (Figure 1) and much of the watershed has unique geological conditions, which may impact the benthic community.[5]

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[2] Stein, E.D., Sengupta, A., Mazor, R.D., and McCune, K. (2016). Application of Regional Flow-ecology to Inform Management Decision in the San Diego River Watershed. Southern California Coastal Water Research Project Technical Report #948. Copy included in Appendix B.

[3] U.S. EPA (Environmental Protection Agency). (2010). Causal Analysis/Diagnosis Decision Information System (CADDIS). Office of Research and Development, Washington, DC. Available online at https://www.epa.gov/caddis. Last updated September 23, 2010

[4] Southern California Stormawater Monitoring Coalition (SMC). 2015. Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey. SCCWRP Technical Report 844. Southern California Coastal Water Research Project. Costa Mesa, CA. Copy included in Appendix B.

[5] U.S. EPA Region 9 (Environmental Protection Agency). (2013). Malibu Creek & Lagoon TMDL for Sedimentation and Nutrients Impacting Benthic Community, Technical Appendices. Available at https://www3.epa.gov/region9/water/tmdl/malibu/2013-07-02-malibu-creek-lagoon-tmdl-appendices.pdf**.**

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Figure 1. Medea Creek Channel Modifications

The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants

The Listing Policy states:

> "A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities as compared to reference site(s) and **is associated with** water or sediment concentrations of pollutants including but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]

In the fact sheets supporting its impairment decisions for each of these listings, the LA Regional Board stated that the alleged impairment in benthic community composition in Reach 1 was justified by being "associated" with impairments for two pollutants, trash and selenium, simply because these constituents co-occurred.

- Trash listings address non-contact recreation, not aquatic life, beneficial uses. Furthermore, the most common routes of harm to aquatic organisms by trash are due to ingestion and entanglement – problems unlikely to impact benthic macroinvertebrate larvae.
- Much of the Malibu Creek watershed is listed as impaired for selenium. However, EPA has recognized that "Sulfate and selenium concentrations are present in excess of water quality criteria, **apparently due to natural geologic background**."[5] [Emphasis Added.] As such, this should not be associated as a pollutant.

Fact Sheet #9

Water Body: San Jose Creek Reach 1
Pollutant: Temperature, Water
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Meets Water Quality Objective

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of San Jose Creek. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved.

Failure to Meet Water Quality Objectives Has Not Been Demonstrated

The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that:

> "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.]

This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.

The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 42 of 301 samples from Pom-RD, Pom-RC, SJC-C1, and SJC-C2 exceeded the objective from July 2005 to November 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report.

Based on a review of the dataset utilized for the listing evaluation, the Sanitation Districts identified 339 discrete temperature measurements, not 301. The dataset contains 368 results (Appendix 1); however, 29 samples were duplicates. Of the 339 unique temperature measurements, 46 exhibited a temperature that exceeded 80 ºF, not 42. However, 14 of the 46 temperature exceedances were demonstrably caused by conduction and radiation (details below), not waste discharges. Conduction and radiative heating likely also caused the remaining 32 exceedances out of 339 measurements; this total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list.

Pom-RC and Pom-RD Excursions Above 80 ºF Are Demonstrably Not a Result of Waste Discharges

Tertiary treated water from the Pomona Water Reclamation Plant is discharged to the south fork of San Jose Creek and flows into Reach 1. Receiving water stations Pom-RC, Pom-RD, and SJC-C1 are located approximately 3, 12, and 12.5 miles from the upstream border of Reach 1, respectively. Reach 1 is fully lined in concrete from the upstream border to just upstream of SJC-C1 (Figure 1).

As observed by Sanitation Districts staff and corroborated by EPA staff, groundwater exudes from relief structures distributed throughout the concrete-lined bottom, even in mid-summer (August) after several

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years of drought (Figure 2).[1] In the absence of discharge from the Pomona Water Reclamation Plant or other observed discharges, flows in SJC between Pom-RC and Pom-RD increase by 200% to greater than 400% (Figure 3) due to the release of this groundwater, which has a localized average temperature of approximately 67 ºF.[2] As this groundwater-dominated flow travels downstream, the temperature naturally rises (Figure 4) due to heat conduction through the warm concrete lining and solar radiation exposure in the unshaded channel (Figure 5 shows ambient air temperature as a proxy for solar radiation[3]). When the concrete channel ends upstream of SJC-C1, the water leaves the heat source (concrete channel) and mixes with additional groundwater, resulting in consistently cooler temperatures. The observed spatial and temporal temperature profile, coupled with no identifiable waste discharges and substantial groundwater contributions, clearly demonstrates that the temperature excursions in Reach 1 of San Jose Creek are not a result of waste discharges.

[1] Fleming, Terrence. 2009. Selenium Data from San Jose Creek. Email to Phil Markle. Copy included in Appendix 1.
[2] https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/ex/jne_henrys_map.html
[3] PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu/explorer/, created 24 Feb 2017.

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Figure 2. Manhole Exuding Groundwater into San Jose Creek

Figure 3. Measured Flow at Pom-RC and Pom-RD in the Absence of Discharge from Pomona WRP

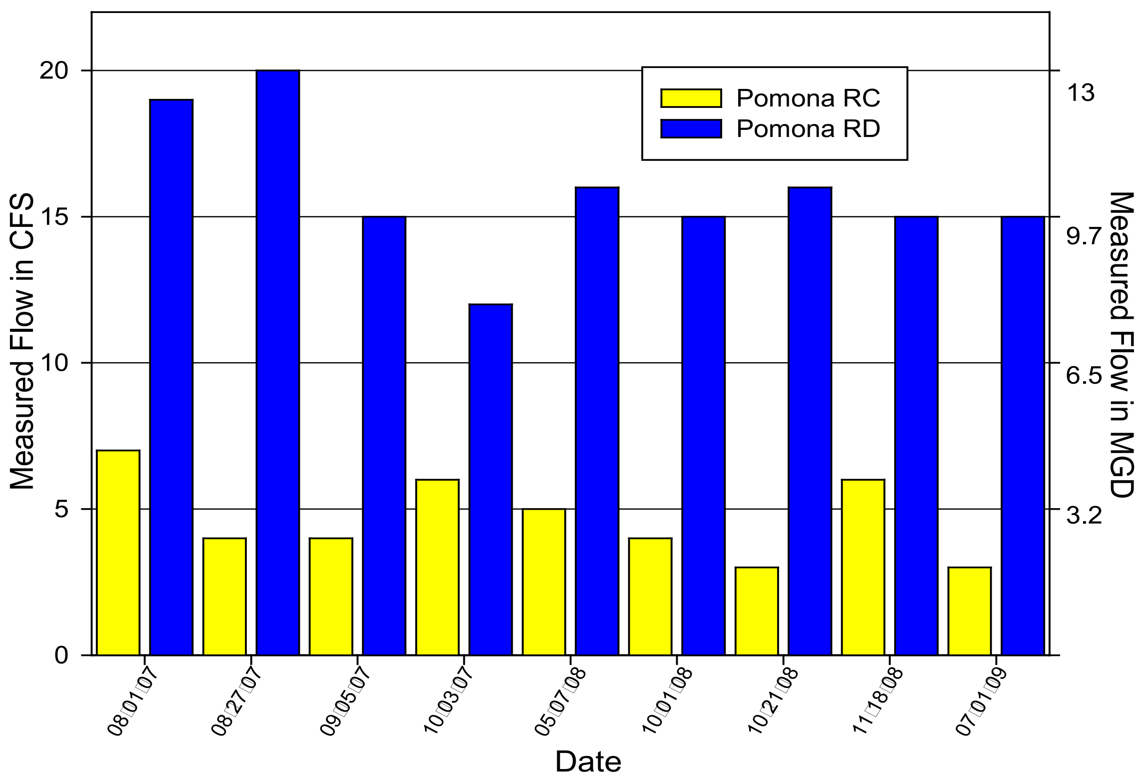

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Figure 4. Monthly Average Water Temperatures Between July 2005 and November 2010 in the Absence of Discharge from the Pomona WRP at

- Pom-RC: Upstream Location in the Concrete-Lined Portion of the Reach
- Pom-RD: Downstream Location in the Concrete-Lined Portion of the Reach
- SJC-C1: Unlined Portion of the Reach

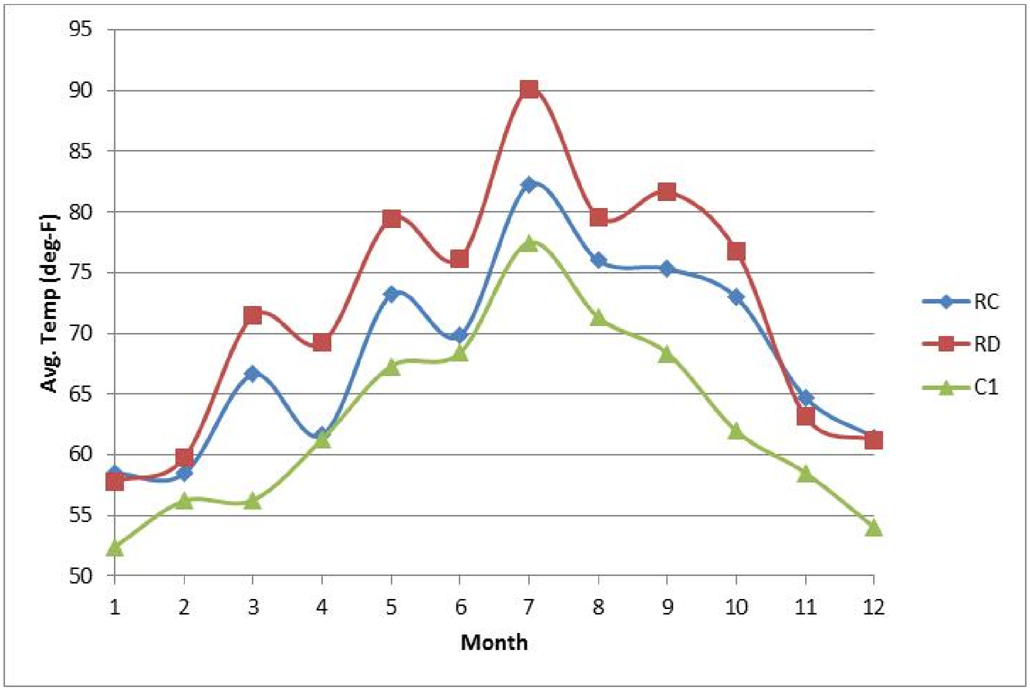
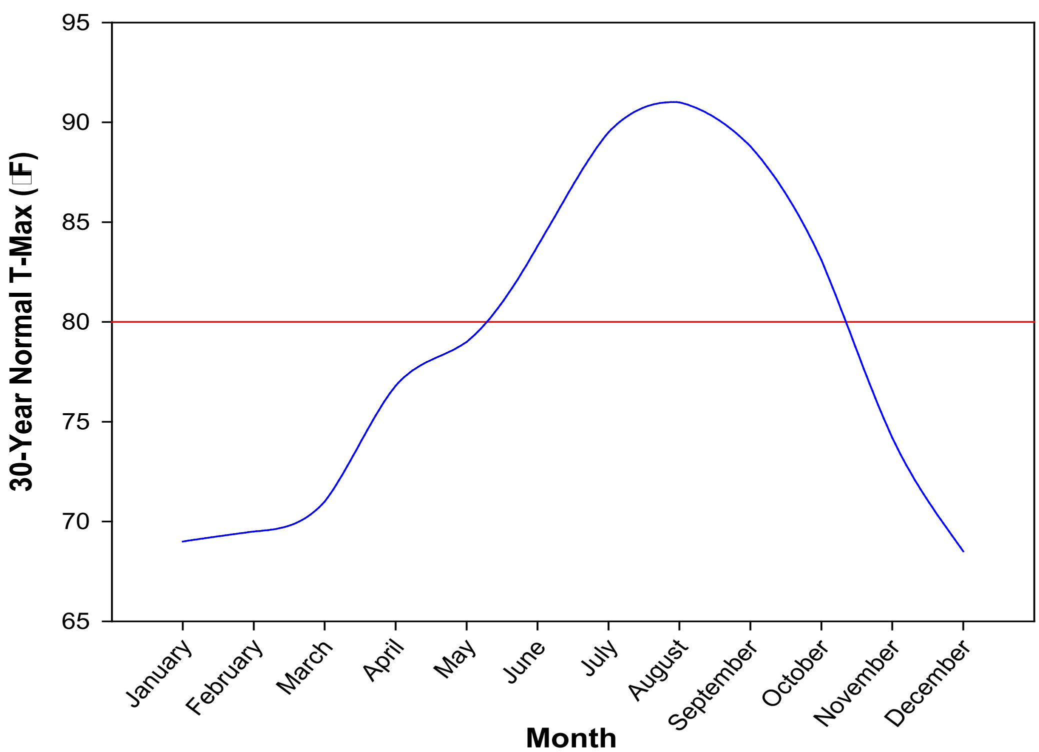


Figure 5. 30-Year Normal Monthly Maximum Air Temperature at Pom-RD[3]



Fact Sheet #10

Water Body: San Gabriel River Reach 1
Pollutant: Temperature, Water
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Meets Water Quality Objective

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved.

Failure to Meet Water Quality Objectives Has Not Been Demonstrated

The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that:

> "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.]

This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste dischargefs but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.

The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 93 of 234 samples from LC-R4, R3-1, and R3-1b exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset.

Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 288 discrete temperature measurements, 117 of which exhibited a temperature that exceeded 80ºF. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed.

San Gabriel River Reach 1 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating

Tertiary treated water from the San Jose Creek and Los Coyotes Water Reclamation Plants (WRPs) is discharged to the main stem of the San Gabriel River. Reach 1 is a fully lined concrete channel from approximately 0.25 miles downstream of the San Jose Creek WRP discharge point 001 to the San Gabriel River estuary. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions

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[1] Data available from Los Angeles Regional Board at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip. Accessed 03/21/2017.

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associated with the radiative and conductive heating exist in San Gabriel River Reach 1. This is supported by a significant correlation between ambient air temperature and receiving water temperature ($R^2 = 0.61$) and the fact that 90% of excursions above 80ºF in the receiving water environment occurred during summer months, between June and September. The weight of evidence supports the contention that receiving water temperatures above 80ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges.

Fact Sheet #11

Water Body: San Gabriel River Reach 2
Pollutant: Temperature, Water
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Meets Water Quality Objective

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 2 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved.

Failure to Meet Water Quality Objectives Has Not Been Demonstrated

The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that:

> "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.]

This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.

The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 81 of 224 samples from SJC-R2 and SJC-R12 exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset.

Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 81 excursions above 80 ºF out of 232 discrete temperature measurements, not 224. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed.

San Gabriel River Reach 2 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating

Tertiary treated water from the San Jose Creek Water Reclamation Plant (WRP) is discharged to the main stem of the San Gabriel River. The uppermost ¼ mile of Reach 2 is a fully lined concrete channel, containing the R2 receiving water station. Data from this station represents 215 of 232 data points. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of

[1] Data available from Los Angeles Regional Board at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip. Accessed 03/21/2017.

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WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 2. This is supported the fact that 99% of excursions above 80 ºF in the receiving water environment occurred during summer months, between June and October. The weight of evidence supports the contention that receiving water temperatures above 80 ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges.

Fact Sheet #12

Water Body: Santa Clara River Reach 6
Pollutant: Temperature, Water
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 6 of Santa Clara River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing.

Incorrect Datasets Were Used for Listing

The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 40 of 152 samples from Sa-RA, Sa-RB, and SCR-14 exceeded the objective from June 2005 to October 2010 using the “Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010” dataset.

Temperature data from location SCR-14 (34.42833333N 118.5394444W) was evaluated as part of Reach 6 of the Santa Clara River. However, SCR-14 is located on Bouquet Canyon Creek, which is recognized as a distinct waterbody by the Region 4 Basin Plan. Figure 1 utilizes a reach delineation layer provided to the Sanitation Districts by Regional Board staff that clearly places SCR-14 in the Bouquet Canyon Creek Reach and not Reach 6. Therefore, temperature measurements from SCR-14 should not be included in the Reach 6 evaluation.

Figure 1. Stations Sa-RB (1), Sa-RA (2), SCR-14 (14), and Bouquet Canyon Creek (Aqua Line)

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Locations Sa-RA and Sa-RB were correctly associated with Reach 6, but results were averaged in the listing evaluation based on the assessment that they were "not spatially independent." However, as highlighted in Figure 2, Sa-RA is located within the main channel of the Santa Clara River and is typically dry; all 25 temperature measurements at Sa-RA utilized in the Staff Report were associated with upstream dewatering activities or extreme storm events. Sa-RB is located in an isolated pool at the southern edge of the Reach 6 channel that receives recycled water discharges from the Saugus Water Reclamation Plant (WRP). Surface flows from this location travel less than a half-mile downstream in a disconnected side channel before percolating into the dry riverbed. Therefore, even though the two locations are relatively close to each other, Sa-RA is hydrologically isolated from Sa-RB except during extreme rainfall events. Consequently, the two locations would be expected to have very different temperature profiles and should therefore be considered spatially independent, with no averaging of results.

Figure 2. Satellite Imagery of Saugus WRP Ambient Monitoring Stations

The 80ºF Water Quality Temperature Objective Is Unnecessary and Inappropriate for Santa Clara River Reach 6

The only dry weather surface flows within this stretch of Reach 6 are associated with recycled water discharges from the Saugus WRP, which percolate into the dry riverbed and eventually resurface downstream near the Reach 5 boundary. At the point of resurfacing, the water temperature averages 69ºF and this perennial surface flow supports a diverse aquatic life community in Reach 5.[1] However, the predominant natural condition of Reach 6 is dry and would not be expected to support any aquatic life

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[1] Hovey, T. (2007) Update: Convict cichlids (*Archocentrus nigrofasciatus*) in the Santa Clara River. Copy included in Appendix B.

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without the Saugus WRP discharge. In addition, the cool temperatures in the water that resurfaces near the Reach 5 boundary demonstrate that elevated temperatures in the isolated discharge area are not detrimental to beneficial uses. Therefore, application of the 80°F water quality objective in Santa Clara Reach 6 is unnecessary and inappropriate, as the presence of water exceeding the 80°F water quality objective would not result in any impairment to naturally occurring aquatic life.

Mitigating the Elevated Temperature at Sa-RB Is Not Feasible

The only reasonable alternative to address the temperature water quality objective below the Saugus WRP at location Sa-RB during dry weather would be to eliminate the discharge. However, it is highly unlikely that the California Department of Fish and Wildlife would support any discharge reductions or elimination, because this action would remove all dry weather surface flows in that stretch of Santa Clara Reach 6 and could potentially reduce the amount of resurfacing groundwater flows that actually support a diverse aquatic community in Santa Clara River Reach 5.

An Evaluation of the Relative Contribution of Radiative and Convective Heating Was Not Conducted

Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that:

> "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.]

This objective clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. Both the Saugus WRP discharge and the immediate downstream receiving water location (Sa-RB) are heavily influenced by ambient air temperature. Figure 3 includes a plot of the 15-day average values of the maximum air temperature along with the individual water temperature measurements collected at the Sa-RB location. Nearly all of the 80°F temperature exceedances were associated with the higher summer time air temperatures and the two have a statistically significant correlation (R^2 = 0.76). Because exceedances of the Basin Plan temperature objective are limited to those "as a result of waste discharges," an evaluation of the contribution of ambient air temperature to the receiving water should have been conducted before identifying receiving water excursions above 80°F as exceedances of the objective.

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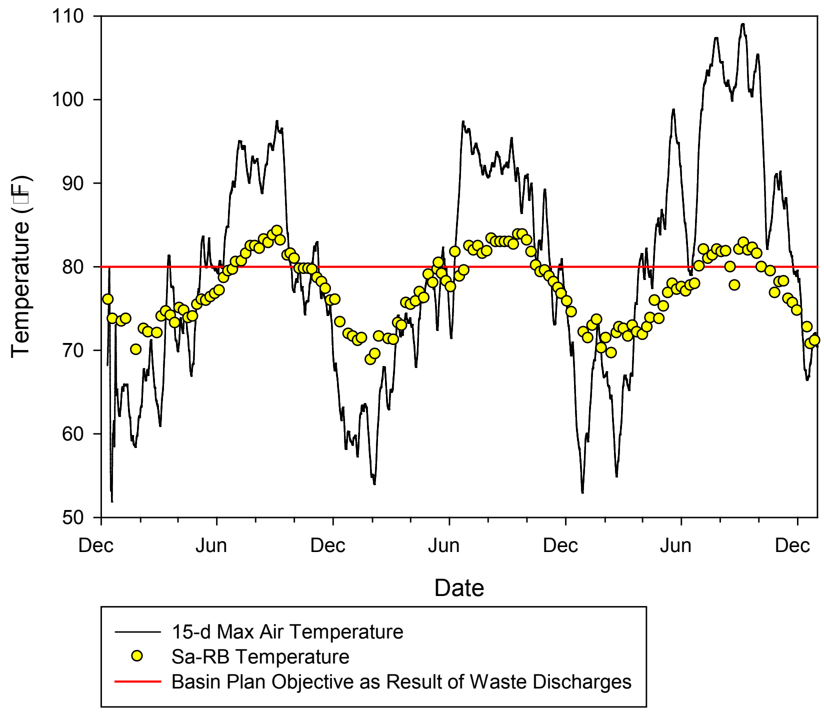
Figure 3. Sa-RB Temperature vs. Maximum Ambient Air Temperature (15-Day Average Value)



Appendix A: Data Tables

Data used in LACSD analysis of San Gabriel River Estuary Toxicity listing.
Accessed via Fact Sheet at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.

Within Data Set but Excluded From Water Board Analysis (n=31)
Single Test/Monthly Median Chronic Toxcity Exceedances (NOEC <100%) (n=0)
Acute Test with <100% Survival (n=6)

Date	ID	Location	Test Name	Single Test Result	Unit
20050601	SJ30206	R9W	Cerio. Chronic-Survival	100	%EFFL
20050601	SJ30206	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20050718	SJ33266	R9W	Cerio. Chronic-Survival	100	%EFFL
20050718	SJ33266	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20050718	SJ33295	R9W	Fathead Acute (Pimphales Prome	100	%SURV
20050801	SJ34396	R9W	Cerio. Chronic-Survival	100	%EFFL
20050801	SJ34396	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20050823	SJ35945	RA2	Topsmelt Acute	97.5	%SURV
20050823	SJ35944	R6	Topsmelt Acute	95	%SURV
20050823	SJ35943	R7	Topsmelt Acute	95	%SURV
20050823	SJ35942	R8	Topsmelt Acute	97.5	%SURV
20050907	SJ36944	R9W	Cerio. Chronic-Survival	100	%EFFL
20050907	SJ36944	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20051102	SJ41229	R9W	Cerio. Chronic-Survival	100	%EFFL
20051102	SJ41229	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20051201	SJ43223	R9W	Cerio. Chronic-Survival	100	%EFFL
20051201	SJ43223	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060105	SJ50383	R9W	Cerio. Chronic-Survival	100	%EFFL
20060105	SJ50383	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060105	SJ50285	R9W	Fathead Acute (Pimphales Prome	100	%SURV
20060118	SJ51126	RA2	90 Menidia Acute	90	%SURV
20060118	SJ51129	R8	90 Menidia Acute	97.5	%SURV
20060125	SJ51588	RA2	Menidia-Survival	100	%EFFL
20060125	SJ51588	RA2	Menidia-Growth	100	%EFFL
20060125	SJ51587	R6	Menidia-Survival	100	%EFFL
20060125	SJ51587	R6	Menidia-Growth	100	%EFFL
20060125	SJ51589	R7	Menidia-Survival	100	%EFFL
20060125	SJ51589	R7	Menidia-Growth	100	%EFFL
20060125	SJ51590	R8	Menidia-Survival	100	%EFFL
20060125	SJ51590	R8	Menidia-Growth	100	%EFFL
20060131	SJ52355	RA2	90 Menidia Acute	97.5	%SURV
20060131	SJ52356	R6	90 Menidia Acute	97.5	%SURV
20060131	SJ52357	R7	90 Menidia Acute	95	%SURV
20060131	SJ52358	R8	90 Menidia Acute	97.5	%SURV
20060202	SJ52190	R9W	Cerio. Chronic-Survival	100	%EFFL
20060202	SJ52190	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060306	SJ55042	R9W	Cerio. Chronic-Survival	100	%EFFL
20060306	SJ55042	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060410	SJ57296	R9W	Cerio. Chronic-Survival	100	%EFFL
20060410	SJ57296	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060428	SJ58518	R6	Topsmelt Chronic Survival	100	%EFFL
20060428	SJ58518	R6	Topsmelt Chronic Growth	100	%EFFL
20060428	SJ58517	R7	Topsmelt Chronic Survival	100	%EFFL
20060428	SJ58517	R7	Topsmelt Chronic Growth	100	%EFFL
20060428	SJ58516	R8	Topsmelt Chronic Survival	100	%EFFL
20060428	SJ58516	R8	Topsmelt Chronic Growth	100	%EFFL
20060429	SJ58519	RA2	Topsmelt Chronic Survival	100	%EFFL

20060429	SJ58519	RA2	Topsmelt Chronic Growth	100	%EFFL
20060503	SJ58913	R9W	Cerio. Chronic-Survival	100	%EFFL
20060503	SJ58913	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060705	SJ62086	R9W	Cerio. Chronic-Survival	100	%EFFL
20060705	SJ62086	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060710	SJ62487	R9W	90 Fathead Acute	100	%EFFL
20060717	SJ64093	R6	Topsmelt Chronic Survival	100	%EFFL
20060717	SJ64093	R6	Topsmelt Chronic Growth	100	%EFFL
20060717	SJ63725	R7	Topsmelt Acute	100	%SURV
20060717	SJ64092	R7	Topsmelt Chronic Survival	100	%EFFL
20060717	SJ64092	R7	Topsmelt Chronic Growth	100	%EFFL
20060717	SJ63724	R8	Topsmelt Acute	100	%SURV
20060717	SJ64091	R8	Topsmelt Chronic Growth	100	%EFFL
20060717	SJ63723	RA2	Topsmelt Acute	100	%SURV
20060717	SJ64094	RA2	Topsmelt Chronic Survival	100	%EFFL
20060717	SJ64094	RA2	Topsmelt Chronic Growth	100	%EFFL
20060814	SJ64571	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20060814	SJ64571	R9W	Cerio. Chronic-Survival	100	%EFFL
20060911	SJ66183	R9W	Cerio. Chronic-Survival	100	%EFFL
20060911	SJ66183	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20061011	SJ68407	R9W	Cerio. Chronic-Survival	100	%EFFL
20061011	SJ68407	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20061101	SJ69224	R9W	Cerio. Chronic-Survival	100	%EFFL
20061101	SJ69224	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20061204	SJ70941	R9W	Cerio. Chronic-Survival	100	%EFFL
20061204	SJ70941	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070108	SJ81063	R6	Topsmelt Chronic Survival	100	%EFFL
20070108	SJ81063	R6	Topsmelt Chronic Growth	100	%EFFL
20070108	SJ81066	R6	Topsmelt Acute	100	%SURV
20070108	SJ81062	R7	Topsmelt Chronic Survival	100	%EFFL
20070108	SJ81062	R7	Topsmelt Chronic Growth	100	%EFFL
20070108	SJ81065	R7	Topsmelt Acute	100	%SURV
20070108	SJ81061	R8	Topsmelt Chronic Survival	100	%EFFL
20070108	SJ81061	R8	Topsmelt Chronic Growth	100	%EFFL
20070108	SJ81074	R8	Topsmelt Acute	100	%SURV
20070108	SJ80358	R9W	Cerio. Chronic-Survival	100	%EFFL
20070108	SJ80358	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070108	SJ80649	R9W	90 Fathead Acute	100	%SURV
20070108	SJ81064	RA2	Topsmelt Chronic Survival	100	%EFFL
20070108	SJ81064	RA2	Topsmelt Chronic Growth	100	%EFFL
20070108	SJ81067	RA2	Topsmelt Acute	100	%SURV
20070226	SJ83442	R9W	Cerio. Chronic-Survival	100	%EFFL
20070226	SJ83442	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070312	SJ83843	R9W	Cerio. Chronic-Survival	100	%EFFL
20070312	SJ83843	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070411	SJ85623	R9W	Cerio. Chronic-Survival	100	%EFFL
20070411	SJ85623	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070430	SJ88059	R6	Topsmelt Chronic Survival	100	%EFFL
20070430	SJ88059	R6	Topsmelt Chronic Growth	100	%EFFL
20070430	SJ88058	R7	Topsmelt Chronic Survival	100	%EFFL
20070430	SJ88058	R7	Topsmelt Chronic Growth	100	%EFFL
20070430	SJ88057	R8	Topsmelt Chronic Survival	100	%EFFL
20070430	SJ88057	R8	Topsmelt Chronic Growth	100	%EFFL
20070430	SJ88060	RA2	Topsmelt Chronic Survival	100	%EFFL
20070430	SJ88060	RA2	Topsmelt Chronic Growth	100	%EFFL

20070611	SJ88456	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070611	SJ88456	R9W	Cerio. Chronic-Survival	100	%EFFL
20070709	SJ90526	R6	Topsmelt Chronic Survival	100	%EFFL
20070709	SJ90526	R6	Topsmelt Chronic Growth	100	%EFFL
20070709	SJ90594	R6	Topsmelt Acute	100	%SURV
20070709	SJ90525	R7	Topsmelt Chronic Survival	100	%EFFL
20070709	SJ90525	R7	Topsmelt Chronic Growth	100	%EFFL
20070709	SJ90593	R7	Topsmelt Acute	100	%SURV
20070709	SJ90524	R8	Topsmelt Chronic Survival	100	%EFFL
20070709	SJ90524	R8	Topsmelt Chronic Growth	100	%EFFL
20070709	SJ90592	R8	Topsmelt Acute	100	%SURV
20070709	SJ89637	R9W	Cerio. Chronic-Survival	100	%EFFL
20070709	SJ89637	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070709	SJ89890	R9W	90 Fathead Acute	**95**	%SURV
20070709	SJ90527	RA2	Topsmelt Chronic Survival	100	%EFFL
20070709	SJ90527	RA2	Topsmelt Chronic Growth	100	%EFFL
20070709	SJ90596	RA2	Topsmelt Acute	100	%SURV
20070801	SJ91186	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070801	SJ91186	R9W	Cerio. Chronic-Survival	100	%EFFL
20070912	SJ93350	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20070912	SJ93350	R9W	Cerio. Chronic-Survival	100	%EFFL
20071008	SJ95043	R6	Fathead Chronic-Survival	100	%EFFL
20071008	SJ95043	R6	Fathead Chronic-Growth	100	%EFFL
20071008	SJ95042	R7	Fathead Chronic-Survival	100	%EFFL
20071008	SJ95042	R7	Fathead Chronic-Growth	100	%EFFL
20071008	SJ95041	R8	Fathead Chronic-Survival	100	%EFFL
20071008	SJ95041	R8	Fathead Chronic-Growth	100	%EFFL
20071008	SJ94573	R9W	Cerio. Chronic-Survival	100	%EFFL
20071008	SJ94573	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20071008	SJ95040	RA2	Fathead Chronic-Survival	100	%EFFL
20071008	SJ95040	RA2	Fathead Chronic-Growth	100	%EFFL
20080102	SJ00349	R6	Topsmelt Acute	100	%SURV
20080102	SJ00348	R7	Topsmelt Acute	100	%SURV
20080102	SJ00347	R8	Topsmelt Acute	100	%SURV
20080102	SJ00151	R9W	90 Fathead Acute	100	%SURV
20080102	SJ00350	RA2	Topsmelt Acute	100	%SURV
20080109	SJ00527	R9W	Cerio. Chronic-Reproduction	100	%EFFL
20080109	SJ00527	R9W	Cerio. Chronic-Survival	100	%EFFL
20080114	SJ01165	R6	Topsmelt Chronic Survival	100	%EFFL
20080114	SJ01165	R6	Topsmelt Chronic Growth	100	%EFFL
20080114	SJ01166	R7	Topsmelt Chronic Survival	100	%EFFL
20080114	SJ01166	R7	Topsmelt Chronic Growth	100	%EFFL
20080114	SJ01167	R8	Topsmelt Chronic Survival	100	%EFFL
20080114	SJ01167	R8	Topsmelt Chronic Growth	100	%EFFL
20080114	SJ01164	RA2	Topsmelt Chronic Survival	100	%EFFL
20080114	SJ01164	RA2	Topsmelt Chronic Growth	100	%EFFL
20080414	SJ06491	R6	Topsmelt Chronic Survival	100	%EFFL
20080414	SJ06491	R6	Topsmelt Chronic Growth	100	%EFFL
20080414	SJ06490	R7	Topsmelt Chronic Survival	100	%EFFL
20080414	SJ06490	R7	Topsmelt Chronic Growth	100	%EFFL
20080414	SJ06489	R8	Topsmelt Chronic Survival	100	%EFFL
20080414	SJ06489	R8	Topsmelt Chronic Growth	100	%EFFL
20080414	SJ06097	R9W	Fathead Chronic-Survival	100	%EFFL
20080414	SJ06097	R9W	Fathead Chronic-Growth	100	%EFFL
20080414	SJ06492	RA2	Topsmelt Chronic Survival	100	%EFFL

20080414	SJ06492	RA2	Topsmelt Chronic Growth	100	%EFFL
20080707	SJ10883	R6	Topsmelt Acute	100	%SURV
20080707	SJ11389	R6	Topsmelt Chronic Survival	100	%EFFL
20080707	SJ11389	R6	Topsmelt Chronic Growth	100	%EFFL
20080707	SJ10885	R7	Topsmelt Acute	100	%SURV
20080707	SJ11390	R7	Topsmelt Chronic Survival	100	%EFFL
20080707	SJ11390	R7	Topsmelt Chronic Growth	100	%EFFL
20080707	SJ10884	R8	Topsmelt Acute	100	%SURV
20080707	SJ11391	R8	Topsmelt Chronic Survival	100	%EFFL
20080707	SJ11391	R8	Topsmelt Chronic Growth	100	%EFFL
20080707	SJ10641	R9W	90 Fathead Acute	**95**	%SURV
20080707	SJ10656	R9W	Fathead Chronic-Survival	100	%EFFL
20080707	SJ10656	R9W	Fathead Chronic-Growth	100	%EFFL
20080707	SJ10886	RA2	Topsmelt Acute	100	%SURV
20080707	SJ11388	RA2	Topsmelt Chronic Survival	100	%EFFL
20080707	SJ11388	RA2	Topsmelt Chronic Growth	100	%EFFL
20081013	SJ16365	R6	Topsmelt Chronic Survival	100	%EFFL
20081013	SJ16365	R6	Topsmelt Chronic Growth	100	%EFFL
20081013	SJ16366	R7	Topsmelt Chronic Survival	100	%EFFL
20081013	SJ16366	R7	Topsmelt Chronic Growth	100	%EFFL
20081013	SJ16367	R8	Topsmelt Chronic Survival	100	%EFFL
20081013	SJ16367	R8	Topsmelt Chronic Growth	100	%EFFL
20081013	SJ15771	R9W	Fathead Chronic-Survival	100	%EFFL
20081013	SJ15771	R9W	Fathead Chronic-Growth	100	%EFFL
20081013	SJ16364	RA2	Topsmelt Chronic Survival	100	%EFFL
20081013	SJ16364	RA2	Topsmelt Chronic Growth	100	%EFFL
20090112	SJ20906	R6	Topsmelt Acute	100	%SURV
20090112	SJ20987	R6	Topsmelt Chronic Survival	100	%EFFL
20090112	SJ20987	R6	Topsmelt Chronic Growth	100	%EFFL
20090112	SJ20907	R7	Topsmelt Acute	100	%SURV
20090112	SJ20989	R7	Topsmelt Chronic Survival	100	%EFFL
20090112	SJ20989	R7	Topsmelt Chronic Growth	100	%EFFL
20090112	SJ20908	R8	Topsmelt Acute	100	%SURV
20090112	SJ20990	R8	Topsmelt Chronic Survival	100	%EFFL
20090112	SJ20990	R8	Topsmelt Chronic Growth	100	%EFFL
20090112	SJ20583	R9W	Fathead Chronic-Survival	100	%EFFL
20090112	SJ20583	R9W	Fathead Chronic-Growth	100	%EFFL
20090112	SJ20725	R9W	90 Fathead Acute	100	%EFFL
20090112	SJ20905	RA2	Topsmelt Acute	100	%SURV
20090112	SJ20988	RA2	Topsmelt Chronic Survival	100	%EFFL
20090112	SJ20988	RA2	Topsmelt Chronic Growth	100	%EFFL
20090406	SJ25094	R9W	Fathead Chronic-Survival	100	%EFFL
20090406	SJ25094	R9W	Fathead Chronic-Growth	100	%EFFL
20090408	SJ25626	R6	Topsmelt Chronic Survival	100	%EFFL
20090408	SJ25626	R6	Topsmelt Chronic Growth	100	%EFFL
20090408	SJ25627	R7	Topsmelt Chronic Survival	100	%EFFL
20090408	SJ25627	R7	Topsmelt Chronic Growth	100	%EFFL
20090408	SJ25628	R8	Topsmelt Chronic Survival	100	%EFFL
20090408	SJ25628	R8	Topsmelt Chronic Growth	100	%EFFL
20090408	SJ25625	RA2	Topsmelt Chronic Survival	100	%EFFL
20090408	SJ25625	RA2	Topsmelt Chronic Growth	100	%EFFL
20090713	SJ29873	R6	Topsmelt Acute	100	%SURV
20090713	SJ30167	R6	Topsmelt Chronic Survival	100	%EFFL
20090713	SJ30167	R6	Topsmelt Chronic Growth	100	%EFFL
20090713	SJ29874	R7	Topsmelt Acute	100	%SURV

20090713	SJ30168	R7	Topsmelt Chronic Survival	100	%EFFL
20090713	SJ30168	R7	Topsmelt Chronic Growth	100	%EFFL
20090713	SJ29875	R8	Topsmelt Acute	100	%SURV
20090713	SJ30169	R8	Topsmelt Chronic Survival	100	%EFFL
20090713	SJ30169	R8	Topsmelt Chronic Growth	100	%EFFL
20090713	SJ29601	R9W	90 Fathead Acute	**97.5**	%SURV
20090713	SJ29685	RA2	Topsmelt Acute	100	%SURV
20090713	SJ30166	RA2	Topsmelt Chronic Survival	100	%EFFL
20090713	SJ30166	RA2	Topsmelt Chronic Growth	100	%EFFL
20090715	SJ29589	R9W	Fathead Chronic-Survival	100	%EFFL
20091019	SJ34121	R9W	Fathead Chronic-Survival	100	%EFFL
20091019	SJ34121	R9W	Fathead Chronic-Growth	100	%EFFL
20100111	10011200149	R6	Survival NOEC	100	%EFFL
20100111	10011200150	R7	Topsmelt Acute	97.5	%SURV
20100111	10011200151	R8	Topsmelt Acute	97.5	%SURV
20100111	10011100410	R9W	90 Fathead Acute	97.5	%SURV
20100111	10011200148	RA2	Survival NOEC	100	%EFFL
20100129	10012900379	R6	Topsmelt Chronic Survival	100	%EFFL
20100129	10012900380	R7	Topsmelt Chronic Survival	100	%EFFL
20100129	10012900381	R8	Topsmelt Chronic Survival	100	%EFFL
20100129	10012900370	R9W	90 Fathead Acute	100	%EFFL
20100129	10012900378	RA2	Topsmelt Chronic Survival	100	%EFFL
20100416	10041600443	R9W	Reproduction NOEC	100	%EFFL
20100416	10041600443	R9W	Survival NOEC	100	%EFFL
20100421	10042200126	R6	Topsmelt Chronic Survival	100	%EFFL
20100421	10042200127	R7	Topsmelt Chronic Survival	100	%EFFL
20100421	10042200128	R8	Topsmelt Chronic Survival	100	%EFFL
20100421	10042200125	RA2	Topsmelt Chronic Survival	100	%EFFL

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Data used in LACSD analysis of San Gabriel River Reach 3 Toxicity listing.
Accessed via Fact Sheet at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip

Within Data Set but Excluded from Water Board Analysis (n=14 median values, 15 single tests)
Single Test Chronic Toxcity Exceedances (NOEC <100%) (n=6)
Monthly Median Chronic Toxicity Exceedance (n=4)
Acute Test with <100% Survival (n=7)

Date	ID	Location	Test Name	Symbol	Single Test Result	UNIT	Final Result	UNIT
20050808	SJ34856	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20050808	SJ34856	RA	Fathead Chronic-Growth		100	%EFFL		
20050808	SJ34889	RA	90 Fathead Acute		100	%SURV	100	%SURV
20050808	SJ34892	R11	90 Fathead Acute		100	%SURV	100	%SURV
20050815	SJ35409	R11	90 Fathead Acute		100	%SURV	100	%SURV
20050826	SJ36208	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20050826	SJ36208	R11	Fathead Chronic-Growth		100	%EFFL		
20051102	SJ42240	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20051102	SJ42240	R11	Fathead Chronic-Growth		100	%EFFL		
20051114	SJ42613	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20051114	SJ42613	RA	Fathead Chronic-Growth		100	%EFFL		
20060201	SJ52180	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060201	SJ52180	RA	Fathead Chronic-Growth		100	%EFFL		
20060201	SJ52182	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060201	SJ52182	R11	Fathead Chronic-Growth		100	%EFFL		
20060206	SJ52435	RA	90 Fathead Acute		100	%SURV	100	%SURV
20060206	SJ52437	R11	90 Fathead Acute		100	%SURV	100	%SURV
20060306	SJ54863	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060306	SJ54863	RA	Fathead Chronic-Growth		100	%EFFL		
20060314	SJ55356	RA	Fathead Chronic-Survival		100	%EFFL		
20060314	SJ55356	RA	Fathead Chronic-Growth		100	%EFFL		
20060510	SJ59336	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060510	SJ59336	RA	Fathead Chronic-Growth		100	%EFFL		
20060525	SJ60114	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060525	SJ60114	R11	Fathead Chronic-Growth		100	%EFFL		
20060807	SJ64179	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060807	SJ64179	RA	Fathead Chronic-Growth		100	%EFFL		
20060807	SJ64176	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20060807	SJ64176	R11	Fathead Chronic-Growth		100	%EFFL		
20060807	SJ64235	RA	90 Fathead Acute		100	%SURV	100	%SURV
20060807	SJ64231	R11	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20061108	SJ69865	RA	Fathead Chronic-Survival		100	%EFFL	100	100
20061108	SJ69865	RA	Fathead Chronic-Growth		100	%EFFL		
20061108	SJ69858	R11	Fathead Chronic-Survival		100	%EFFL	100	100
20061108	SJ69858	R11	Fathead Chronic-Growth		100	%EFFL		
20070205	SJ81874	R11	Fathead Chronic-Survival		100	%EFFL	100	100
20070205	SJ81874	R11	Fathead Chronic-Growth		100	%EFFL		
20070205	SJ81875	RA	Cerio. Chronic-Survival		100	%EFFL	100	100
20070205	SJ81875	RA	Cerio. Chronic-Reproduction		100	%EFFL		

20070205	SJ81878	R11	Cerio. Chronic-Survival		100	%EFFL	100	100
20070205	SJ81878	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20070205	SJ81819	RA	90 Fathead Acute		100	%SURV	100	%SURV
20070205	SJ81822	R11	90 Fathead Acute		100	%SURV	100	%SURV
20070502	SJ86664	R11	Fathead Chronic-Survival		100	%EFFL	100	100
20070502	SJ86664	R11	Fathead Chronic-Growth		100	%EFFL		
20070502	SJ86669	R11	Cerio. Chronic-Survival		100	%EFFL	100	100
20070502	SJ86669	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20070808	SJ91575	R11	Fathead Chronic-Survival		100	%EFFL	100	100
20070808	SJ91575	R11	Fathead Chronic-Growth		100	%EFFL		
20070808	SJ91310	RA	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20070808	SJ91312	R11	90 Fathead Acute		100	%SURV	100	100
20070925	SJ93977	RA	Cerio. Chronic-Survival		100	%EFFL	100	100
20070925	SJ93977	RA	Cerio. Chronic-Reproduction		100	%EFFL		
20070925	SJ93976	R11	Cerio. Chronic-Survival		100	%EFFL	100	100
20070925	SJ93976	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20071105	SJ95889	RA	Cerio. Chronic-Survival		100	%EFFL	100	100
20071105	SJ95889	RA	Cerio. Chronic-Reproduction		100	%EFFL		
20071105	SJ95891	R11	Cerio. Chronic-Survival		100	%EFFL	100	100
20071105	SJ95891	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20071105	SJ95898	R11	Fathead Chronic-Survival		100	%EFFL	80	%EFFL
20071105	SJ95898	R11	Fathead Chronic-Growth		80	%EFFL		
20071116	SJ96726	R11	Fathead Chronic-Survival		100	%EFFL		
20071116	SJ96726	R11	Fathead Chronic-Growth		100	%EFFL		
20071126	SJ97079	R11	Fathead Chronic-Survival		100	%EFFL		
20071126	SJ97079	R11	Fathead Chronic-Growth		80	%EFFL		
20071211	SJ97715	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20071211	SJ97715	R11	Fathead Chronic-Growth		100	%EFFL		
20071226	SJ98390	R11	Fathead Chronic-Survival		100	%EFFL		
20071226	SJ98390	R11	Fathead Chronic-Growth		100	%EFFL		
20080109	SJ00538	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20080109	SJ00538	R11	Fathead Chronic-Growth		100	%EFFL		
20080116	SJ00997	R11	Fathead Chronic-Survival		40	%EFFL		
20080116	SJ00997	R11	Fathead Chronic-Growth		40	%EFFL		
20080131	SJ01357	R11	Fathead Chronic-Survival		100	%EFFL		
20080131	SJ01357	R11	Fathead Chronic-Growth		100	%EFFL		
20080206	SJ02088	R10	Fathead Chronic-Survival		100	%EFFL	<100	%EFFL
20080206	SJ02088	R10	Fathead Chronic-Growth	<	100	%EFFL		
20080206	SJ02096	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20080206	SJ02096	R11	Fathead Chronic-Growth		100	%EFFL		
20080206	SJ02090	R11	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20080206	SJ02090	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20080213	SJ02600	R11	Fathead Chronic-Survival		100	%EFFL		
20080213	SJ02600	R11	Fathead Chronic-Growth		100	%EFFL		
20080227	SJ02986	R11	Fathead Chronic-Survival		100	%EFFL		
20080227	SJ02986	R11	Fathead Chronic-Growth		100	%EFFL		
20080206	SJ02084	RA	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20080206	SJ02084	RA	Cerio. Chronic-Reproduction		100	%EFFL		
20080206	SJ01675	RA	90 Fathead Acute		100	%SURV	100	%SURV
20080206	SJ01679	R11	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20080305	SJ03503	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20080305	SJ03503	R11	Fathead Chronic-Growth		100	%EFFL		
20080312	SJ04454	R11	Fathead Chronic-Survival		100	%EFFL		
20080312	SJ04454	R11	Fathead Chronic-Growth		100	%EFFL		
20080505	SJ06886	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL

20080505	SJ06886	R11	Fathead Chronic-Growth		100	%EFFL	100	%EFFL
20080609	SJ08468	RA	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20080609	SJ08468	RA	Cerio. Chronic-Reproduction		100	%EFFL		
20080609	SJ08470	R11	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20080609	SJ08470	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20080804	SJ11926	R10	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20080804	SJ11926	R10	Fathead Chronic-Growth		100	%EFFL		
20080804	SJ11917	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20080804	SJ11917	R11	Fathead Chronic-Growth		100	%EFFL		
20080804	SJ11923	R11	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20080804	SJ11923	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20080804	SJ12066	RA	90 Fathead Acute		100	%SURV	100	%SURV
20080804	SJ12076	R10	90 Fathead Acute		100	%SURV	100	%SURV
20080804	SJ12070	R11	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20081112	SJ17321	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20081112	SJ17321	R11	Fathead Chronic-Growth		100	%EFFL		
20081112	SJ17324	RA	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20081112	SJ17324	RA	Cerio. Chronic-Reproduction		100	%EFFL		
20081112	SJ17327	R11	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20081112	SJ17327	R11	Cerio. Chronic-Reproduction		100	%EFFL		
20090202	SJ21563	RA	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20090202	SJ21566	R11	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20090303	SJ22953	RA	Fathead Chronic-Survival	<	100	%EFFL	<100	%EFFL
20090303	SJ22953	RA	Fathead Chronic-Growth	<	100	%EFFL		
20090303	SJ22951	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20090303	SJ22951	R11	Fathead Chronic-Growth		100	%EFFL		
20090511	SJ26787	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20090511	SJ26787	R11	Fathead Chronic-Growth		100	%EFFL		
20090527	SJ27141	RA	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20090527	SJ27141	RA	Fathead Chronic-Growth		100	%EFFL		
20090810	SJ31132	RA	Fathead Chronic-Survival		100	%EFFL	<100	%EFFL
20090810	SJ31132	RA	Fathead Chronic-Growth	<	100	%EFFL		
20090810	SJ31129	R11	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
20090810	SJ31129	R11	Fathead Chronic-Growth		100	%EFFL		
20090810	SJ30785	RA	90 Fathead Acute		97.5	%SURV	97.5	%SURV
20090810	SJ30781	R11	90 Fathead Acute		100	%SURV	100	%SURV
20091109	09110900445	R11	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
20100216	10021600440	R11	90 Fathead Acute		100	%SURV	100	%SURV
20100216	10021600447	RA	90 Fathead Acute		100	%SURV	100	%SURV
20100310	10031000460	RA	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
20100310	10031000460	RA	Cerio. Chronic-Survival		100	%EFFL		
20100324	10032400521	R11	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
20100324	10032400521	R11	Cerio. Chronic-Survival		100	%EFFL		
20100510	10051100160	R11	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
20100510	10051100160	R11	Cerio. Chronic-Survival		100	%EFFL		

*Final result is the monthly median value for chronic toxicity and the single test value for acute toxicity.

A10

Data used in LACSD analysis of Rio Hondo Reach 2 Toxicity listing.
Accessed via Fact Sheet at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip

Within Data Set but Excluded from Water Board Analysis (n=5)
Single Test Chronic Toxcity Exceedances (NOEC <100%) (n=4)
Monthly Median Chronic Toxicity Exceedance (n=2)
Acute Test with <100% Survival (n=3)

Date	ID	Location	Test Name	Symbol	Single Test Result	UNIT	Final Result*	UNIT
8/8/2005	SJ34891	RD1	90 Fathead Acute		100	%SURV	100	%SURV
11/2/2005	SJ41223	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
11/2/2005	SJ41223	RD1	Fathead Chronic-Growth		100	%EFFL		
2/1/2006	SJ52185	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
2/1/2006	SJ52185	RD1	Fathead Chronic-Growth		100	%EFFL		
2/6/2006	SJ52434	RD1	90 Fathead Acute		100	%SURV	100	%SURV
5/10/2006	SJ59344	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
5/10/2006	SJ59344	RD1	Fathead Chronic-Growth		100	%EFFL		
8/7/2006	SJ64238	RD1	90 Fathead Acute		100	%SURV	100	%SURV
8/7/2006	SJ64415	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
8/7/2006	SJ64415	RD1	Fathead Chronic-Growth		100	%EFFL		
11/20/2006	SJ70373	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
11/20/2006	SJ70373	RD1	Fathead Chronic-Growth		100	%EFFL		
2/5/2007	SJ81821	RD1	90 Fathead Acute		100	%SURV	100	%SURV
2/5/2007	SJ81873	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
2/5/2007	SJ81873	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
5/2/2007	SJ86670	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
5/2/2007	SJ86670	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
8/8/2007	SJ91309	RD1	90 Fathead Acute		100	%SURV	100	%SURV
9/25/2007	SJ93974	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
9/25/2007	SJ93974	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
11/5/2007	SJ95892	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
11/5/2007	SJ95892	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
2/6/2008	SJ01678	RD1	90 Fathead Acute		95	%SURV	95	%SURV
2/6/2008	SJ02089	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
2/6/2008	SJ02089	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
6/9/2008	SJ08471	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
6/9/2008	SJ08471	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
8/4/2008	SJ11922	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
8/4/2008	SJ11922	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
8/4/2008	SJ12068	RD1	90 Fathead Acute		100	%SURV	100	%SURV
11/12/2008	SJ17326	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
11/12/2008	SJ17326	RD1	Cerio. Chronic-Reproduction		100	%EFFL		
2/2/2009	SJ21565	RD1	90 Fathead Acute		95	%SURV	95	%SURV
3/3/2009	SJ22952	RD1	Fathead Chronic-Survival	<	100	%EFFL	<100	%EFFL
3/3/2009	SJ22952	RD1	Fathead Chronic-Growth	<	100	%EFFL		
3/11/2009	SJ23743	RD1	Fathead Chronic-Survival		100	%EFFL		
3/11/2009	SJ23743	RD1	Fathead Chronic-Growth	<	100	%EFFL		
3/23/2009	SJ24217	RD1	Fathead Chronic-Survival	<	100	%EFFL		
3/23/2009	SJ24217	RD1	Fathead Chronic-Growth	<	100	%EFFL		
5/11/2009	SJ26795	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
5/11/2009	SJ26795	RD1	Fathead Chronic-Growth		100	%EFFL		
8/10/2009	SJ30779	RD1	90 Fathead Acute		100	%SURV	100	%SURV
8/10/2009	SJ31130	RD1	Fathead Chronic-Survival		100	%EFFL	100	%EFFL
8/10/2009	SJ31130	RD1	Fathead Chronic-Growth		100	%EFFL		
11/09/2009	09110900470	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%SURV
11/09/2009	09110900478	RD	Cerio. Chronic-Survival		100	%EFFL	100	%SURV
02/16/2010	10021600426	RD1	90 Fathead Acute		100	%SURV	100	%SURV
02/16/2010	10021600430	RD	90 Fathead Acute		97.5	%SURV	97.5	%SURV
03/10/2010	10031000461	RD1	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL

03/10/2010	10031000461	RD1	Cerio. Chronic-Survival		100	%EFFL	100	%EFFL
03/10/2010	10031000462	RD	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
03/10/2010	10031000462	RD	Cerio. Chronic-Survival		100	%EFFL		
05/10/2010	10051100166	RD	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
05/10/2010	10051100166	RD	Cerio. Chronic-Survival		100	%EFFL		
05/10/2010	10051100168	RD1	Cerio. Chronic-Reproduction		100	%EFFL	100	%EFFL
05/10/2010	10051100168	RD1	Cerio. Chronic-Survival		100	%EFFL		
03/10/2010	10031000467	RDB	Survival TUc		1.0	TUc	>1.0	TUc
03/10/2010	10031000467	RDB	Reprod TUc	>	1.0	TUc		
05/10/2010	10051100165	RDB	Survival TUc		1.0	TUc	1.0	TUc
05/10/2010	10051100165	RDB	Reprod TUc		1.0	TUc		
11/09/2009	09110900469	RDB	Survival TUc		1.0	TUc	1.0	TUc
11/09/2009	09110900469	RDB	Growth TUc		1.0	TUc		

*Final result is the monthly median value for chronic toxicity and the single test value for acute toxicity.

Data used in LACSD analysis of Santa Clara River Reach 5 Toxicity listing.
Accessed via Fact Sheet at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip

Single Test/Monthly Median Chronic Toxcity Exceedances (NOEC <100%) (n=5)
Acute Test with <100% Survival (n=10)

Date	ID	Location	Test Name	Symbol	Single Test Result	UNIT
7/11/2005	SJ32723	RC	Fathead Chronic-Survival	<	100	%EFFL
7/11/2005	SJ32723	RC	Fathead Chronic-Growth	<	100	%EFFL
7/11/2005	SJ32724	RD	Fathead Chronic-Survival		100	%EFFL
7/11/2005	SJ32724	RD	Fathead Chronic-Growth		100	%EFFL
7/11/2005	SJ32728	RC	90 Fathead Acute		97.5	%SURV
7/11/2005	SJ32729	RD	90 Fathead Acute		100	%SURV
7/11/2005	SJ32730	RE	90 Fathead Acute		97.5	%SURV
7/25/2005	SJ33924	RE	Fathead Chronic-Survival		100	%EFFL
7/25/2005	SJ33924	RE	Fathead Chronic-Growth		100	%EFFL
10/3/2005	SJ38690	RE	Fathead Chronic-Survival		100	%EFFL
10/3/2005	SJ38690	RE	Fathead Chronic-Growth		100	%EFFL
10/3/2005	SJ38691	RC	Fathead Chronic-Survival		100	%EFFL
10/3/2005	SJ38691	RC	Fathead Chronic-Growth		100	%EFFL
10/3/2005	SJ38692	RD	Fathead Chronic-Survival		100	%EFFL
10/3/2005	SJ38692	RD	Fathead Chronic-Growth		100	%EFFL
1/9/2006	SJ50891	RE	90 Fathead Acute		100	%SURV
1/9/2006	SJ50892	RD	90 Fathead Acute		100	%SURV
1/9/2006	SJ50893	RC	90 Fathead Acute		100	%SURV
1/9/2006	SJ51551	RC	Fathead Chronic-Survival		100	%EFFL
1/9/2006	SJ51551	RC	Fathead Chronic-Growth		100	%EFFL
1/9/2006	SJ51552	RD	Fathead Chronic-Survival		100	%EFFL
1/9/2006	SJ51552	RD	Fathead Chronic-Growth		100	%EFFL
1/9/2006	SJ51553	RE	Fathead Chronic-Survival		100	%EFFL
1/9/2006	SJ51553	RE	Fathead Chronic-Growth		100	%EFFL
4/17/2006	SJ57771	RC	Fathead Chronic-Survival		100	%EFFL
4/17/2006	SJ57771	RC	Fathead Chronic-Growth		100	%EFFL
4/17/2006	SJ57772	RE	Fathead Chronic-Survival		100	%EFFL
4/17/2006	SJ57772	RE	Fathead Chronic-Growth		100	%EFFL
4/17/2006	SJ57776	RD	Fathead Chronic-Survival		100	%EFFL
4/17/2006	SJ57776	RD	Fathead Chronic-Growth		100	%EFFL
7/5/2006	SJ62082	RE	Fathead Chronic-Survival		100	%EFFL
7/5/2006	SJ62082	RE	Fathead Chronic-Growth		100	%EFFL
7/5/2006	SJ62083	RD	Fathead Chronic-Survival		100	%EFFL
7/5/2006	SJ62083	RD	Fathead Chronic-Growth		100	%EFFL
7/5/2006	SJ62084	RC	Fathead Chronic-Survival		100	%EFFL
7/5/2006	SJ62084	RC	Fathead Chronic-Growth		100	%EFFL
7/10/2006	SJ62478	RC	90 Fathead Acute		100	%SURV
7/10/2006	SJ62479	RD	90 Fathead Acute		100	%SURV
7/10/2006	SJ62480	RE	90 Fathead Acute		100	%SURV
10/16/2006	SJ68391	RD	Fathead Chronic-Survival		100	%EFFL
10/16/2006	SJ68391	RD	Fathead Chronic-Growth		100	%EFFL
10/16/2006	SJ68392	RC	Fathead Chronic-Survival		100	%EFFL
10/16/2006	SJ68392	RC	Fathead Chronic-Growth		100	%EFFL
10/16/2006	SJ68393	RE	Fathead Chronic-Survival		100	%EFFL
10/16/2006	SJ68393	RE	Fathead Chronic-Growth		100	%EFFL
1/3/2007	SJ80157	RC	Fathead Chronic-Survival		100	%EFFL

1/3/2007	SJ80157	RC	Fathead Chronic-Growth		100	%EFFL
1/3/2007	SJ80160	RE	Fathead Chronic-Survival		100	%EFFL
1/3/2007	SJ80160	RE	Fathead Chronic-Growth	<	100	%EFFL
1/3/2007	SJ80161	RD	Fathead Chronic-Survival		100	%EFFL
1/3/2007	SJ80161	RD	Fathead Chronic-Growth		100	%EFFL
1/8/2007	SJ80643	RE	90 Fathead Acute		100	%SURV
1/8/2007	SJ80644	RD	90 Fathead Acute		97.5	%SURV
1/8/2007	SJ80645	RC	90 Fathead Acute		100	%SURV
4/2/2007	SJ85062	RD	Fathead Chronic-Survival		100	%EFFL
4/2/2007	SJ85062	RD	Fathead Chronic-Growth		100	%EFFL
4/2/2007	SJ85063	RE	Fathead Chronic-Survival		100	%EFFL
4/2/2007	SJ85063	RE	Fathead Chronic-Growth		100	%EFFL
4/2/2007	SJ85064	RC	Fathead Chronic-Survival		100	%EFFL
4/2/2007	SJ85064	RC	Fathead Chronic-Growth		100	%EFFL
7/16/2007	SJ90059	RC	90 Fathead Acute		100	%SURV
7/16/2007	SJ90060	RD	90 Fathead Acute		100	%SURV
7/16/2007	SJ90061	RE	90 Fathead Acute		100	%SURV
7/16/2007	SJ90118	RC	Fathead Chronic-Survival		100	%EFFL
7/16/2007	SJ90118	RC	Fathead Chronic-Growth		100	%EFFL
7/16/2007	SJ90119	RD	Fathead Chronic-Survival		100	%EFFL
7/16/2007	SJ90119	RD	Fathead Chronic-Growth		100	%EFFL
7/16/2007	SJ90120	RE	Fathead Chronic-Survival		100	%EFFL
7/16/2007	SJ90120	RE	Fathead Chronic-Growth		100	%EFFL
10/15/2007	SJ95013	RC	Fathead Chronic-Survival		100	%EFFL
10/15/2007	SJ95013	RC	Fathead Chronic-Growth	<	100	%EFFL
10/15/2007	SJ95014	RD	Fathead Chronic-Survival		100	%EFFL
10/15/2007	SJ95014	RD	Fathead Chronic-Growth		100	%EFFL
10/15/2007	SJ95015	RE	Fathead Chronic-Survival		100	%EFFL
10/15/2007	SJ95015	RE	Fathead Chronic-Growth		100	%EFFL
1/9/2008	SJ00535	RD	Fathead Chronic-Survival		100	%EFFL
1/9/2008	SJ00535	RD	Fathead Chronic-Growth		100	%EFFL
1/9/2008	SJ00536	RC	Fathead Chronic-Survival		100	%EFFL
1/9/2008	SJ00536	RC	Fathead Chronic-Growth		100	%EFFL
1/9/2008	SJ00537	RE	Fathead Chronic-Survival		100	%EFFL
1/9/2008	SJ00537	RE	Fathead Chronic-Growth		100	%EFFL
1/9/2008	SJ00567	RC	90 Fathead Acute		100	%SURV
1/9/2008	SJ00568	RD	90 Fathead Acute		95	%SURV
1/9/2008	SJ00569	RE	90 Fathead Acute		90	%SURV
4/7/2008	SJ05704	RD	Fathead Chronic-Survival		100	%EFFL
4/7/2008	SJ05704	RD	Fathead Chronic-Growth		100	%EFFL
4/7/2008	SJ05707	RC	Fathead Chronic-Survival		100	%EFFL
4/7/2008	SJ05707	RC	Fathead Chronic-Growth		100	%EFFL
4/7/2008	SJ05708	RE	Fathead Chronic-Survival		100	%EFFL
4/7/2008	SJ05708	RE	Fathead Chronic-Growth		100	%EFFL
7/14/2008	SJ10962	RC	90 Fathead Acute		97.5	%SURV
7/14/2008	SJ10963	RD	90 Fathead Acute		95	%SURV
7/14/2008	SJ10964	RE	90 Fathead Acute		97.5	%SURV
7/14/2008	SJ10993	RE	Fathead Chronic-Survival		100	%EFFL
7/14/2008	SJ10993	RE	Fathead Chronic-Growth		100	%EFFL
7/14/2008	SJ10997	RC	Fathead Chronic-Survival		100	%EFFL
7/14/2008	SJ10997	RC	Fathead Chronic-Growth		100	%EFFL
7/14/2008	SJ10998	RD	Fathead Chronic-Survival		100	%EFFL
7/14/2008	SJ10998	RD	Fathead Chronic-Growth		100	%EFFL
10/6/2008	SJ15483	RC	Fathead Chronic-Survival		100	%EFFL
10/6/2008	SJ15483	RC	Fathead Chronic-Growth		100	%EFFL

10/6/2008	SJ15484	RD	Fathead Chronic-Survival		100	%EFFL
10/6/2008	SJ15484	RD	Fathead Chronic-Growth		100	%EFFL
10/6/2008	SJ15485	RE	Fathead Chronic-Survival		100	%EFFL
10/6/2008	SJ15485	RE	Fathead Chronic-Growth		100	%EFFL
1/5/2009	SJ20232	RC	Fathead Chronic-Survival		100	%EFFL
1/5/2009	SJ20232	RC	Fathead Chronic-Growth		100	%EFFL
1/5/2009	SJ20233	RD	Fathead Chronic-Survival		100	%EFFL
1/5/2009	SJ20233	RD	Fathead Chronic-Growth		100	%EFFL
1/5/2009	SJ20240	RC	90 Fathead Acute		100	%SURV
1/5/2009	SJ20241	RD	90 Fathead Acute		100	%SURV
1/6/2009	SJ20234	RE	Fathead Chronic-Survival		100	%EFFL
1/6/2009	SJ20234	RE	Fathead Chronic-Growth	<	100	%EFFL
1/6/2009	SJ20242	RE	90 Fathead Acute		100	%SURV
4/13/2009	SJ25146	RC	Fathead Chronic-Survival		100	%EFFL
4/13/2009	SJ25146	RC	Fathead Chronic-Growth		100	%EFFL
4/13/2009	SJ25148	RE	Fathead Chronic-Survival		100	%EFFL
4/13/2009	SJ25148	RE	Fathead Chronic-Growth		100	%EFFL
4/20/2009	SJ25586	RD	Fathead Chronic-Survival		100	%EFFL
4/20/2009	SJ25586	RD	Fathead Chronic-Growth		100	%EFFL
7/6/2009	SJ29167	RC	Fathead Chronic-Survival		100	%EFFL
7/6/2009	SJ29167	RC	Fathead Chronic-Growth	<	100	%EFFL
7/6/2009	SJ29167	RC	90 Fathead Acute		100	%SURV
7/6/2009	SJ29168	RD	Fathead Chronic-Survival		100	%EFFL
7/6/2009	SJ29168	RD	Fathead Chronic-Growth		100	%EFFL
7/6/2009	SJ29168	RD	90 Fathead Acute		100	%SURV
7/6/2009	SJ29169	RE	Fathead Chronic-Survival		100	%EFFL
7/6/2009	SJ29169	RE	Fathead Chronic-Growth		100	%EFFL
7/6/2009	SJ29169	RE	90 Fathead Acute		100	%SURV
10/5/2009	SJ33437	RD	Fathead Chronic-Survival		100	%EFFL
10/5/2009	SJ33437	RD	Fathead Chronic-Growth		100	%EFFL
10/5/2009	SJ33438	RC	Fathead Chronic-Survival		100	%EFFL
10/5/2009	SJ33438	RC	Fathead Chronic-Growth		100	%EFFL
10/5/2009	SJ33439	RE	Fathead Chronic-Survival		100	%EFFL
10/5/2009	SJ33439	RE	Fathead Chronic-Growth		100	%EFFL
01/04/2010	10010400421	RC	90 Fathead Acute		97.5	%SURV
01/04/2010	10010400422	RD	90 Fathead Acute		100	%SURV
01/04/2010	10010400423	RE	90 Fathead Acute		97.5	%SURV
02/16/2010	10021600412	RC	Survival NOEC		100	%EFFL
02/16/2010	10021600413	RD	Survival NOEC		100	%EFFL
02/16/2010	10021600414	RE	Survival NOEC		100	%EFFL
04/19/2010	10041900436	RC	Survival NOEC		100	%EFFL
04/19/2010	10041900438	RD	Survival NOEC		100	%EFFL
04/19/2010	10041900440	RE	Survival NOEC		100	%EFFL

Data used in LACSD analysis of San Jose Creek Reach 1 Temperature listing.
Accessed via Fact Sheet at http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_4/2010/ref3966.zip

Duplicate Sample - Removed from Analyses (n=29)
Discrete Sample with T> 80 ºF Not Attributable to Waste Discharges (n=14)
Discrete Sample with T> 80 ºF, Possibly Due to Waste Discharges (n=32)
Discrete Samples with T<80 ºF (n=293)

SDATE	Month	JOB	LOC	SUBLOC	Test Name	S	VALUE
20050706	7	SJ32503	SG	C2	Temperature		72.5
20050713	7	SJ32895	SG	C2	Temperature		79.6
20050713	7	SJ32894	SG	C1	Temperature		73.1
20050713	7	SJ32894	SG	C1	Temperature		73.1
20050713	7	SJ32895	SG	C2	Temperature		79.6
20050719	7	SJ33430	POM	RC	Temperature		84.4
20050719	7	SJ33431	POM	RD	Temperature		87.6
20050720	7	SJ33620	SG	C2	Temperature		80.4
20050727	7	SJ34108	SG	C2	Temperature		79.2
20050803	8	SJ34650	SG	C2	Temperature		78.8
20050810	8	SJ35094	SG	C1	Temperature		70.2
20050810	8	SJ35094	SG	C1	Temperature		70.2
20050810	8	SJ35095	SG	C2	Temperature		75
20050810	8	SJ35095	SG	C2	Temperature		75
20050816	8	SJ35444	POM	RC	Temperature		73.8
20050816	8	SJ35445	POM	RD	Temperature		75.9
20050817	8	SJ35605	SG	C2	Temperature		73.9
20050824	8	SJ35973	SG	C2	Temperature		66.4
20050831	8	SJ36563	SG	C2	Temperature		69.4
20050907	9	SJ36923	SG	C2	Temperature		69.1
20050914	9	SJ37388	SG	C1	Temperature		63.5
20050914	9	SJ37388	SG	C1	Temperature		63.5
20050914	9	SJ37389	SG	C2	Temperature		67.1
20050914	9	SJ37389	SG	C2	Temperature		67.1
20050923	9	SJ38029	SG	C2	Temperature		75.9
20050927	9	SJ38223	POM	RC	Temperature		68
20050927	9	SJ38224	POM	RD	Temperature		75.2
20050928	9	SJ38352	SG	C2	Temperature		68.5
20051005	10	SJ38887	SG	C2	Temperature		66
20051012	10	SJ39320	SG	C2	Temperature		67.1
20051025	10	SJ40108	POM	RC	Temperature		66.4
20051025	10	SJ40109	POM	RD	Temperature		64.9
20051026	10	SJ40280	SG	C1	Temperature		58.8
20051026	10	SJ40280	SG	C1	Temperature		58.8
20051026	10	SJ40281	SG	C2	Temperature		69.4
20051026	10	SJ40281	SG	C2	Temperature		69.4
20051102	11	SJ40946	SG	C2	Temperature		76.1
20051109	11	SJ41478	SG	C2	Temperature		72
20051115	11	SJ41779	POM	RC	Temperature		70

20051115	11	SJ41780	POM	RD	Temperature	67.7
20051116	11	SJ41944	SG	C1	Temperature	57.4
20051116	11	SJ41945	SG	C2	Temperature	72.1
20051121	11	SJ42189	SG	C2	Temperature	58.1
20051130	11	SJ42673	SG	C2	Temperature	55.6
20051207	12	SJ43176	SG	C2	Temperature	57.7
20051213	12	SJ43482	POM	RC	Temperature	56.1
20051213	12	SJ43483	POM	RD	Temperature	56.7
20051214	12	SJ43677	SG	C2	Temperature	58.8
20051221	12	SJ44026	SG	C1	Temperature	55.8
20051221	12	SJ44026	SG	C1	Temperature	55.8
20051221	12	SJ44027	SG	C2	Temperature	64
20051221	12	SJ44027	SG	C2	Temperature	64
20051228	12	SJ44249	SG	C2	Temperature	63
20060105	1	SJ50229	SG	C2	Temperature	55.6
20060111	1	SJ50626	SG	C1	Temperature	52.5
20060111	1	SJ50626	SG	C1	Temperature	52.5
20060111	1	SJ50627	SG	C2	Temperature	62.4
20060111	1	SJ50627	SG	C2	Temperature	62.4
20060117	1	SJ50934	POM	RC	Temperature	55.8
20060117	1	SJ50935	POM	RD	Temperature	56.7
20060118	1	SJ51099	SG	C2	Temperature	51.1
20060125	1	SJ51604	SG	C2	Temperature	50.7
20060201	2	SJ52119	SG	C1	Temperature	54.9
20060201	2	SJ52119	SG	C1	Temperature	54.9
20060201	2	SJ52120	SG	C2	Temperature	60.8
20060201	2	SJ52120	SG	C2	Temperature	60.8
20060208	2	SJ52741	SG	C2	Temperature	58.3
20060215	2	SJ53448	SG	C2	Temperature	64
20060221	2	SJ53771	POM	RC	Temperature	54.5
20060221	2	SJ53772	POM	RD	Temperature	60.4
20060222	2	SJ54012	SG	C2	Temperature	51.5
20060227	2	SJ54354	SG	C2	Temperature	62.4
20060309	3	SJ55095	SG	C2	Temperature	68.5
20060315	3	SJ55542	SG	C1	Temperature	54.5
20060315	3	SJ55542	SG	C1	Temperature	54.5
20060315	3	SJ55543	SG	C2	Temperature	67.3
20060315	3	SJ55543	SG	C2	Temperature	67.3
20060323	3	SJ56066	SG	C2	Temperature	60.4
20060323	3	SJ56091	POM	RC	Temperature	76.6
20060323	3	SJ56092	POM	RD	Temperature	79.5
20060327	3	SJ56406	SG	C2	Temperature	62.4
20060403	4	SJ56845	SG	C2	Temperature	61.3
20060412	4	SJ57490	SG	C2	Temperature	62.2
20060418	4	SJ57802	POM	RC	Temperature	65.7
20060418	4	SJ57803	POM	RD	Temperature	72.5
20060419	4	SJ57896	SG	C1	Temperature	60.8
20060419	4	SJ57896	SG	C1	Temperature	60.8

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20060419	4	SJ57897	SG	C2	Temperature	70.7
20060419	4	SJ57897	SG	C2	Temperature	70.7
20060426	4	SJ58301	SG	C2	Temperature	64.2
20060503	5	SJ58739	SG	C2	Temperature	69.3
20060510	5	SJ59211	SG	C2	Temperature	73.6
20060517	5	SJ59631	SG	C1	Temperature	68.9
20060517	5	SJ59632	SG	C2	Temperature	70.1
20060525	5	SJ60106	SG	C2	Temperature	72.3
20060530	5	SJ60233	POM	RC	Temperature	73.4
20060530	5	SJ60234	POM	RD	Temperature	90
20060531	5	SJ60319	SG	C2	Temperature	68.9
20060607	6	SJ60703	SG	C1	Temperature	68.9
20060607	6	SJ60703	SG	C1	Temperature	68.9
20060607	6	SJ60704	SG	C2	Temperature	76.1
20060607	6	SJ60704	SG	C2	Temperature	76.1
20060614	6	SJ61114	SG	C2	Temperature	61.9
20060620	6	SJ61419	POM	RC	Temperature	75.9
20060620	6	SJ61420	POM	RD	Temperature	86.5
20060621	6	SJ61520	SG	C2	Temperature	66.2
20060628	6	SJ61849	SG	C2	Temperature	74.7
20060705	7	SJ62025	SG	C2	Temperature	76.8
20060712	7	SJ62387	SG	C1	Temperature	89.8
20060712	7	SJ62387	SG	C1	Temperature	89.8
20060712	7	SJ62388	SG	C2	Temperature	74.5
20060712	7	SJ62388	SG	C2	Temperature	74.5
20060718	7	SJ62668	POM	RC	Temperature	82.9
20060718	7	SJ62669	POM	RD	Temperature	92.7
20060719	7	SJ62848	SG	C2	Temperature	81.9
20060726	7	SJ63466	SG	C2	Temperature	78.9
20060802	8	SJ63967	SG	C2	Temperature	77.6
20060809	8	SJ64371	SG	C2	Temperature	76.1
20060816	8	SJ64621	SG	C1	Temperature	71.2
20060816	8	SJ64621	SG	C1	Temperature	71.2
20060816	8	SJ64622	SG	C2	Temperature	74.3
20060816	8	SJ64622	SG	C2	Temperature	74.3
20060823	8	SJ65105	SG	C2	Temperature	75
20060823	8	SJ65121	POM	RC	Temperature	75
20060823	8	SJ65122	POM	RD	Temperature	85.3
20060830	8	SJ65518	SG	C2	Temperature	74.3
20060906	9	SJ65870	SG	C2	Temperature	82.1
20060913	9	SJ66242	SG	C1	Temperature	69.2
20060913	9	SJ66242	SG	C1	Temperature	69.2
20060913	9	SJ66243	SG	C2	Temperature	78.5
20060913	9	SJ66243	SG	C2	Temperature	78.5
20060920	9	SJ66792	SG	C2	Temperature	49.5
20060927	9	SJ67302	POM	RC	Temperature	69.6
20060927	9	SJ67303	POM	RD	Temperature	78.4
20061004	10	SJ67774	POM	RC	Temperature	69.8

20061004	10	SJ67775	POM	RD	Temperature	75.2
20061011	10	SJ68030	SG	C1	Temperature	62.1
20061011	10	SJ68030	SG	C1	Temperature	62.1
20061011	10	SJ68031	SG	C2	Temperature	69.3
20061011	10	SJ68031	SG	C2	Temperature	69.3
20061018	10	SJ68515	SG	C2	Temperature	71.8
20061101	11	SJ69193	SG	C2	Temperature	66.2
20061101	11	SJ69178	POM	RC	Temperature	64.8
20061101	11	SJ69179	POM	RD	Temperature	65.7
20061108	11	SJ69584	SG	C1	Temperature	60.4
20061108	11	SJ69585	SG	C2	Temperature	73
20061115	11	SJ70125	SG	C2	Temperature	65.3
20061122	11	SJ70521	SG	C2	Temperature	67.5
20061129	11	SJ70705	SG	C2	Temperature	69.6
20061206	12	SJ71055	SG	C2	Temperature	54.5
20061206	12	SJ71157	POM	RC	Temperature	56.8
20061206	12	SJ71158	POM	RD	Temperature	59.7
20061213	12	SJ71334	SG	C1	Temperature	53.1
20061213	12	SJ71334	SG	C1	Temperature	53.1
20061213	12	SJ71335	SG	C2	Temperature	70.7
20061213	12	SJ71335	SG	C2	Temperature	70.7
20061220	12	SJ71763	SG	C2	Temperature	66.8
20070103	1	SJ80095	SG	C2	Temperature	56.5
20070103	1	SJ80110	POM	RC	Temperature	56.1
20070103	1	SJ80111	POM	RD	Temperature	56.8
20070110	1	SJ80416	SG	C1	Temperature	52.9
20070110	1	SJ80417	SG	C2	Temperature	67.8
20070124	1	SJ81144	SG	C2	Temperature	67.1
20070125	1	SJ81163	SG	C2	Temperature	67.6
20070207	2	SJ81998	SG	C2	Temperature	64.9
20070207	2	SJ82019	POM	RC	Temperature	63.3
20070207	2	SJ82020	POM	RD	Temperature	66
20070214	2	SJ82488	SG	C1	Temperature	53
20070214	2	SJ82489	SG	C2	Temperature	67.8
20070221	2	SJ82923	SG	C2	Temperature	70.5
20070307	3	SJ83632	SG	C2	Temperature	65.5
20070307	3	SJ83637	POM	RC	Temperature	59.7
20070307	3	SJ83638	POM	RD	Temperature	63.2
20070314	3	SJ83902	SG	C1	Temperature	58.3
20070314	3	SJ83903	SG	C2	Temperature	64.2
20070328	3	SJ84732	SG	C2	Temperature	58.7
20070404	4	SJ85120	SG	C2	Temperature	66.9
20070404	4	SJ85123	POM	RC	Temperature	59.5
20070404	4	SJ85124	POM	RD	Temperature	63.9
20070411	4	SJ85397	SG	C1	Temperature	62.4
20070411	4	SJ85398	SG	C2	Temperature	66.4
20070418	4	SJ85835	SG	C2	Temperature	68.4
20070425	4	SJ86212	SG	C2	Temperature	72.8

20070502	5	SJ86560	SG	C2	Temperature	73.2
20070502	5	SJ86582	POM	RC	Temperature	75.7
20070502	5	SJ86583	POM	RD	Temperature	76.5
20070509	5	SJ86895	SG	C1	Temperature	67.9
20070509	5	SJ86896	SG	C2	Temperature	71.6
20070523	5	SJ87637	SG	C2	Temperature	74.5
20070530	5	SJ87913	SG	C2	Temperature	75.9
20070606	6	SJ88214	SG	C2	Temperature	76.1
20070606	6	SJ88229	POM	RC	Temperature	65.3
20070606	6	SJ88230	POM	RD	Temperature	77.2
20070613	6	SJ88488	SG	C1	Temperature	71.1
20070613	6	SJ88489	SG	C2	Temperature	79.5
20070620	6	SJ88910	SG	C2	Temperature	79.5
20070627	6	SJ89280	SG	C2	Temperature	79.7
20070704	7	SJ89460	SG	C2	Temperature	80.8
20070705	7	SJ89484	POM	RC	Temperature	82.8
20070705	7	SJ89485	POM	RD	Temperature	91.2
20070711	7	SJ89585	SG	C1	Temperature	71.8
20070711	7	SJ89582	SG	C2	Temperature	81
20070718	7	SJ90193	SG	C2	Temperature	81.3
20070725	7	SJ90634	SG	C2	Temperature	82.9
20070801	8	SJ90951	SG	C2	Temperature	81.9
20070801	8	SJ90976	POM	RC	Temperature	74.1
20070801	8	SJ90977	POM	RD	Temperature	79.2
20070808	8	SJ91407	SG	C1	Temperature	72.9
20070808	8	SJ91408	SG	C2	Temperature	80.8
20070815	8	SJ91972	SG	C2	Temperature	84.6
20070815	8	SJ91973	SG	C2	Temperature	85.5
20070822	8	SJ92330	SG	C2	Temperature	82.4
20070827	8	SJ92507	POM	RC	Temperature	71.2
20070827	8	SJ92508	POM	RD	Temperature	80.4
20070829	8	SJ92740	SG	C2	Temperature	80.8
20070905	9	SJ92936	SG	C2	Temperature	82.9
20070905	9	SJ92943	POM	RC	Temperature	79.2
20070905	9	SJ92944	POM	RD	Temperature	79.8
20070912	9	SJ93279	SG	C1	Temperature	70.9
20070912	9	SJ93280	SG	C2	Temperature	80.2
20070919	9	SJ93686	SG	C2	Temperature	79.2
20070926	9	SJ94081	SG	C2	Temperature	78.8
20071003	10	SJ94410	SG	C2	Temperature	78.3
20071003	10	SJ94412	POM	RC	Temperature	72.7
20071003	10	SJ94413	POM	RD	Temperature	79
20071010	10	SJ94624	SG	C1	Temperature	59.2
20071010	10	SJ94625	SG	C2	Temperature	71.1
20071017	10	SJ94990	SG	C2	Temperature	70.3
20071024	10	SJ95294	SG	C2	Temperature	79.2
20071031	10	SJ95708	SG	C2	Temperature	76.5
20071107	11	SJ96093	SG	C2	Temperature	61.9

20071107	11	SJ96091	POM	RC	Temperature	63
20071107	11	SJ96092	POM	RD	Temperature	59
20071114	11	SJ96307	SG	C1	Temperature	60.3
20071114	11	SJ96308	SG	C2	Temperature	76.3
20071204	12	SJ97384	POM	RC	Temperature	65.8
20071204	12	SJ97385	POM	RD	Temperature	64.9
20071212	12	SJ97779	SG	C1	Temperature	48.4
20071212	12	SJ97780	SG	C2	Temperature	64.2
20071226	12	SJ98314	SG	C2	Temperature	65.5
20080102	1	SJ00117	SG	C2	Temperature	69.8
20080102	1	SJ00122	POM	RC	Temperature	60.5
20080102	1	SJ00123	POM	RD	Temperature	66.4
20080109	1	SJ00352	SG	C1	Temperature	50.9
20080109	1	SJ00353	SG	C2	Temperature	65.7
20080116	1	SJ00889	SG	C2	Temperature	67.3
20080131	1	SJ01361	SG	C2	Temperature	64.2
20080206	2	SJ01656	SG	C2	Temperature	61
20080206	2	SJ01703	POM	RC	Temperature	62.2
20080206	2	SJ01704	POM	RD	Temperature	59.5
20080213	2	SJ02118	SG	C1	Temperature	57.4
20080213	2	SJ02119	SG	C2	Temperature	69.4
20080227	2	SJ02888	SG	C2	Temperature	70
20080305	3	SJ03381	SG	C2	Temperature	64
20080305	3	SJ03428	POM	RC	Temperature	65.3
20080305	3	SJ03429	POM	RD	Temperature	70.7
20080312	3	SJ03805	SG	C1	Temperature	59.2
20080312	3	SJ03806	SG	C2	Temperature	70.2
20080319	3	SJ04440	SG	C2	Temperature	70.9
20080326	3	SJ05156	SG	C2	Temperature	72.3
20080402	4	SJ05419	SG	C2	Temperature	66.6
20080402	4	SJ05441	POM	RC	Temperature	57.3
20080402	4	SJ05442	POM	RD	Temperature	66.4
20080409	4	SJ05732	SG	C1	Temperature	57.6
20080409	4	SJ05733	SG	C2	Temperature	69.1
20080416	4	SJ06108	SG	C2	Temperature	79.2
20080423	4	SJ06371	SG	C2	Temperature	70.5
20080430	4	SJ06571	SG	C2	Temperature	73.1
20080507	5	SJ07052	SG	C2	Temperature	72.8
20080507	5	SJ07013	POM	RC	Temperature	62.6
20080507	5	SJ07014	POM	RD	Temperature	63.5
20080514	5	SJ07254	SG	C1	Temperature	63.5
20080514	5	SJ07255	SG	C2	Temperature	74.6
20080528	5	SJ07929	SG	C2	Temperature	73.2
20080604	6	SJ08240	SG	C2	Temperature	75
20080604	6	SJ08248	POM	RC	Temperature	64.4
20080604	6	SJ08249	POM	RD	Temperature	67.8
20080611	6	SJ08511	SG	C1	Temperature	69.8
20080611	6	SJ08512	SG	C2	Temperature	78.6

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20080618	6	SJ09029	SG	C2	Temperature	81.1
20080625	6	SJ09614	SG	C2	Temperature	79.5
20080702	7	SJ10352	SG	C2	Temperature	79
20080702	7	SJ10294	POM	RC	Temperature	84.9
20080702	7	SJ10295	POM	RD	Temperature	90.5
20080709	7	SJ10667	SG	C1	Temperature	70.2
20080709	7	SJ10668	SG	C2	Temperature	79.9
20080716	7	SJ11014	SG	C2	Temperature	81.5
20080723	7	SJ11371	SG	C2	Temperature	81.1
20080730	7	SJ11620	SG	C2	Temperature	81.9
20080806	8	SJ11951	SG	C2	Temperature	82.8
20080806	8	SJ11853	POM	RC	Temperature	85.8
20080806	8	SJ11854	POM	RD	Temperature	77
20080813	8	SJ12243	SG	C1	Temperature	71.4
20080813	8	SJ12244	SG	C2	Temperature	76.6
20080903	9	SJ12915	POM	RC	Temperature	84.4
20080903	9	SJ12916	POM	RD	Temperature	93.2
20080910	9	SJ13466	SG	C1	Temperature	71.8
20080910	9	SJ13467	SG	C2	Temperature	76.6
20080924	9	SJ14592	SG	C2	Temperature	73.7
20081001	10	SJ15115	POM	RC	Temperature	82.9
20081001	10	SJ15116	POM	RD	Temperature	88
20081008	10	SJ15453	SG	C1	Temperature	70
20081008	10	SJ15454	SG	C2	Temperature	74.7
20081112	11	SJ16988	SG	C1	Temperature	55.9
20081112	11	SJ16989	SG	C2	Temperature	58.4
20081113	11	SJ17173	POM	RC	Temperature	68.9
20081113	11	SJ17174	POM	RD	Temperature	59.7
20081118	11	SJ17400	POM	RC	Temperature	56.8
20081118	11	SJ17401	POM	RD	Temperature	63.6
20081119	11	SJ17511	SG	C2	Temperature	69.9
20081124	11	SJ17664	SG	C2	Temperature	66.8
20081201	12	SJ17793	SG	C1	Temperature	56.3
20081201	12	SJ17794	SG	C2	Temperature	68.3
20081202	12	SJ18127	SG	C1	Temperature	59.9
20081202	12	SJ18126	SG	C2	Temperature	58.7
20081203	12	SJ18407	SG	C2	Temperature	69.8
20081203	12	SJ18362	POM	RC	Temperature	66.9
20081203	12	SJ18363	POM	RD	Temperature	63.5
20081210	12	SJ18872	SG	C1	Temperature	49.5
20081210	12	SJ18873	SG	C2	Temperature	54.5
20081231	12	SJ19536	SG	C2	Temperature	64
20090102	1	SJ20073	SG	C2	Temperature	62.6
20090107	1	SJ20253	SG	C2	Temperature	64
20090107	1	SJ20188	POM	RC	Temperature	61.5
20090107	1	SJ20189	POM	RD	Temperature	51.4
20090114	1	SJ20517	SG	C1	Temperature	53.4
20090114	1	SJ20518	SG	C2	Temperature	57.3

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20090121	1	SJ20883	SG	C2	Temperature	68.7
20090128	1	SJ21192	SG	C2	Temperature	64.6
20090204	2	SJ21489	SG	C2	Temperature	67.3
20090204	2	SJ21422	POM	RC	Temperature	53.8
20090204	2	SJ21423	POM	RD	Temperature	53.1
20090212	2	SJ21816	SG	C2	Temperature	64.8
20090223	2	SJ22242	SG	C1	Temperature	60.8
20090223	2	SJ22243	SG	C2	Temperature	61.3
20090311	3	SJ23588	SG	C1	Temperature	54.8
20090311	3	SJ23589	SG	C2	Temperature	57.6
20090317	3	SJ22677	POM	RC	Temperature	64.9
20090317	3	SJ22678	POM	RD	Temperature	72.3
20090318	3	SJ23943	SG	C2	Temperature	69.8
20090401	4	SJ24369	POM	RC	Temperature	63.9
20090401	4	SJ24370	POM	RD	Temperature	74.1
20090408	4	SJ24822	SG	C1	Temperature	64.8
20090408	4	SJ24823	SG	C2	Temperature	63.9
20090506	5	SJ25996	POM	RC	Temperature	81.1
20090506	5	SJ25997	POM	RD	Temperature	87.8
20090513	5	SJ26389	SG	C1	Temperature	68.9
20090513	5	SJ26390	SG	C2	Temperature	73.4
20090603	6	SJ27385	SG	C2	Temperature	75
20090603	6	SJ27304	POM	RC	Temperature	73.8
20090603	6	SJ27305	POM	RD	Temperature	73.3
20090610	6	SJ27760	SG	C1	Temperature	63.5
20090610	6	SJ27761	SG	C2	Temperature	74.1
20090617	6	SJ28224	SG	C2	Temperature	78.6
20090624	6	SJ28547	SG	C2	Temperature	76.5
20090701	7	SJ28828	SG	C2	Temperature	78.6
20090701	7	SJ28781	POM	RC	Temperature	76.3
20090701	7	SJ28782	POM	RD	Temperature	88.5
20090708	7	SJ29042	SG	C1	Temperature	74.6
20090708	7	SJ29043	SG	C2	Temperature	80.3
20090715	7	SJ29483	SG	C2	Temperature	82
20090722	7	SJ29806	SG	C2	Temperature	82.2
20090812	8	SJ30821	SG	C1	Temperature	72.1
20090812	8	SJ30822	SG	C2	Temperature	81.5
20090909	9	SJ31905	SG	C1	Temperature	70.4
20090909	9	SJ31906	SG	C2	Temperature	82.7
20091021	10	SJ34087	SG	C1	Temperature	62.5
20091021	10	SJ34088	SG	C2	Temperature	77.5

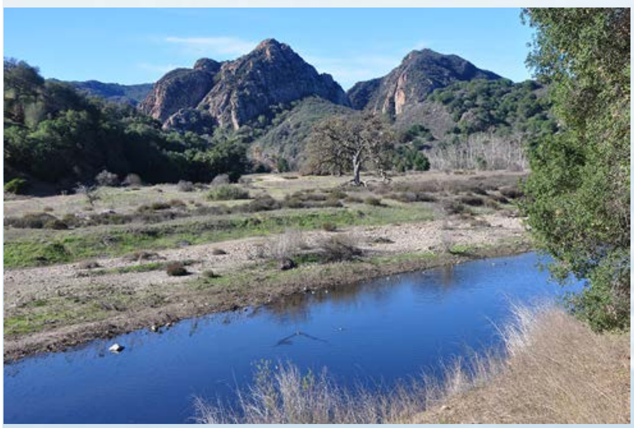
Appendix B: References

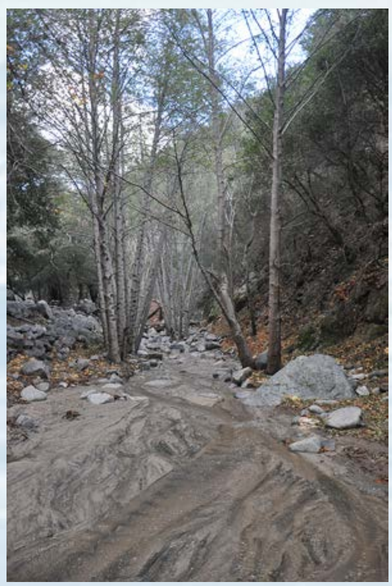
Appendix 1

B3

Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey

Southern California
STORMWATER MONITORING
Coalition





Raphael D. Mazor

Southern California Coastal Water Research Project

SCCWRP Technical Report 844

6-398

SMC
Southern California
STORMWATER MONITORING
Coalition

SWAMP
Surface Water
Ambient Monitoring
Program

SCCWRP
Established 1969

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Ventura Countywide
Stormwater Quality
Management Program

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Council for
Watershed Health

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

COUNTY OF ORANGE CALIFORNIA

Riverside County Flood Control Water Conservation District

THE NOBLEST MOTIVE IS THE PUBLIC GOOD
COUNTY OF SAN DIEGO
MDCCCLI

CALIFORNIA
DEPARTMENT OF
FISH &
WILDLIFE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

STATE OF CALIFORNIA
SANTA ANA REGION
REGIONAL WATER QUALITY CONTROL BOARD

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION (9)

A REGIONAL APPROACH TO EVALUATING THE BIOLOGICAL CONDITION OF SOUTHERN CALIFORNIA'S WADEABLE STREAMS

2009-2013: THE FIRST FIVE YEARS OF THE STORMWATER MONITORING COALITION'S REGIONAL MONITORING PROGRAM

Southern California Stormwater Monitoring Coalition

OVERVIEW

In 2009, the Southern California Stormwater Monitoring Coalition embarked on an ambitious effort to evaluate the biological condition of 4,300 miles of wadeable streams in the region's coastal watersheds. Over the ensuing five years, the coalition's participating agencies conducted extensive survey and sampling work at more than 500 randomly selected sites encompassing 15 major watersheds in California's South Coast region. Monitoring efforts that had historically been done with minimal coordination were unified around a cohesive, shared vision for the first time, generating high-quality data sets that have painted a powerful picture of regional stream condition. The SMC survey is a regional enhancement of the statewide Perennial Stream Assessment.

The mature riparian plants and biological complexity observed in upper portions of Trabuco Creek in the Santa Ana Mountains reflect a stream that is in good biological condition. 25% of wadeable stream-miles in Southern California were found to be in good condition in the five-year survey.

Caballero Creek, a channelized, algae -filled tributary to the Los Angeles River, reflects severe habitat degradation and impacts of elevated nutrient concentrations. The survey found that both types of stressors were widespread in Southern California streams.

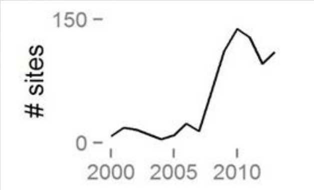
PROGRAM BENEFITS AND IMPACTS

- **Relevant to managers**: Comprehensive data sets inform decisions about priorities and resource allocation, and identify opportunities for causal assessment follow-up studies.
- **Cost-effective:** Each participant realizes approximately 10 times the data value relative to costs.
- **More influential**: Regional collaborations provide more data to inform statewide policymaking, and highlight local concerns.
- **Conversation-altering**: Provides a starting point for developing innovative management strategies that consider and go beyond water chemistry.

KEY FINDINGS

25% of the region's wadeable stream-miles are in good biological condition, including:

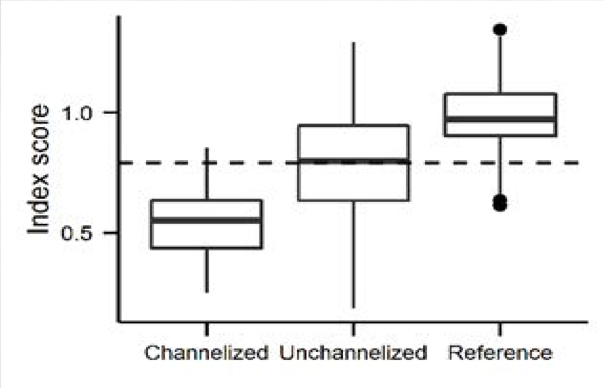
- **60%** of stream-miles in open-space
- **9%** in agricultural areas
- **2%** in urban areas



The Regional Monitoring Program stream survey, which began in 2009, significantly increased the number of stream sites sampled in the region.

HIGH-PRIORITY STRESSORS ON WADEABLE STREAMS

Stressors affecting more than 25% of stream-miles	Stressors affecting 10% to 25% of stream-miles
• Nutrients (Nitrogen and Phosphorus) • Physical habitat degradation • Sulfates • Total dissolved solids	• Chloride • Total suspended solids • pH



Index scores based on benthic macroinvertebrates were lower in channelized streams than non-channelized and reference streams; however, high scores for algal indices were observed in channelized streams where water quality was good. These findings provide a basis for regulators and stormwater agencies to discuss management strategies for channelized streams.

FOUR ECOLOGICAL CONDITION INDICATORS

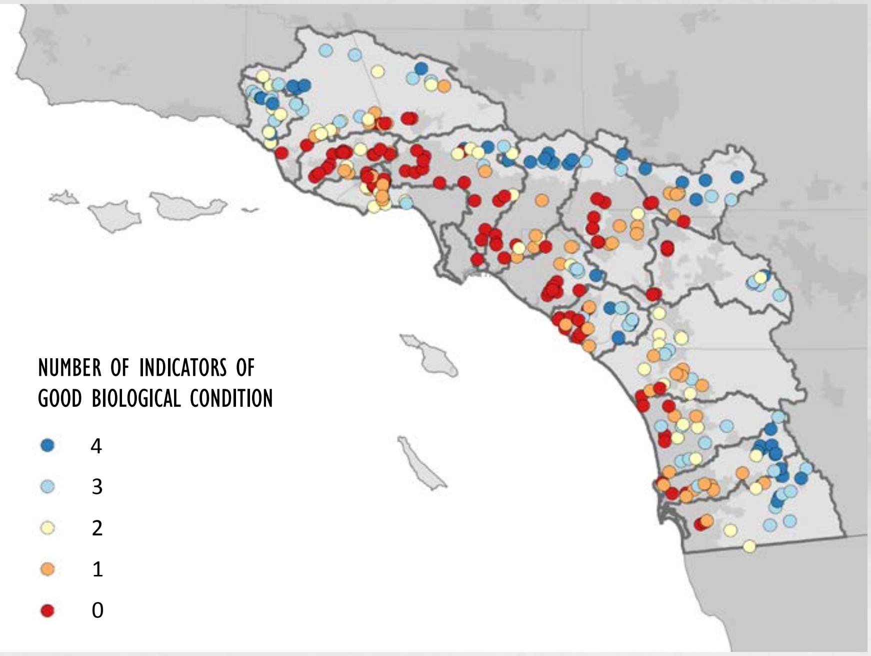
The biological condition of streams was assessed by collecting data for four biological indicators. Each indicator is sensitive to a unique combination of stream stressors, allowing it to provide different types of information about a stream's overall health. Collectively, the four indicators provide comprehensive, direct evidence of a stream's capacity to support aquatic life, a more revealing approach than measuring the chemical concentrations of pollutants.

1 **Benthic macro-invertebrates**, such as aquatic insects, snails, and worms, respond to changes in habitat or water quality over their lifespans.

2 **Soft algae**, such as *Vaucheria*, may form clumps or filaments on submerged rocks. Some species proliferate when nutrients are elevated, while others thrive when nutrients are scarce.

3 **Diatoms**, such as *Navicula*, respond strongly to changes in water chemistry and sedimentation.

4 **Riparian habitats**, which support both terrestrial and in-stream wildlife, may be degraded by habitat alteration, upstream discharges, and hydrologic modification.



At the 500+ randomly selected sampling sites in the stream survey, anywhere from 0 to all 4 biological indicators indicated that a site was in good biological condition. The four indicators – benthic macroinvertebrates, diatoms, soft algae, and riparian habitat condition – collectively were used to assess a site's biological condition.

WATERSHEDS WITH MANY STREAMS IN GOOD CONDITION

- Ventura River
- Upper Santa Ana River
- Tijuana + Sweetwater + Otay Rivers

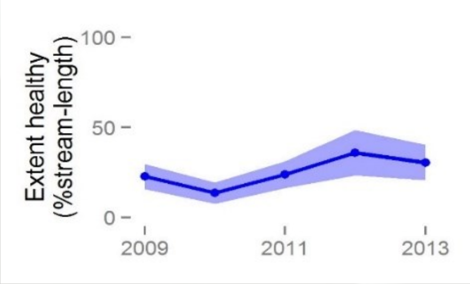
WATERSHEDS WITH FEW STREAMS IN GOOD CONDITION

- Calleguas Creek
- Lower Santa Ana River
- San Dieguito River + Carlsbad Hydrologic Unit

NO APPARENT TRENDS

Although there was some year-over-year variability, the survey did not find a change in the health of the streams over the five-year sampling period, from 2009 to 2013.

Urban streams tended to be in consistently poor biological condition, whereas open-space and agricultural streams tended to experience greater year-to-year variability.



The portion of healthy stream-miles fluctuated over the five-year sampling period, but overall showed no clear trends in either direction. The blue shading represents the 95% confidence interval.

A NEW SURVEY UNDERWAY

The success of the SMC's Regional Monitoring Program has paved the way for a second round of the program, which began in spring 2015. The first five-year survey will serve as a baseline for detecting trends over time.

The second cycle includes nonperennial streams, a critical habitat that makes up more than half of the region's stream-miles, and will seek to clarify the linkage between stressors and biotic integrity.

STORMWATER MONITORING COALITION MEMBERS

County of Los Angeles Department of Public Works, County of Orange Public Works, County of San Diego Department of Public Works, Riverside County Flood Control and Water Conservation District, San Bernardino County Flood Control District, Ventura County Watershed Protection District, City of Long Beach Public Works Department, City of Los Angeles Department of Public Works, California Regional Water Quality Control Board—Santa Ana Region, Los Angeles Region, and San Diego Region, State Water Resources Control Boards, California Department of Transportation, Southern California Coastal Water Research Project (SCCWRP). Collaborating organization: U.S. Environmental Protection Agency Office of Research and Development | www.socalsmc.org

DEVELOPED IN COLLABORATION WITH THE SURFACE WATER AMBIENT MONITORING PROGRAM

SWAMP Surface Water Ambient Monitoring Program

Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey

Stormwater Monitoring Coalition Bioassessment Workgroup

Prepared by Raphael D. Mazor
Southern California Coastal Water Research Project

May 2015

Technical Report 844

ACKNOWLEDGEMENTS

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ACRONYMS

Acronym	Definition
AFDM	Ash-free dry mass
CI	Confidence interval
CMAP	California Monitoring and Assessment Program
CRAM	California Rapid Assessment Method
CSCI	California Stream Condition Index
CTR	California Toxics Rule
D18	Diatom Index of Biotic Integrity
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
IBI	Southern and Central California Index of Biotic Integrity
NHD	National Hydrography Dataset
NRSA	National Rivers and Streams Assessment
O□E	Ratio of Observed to Expected Taxa
PCT□BIGR	□ large substrate (□128 mm)
PCT□CPOM	□ cover by coarse particulate organic matter
PCT□FAST	□ fast-water habitat
PCT□MAP	□ macroalgae cover
PCT□MCP	□ macrophyte cover
PCT□MIAT1	□ cover by thick (□1 mm) microalgae
PCT□SAFN	% sands and fines (≤2 mm)
pMMI	Predictive Multi-Metric Index
PSA	Perennial Stream Assessment
S2	Soft Algae Index of Biotic Integrity
SD	Standard Deviation
SMC	Stormwater Monitoring Coalition
TDS	Total Dissolved Solids
TN	Total Nitrogen
TP	Total Phosphorous
XEMBED	Mean □ cobble embeddedness
XFC□NAT□SWAMP	Natural fish cover
XMIATP	Mean microlagae thickness (where present)

EXECUTIVE SUMMARY

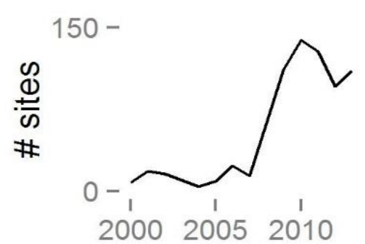
Streams are important natural resources in the South Coast of California, a region that extends from Ventura to San Diego counties. Competing needs for aquatic resources are intense and growing. Assessing the biological condition of these streams has been the focus of considerable monitoring activity. However, until 2009 these efforts were minimally coordinated and provided only limited information about the health of streams in the region, as a result of an emphasis on end-of-watershed monitoring. The Stormwater Monitoring Coalition (SMC) regional perennial stream survey was created in response to the need for a more holistic and coordinated approach. This report provides the results of a five-year probability-based bioassessment of southern California's perennial wadeable streams and represents one of the most comprehensive assessments of stream conditions in the United States.

The five-year survey was designed to answer key questions that are essential to watershed management:

1) What is the biological condition of perennial streams in the region?

2) What stressors are associated with poor condition?

3) Are conditions changing over time?



The Stormwater Monitoring Coalition has greatly increased the number of sites sampled in southern California.

Answering these questions at the regional scale provides resource managers with the ability to contextualize their programs and improve understanding of the effectiveness of management actions, prioritization of streams most in need of protection, and identification of stressors that are likely to pose the greatest risk to stream health.

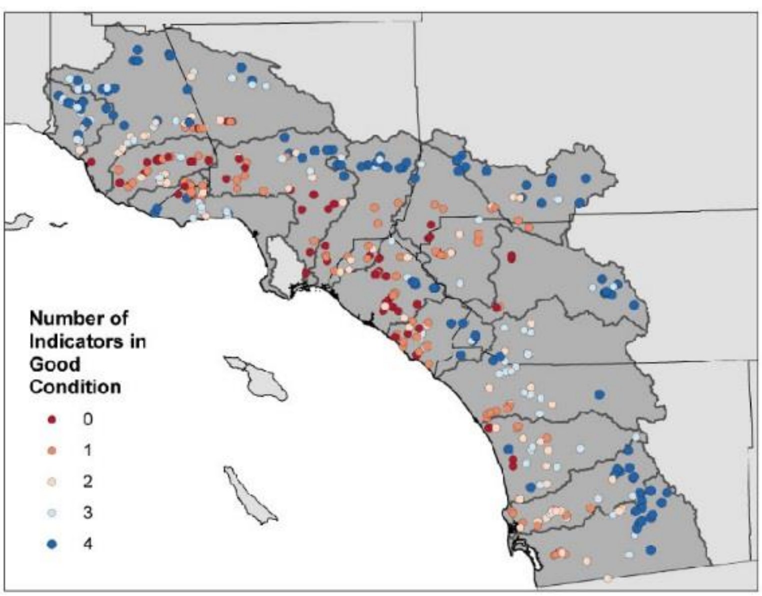
Prior to the initiation of the SMC perennial stream survey, bioassessment efforts in southern California had a limited ability to answer any of these questions. Lead monitoring agencies worked with little coordination, typically addressing site-specific problems with sometimes incomparable methodologies and rarely sharing data. Targeted monitoring mandated by permits did not provide the regional context needed to inform management decisions. Earlier probabilistic sampling efforts in southern California were limited (rarely more than a handful of sites per year), and were conducted as a small part of a statewide or national assessment.

Since the initiation of the SMC perennial stream survey in 2009, stormwater agencies have been able to coordinate their monitoring efforts with regulatory agencies, reallocate resources, and generate the needed data in a cost-neutral way, while simultaneously allowing regulated agencies to fulfill their permit obligations. This survey serves as the regional component of the statewide Perennial Stream Assessment, allowing both the SMC and the State Water Resources Control Board to leverage resources and support each other's surveys.

To answer key management questions, over 500 sites were sampled for four key indicators of biological condition: benthic macroinvertebrates, diatoms, soft algae, and riparian wetlands. These indicators were used to assess the biological health of over 7000 km of streams. In addition, water chemistry, water column toxicity, and physical habitat were examined in order to identify stressors affecting biological conditions in the region. Furthermore, because the survey spanned five years, initial estimates of regional trends are now possible.

Key Findings

Biologically healthy perennial streams are a scarce resource, comprising only 25% of perennial wadeable stream-miles in the region. Based on four biological indicators (i.e., benthic macroinvertebrates, diatoms, soft algae, and riparian wetlands), perennial streams in good biological condition (i.e., scores above the 10th percentile of reference sites) were largely confined to undeveloped portions of watersheds; most indicators identified slightly better conditions at agricultural streams relative to urban streams. Ventura, Santa Clara, Upper Santa Ana, and Southern San Diego watersheds were in better condition than other watersheds for most indicators, whereas perennial streams in poor condition (i.e., scores below the 10th percentile of reference sites) were most extensive in Calleguas, Los Angeles, San Gabriel, and Lower and Middle Santa Ana watersheds.



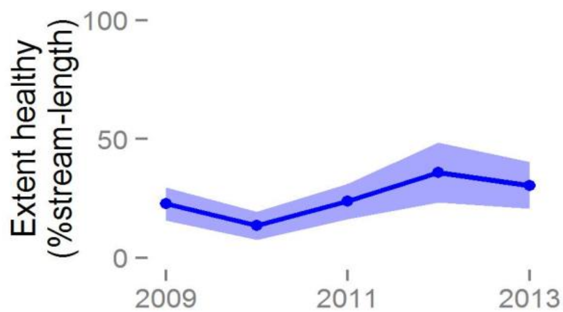
Perennial stream condition was evaluated with four biological indicators: benthic macroinvertebrates, diatoms, soft algae, and riparian condition. In general, these components of the stream community rarely indicated good health in developed portions of watersheds.

Nutrients, sulfates, and habitat degradation were extensive, high-risk stressors associated with poor biological condition. Future investigations should consider these possible candidate stressors as potential causes of poor biological condition. In contrast, metals, pyrethroids, and toxicity were either rarely above threshold or weakly associated with biological condition.

A large extent of the South Coast region was at risk from physical habitat degradation, elevated nutrients, and major ions. Pyrethroids and metals were either weakly or rarely associated with poor health.

Very high priority **(Affects more than 25% of region)**	**High priority** **(Affects more than 10% of region)**	**Moderate or low priority** **(Limited extent or low risk)**
Nitrogen Phosphorus Physical habitat Sulfates Dissolved solids	Chloride Suspended solids pH	Pyrethroids Metals Biomass Toxicity

No changes in biological condition were detected. Although mean condition estimates fluctuated from year to year, conditions in 2013 were similar to those observed in 2009; fluctuations were primarily driven by variability in undeveloped streams, as urban streams were consistently in poor condition, varying little from year to year. At no time during the survey were more than 35% or less than 14% of streams estimated to be intact for all indicators. Moving forward, the ability to detect trends could be improved by minor changes to the study design, such as revisiting sites over several years and by extending the survey for additional years.



Extent of perennial streams in good biological condition for all four indicators (benthic macroinvertebrates, diatoms, soft algae, and riparian condition) fluctuated from year to year, but was always limited to less than 35% of perennial stream-miles in the region. The band indicates the 95% confidence interval.

How can this survey support management decisions?

Evaluate steps to protect healthy streams and improve unhealthy streams. Given the small extent of healthy perennial stream-miles in the southern California, protecting such streams may be a priority for resource managers. Additionally, the relatively large extent of stream-miles in poor condition suggests that managers will need to prioritize actions to address stressors affecting unhealthy streams. Prioritization should focus on likelihood of success, achievability of objectives, breadth of impact, and costs associated with management activities, as well as local objectives and needs for each waterbody. Although most of the actions required will be site-specific, a regionally coordinated approach will aid in priority ranking and enable leveraging of efforts across sites or watersheds.

Use regional context in site-specific evaluations. The primary application of survey data is to provide context in evaluating site-specific questions. Comparing the condition of a specific site to conditions at sites with similar land use within the region may provide more useful benchmarks for management objectives than comparison to reference sites, which may not provide an achievable management objective.

Use survey data in causal assessments to identify candidate stressors. Because of the breadth of information collected at each site, the comparability of methods used, and the diversity of sites sampled, data from this survey are well suited to causal assessment applications. With some investment in tool development, regional watershed managers will be able to overcome the data limitations (such as difficulties in identifying comparison sites with information on stressors) that often hinder effective causal assessments.

Recommendations for future monitoring

Although this survey successfully produced preliminary answers to key questions, important knowledge gaps remain. Continuing the survey with modifications will address these gaps.

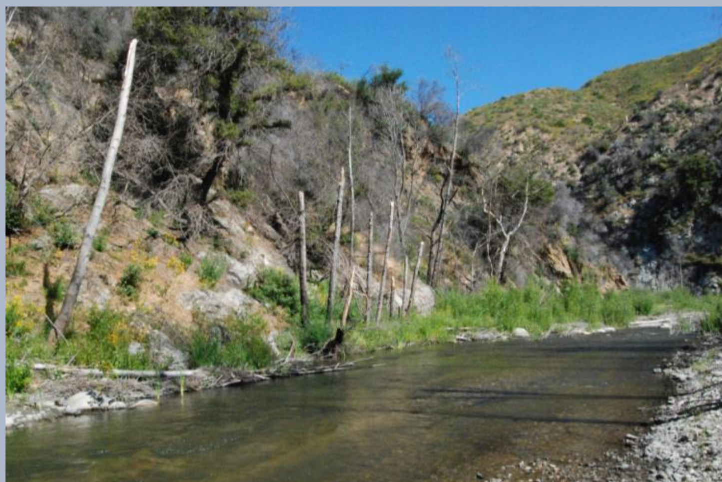
Include stream types that were previously excluded from the survey. The chief limitation of this survey is that it was restricted to perennial, wadeable streams, 2nd order and higher. The condition of nonperennial and headwater streams represents the largest gap in our regional assessment. Perennial streams account for only 25% of stream-miles in the region as a whole, and as little as 5% in certain watersheds; this variation is caused by both natural factors (such as climate) and land use. Because perennial and higher-order streams are more abundant in developed regions, it is likely that the surveyed portion of the region is in worse condition than the region as a whole. Expanding the survey to include assessment of nonperennial streams (approximately 59% of stream-miles in the region), and exploring ways to map them will help fill these knowledge gaps. Existing assessment tools may be appropriate to assess condition of nonperennial streams, and new tools should be developed as needed.

Improve trend detection through site revisits. Probabilistic sites that are revisited for several years can be used to estimate the extent of improving, degrading, or stable streams in the region. Additionally, management practices associated with changes in conditions can be identified.

Use survey data and special studies to support causal assessments and investigate high-priority stressors. Stressor prioritizations are strictly associative and cannot identify with certainty causal relationships between stressors and biological condition. In some cases, stressors that were identified as high priority (e.g., nutrients) might not directly affect biological condition. Instead, the high risk may reflect a correlation with an unmeasured stressor. The frequent co-occurrence of multiple stressors can make it difficult to disentangle the relationships between individual stressors and biological condition. The SMC can address these limitations in several ways:

- Analyze existing data to explore the diagnostic potential of biological indicators to identify specific stressors.
- Enhance the stream survey with new indicators related to habitat degradation (e.g., hydromodification indicators) or nutrient enrichment (e.g., continuous water quality loggers, algae biomass), or other stressors of emerging concern (e.g., sediment pyrethroids).
- Conduct special studies to distinguish biological constraints imposed by habitat degradation, channel engineering, water chemistry, and natural factors.

SURVEY OVERVIEW



This survey provides the best estimate of the extent of perennial (e.g., Big Tujunga Creek, upper photo) and nonperennial streams (e.g., San Juan Creek, lower photo) in the South Coast region.

Introduction

Southern California's coastal watersheds contain important aquatic resources that support a variety of ecological functions and environmental values. Comprising over 7,000 stream-kilometers, both humans and wildlife depend on these watersheds for habitat, drinking water, agriculture, and industrial uses. In order to assess the health of streams in these watersheds, the Stormwater Monitoring Coalition (SMC), a coalition of multiple state, federal, and local agencies, initiated a regional monitoring program in 2009. Using multiple indicators of ecological health, including benthic macroinvertebrates, benthic algae, riparian wetland condition, water chemistry, water column toxicity, and physical habitat, the SMC has led the first comprehensive assessment of southern California's watersheds based on a probabilistic survey design. Through the re-allocation of permit-required monitoring efforts, the SMC has developed a cooperative sampling program that is efficient and cost-effective for participants. This report represents a summary of data collected in the first five years of the SMC's stream survey. Data from previous surveys, such as the Environmental Protection Agency (EPA) Environmental Monitoring and Assessment Program (EMAP) and California's Perennial Stream Assessment (PSA), are included as well.

The SMC monitoring program was designed to address three main questions:

1) What is the biological condition of perennial streams in the region?
2) What stressors are associated with poor condition?
3) Are conditions changing over time?

The first question is addressed by estimating the extent of biologically intact streams, as determined by key biological indicators. The second question is addressed by estimating the extent of streams with stressors above key thresholds, and by associating stress levels with biological indicators through correlation and relative risk analyses (Van Sickle *et al.* 2006). The third question is addressed by comparing condition across years of the survey.

Regional assessments provide critical information to complement site-specific monitoring at sites of interest. Regional surveys that use a probabilistic design provide statistically valid and unbiased assessments of large geographic areas (Gibson *et al.* 1996). Crucially, regional assessments provide context to site-specific problems and allow sites to be prioritized for protection or restoration (Barbour *et al.* 1996). Furthermore, regional assessments provide a comprehensive perspective on reference conditions (Reynoldson *et al.* 1997). Although regional programs do not replace the need for monitoring at sites of interest (such as below discharges or within sensitive wildlife areas), the context provided by a regional assessment is essential for effective watershed management (Barbour *et al.* 1996, Gibson *et al.* 1996).

Methods

Study Area

Coastal southern California (i.e., the South Coast) is a semi-arid region with a Mediterranean climate, which experiences nearly all of its precipitation as rainfall during winter months. Lower elevations are characterized by chaparral, oak woodlands, grasslands, and coastal sage scrub. The region is bordered by the Transverse Ranges to the North, and the Peninsular Ranges to the East, and continues to the Mexican border to the South. Both Transverse and Peninsular ranges contain peaks that exceed 10,000 feet and regularly experience snow, although contributions to stream flow are limited. Much of the higher elevations are undeveloped and remain protected in a network of national, state, and county parks and forests. The lower elevations have been largely urbanized or converted to agriculture. Wildfires and drought are frequent in the region, with extensive fires occurring in 2007, 2009, and 2013 throughout much of the area. By area, the overall region is 59% undeveloped open space, 28% urban, and 13% agricultural (National Oceanic and Atmospheric Administration (NOAA) 2001).

Survey Design

The target population of the survey was defined as perennial, wadeable second-order and higher streams located in the six southern California counties draining into the Southern California Bight. The study area was divided into fifteen management units (hereafter referred to as watersheds) based on a combination of hydrologic and political boundaries (Table S-1, Figure S-1). The National Hydrography Dataset Plus stream network (NHD Plus; US Geological Survey and US Environmental Protection Agency 2005) was used as the sample frame. Stream segments in the NHD Plus typically represent lengths of streams between two confluences, although particularly long reaches are often split into shorter lengths. In order to assign land-use to each segment of the NHD Plus frame, a 500-m buffer was drawn around each stream segment and overlain in a GIS onto a landcover layer (NOAA 2001). If the buffer was more than 75% natural or open land, the segment was considered open space; if not, it was considered urban or agricultural, depending on which land use was relatively more dominant. Very short segments were occasionally hand corrected if the buffers were too small to adequately capture the adjacent land use; these corrections were most typically used for segments representing individual channels in complex braided systems, such as the mainstem of the Santa Clara River.

The study employed the “master list” approach to integrate sampling efforts by multiple agencies and to facilitate collaboration with other monitoring programs (Larsen *et al.* 2008). A master list was generated, containing over 50,000 sites randomly distributed across the entire stream network using a spatially balanced generalized random-tessellation design (Stevens and Olsen 2004). Sites were then assigned to a watershed using a geographic information system (GIS). Sites were attributed with Strahler stream order from the NHD Plus dataset, and with land use based on the designation of the stream segment, as described above. Sites were then attributed with watershed, stream order, and land-use of the corresponding stream segment of the sample frame. First order streams were excluded from the survey, because these sites typically have a higher rejection rate based on nonperenniality or inaccessibility in mountainous regions. A target sample of 30 sites was selected from each watershed, with heavier representation in relatively uncommon strata (e.g., agricultural streams) to improve balance among the sampled stream types. Large oversamples (ranging from 5x to 20x) were selected as well because of high rejection rates in certain strata. Sites in the sample draw and oversamples were distributed to field crews for evaluation for sampling suitability.

Sites were evaluated for sampling using both desktop and field reconnaissance. Field crews attempted to locate a reach suitable for sampling within 300 m of the target coordinates. Sites with no nearby suitable reaches were rejected for sampling. Reasons for rejection included nonperenniality (see box below), inaccessibility (defined as sites that cannot be safely reached and sampled within one day), refusal or lack of response from landowners, map errors (e.g., no channel near the target coordinates), nonwadeability (i.e., >1 m deep for at least 50% of the reach) and inappropriate waterbody types (e.g., tidally influenced, impounded, etc.). Sites with temporary accessibility or permission issues (e.g., road closures, late responses from landowners) were re-evaluated for sampling in subsequent years.

Defining and Determining Perennial Streams

Perennial streams were defined as those with continuous flow that lasts until the end of the hydrologic year (i.e., September 30) in most years. Determining if a site met these criteria required that field crews find the best available data, including stream gauges, field indicators, historical imagery, consultation with local experts, and best professional judgment. Although all reasonable efforts were made to confirm the perenniality of the sampled sites, it is likely that some of them do not meet the survey's criteria for perennial streams during the years of the study. Therefore, the survey reflects the condition of a mixture in unknown proportions of perennial and long-lasting nonperennial streams. Development of an objective tool to characterize hydrologic regimes remains a priority research area for the SMC.

Sampling Methods

Biological Indicators

Benthic Macroinvertebrates

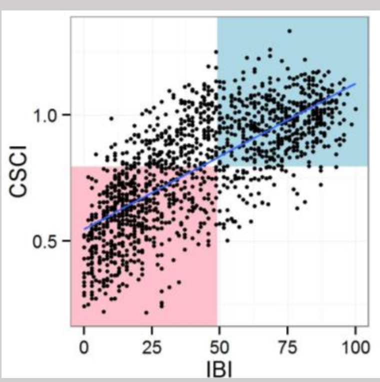
Benthic macroinvertebrates were collected using protocols described by Ode (2007). At each transect established for physical habitat sampling, a sample was collected using a D-frame kicknet at 25, 50, or 75% of the stream width. A total of 11 ft^2 (~1.0 m^2) of streambed was sampled. This method was identical to the Reach-Wide Benthos method used by EMAP (Peck *et al.* 2006). However, in low-gradient streams (i.e., gradient <1%), sampling locations were adjusted to 0, 50, and 100% of the stream width, because traditional sampling methods fail to capture sufficient organisms for bioassessment indices in these types of streams (Mazor *et al.* 2010). Benthic macroinvertebrates were collected and preserved in 95% ethanol (final concentration 70%), and sent to one of five labs for identification. At all labs, a target number of at least 600 organisms were removed from each sample and identified to the highest taxonomic resolution that can be consistently achieved (i.e., SAFIT Level 2 in Richards and Rogers 2011); in general, most taxa were identified to species and Chironomidae (i.e., midges) were identified to genus. Benthic macroinvertebrate data was used to calculate the California Stream Condition Index (CSCI; Mazor et al. In Press). Samples from streams in reference condition are expected to have a mean CSCI score of 1.

CSCI vs. IBI

Like the Southern and Central California Index of Biotic Integrity (IBI), the CSCI was designed to measure the biological condition of streams, as indicated by benthic macroinvertebrate assemblage structure. The CSCI characterizes benthic macroinvertebrate assemblage structure in two ways: 1) As the ratio of observed-to-expected taxa (an O/E index), and 2) as a multi-metric index (MMI), where biological metrics related to important ecological attributes (e.g., number of sensitive taxa) are compared with expected values. Both components are compared to expectations that vary from site to site, and these expectations are derived from reference sites in similar environmental settings.

The CSCI was developed specifically to address some of the shortcomings of traditional indices like the IBI and provides a better measure of stream health than its predecessor because of two key features. First, the CSCI was developed with a much larger, more representative data set. For example, 473 reference sites were used to calibrate the CSCI (including 27 from lower elevation South Coast xeric sites), versus 88 for the IBI (of which only 9 were from South Coast xeric regions). More importantly, the CSCI sets biological benchmarks for a site based on its environmental setting (determined by environmental factors, like climate, geology, watershed area, and elevation) whereas the IBI makes minimal adjustments for natural environmental influences on stream communities.

Overall, the CSCI and IBI have similar performance, and samples that score high for one index usually score high for the other (Pearson's r^2 = 0.54). In general, the CSCI is more accurate, and is less likely than the IBI to give false indications of nonreference condition. However, it is also less sensitive, and is less likely to indicate nonreference conditions at severely stressed sites. If a threshold based on the 10th percentile of reference sites is applied to both indices (i.e., 0.79 for the CSCI and 49 for the IBI), approximately one-third of streams below the IBI threshold would be above the CSCI threshold; in contrast, only 2% of streams below the CSCI threshold would be above the IBI threshold.



Correlation between IBI and CSCI scores for sites in southern California. The pink area indicates sites where both indices suggest likely altered biological condition (i.e., Class 3 and 4), and the blue area indicates sites where both indices suggest intact or possibly altered biological condition (i.e., Class 1 and 2). The blue line represents a linear regression between the two indices.

Benthic Algae

Benthic algae samples were collected using the protocols of Fetscher *et al.* (2009), approximately 1 foot upstream of each location where benthic macroinvertebrates were collected. Diatom samples were preserved in formalin, and soft algae samples were preserved in glutaraldehyde. Unpreserved, qualitative soft algae samples were also collected to produce fruiting bodies that facilitate identification of soft algae species. Benthic algae samples were identified to the best taxonomic resolution possible, which was typically species. Benthic algae was assessed using two indices from Fetscher *et al.* (2014): a soft algae index (S2), and a diatom index (D18). Calculations were completed using custom scripts in the statistical software R. Samples from streams in reference condition are expected to have a mean D18 score of 79 and a mean S2 score of 69. Although these indices are not "predictive" like the CSCI score, little bias from natural gradients was evident at reference sites (Fetscher *et al.*2014).

Riparian Wetlands

Riparian wetland condition was assessed using the California Rapid Assessment Method (CRAM; Collins *et al.* 2008). Briefly, the CRAM method assesses four attributes of wetland condition: buffer and landscape, hydrologic connectivity, physical structure, and biotic structure. Each of these attributes is comprised of a number of metrics and submetrics that are evaluated in the field for a prescribed assessment area. Streams in reference condition are expected to have a mean CRAM score of 84.

Water Chemistry

Field crews measured pH, specific conductance, dissolved oxygen, salinity, and alkalinity at each site visit using digital field sensors (or by collecting samples for lab analyses, where appropriate). In addition, samples of stream water were collected for measurements of 36 different analytes, including: total suspended solids, total hardness (as $CaCO_3$), silica, sulfate and other major ions, nutrients, dissolved and total metals, and pyrethroid pesticides. Analytical methods and quality assurance protocols are described in SWAMP QAT (2008).

Toxicity

At each site, ~4 L of water were collected for toxicity assays, primarily using the water flea *Ceriodaphnia dubia*. Six to eight day exposures to undiluted field-collected stream water were conducted, and both survival (acute toxicity as percent mortality) and reproduction (chronic toxicity as young per female) endpoints were recorded. In samples with specific conductivity ≥2500 µS/cm, a 10-day survival assay using the amphipod *Hyalella azteca* was used instead, with no reproductive endpoint (USEPA 2002, SWAMP QAT 2008).

Physical Habitat

At each site, physical habitat was evaluated using a physical habitat assessment as specified in Ode (2007) and Fetscher *et al.* (2009), which were adapted from EMAP (Peck *et al.* 2006). Briefly, a 150-m reach (250-m for streams over 10 m wide) was divided into 11 equidistant transects, with 10 inter-transects located halfway between them. At each transect, the following parameters were measured: bank dimensions, wetted width, water depth in five locations, substrate size, cobble embeddedness, bank stability, microalgae thickness, presence of coarse particulate organic matter, presence of attached or unattached macroalgae, presence of macrophytes, riparian vegetation, instream habitat complexity, canopy cover using a densiometer, human influence, and flow habitats. A subset of these variables were measured at each inter-transect as well. The slope of the water surface was measured across the entire reach at each site. Metrics based on physical habitat data were calculated using custom scripts in R, based on those presented in Kaufmann *et al.* (1999).

Challenges in Assessing Physical Habitat

Although many studies point to a crucial role for physical habitat in supporting healthy streams, assessing the condition of physical habitat remains a challenge for bioassessments. There are four parts to this challenge: 1) measuring the right variables, 2) calculating meaningful metrics from these variables, 3) comparing these metrics to benchmarks that are appropriate for the environmental setting of a site, and 4) ensuring that the metrics are comprehensive enough to characterize important aspects of habitat degradation. To some extent, the first two problems have been addressed. The protocol developed by SWAMP, based on methods developed by the EPA (Peck *et al.* 2006), encompasses over 1000 individual measurements per site, and these measurements are converted into more than 150 metrics that characterize the physical habitat, again based on earlier efforts of the EPA (Kaufmann *et al.* 1999). However, most of these metrics vary widely among reference sites, based on environmental factors like climate and watershed size. Predictive models to set reference-based expectations for physical habitat metrics are in development, but are not yet available. Once such models are developed, a remaining challenge will be to select which metrics (and in which combinations) are most useful in characterizing the overall condition of the physical habitat of a site.

Landscape Variables

Landscape variables were calculated for three purposes: CSCI calculation (see Mazor *et al.* In review), reference site screening (see Ode *et al.* In review), and biological relationships. Using a GIS, watersheds were delineated for each site from 30-m digital elevation models (USGS 1999), and visually corrected to reflect local conditions. For sites draining ambiguous watersheds with minimal topography, delineations were modified using CALWATER boundaries (California Department of Forestry and Fire Protection 2004) or by consulting local experts. Watersheds were clipped at 5 km and 1 km to evaluate local conditions, creating a total of three scales (abbreviated as WS, 5k, and 1k). A fourth scale (i.e., point), based only on the site location, was used to calculate distance-based metrics. These delineations were then used to calculate metrics from source layers relating to landcover (NOAA 2001), transportation (CDFG custom roads layer, P. Ode, unpublished data), geology (J. Olson and C. Hawkins, unpublished data), and hydrology (National Inventory of Dams and NHD Plus). For sites sampled in 2013, only variables related to the CSCI were calculated.

Summary of Data from Other Surveys

Data from other surveys were included in this report, where possible. In order to be included, these surveys had to meet the several criteria: 1) benthic macroinvertebrates were collected using similar protocols (e.g., EMAP), 2) benthic macroinvertebrates were identified to equivalent taxonomic resolution, 3) survey design documentation (including stratifications) and site evaluation data were available, and 4) compatible sample frames were used for survey design (specifically, the NHD Plus or its predecessor RF3). These surveys are summarized in Table S-2. Note that some sites, although selected for sampling for a probabilistic survey, were revisited under other programs (such as reference sampling, fire studies, or other targeted designs), and these data were included in the current assessment as well. With few exceptions, limited data types (generally, benthic macroinvertebrates and physical habitat) were collected for these surveys.

Climate Data

Monthly rainfalls for stations throughout the region were downloaded from The National Oceanic and Atmospheric Administration's California and Nevada River Forecast Center (www.cnrfc.noaa.gov/rainfall_data.php). Annual totals were then calculated and plotted to evaluate the conditions during the study period relative to longer term trends. Three representative stations were selected for plotting (i.e., downtown Los Angeles, Big Bear Lake, and Lindbergh Field).

Data Analysis

Weighted Magnitudes and Extent Estimates

Adjusted sample weights were calculated for each site. Because multiple surveys with different designs were included in analysis, weights needed to be recalculated for each site. Stratification approaches from all surveys were combined to create "cross-strata" in which all evaluated sites have an equal probability of being sampled. Adjusted weights were recalculated as the total stream length within each strata, divided by the number of sites evaluated in that stratum. Strata with no evaluations were excluded from analysis. Because these strata comprised less than 2% of the total stream length, these exclusions are unlikely to affect condition estimates. These weights were used to estimate distribution points for selected variables and extents (e.g., % of stream-length in classes of interest) using the Horvitz-Thompson estimator (Horvitz-Thompson 1952). These estimates were calculated for reporting units of interest, including watersheds, land use classes, and (for trend estimates) years. Confidence intervals (CIs) were based on local neighborhood variance estimators (Stevens and Olsen 2004). All calculations were conducted using the spsurvey package (Kincaid and Olsen 2013) in R version 3.0.3 (R Core Team 2012).

Extent Estimates

When surveys use a probabilistic design, the data they produce can be used to make inferences about the region as a whole, and not just about sampled sites. Therefore, statements about the extent of perennial wadeable streams, or about the average CSCI score in a watershed can be made. Probabilistic surveys provide context about ambient condition, which can be used to compare against sites of interest.

The key benefit of a probabilistic survey is its ability to estimate the true extent of a resource of interest, such as perennial, wadeable streams. Sites sampled under a targeted design provide valuable information about local conditions, but cannot be used to estimate the condition of the region as a whole. Because targeted studies are typically designed to assess known impacts (e.g., downstream of discharges), the sites may be in worse condition than the average site in the region; therefore, estimates of regional condition from targeted sites may be biased.

When sites are sampled according to a probabilistic design, measurements represent not just local conditions, but also reflect conditions of a much larger population. The condition of each probabilistic site therefore contributes to condition estimates of the region as a whole. The weight (i.e., the contribution to regional estimates) of each site varies; sites in large, sparsely sampled regions (e.g., open streams) make a larger contribution to regional estimates than sites in small or densely sampled regions (e.g., agricultural streams).

Results

A total of 760 probabilistic sites were sampled in the South Coast region, of which 515 were sampled by the SMC or affiliated programs (Table S-2). To attain this sample size, 4330 unique sites were evaluated, yielding a rejection rate of 82%. The most common cause for rejecting a site was nonperenniality (75% of rejected sites), followed by physical barriers (9% of rejected sites). Determinations of nonperenniality were made during both office and field reconnaissance. Other causes for rejection (e.g., map errors, inappropriate waterbody types, nonwadeability) were infrequently encountered (≤5% of rejected sites; Table S-3; Figure S-2).

Analysis of rejected sites indicated large differences in the extent of perennial streams by watershed and land use. For example, perennial streams made up 53% of stream-miles in the Los Angeles watershed, but only 6% of the San Jacinto watershed (median watershed extent: 26%). Land-use was strongly associated with perenniality, as 35% of urban stream-length, but 12% of agricultural stream-length and 16% of open stream-length were perennial (Figures S-2, S-3, S-4).

Overall, the survey occurred in a drier than normal period. Rainfall during 2011 was slightly above average, although most other years were well below normal. Notably, the survey occurred shortly after one of the driest years on record (i.e., 2007), when even the rainier weather stations (e.g., Big Bear Lake) reported extremely low precipitation (Figure S-5).

Discussion

Perennial wadeable streams are a small component of the region, and protecting this limited resource may be a high priority for watershed managers, particularly because of their importance to a variety of beneficial uses (such as fisheries, wildlife, and swimming). At the same time, the need to expand attention to nonperennial streams is apparent: A comprehensive assessment of the coastal watersheds of southern California should not exclude the large extent of nonperennial streams. Ongoing research in the region addresses the question of whether the condition indices used in this survey are valid in nonperennial streams. However, it is likely that assessment tools currently available to watershed managers are adequate to include at least some portion of nonperennial streams in future surveys.

The observed extents of perennial streams in urban and agricultural areas are probably elevated by imported water sources (either as wastewater effluent or as runoff). Because nonperennial streams are so extensive in undeveloped areas, it is likely that this survey excludes many of the healthiest, least disturbed streams in the region. Therefore, although this survey provides an unbiased assessment of the perennial portion of southern California streams, extrapolation to the nonperennial portion may lead to incorrect conclusions about the health of the region as a whole.

Climatic trends may have also influenced the extent and location of perennial streams. Frequently, field crews were unable to sample reaches that were historically perennial, suggesting that long-term drought or changes in water management may have converted some perennial streams to nonperennial. The variability of flow regimes in southern California streams has been documented in special studies commissioned by the SMC (e.g., Mazor *et al.* 2014), and this variability underscores the need for a flexible approach towards characterizing stream hydrology.

The widespread conversion of streams from nonperennial to perennial (and vice versa) presents a question about setting appropriate ecological objectives. Should a converted stream be compared to perennial reference streams? Or is it more appropriate to compare them to their historical conditions? This survey used the former approach, although in certain applications, such as setting restoration objectives, different goals may be appropriate.

However objectives are set for streams with altered hydrology, managing flows may be an important tool in supporting their ecological health. The causes of elevated water flows were not investigated in this survey. In major tributaries and mainstems of large rivers, elevated flows may be driven by effluent from treatment plants managed by sanitation districts. In smaller streams, runoff may be an important driver, where flood control agencies manage stream flows. Diversions and groundwater extraction are particularly important in streams in agricultural areas. Therefore, if flow regime management needs to change to support ecological health, coordination among several agencies working under different permits may be required.

Table S-1. Characteristics of each watershed.

Watersheds	Stream Order	Area (km^2)	Total Stream Length (km)	Land Use (%)		
				Open	Agricultural	Urban
Ventura	6	642	236	68	15	17
Santa Clara	7	4327	1429	81	14	6
Calleguas	5	891	315	28	35	36
Santa Monica Bay	4	1171	200	73	2	25
Los Angeles	5	2160	519	41	1	59
San Gabriel	5	1758	487	50	0	50
Santa Ana River	6	7092	1708	49	15	36
–Lower Santa Ana	6	1253	298	36	10	53
–Middle Santa Ana	6	2135	519	38	14	48
–Upper Santa Ana	5	1721	523	64	12	24
–San Jacinto	4	1984	367	55	24	21
San Juan	4	1019	337	66	5	29
Northern San Diego	6	3640	1055	58	28	14
Central San Diego	5	1725	430	38	12	51
Mission Bay San Diego River	5	1270	322	64	4	32
Southern San Diego	5	2355	535	80	6	14
Entire Region	7	28051	7574	59	13	28

Table S-2. Probabilistic surveys included in the study. Note that the SMC program includes sites sampled under nested programs that used the same master sample draw, such as the San Gabriel River Regional Monitoring Program, the Los Angeles Watershed Monitoring Program, and Region 4 Probabilistic Sampling; sites from these surveys were included only if they were part of the SMC's target population of second-order or higher perennial, wadeable streams.

Survey	Years	Sites
Environmental Monitoring and Assessment Program (EMAP)	2000 to 2003	42
California Monitoring and Assessment Program (CMAP)	2004 to 2007	12
National Rivers and Streams Assessment (NRSA)	2009 and 2013	1
Perennial Streams Assessment (PSA)	2008	11
Stormwater Monitoring Coalition (SMC)	2008 through 2013	515
Region 8 Trend Monitoring (R8T)	2006 through 2013	102

Table S-3. Extent (in percent stream-miles) of perennial and non-perennial streams by subpopulation.

Subpopulation	Perennial, sampled (n sampled)	Perennial, not sampled	Rejected		
			Nonperennial	Physical Barrier	Other
South Coast	20.7 (682)	2.3	58.5	10.0	8.4
Land Use					
Agricultural	11.9 (92)	4.0	70.7	1.2	12.3
Open	15.9 (306)	1.4	61.1	16.3	5.3
Urban	35.3 (284)	3.4	47.2	0.8	13.4
Watershed					
Region 4					
Ventura	25.3 (37)	0.8	62.6	7.1	4.3
Santa Clara	16.2 (94)	2.1	55.2	24.0	2.6
Calleguas	30.2 (38)	6.0	48.2	3.0	12.6
Santa Monica Bay	23.6 (72)	2.1	52.7	9.6	11.9
Los Angeles	47.1 (44)	5.6	25.3	13.2	8.8
San Gabriel	43.7 (39)	1.1	23.0	16.6	15.5
Region 8					
Lower Santa Ana	16.3 (45)	3.1	46.6	8.2	25.8
Middle Santa Ana	13.1 (57)	4.0	61.3	4.7	16.9
Upper Santa Ana	25.1 (67)	2.8	44.6	22.2	5.3
San Jacinto	5.3 (28)	0.7	77.5	8.6	7.9
Region 9					
San Juan	27.5 (30)	1.0	68.0	1.1	2.5
Northern San Diego	7.1 (36)	0.7	81.0	1.5	9.6
Central San Diego	37.1 (35)	3.1	54.3	0.5	5.2
Mission Bay and San Diego River	14.5 (29)	2.8	74.6	1.3	6.8
Southern San Diego	8.3 (31)	0.8	83.7	0.8	6.3

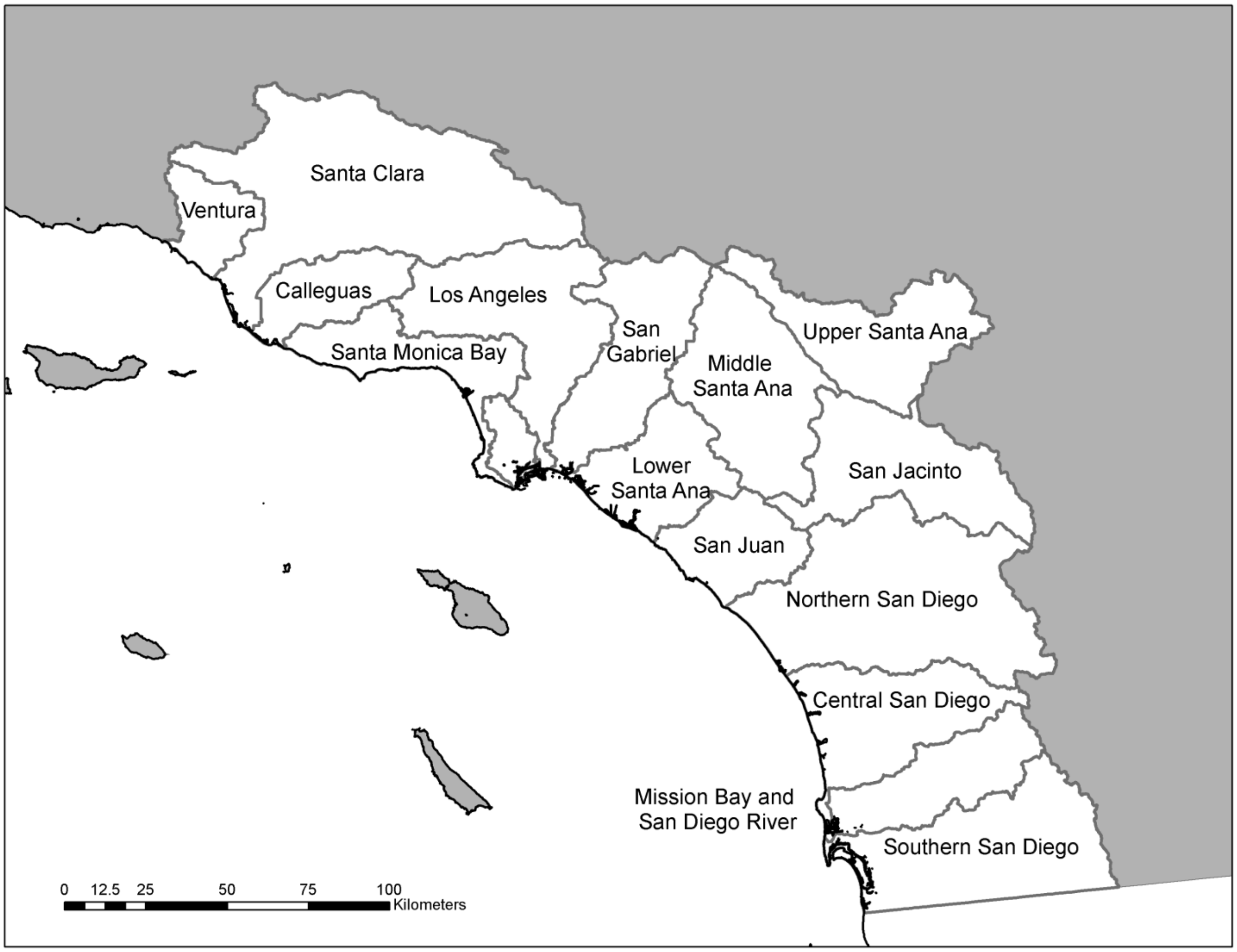


Figure S-1. Major watersheds in the South Coast survey area.

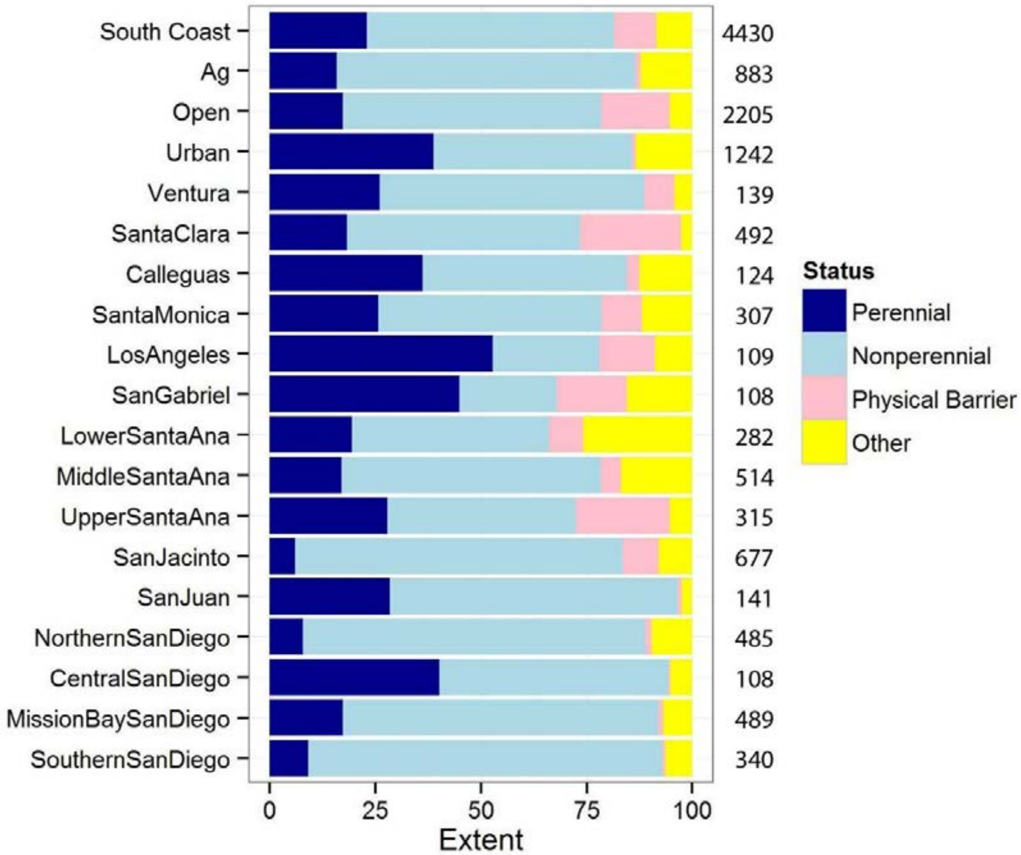


Figure S-2. Site evaluation results by watershed or land use. Numbers to the right of each bar represent the total number of sites evaluated for inclusion in the SMC and other survey.

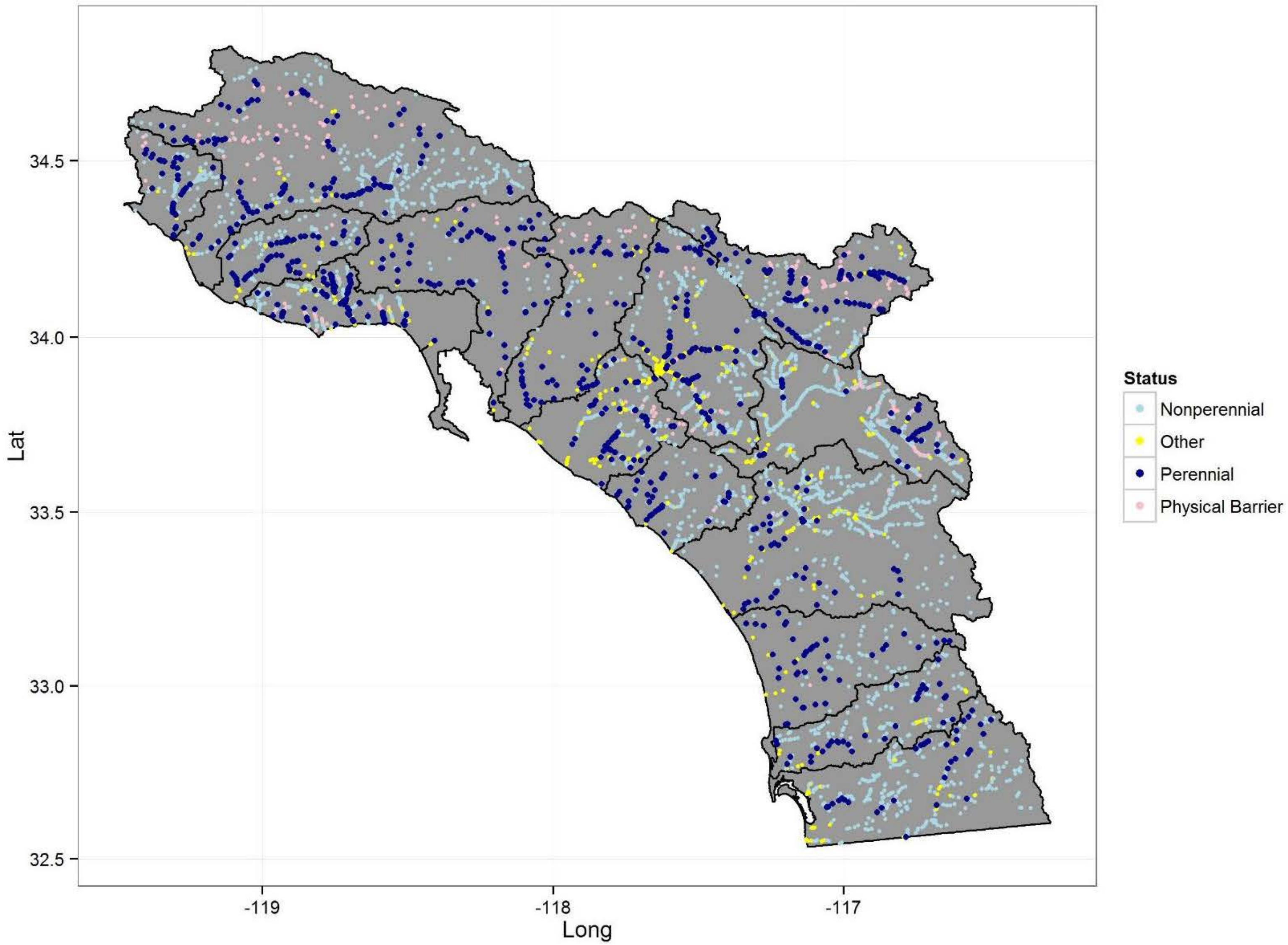


Figure S-3. Map of site evaluation results.

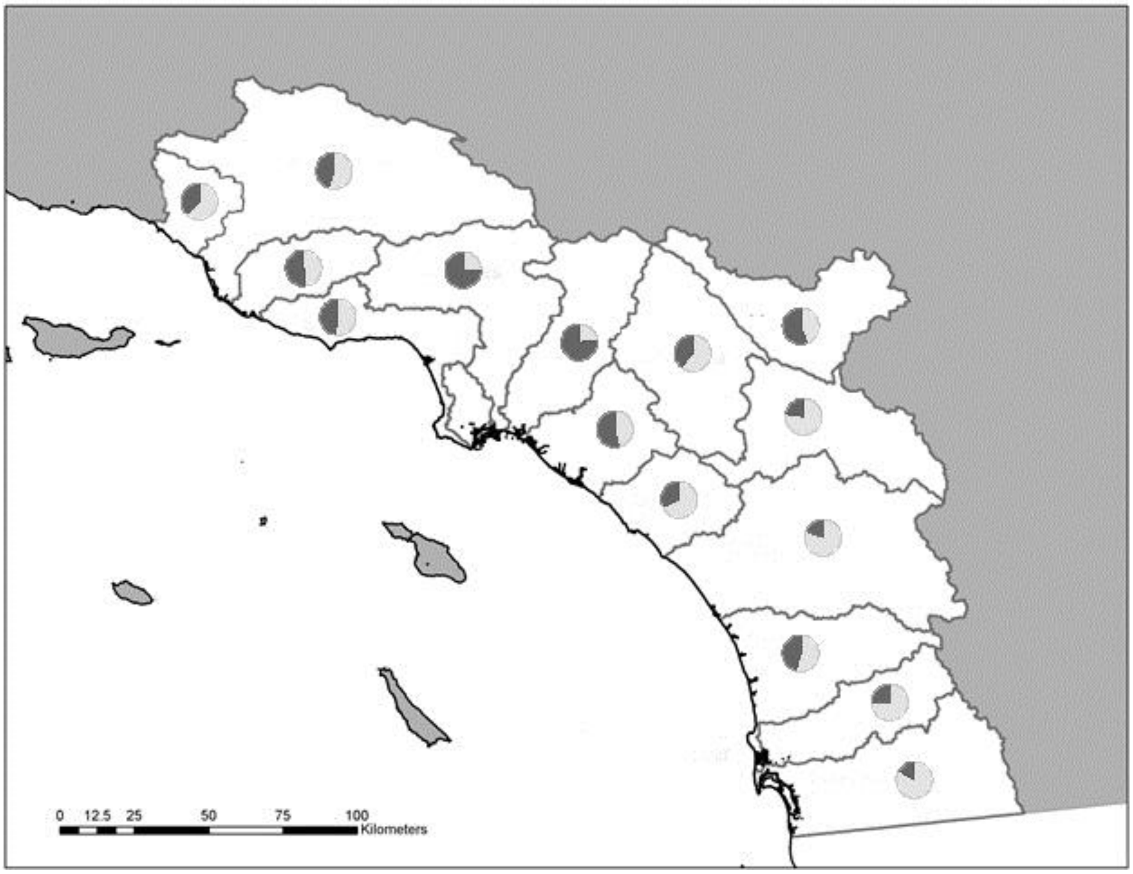


Figure S-4. Percent of nonperennial stream-miles (shown in light gray) for each watershed.

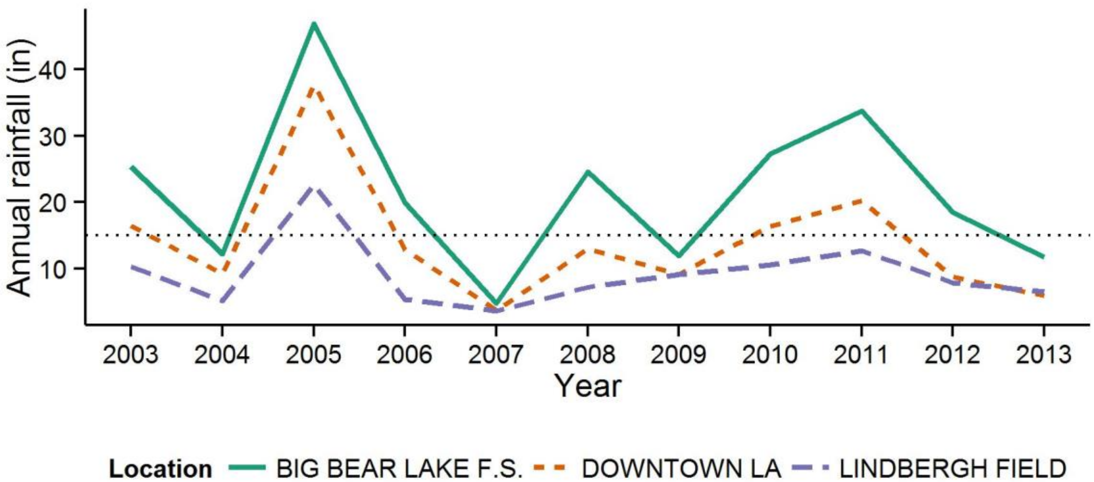


Figure S-5. Annual precipitation at three weather stations in the South Coast. The horizontal line reflects the average for downtown Los Angeles between 1877 and 2012.

QUESTION 1: WHAT IS THE BIOLOGICAL CONDITION OF PERENNIAL STREAMS IN THE SOUTH COAST REGION?

Healthy perennial streams, like this site on the North Fork of the San Jacinto River, are a scarce resource in the South Coast region.

Introduction

Surveys of ambient biological condition provide essential context for watershed management. At larger geographic scales, ambient surveys allow watershed managers to identify regional priorities. At local scales, ambient surveys allow managers to compare sites of interest to typical ranges in the region. This context informs decisions about which sites need protection or rehabilitation.

The biological condition of perennial streams was assessed by sampling four key biological indicators (i.e., benthic macroinvertebrates, diatoms, soft algae, and CRAM) at sites throughout the region, and comparing them to thresholds benchmarked to the distribution of scores at reference sites. These biological indicators provide a direct measurement of ecological health, and are an effective tool to determine if streams are supporting aquatic life or other beneficial uses. Additionally, their ability to integrate multiple stressors across both time and space make them a superior measure of biological condition to direct measures of stressors.

Methods

Data Collection

Data were collected as described in the Survey Overview.

Data Aggregation

Where multiple biological samples were collected at a single site within a year, data were aggregated as the maximum value within a site (with the assumption that index scores may be spuriously low, but not spuriously high). Multi-year mean values for each site were then calculated from these aggregated values if sites were revisited in multiple years. Missing values were ignored for all relevant analyses, where appropriate.

Thresholds

Biological indicators were compared to the 30th, 10th, and 1st percentile of reference sites (Table 1-1); these percentiles correspond to different probabilities that a score is from a site in reference condition. This approach creates four biological condition-classes that may be interpreted as indicating a stream's biology is likely intact (Class 1), possibly altered (Class 2), likely altered (Class 3), and very likely altered (Class 4). These percentiles were selected to reflect a range of conditions. Because this approach is consistent across indicators, it is possible to compare results from one index to another. Means and standard deviations were from published sources (CSCI: Mazor et al. In review; algae IBIs: Fetscher *et al.* 2014) or unpublished data (CRAM). Each threshold has an associated error rate; for example, 10% of reference sites are in Class 3 or 4, despite the fact that they are, by definition, intact.

Integrating Multiple Indicators

In order to determine a stream's overall condition, the four biological indicators were evaluated together to provide a comprehensive assessment of ecological health. To be considered intact for multiple indicators, all four indicators need to suggest that a stream is in reference condition. A single indicator below this threshold suggests that a stream is not in reference condition. To maintain an overall error rate of 10%, a site had to have scores above the 2.5th percentile of reference sites for each indicator (Table 1-1).

Weighted Magnitudes and Extent Estimates

Adjusted sample weights were calculated for each site. Because multiple surveys with different designs were included in analysis, weights needed to be recalculated for each site. Stratification approaches from all surveys were combined to create "cross-strata" in which all evaluated sites have an equal probability of being sampled. Adjusted weights were recalculated as the total stream length within each strata, divided by the number of sites evaluated in that stratum. Strata with no evaluations were excluded from analysis. Because these strata comprised less than 2% of the total stream length, these exclusions are unlikely to affect condition estimates. These weights were used to estimate distribution points for selected variables and extents for selected categories using the Horvitz-Thompson estimator (Horvitz-Thompson 1952). These estimates were calculated for reporting units of interest, including watersheds, land use classes, and (for trend estimates) years. Confidence intervals (CIs) were based on local neighborhood variance estimators (Stevens and Olsen 2004). All calculations were conducted using the spsurvey package (Kincaid and Olsen 2013) in R version 3.0.3 (R Core Team 2012).

Results

All data used in this report can be downloaded from ftp.sccwrp.org/pub/download/SMCReport/SMCDataFor5yearReport.zip.

Benthic Macroinvertebrates

Biological indicators suggested that most stream-kilometers in the survey's target population (i.e., perennial wadeable streams in southern coastal California) do not support healthy biology (Table 1-2a to c; Figures 1-1 and 1-2). For example, the mean CSCI score for the region was 0.77 and only 29% of stream-miles were in the top biological condition class for this indicator. Of the two components of the CSCI, the pMMI (which measures ecological structure) was more sensitive; the pMMI indicated that only 22% of South Coast stream-miles were in Class 1, whereas the O/E (which measures taxonomic completeness) indicated 46% were in Class 1.

The CSCI indicated that open streams were in better condition than agricultural streams, which were in turn better than urban streams. In fact, at open sites, mean CSCI scores were close to reference (i.e., 0.93), and only 5% of open stream-miles was in Class 4 (i.e., the worst condition class). In contrast, 31% of agricultural streams and 58% of urban streams were in Class 4.

Although this ranking of land use classes was evident with both components of the CSCI, the O/E generally categorized agricultural streams as intermediate between open and urban classes, whereas the difference was small when examined with the pMMI.

The watersheds with the greatest proportion of streams in Class 1 were located, roughly, in the northern and southern ends of the region, while the middle portions of the region had streams in poorer health. For example, the greatest extent of Class 1 stream-miles was located in the Ventura watershed (68%), followed by Southern San Diego (65%). These watersheds, along with the Santa Clara, all had mean CSCI scores greater than 0.9. The smallest extents of Class 1 stream-miles were observed in the Calleguas (9%), Central San Diego (10%), Lower Santa Ana (11%) and Middle Santa Ana (11%) watersheds.

Benthic Algae

In general, the algae indices showed similar patterns of regional stream condition as the CSCI (Table 1-2d and e; Figures 1-1 and 1-2). For example, the diatom index (D18) showed that 27% of stream-miles were in Class 1, while the soft algae index (S2) showed that 25% were in this class; these numbers are only slightly less than the estimate for the CSCI (i.e., 29%).

In contrast with the CSCI, algae-based indices only weakly differentiated between urban and agricultural streams, and estimated both to be in far worse condition than open streams. For example, D18 rarely identified developed streams as Class 1 (Agricultural: 11%; Urban: 2%). Uniquely, S2 scores were generally lower at agricultural streams (mean: 26) than urban streams (mean: 32). In contrast, mean D18 scores were similar in both urban (43) and agricultural (45) streams.

Although there were some differences among the two algae indices, they both showed that the watersheds in the northern portions of the region had the greatest extent of streams in Class 1. For example, D18 indicated the greatest extent of streams in Class 1 in the Ventura (84%) and Upper Santa Ana (63%,) watersheds, whereas S2 indicated the greatest extent of stream-miles in Class 1 in the Upper Santa Ana (47%) and Santa Clara (46%) watersheds. Depending on the index used, Class 1 streams were rarely or never observed in the Calleguas, Santa Monica Bay, Lower Santa Ana, San Juan, and Central San Diego watersheds.

Riparian Condition

Most streams in southern California did not support healthy riparian communities, as only 30% of stream-miles in the region had CRAM scores in the top condition class (i.e., a CRAM score ≥ 79), and the mean CRAM score (64) was much lower than the reference mean (i.e., 84). However, the extent of stream-miles in Class 1 was greater for individual attributes (e.g., 40% for the landscape and buffer attribute), indicating that different attributes limit overall riparian condition at different sites (Table 1-2f; Figures 1-1 and 1-2).

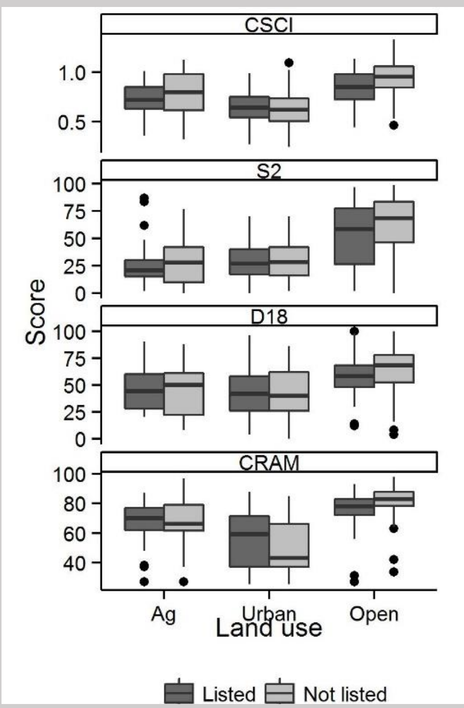
Land use was strongly associated with CRAM scores, even more so than with other indicators. For example, Class 1 CRAM scores were observed at 65% of open stream-miles (mean: 81), but only 20% of agricultural streams (mean: 68) and 7% of urban stream-miles (mean: 51). This contrast was particularly strong at the attribute level (especially the buffer and landscape attribute). For example, hydrologic conditions were in the top class at 57% of open stream-miles, but only 17% of agricultural stream-miles and 17% of urban stream-miles.

Class 1 riparian conditions were observed at the majority of stream-miles within five watersheds that were geographically dispersed across the region, with the greatest extents in the San Jacinto (63%) and Northern San Diego (57%) watersheds, followed by Ventura (54%) and Southern San Diego (52%). Streams with Class 1 riparian condition were scarce in the Calleguas (3%) and Los Angeles (14%) watersheds. Across the four attributes, four watersheds ranked among the worst in terms of the extent of streams in Class 4: Los Angeles, San Gabriel, Lower Santa Ana and Middle Santa Ana. All attributes were in the worst condition class for at least 50% of these watersheds (Table 1-2g to j) with the exception of the biotic structure attribute in the Lower Santa Ana (36% in Class 4).

303(d)-Listed Streams

The State Water Resources Control Board has designated approximately 2000 stream-kilometers in southern California as impaired for water quality pursuant to Section 303(d) of the Clean Water Act. Streams are usually listed as “impaired” due to exceedances of a chemical water quality standard. The potential relationship between designated impairments and instream biological condition was evaluated by comparing biological index scores from streams listed as impaired to streams from comparable land use categories that are not listed. Listed streams were obtained from the State Water Board 303(d) list; in Ventura and Riverside counties, agency staff modified this list by reclassifying listings believed to be unrelated to aquatic life uses (e.g., bacteria) as “not listed” for this analysis.

Land use was more strongly associated with scores than with status on the 303(d) list. For example, scores at urban and agricultural sites were lower than scores at open sites, whether or not the sites were included on the 303(d) list. There was no significant difference in scores between listed and unlisted streams at urban or agricultural sites. Scores at open listed sites were slightly lower than at open unlisted sites; however, this difference was small, and the proportion of Class 3 or 4 sites was no greater at open listed sites than open unlisted sites.



Index scores based on benthic macroinvertebrates (CSCI), soft algae (S2), diatoms (D18) and riparian condition (CRAM) for 303(d)-listed and unlisted streams, by land use.

Condition of Engineered Channels: Exploring options for alternative thresholds

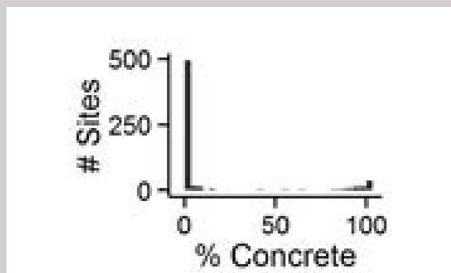
Many of the streams in this survey have been engineered to some degree for flood management purposes, and these engineered features may constrain biological condition. Therefore, we estimated the biological condition of streams with engineered channels relative to those with natural channels. The best condition observed in engineered channels may be a more realistic threshold than a reference-based threshold, assuming that the effects of channel engineering cannot be mitigated. If the best observed condition in engineered channels is substantially below a reference-based threshold, an alternative threshold may be appropriate.

Because consistently derived region-wide maps identifying the location of engineered channels are not available, habitat data was used to classify streams as likely concrete-lined (i.e., at least 5% concrete in the streambed), or likely non-concrete lined (i.e., less than 5% concrete in the streambed). This approach overlooks forms of engineered channels that do not use concrete, such as ungrouted rock, while also misclassifying streams affected by other types of concrete structures, such as road crossings. It also ignores the substantial variation of channel forms in engineered systems, which may affect biological condition. But despite these shortcomings, this approach represents a useful starting point until better data are available about engineered channels.

Overall, approximately 26% of perennial stream-miles were estimated to be concrete-lined. About half of urban streams were concrete lined and 13% of agricultural streams, but only 2% of open streams. Concrete-lined streams comprised a majority of stream-miles in the Los Angeles and San Gabriel watersheds, but none were sampled in the Northern and Southern San Diego watersheds.

Extent of concrete channels in southern California

Subpopulation	Concrete-Lined Channels	
	# sites	% stream-miles
South Coast	130	26
Land use		
Urban	107	53
Open	10	2
Agricultural	13	13
Watershed		
Los Angeles Region		
Ventura	2	4
Santa Clara	3	3
Calleguas	12	29
Santa Monica Bay	13	19
Los Angeles	22	51
San Gabriel	23	69
Santa Ana Region		
Lower Santa Ana	11	26
Middle Santa Ana	22	41
Upper Santa Ana	1	2
San Jacinto	5	19
Northern San Diego		
San Juan	6	24
Northern San Diego	0	0
Mission Bay and San Diego River	6	24
Central San Diego	4	14
Southern San Diego	0	0



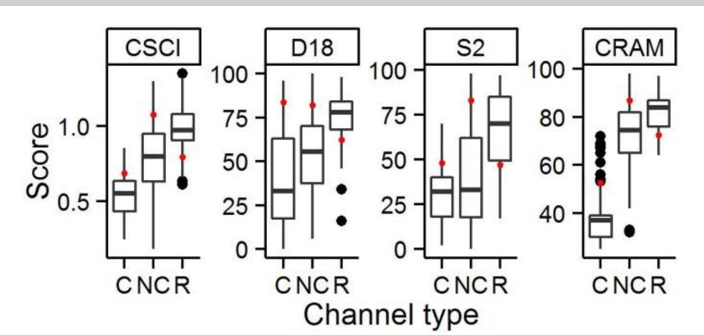
% concrete substrate at each sampled site. Concrete was absent from most sites, but comprised nearly 100% for a small handful of sites. Intermediate values were rarely observed.

Condition of Engineered Channels (Continued)

To investigate the constraints concrete lining imposes on biological condition, sites were divided into three classes: concrete-lined, no concrete, and reference. The range of index scores within each class was examined by creating boxplots. For indices where the 90th percentile of concrete-lined channels is less than the 10th percentile of reference streams, lower thresholds may be appropriate.

In general, scores of all indices were lower in concrete-lined channels than in reference streams, suggesting that these streams were typically in poor condition. For most indices the highest scores in concrete-lined channels were lower than lowest scores observed at reference sites (estimated at the 90th and 10th percentiles, respectively). For example, the 90th percentile of CSCI scores was 0.69 (i.e., "Class 3"), suggesting that an alternative threshold may reflect a more attainable management objective than the 10th percentile of reference sites. Additional data and analyses (particularly on channel type) are needed if alternative thresholds for concrete-lined channels are used for regulatory purposes.

In contrast, this analysis did not support alternative thresholds for algae indices. High scores were frequently observed in concrete-lined channels. In fact, the 90th percentile of D18 scores in concrete-lined channels was 84, which is substantially higher than the threshold based on the 10th percentile of reference sites (i.e., 62). Therefore, it is probable that low D18 and S2 scores in concrete-lined channels are attributable to impacts not directly related to channelization, and may instead be related to water quality impacts.



Distribution of scores at concrete-lined channels (C), nonconcrete-lined channels (NC), and reference streams (R). The red dot represents the 90th percentile of scores of concrete- and nonconcrete-lined channels and the 10th percentile of reference streams.

Options for setting thresholds in concrete-lined channels. A traditional approach is based on the distribution of scores at reference sites, whereas an alternative approach is based on the distribution of scores at concrete-lined channels. These numbers reflect preliminary analyses.

Index	**Option 1: Threshold based on reference**	**Option 2: Threshold based on concrete-lined channels**
CSCI	0.79	0.68
D18	62	84
S2	47	48
CRAM	72	53

Multiple indicators

Only 25% of streams-miles in the region were intact for all four indices, and these conditions were almost exclusively observed at streams with undeveloped watersheds (Table 1-3, Figures 1-3 and 1-4). Overall, 60% of open stream-miles were in this category. Streams with index scores above the multi thresholds were absent from the Calleguas watershed and scarce in Santa Monica Bay, Los Angeles, Middle Santa Ana, and Central San Diego watersheds. In contrast, a majority of stream-miles were intact for multiple indicators in the Upper Santa Ana (62%), Southern San Diego (61%), San Jacinto (53%) and Ventura (50%) watersheds.

Most commonly, streams were limited (i.e., below the "multi" threshold) for multiple indicators, and all four indicators were identified as limiting for 15% of stream-miles region-wide (Table 1-3; Figures 1-3 and 1-4). More than a quarter of stream-miles were limited for all indicators in certain watersheds (specifically, Calleguas, Los Angeles, Lower Santa Ana, and San Jacinto watersheds) and in urban streams, but this situation was rare in other watersheds (specifically, Ventura, Upper Santa Ana, Northern San Diego, and Mission Bay and San Diego watersheds), and in open streams. Streams limited for single indicators were more extensive in these open streams, and algae indices (D18, S2, or both) were most commonly the only limiting indicator. For example, 41% of stream-miles in the Northern San Diego and 37% in the Ventura watersheds were limited for D18 or S2, but not CRAM or CSCI.

Discussion

The scarcity of streams with intact biology may prompt managers to evaluate ways to protect these streams, or improve the condition of streams where indicators suggest altered biological condition. The emphasis may vary from protection in one part of the region to rehabilitation in another, depending on local needs and interests. However, many watershed managers in southern California would benefit from a coordinated approach towards prioritizing local objectives, given the extent of streams with altered biology. Uncoordinated efforts to address pervasive challenges have historically met with little success (Bernstein and Schiff 2002).

Multiple indicators proved valuable for several reasons. 1) Redundancy improves precision and guards against incorrect conclusions from sampling error or natural variability. 2) The different life histories of each indicator provided a broader assessment of ecosystem function. 3) The unique properties of the indices increase overall sensitivity to different stressors. 4) The different responsiveness of the indices allows better discrimination among condition-classes along the biological condition gradient.

The identification of "limiting indicators" may provide initial steps towards diagnosing stressors or prioritizing sites for rehabilitation. The fact that so many streams were limited for multiple indicators (frequently all four indicators used in the survey) suggests that pressures on many streams are diverse, severe, or both, and fixing these streams may be major challenge. But 19% of the region was limited for a single indicator, and this may indicate that pressures are less severe or more similar in action; rehabilitating these streams may be a more surmountable challenge than streams with fewer indicators in intact condition.

Table 1-1. Thresholds for identifying non-reference condition for biological indicators. Ref mean: Mean of reference sites. Ref SD: Standard deviation of reference sites. Numbers in parentheses refer to the percentiles used to set boundaries between classes. "Multi" refers to the threshold used in multiple-indicator analyses (i.e., the 2.5th percentile); samples with scores above all "multi" thresholds are considered to be in reference condition, with a 10% error rate.

Index	Ref N	Ref mean	Ref SD	Class 1 (≥30th Intact)	Class 2 (10th to 30th)	Class 3 (1st to 10th)	Class 4 (<1st Altered)	Multi
Benthic Macroinvertebrates								
CSCI	479	1.00	0.16	≥0.92	0.79 to 0.92	0.63 to 0.79	<0.63	0.69
-pMMI	479	1.00	0.18	≥0.91	0.77 to 0.91	0.58 to 0.77	<0.58	--
-OE	479	1.00	0.19	≥0.90	0.76 to 0.90	0.56 to 0.76	<0.56	--
Benthic Algae								
D18	122	79	13	≥72	62 to 72	49 to 62	<49	54
S2	122	69	17	≥60	47 to 60	29 to 47	<29	69
CRAM								
Overall Score	86	84	9	≥79	72 to 79	63 to 72	<63	66
Buffer and Landscape	86	95	10	≥90	82 to 90	72 to 82	<72	--
Hydrologic Connectivity	86	81	13	≥74	64 to 74	51 to 64	<51	--
Physical Structure	86	81	16	≥73	60 to 73	44 to 60	<44	--
Biotic Structure	86	75	16	≥67	54 to 67	38 to 54	<38	--

Table 1-2a: Mean CSCI scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	682	0.76	0.24	29	16	23	31
Land Use							
Agricultural	92	0.74	0.19	20	17	31	31
Open	306	0.93	0.17	59	21	15	5
Urban	284	0.59	0.16	2	11	30	58
Watershed							
Region 4							
Ventura	37	0.95	0.15	68	17	15	0
Santa Clara	94	0.91	0.21	54	20	15	11
Calleguas	38	0.65	0.15	9	3	38	49
Santa Monica Bay	72	0.70	0.20	18	9	31	43
Los Angeles	44	0.70	0.23	15	23	29	33
San Gabriel	39	0.62	0.25	17	11	15	57
Region 8							
Lower Santa Ana	45	0.59	0.21	11	14	10	65
Middle Santa Ana	57	0.64	0.23	11	16	30	43
Upper Santa Ana	67	0.88	0.20	49	16	26	10
San Jacinto	28	0.72	0.19	14	24	31	31
Region 9							
San Juan	30	0.72	0.18	15	20	27	38
Northern San Diego	36	0.83	0.19	55	11	13	21
Central San Diego	35	0.72	0.17	10	17	37	35
Mission Bay and San Diego	29	0.78	0.27	33	9	25	33
Southern San Diego	31	0.91	0.16	65	19	5	11

Table 1-2b. Mean pMMI scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	682	0.68	0.25	22	10	24	44
Land Use							
Agricultural	92	0.62	0.17	4	16	36	45
Open	306	0.87	0.20	47	19	27	7
Urban	284	0.49	0.12	0	1	18	81
Watershed							
Region 4							
Ventura	37	0.83	0.22	32	26	27	15
Santa Clara	94	0.86	0.22	49	16	25	11
Calleguas	38	0.54	0.09	0	0	32	68
Santa Monica Bay	72	0.64	0.19	13	13	24	50
Los Angeles	44	0.61	0.23	10	1	35	53
San Gabriel	39	0.57	0.25	15	9	6	70
Region 8							
Lower Santa Ana	45	0.50	0.18	0	12	19	68
Middle Santa Ana	57	0.59	0.21	9	9	24	58
Upper Santa Ana	67	0.86	0.23	39	19	34	8
San Jacinto	28	0.62	0.19	12	10	27	51
Region 9							
San Juan	30	0.56	0.22	13	4	6	76
Northern San Diego	36	0.72	0.21	32	14	21	33
Central San Diego	35	0.60	0.18	10	2	34	54
Mission Bay and San Diego	29	0.72	0.27	27	10	11	52
Southern San Diego	31	0.81	0.19	41	33	9	18

Table 1-2c. Mean O/E scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	682	0.85	0.27	46	20	17	18
Land Use							
Agricultural	92	0.86	0.24	47	14	29	10
Open	306	1.00	0.21	71	18	7	4
Urban	284	0.69	0.23	20	23	24	33
Watershed							
Region 4							
Ventura	37	1.09	0.15	94	3	3	0
Santa Clara	94	0.96	0.23	67	15	11	6
Calleguas	38	0.76	0.23	21	20	45	15
Santa Monica Bay	72	0.77	0.24	28	20	35	17
Los Angeles	44	0.80	0.27	31	36	5	28
San Gabriel	39	0.68	0.28	19	25	17	39
Region 8							
Lower Santa Ana	45	0.68	0.27	22	15	32	31
Middle Santa Ana	57	0.70	0.29	28	17	21	34
Upper Santa Ana	67	0.91	0.26	60	15	8	17
San Jacinto	28	0.82	0.27	46	11	24	19
Region 9							
San Juan	30	0.87	0.18	42	33	18	7
Northern San Diego	36	0.96	0.24	70	7	17	6
Central San Diego	35	0.83	0.23	51	10	21	17
Mission Bay and San Diego	29	0.85	0.28	38	29	19	15
Southern San Diego	31	1.01	0.18	75	14	11	0

Table 1-2d. Mean D18 and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	525	53	25	27	13	18	42
Land Use							
Agricultural	70	45	23	11	15	27	47
Open	221	67	21	47	19	16	18
Urban	234	43	24	12	9	18	62
Watershed							
Region 4							
Ventura	35	79	11	84	11	4	2
Santa Clara	63	59	18	28	16	31	25
Calleguas	38	34	16	0	1	19	80
Santa Monica Bay	54	45	18	3	12	36	48
Los Angeles	40	41	26	15	13	12	60
San Gabriel	32	69	23	52	9	19	21
Region 8							
Lower Santa Ana	33	39	23	3	19	12	66
Middle Santa Ana	30	63	25	41	17	14	28
Upper Santa Ana	27	72	23	63	14	7	16
San Jacinto	21	58	25	24	37	10	29
Region 9							
San Juan	30	41	25	10	16	17	57
Northern San Diego	33	58	19	30	23	17	30
Central San Diego	29	46	23	16	8	14	62
Mission Bay and San Diego	30	56	27	28	18	17	37
Southern San Diego	30	58	22	21	32	19	28

Table 1-2e. Mean S2 scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	524	44	25	25	16	27	32
Land Use							
Agricultural	71	26	18	5	6	27	61
Open	217	62	24	59	13	15	12
Urban	236	32	16	2	19	35	43
Watershed							
Region 4							
Ventura	36	49	25	39	4	33	24
Santa Clara	60	58	27	46	16	23	15
Calleguas	38	26	15	0	13	28	59
Santa Monica Bay	54	37	24	20	19	15	46
Los Angeles	41	41	20	21	11	35	33
San Gabriel	32	49	21	26	23	27	24
Region 8							
Lower Santa Ana	33	32	22	11	10	26	53
Middle Santa Ana	30	36	16	8	13	46	33
Upper Santa Ana	26	53	28	47	10	19	23
San Jacinto	21	54	24	51	10	21	19
Region 9							
San Juan	30	45	29	27	6	35	32
Northern San Diego	33	45	26	36	15	12	37
Central San Diego	30	33	19	4	31	22	43
Mission Bay and San Diego	30	49	31	39	11	22	29
Southern San Diego	30	57	27	41	21	21	17

Table 1-2f. Mean CRAM and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	529	64	21	30	13	16	41
Land Use							
Agricultural	77	68	15	20	19	29	32
Open	203	81	10	65	20	12	2
Urban	249	51	18	7	7	16	70
Watershed							
Region 4							
Ventura	32	79	9	54	19	25	2
Santa Clara	69	76	11	48	24	16	12
Calleguas	31	57	18	3	22	17	59
Santa Monica Bay	67	64	19	25	15	22	38
Los Angeles	41	50	19	14	4	16	66
San Gabriel	37	52	22	24	6	2	68
Region 8							
Lower Santa Ana	33	56	18	11	12	20	57
Middle Santa Ana	29	52	23	24	6	4	67
Upper Santa Ana	23	74	10	34	19	30	17
San Jacinto	18	79	13	63	10	10	16
Region 9							
San Juan	31	66	21	38	6	11	45
Northern San Diego	31	81	10	57	19	21	4
Central San Diego	29	63	17	17	14	28	41
Mission Bay and San Diego	30	70	21	50	13	13	25
Southern San Diego	28	76	15	52	19	13	16

Table 1-2g. Mean CRAM Buffer and Landscape attribute scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	529	75	24	40	10	11	39
Land Use							
Agricultural	77	81	18	44	13	21	21
Open	203	92	13	81	12	4	4
Urban	249	62	22	10	8	14	67
Watershed							
Region 4							
Ventura	32	91	12	71	16	11	2
Santa Clara	69	91	12	70	13	10	7
Calleguas	31	65	21	7	15	27	52
Santa Monica Bay	67	72	26	38	8	21	34
Los Angeles	41	67	23	26	9	5	61
San Gabriel	37	68	21	27	5	0	68
Region 8							
Lower Santa Ana	33	59	26	11	12	14	62
Middle Santa Ana	29	53	28	16	0	14	69
Upper Santa Ana	23	86	23	69	8	0	23
San Jacinto	18	79	23	43	13	16	27
Region 9							
San Juan	31	71	24	33	6	10	52
Northern San Diego	31	93	8	74	12	12	2
Central San Diego	29	71	24	29	13	26	31
Mission Bay and San Diego	30	77	24	50	8	7	35
Southern San Diego	28	87	21	67	11	10	12

Table 1-2h. Mean CRAM Hydrologic structure attribute scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	529	63	21	25	18	24	33
Land Use							
Agricultural	77	66	15	17	28	34	22
Open	203	81	15	57	22	18	3
Urban	249	51	17	4	15	26	55
Watershed							
Region 4							
Ventura	32	80	15	52	26	19	4
Santa Clara	69	74	13	35	30	28	7
Calleguas	31	54	16	8	9	32	51
Santa Monica Bay	67	63	17	25	16	30	30
Los Angeles	41	52	22	20	6	22	52
San Gabriel	37	53	24	22	8	9	61
Region 8							
Lower Santa Ana	33	53	20	12	6	28	53
Middle Santa Ana	29	50	20	11	6	26	57
Upper Santa Ana	23	75	19	48	12	31	10
San Jacinto	18	76	22	58	19	0	23
Region 9							
San Juan	31	65	21	18	30	17	35
Northern San Diego	31	79	15	44	28	25	2
Central San Diego	29	65	15	12	28	41	19
Mission Bay and San Diego	30	69	19	30	28	20	22
Southern San Diego	28	78	16	46	25	22	7

Table 1-2i. Mean CRAM Physical structure attribute scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	529	56	25	38	12	15	35
Land Use							
Agricultural	77	59	20	32	23	20	25
Open	203	75	17	71	14	10	4
Urban	249	43	22	16	9	17	58
Watershed							
Region 4							
Ventura	32	76	21	65	15	16	4
Santa Clara	69	73	17	60	22	13	5
Calleguas	31	52	25	31	7	21	41
Santa Monica Bay	67	63	22	46	23	13	19
Los Angeles	41	39	20	17	1	18	64
San Gabriel	37	44	26	21	13	2	64
Region 8							
Lower Santa Ana	33	49	26	29	10	5	56
Middle Santa Ana	29	40	22	18	2	17	63
Upper Santa Ana	23	55	18	22	26	32	20
San Jacinto	18	59	22	50	0	24	26
Region 9							
San Juan	31	66	25	58	5	15	22
Northern San Diego	31	71	16	63	21	8	9
Central San Diego	29	55	20	28	11	29	32
Mission Bay and San Diego	30	64	24	50	23	2	25
Southern San Diego	28	67	17	63	10	17	10

Table 1-2j. Mean CRAM Biotic structure attribute scores and extent estimates for each condition class. n: number of sites used in the analysis. SD: Standard deviation. Class 1: % of streams with scores above the 30% percentile of reference sites. Class 2: % of streams with scores between the 10th and 30th percentiles of reference sites. Class 3: % of streams with scores between the 1st and 10th percentiles of reference sites. Class 4: % of streams with scores below the 1st percentile of reference sites.

Subpopulation	n	Mean	SD	Class 1	Class 2	Class 3	Class 4
South Coast	529	57	24	42	17	11	30
Land Use							
Agricultural	77	63	19	46	27	13	13
Open	203	72	17	69	19	8	4
Urban	249	45	22	22	15	13	50
Watershed							
Region 4							
Ventura	32	66	12	50	29	18	2
Santa Clara	69	66	16	53	24	17	6
Calleguas	31	55	20	35	30	7	28
Santa Monica Bay	67	59	19	42	28	14	16
Los Angeles	41	41	22	19	14	6	61
San Gabriel	37	42	24	24	6	9	62
Region 8							
Lower Santa Ana	33	51	23	33	8	23	36
Middle Santa Ana	29	43	26	21	13	10	56
Upper Santa Ana	23	58	24	38	25	16	22
San Jacinto	18	75	21	73	12	4	11
Region 9							
San Juan	31	63	23	52	7	16	26
Northern San Diego	31	81	13	84	14	2	0
Central San Diego	29	62	19	41	32	15	13
Mission Bay and San Diego	30	69	23	74	4	0	22
Southern San Diego	28	70	16	70	16	6	8

Table 1-3. Percent of stream-miles intact for multiple indicators, or limiting for specific indicators, for each subpopulation. Note that, in contrast to Table 1-2, these results are based on an adjusted "multi" threshold in Table 1-1, which reduces the error associated with multiple comparisons. CI: Confidence interval.

Subpopulation	n	% Intact			Indicators of Poor Condition						
		Estimate	95% CI		CSCI Alone	D18 Alone	S2 Alone	D18 or S2	All Benthic Indicators	CRAM Alone	All Four Indicators
South Coast	453	25	21	28	2	6	7	18	4	3	15
Land Use											
Agricultural	66	9	4	15	1	6	15	29	6	3	22
Open	172	60	51	68	4	11	10	25	1	6	0
Urban	215	2	0	4	1	3	4	10	6	0	25
Watershed											
Region 4											
Ventura	31	50	31	69	9	5	32	37	0	0	0
Santa Clara	51	43	30	55	5	17	6	25	1	3	7
Calleguas	30	0	0	0	0	0	12	29	11	0	32
Santa Monica Bay	47	10	3	16	5	10	6	25	10	0	12
Los Angeles	33	13	5	21	0	0	4	4	0	10	34
San Gabriel	31	28	19	37	0	0	3	3	0	3	7
Region 8											
Lower Santa Ana	32	15	7	23	0	3	6	15	0	0	46
Middle Santa Ana	25	5	0	13	4	0	7	12	3	1	13
Upper Santa Ana	19	62	42	82	0	0	0	5	9	8	0
San Jacinto	14	53	35	70	13	0	0	0	7	0	27
Region 9											
San Juan	29	18	9	27	10	7	6	13	7	0	16
Northern San Diego	31	33	4	62	2	8	23	41	9	2	0
Central San Diego	25	6	0	15	0	15	9	28	4	0	19
Mission Bay and San Diego	29	32	22	41	0	10	0	14	13	0	0
Southern San Diego	26	61	53	70	0	10	0	20	0	2	2

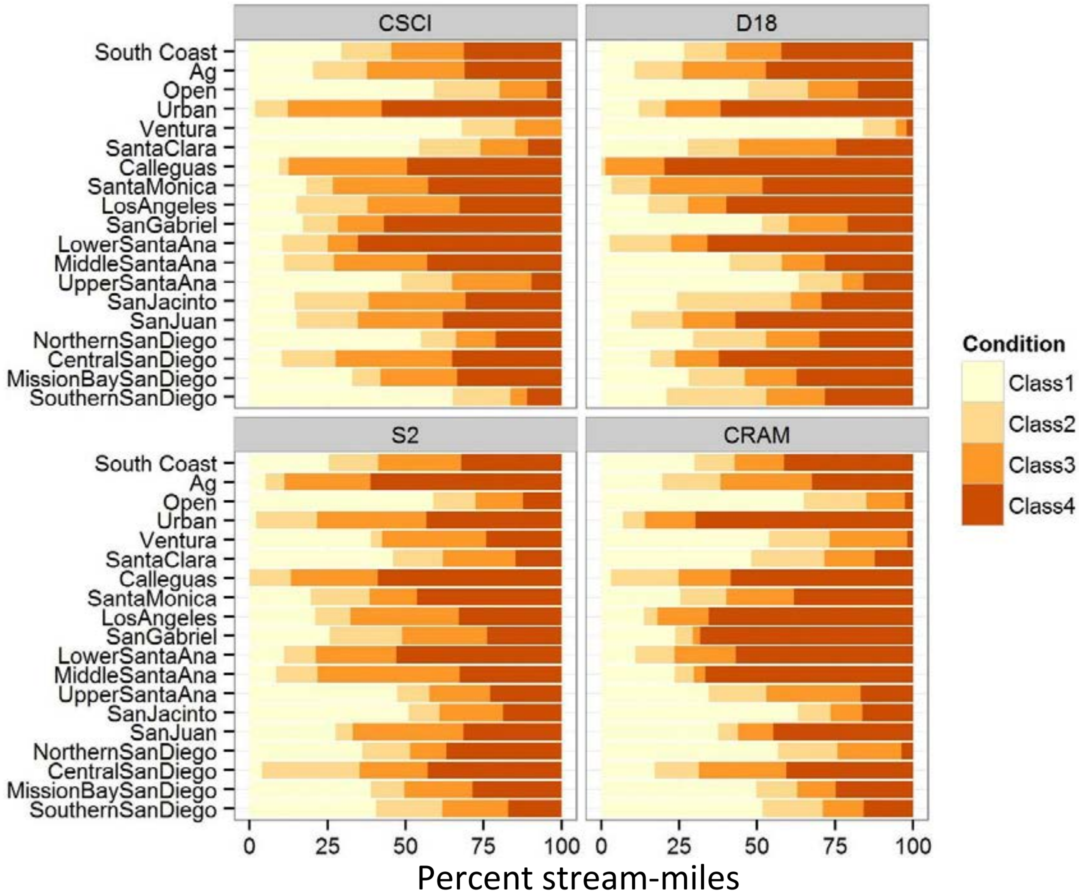


Figure 1-1. Percent of stream-miles in each condition class for each indicator by subpopulation.

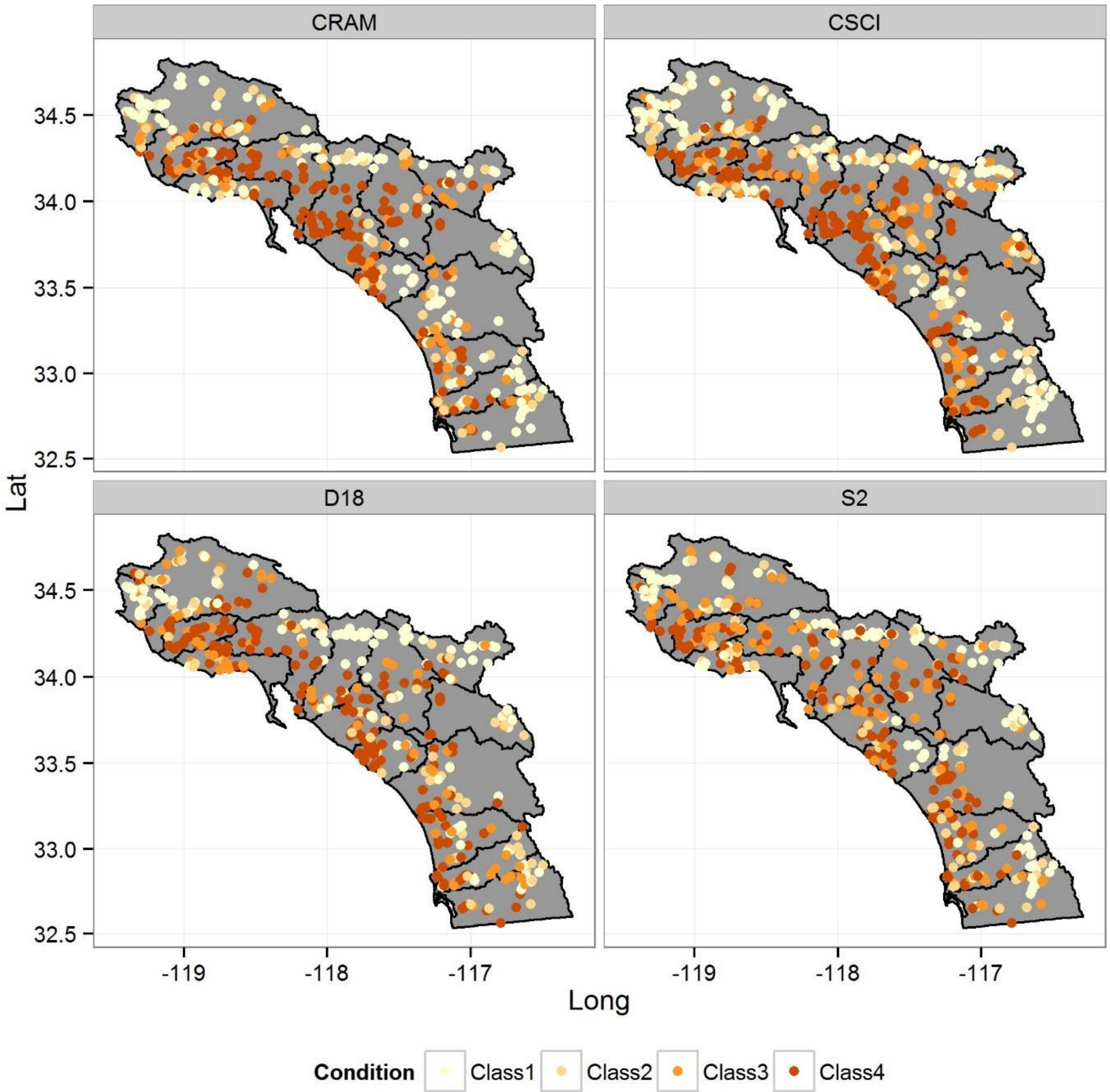


Figure 1-2. Map of scores for key indicators.

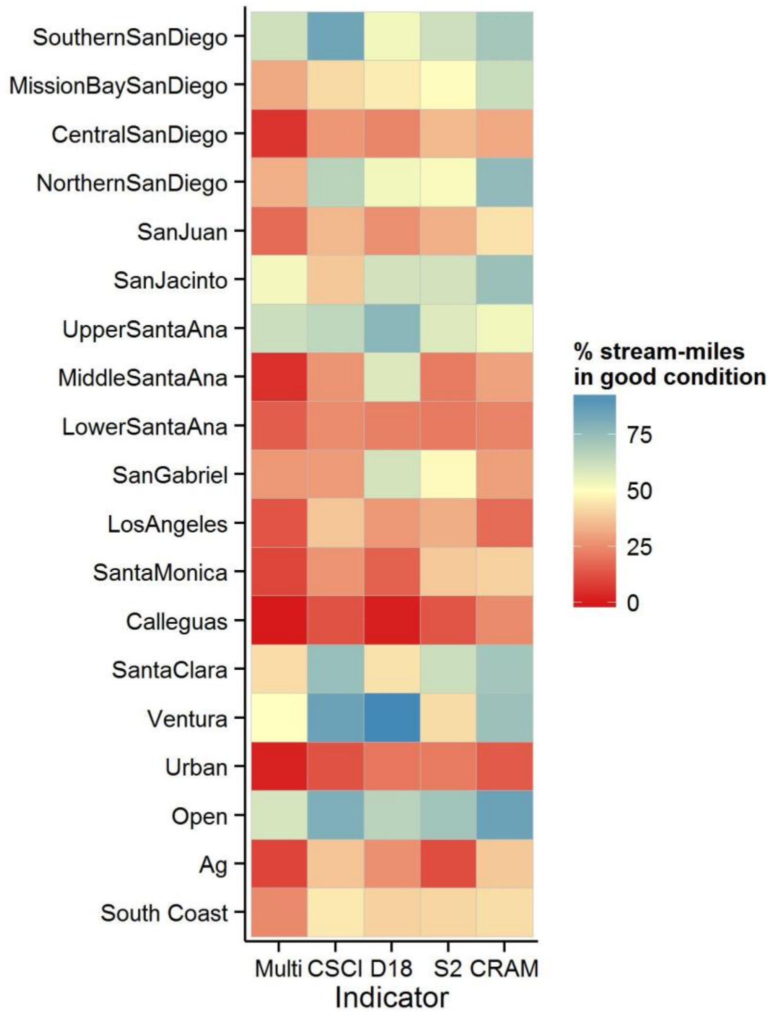


Figure 1-3. Percent of stream-miles in good condition by subpopulation. For the "multi" column, the number reflects the percent of stream-miles with scores for all indicators above the 2.5th percentile of reference sites; all other columns reflect the percent of stream-miles with scores above the 10th percentile of reference sites.

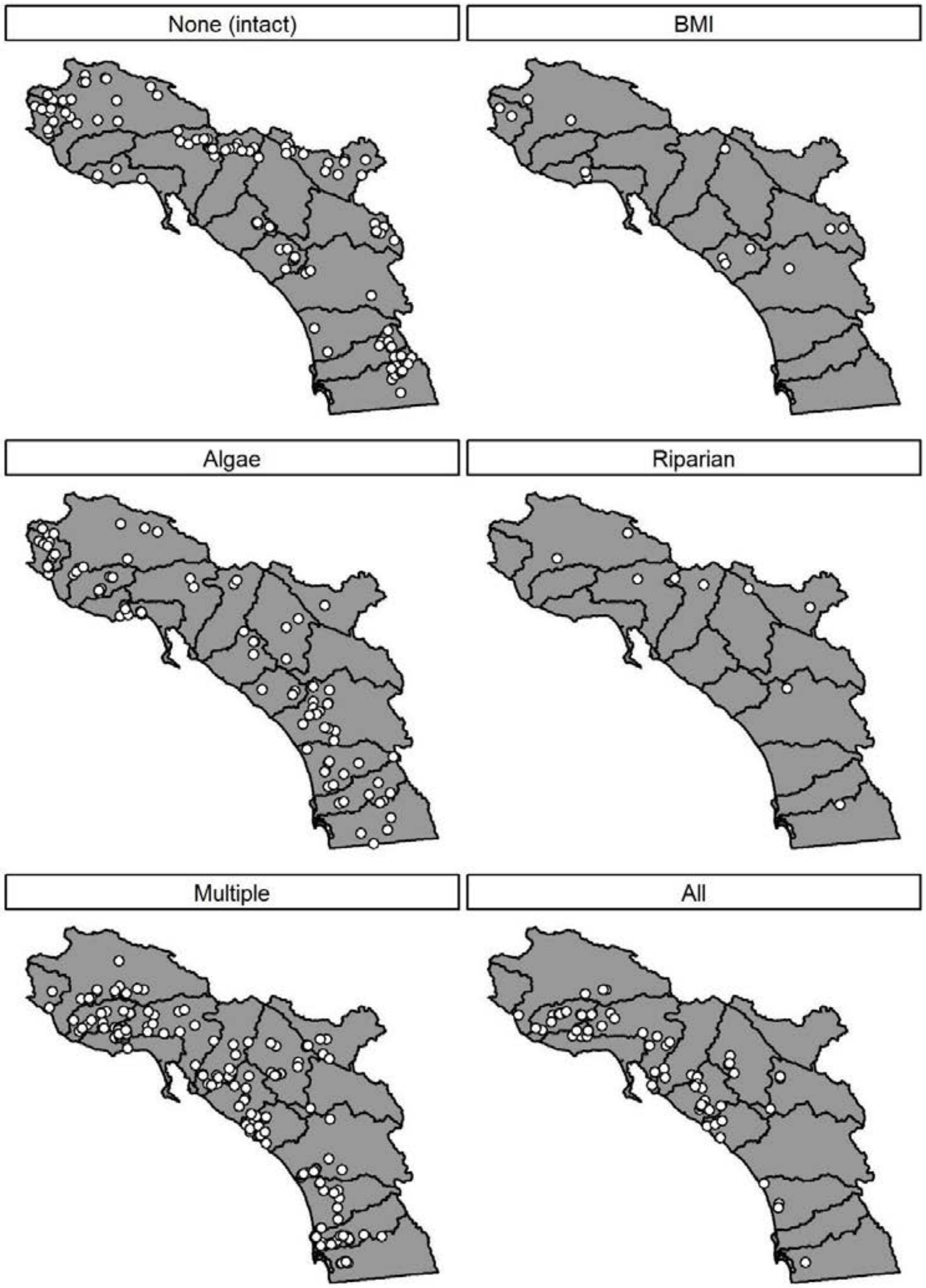


Figure 1-4. Map of limiting indicators. In the top left panel, points represent sites where scores for all four indicators above the 2.5th percentile of reference sites. For all other panels, points represent sites where scores for the specified indicator or indicators were below the 2.5th percentile of reference sites.

QUESTION 2: WHICH STRESSORS ARE ASSOCIATED WITH POOR BIOLOGICAL CONDITION?

Caballero Creek, in the Los Angeles watershed, exemplifies both the severe habitat alteration and nutrient enrichment that affects many streams in southern California.

Introduction

Although the direct measurement of stressors cannot determine the ecological health of a stream, it is essential in determining which factors may limit its health, and provides essential data to inform causal assessment at degraded sites. The SMC stream survey took a notably broad approach towards assessing stressors, measuring nutrients, total and dissolved metals, major ions, water column toxicity, and physical habitat. For some constituents, this survey represents the first unbiased estimate of the extent and magnitude of stressors in aquatic systems. By assessing the extent of these stressors and assessing their associations with biological condition, this survey allows the prioritization of stressors of regional interest, which can then inform local management decisions.

Methods

Data Collection

Data were collected as described in the Survey Overview.

Data Aggregation

Where multiple samples were collected at a single site within a year, data were aggregated as the maximum value within a site. Multi-year mean values for each site were then calculated from these aggregated values if sites were revisited in multiple years. Missing values were ignored for all relevant analyses, where appropriate.

Thresholds

Our goal in setting stressor thresholds was to prioritize stressors in terms of their associated risks to biological condition, as opposed to validating the adequacy of existing regulatory thresholds or assessing compliance with permit requirements. Therefore, the best threshold for this goal is one that is associated with the biggest change in biological condition. Stressor thresholds do not necessarily reflect the most appropriate water quality standards for a given site, which may vary based on site-specific conditions. Therefore, exceeding one of the stressor thresholds used in this analysis may not necessarily indicate impairment or noncompliance with permit requirements.

Stressor thresholds were derived from values published in relevant literature or regulations, where possible (Tables 2-1, 2-2). For chemical nutrients and for most habitat metrics (which are occur naturally and do not have regionally applicable regulatory thresholds), thresholds were established at the 90^{th} or 10^{th} percentile of the distribution among reference sites (as per Ode *et al.* In review). For pyrethroids without published thresholds, a threshold of zero was used.

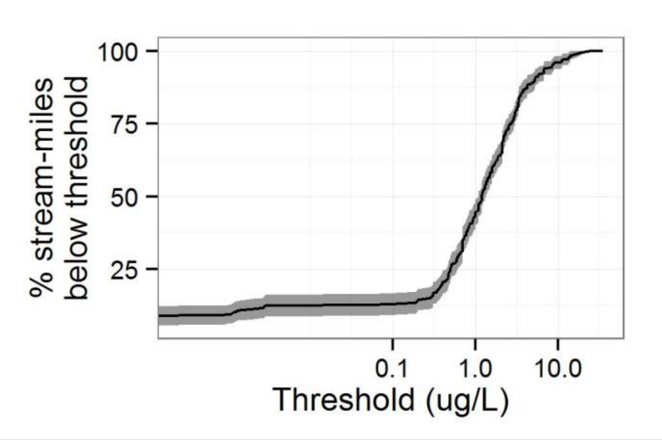
Toxicity tests were compared against controls. If endpoints were significantly different from controls and had values that were 80% of control values or lower, the samples were considered toxic. Toxic survival endpoints were given precedence over nonlethal endpoints (e.g., depressed reproduction).

Reference-Based Thresholds

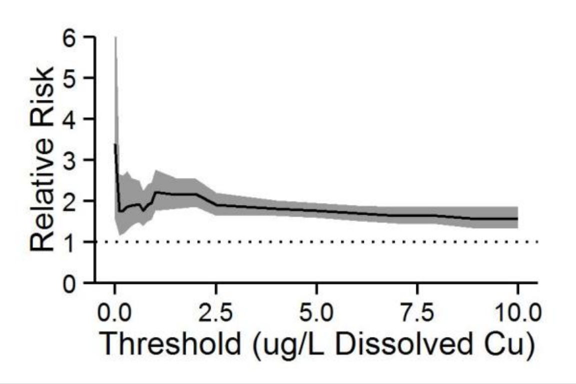
Reference-based thresholds, while appropriate for assessing whether biological indices reflect reference condition, may not be appropriate for water chemistry or physical habitat variables, as they may be excessively stringent. Because of uncertainty about the applicability of certain water chemistry thresholds, a number of alternative thresholds recommended by participating agencies were evaluated.

Copper

To evaluate the impacts of metals on stream condition, this survey used hardness-adjusted thresholds from the California Toxics Rule (EPA 2000). These thresholds are intended to prevent toxic effects on a variety of aquatic species based on the concentration of bio-available toxicants. However, because many of these metals have natural geological sources in the region (e.g., Yoon and Stein 2008), a reference-based threshold, such as those used for nutrients, would better identify sites that exceed natural concentrations. Therefore, a reference-based threshold for copper was calculated as the 90th percentile of concentrations at reference sites within the South Coast region (i.e., 3.4 ug/L), and the extent of stream-miles below this threshold was estimated. Whereas 96% of stream-miles across the region were below the hardness-adjusted threshold for total copper, only 67% were below the reference-based threshold. The difference was even greater for dissolved Copper: 99% of stream-miles were below the hardness-adjusted CTR threshold, whereas only 39% were below the reference threshold of 0.8. Relative risk estimates were only marginally affected (e.g., risk to CSCI scores went up from 1.7 to 1.9 for dissolved copper). However, attributable risks increased considerably (e.g., from 0.004 to 0.360), reflecting the larger number of stream-miles exceeding the reference-based threshold, which would have increased the priority given to this stressor.



Effects of varying thresholds on the percent of perennial stream-miles below threshold for dissolved copper. The gray band indicates the 95% confidence interval.

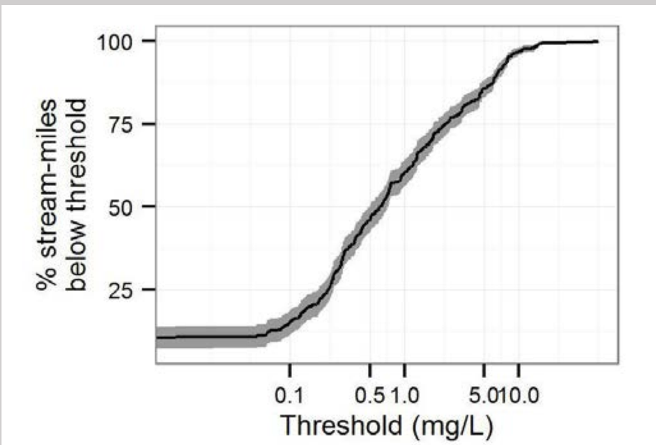


Risk to CSCI scores remain high at all levels of dissolved copper analyzed. The gray band represents the 95% confidence interval. Relative risks greater than 1 (represented by the dotted line) indicate that the stressor is associated with poor biological condition.

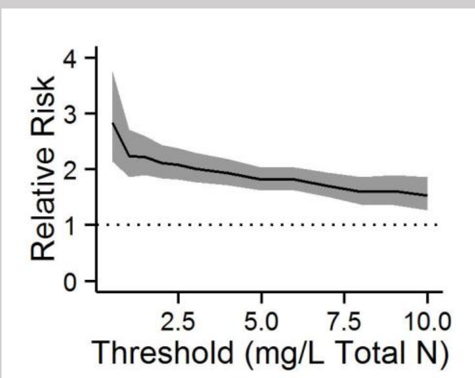
Reference-Based Thresholds (Continued)

Total Nitrogen

This study and others (see Herlihy and Sifneos 2008) have shown a strong association between nutrient concentrations and poor biological condition. However, the reference based thresholds used here are much lower than those used in basin plans or TMDLs throughout the region. For example, the reference-based threshold for total nitrogen (TN) was 0.37 mg/L, whereas the San Diego Basin Plan specifies a threshold of 1 mg/L. The Los Angeles Basin Plan sets a much higher threshold of 10 mg/L (although this threshold is explicitly linked to risks to human health and municipal water uses, not aquatic life). Although 39% of stream-miles across the region were below the reference threshold, this number increased to 60% if a threshold of 1 mg/L was used, and to 98% if a threshold of 10 mg/L was used.



Effect of varying thresholds on the percent of perennial stream-miles below threshold for total nitrogen. The gray band indicates the 95% confidence interval.



Risk to CSCI scores remain high at all levels of total N analyzed. The gray band represents the 95% confidence interval. Relative risks greater than 1 (represented by the dotted line) indicate that the stressor is associated with poor biological condition.

Stressor Extent Estimates

Extent estimates and related distribution points were calculated as described in the Survey Overview. These estimates were calculated for land use classes and for the region as a whole, but not for individual watersheds.

Stressor Associations and Prioritization

Relative risk analysis was used to estimate the likelihood of poor biological condition given the presence of a stressor, relative to the likelihood in the absence of a stressor (Van Sickle *et al.* 2006). Attributable risk analysis was then used to estimate the proportion of streams in the region where biological condition may improve if a stressor were removed. Biological condition was determined as described in the section on Question 1, except that Class 1 and 2 streams (Table 1-1) were both treated as "good", and Class 3 and 4 streams were both treated as "poor".

Stressors were then designated as very high priority (attributable risk > 25% of the region for any indicator), high priority (attributable risk between 10% and 25% for any indicator), moderate (attributable risk <10%, but relative risk > 1 for any indicator), and low (relative risk <1 for all indicators).

Relative and Attributable Risk

Relative risk assessment is statistical method of associating the increased risk associated with a stressor (Van Sickle *et al.* 2006). Originally developed for public health studies, relative risk analysis has become popular in environmental assessment because it facilitates prioritization of stressors by identifying which ones are most strongly associated with poor condition. Relative risk compares the odds of observing poor biological condition when a stressor is present to the odds of observing it when the stressor is absent:

$$\text{Relative risk} = \frac{Proportion\ of\ stressed\ stream{-}miles\ in\ poor\ condition}{Proportion\ of\ unstressed\ stream{-}miles\ in\ poor\ condition}$$

Stressors with relative risks greater than 1 are considered to be associated with poor condition; larger relative risks indicate stronger associations, although any stressor with a risk greater than 1 is a good candidate for further study (e.g., causal analysis).

Relative risk analysis can be extended through attributable risk analysis, which accounts for the fact that low-risk but extensive stressors may be higher regional priorities than high-risk stressors that affect few stream miles (Van Sickle and Paulsen 2008). Attributable risk is calculated as follows:

$$\text{Attributable risk} = \frac{(Proportion\ of\ stressed\ stream{-}miles)\times(Relative\ risk-1)}{1+(Proportion\ of\ stressed\ stream{-}miles)\times(Relative\ risk-1)}$$

Thus, the attributable risk of a stressor is large if a stressor is extensive and has a relative risk greater than 1. If one assumes a perfect causal relationship between the stressor and poor condition, the attributable risk represents the proportion of the region that would be improved if the stressor were eliminated (Van Sickle and Paulsen 2008). But even when this assumption is violated, attributable risk is a useful metric for ranking stressors by regional importance because it accounts for both stressor extent and strength of association with biological condition.

Both relative risk and attributable risk require stressor thresholds for calculation, and modifying the threshold may alter estimates of risk. If stressor thresholds are set too high, relative risk estimates will go down as the proportion of unstressed stream-miles in poor condition increases. Similarly, if stressor thresholds are set too low, relative risk estimates will also go down as the proportion of stressed stream-miles in poor condition decreases. Ideally, stressor thresholds are set at the level where streams are most likely to switch from poor to good condition (or vice-versa), thereby allowing more direct comparisons of risk across stressors.

Results

All data used in this report can be downloaded from ftp.sccwrp.org/pub/download/SMCReport/SMCDataFor5yearReport.zip.

Stressor Extents

Regional results for all analytes are presented, but only subpopulations where at least 5% of the stream-miles exceeded the threshold are included.

Water Chemistry

In general, nutrients and sulfate exceeded the threshold in extensive portions of the region, while exceedances of pyrethroids and metals were rare (Table 2-3a, Figures 2-1 and 2-2). For example, total Nitrogen exceeded the reference benchmark of 0.37 mg/L in 61% of stream-miles across the region, and sulfates exceeded the benchmark of 250 mg/L in 45% of stream-miles. In contrast, Bifenthrin, the most commonly detected pyrethroid, exceeded the benchmark of 0.0006 ug/L in only 16% of stream-miles, and Selenium exceeded the threshold of 5 ug/L in only 13% of stream-miles. Even within urban areas, pyrethroid and metal exceedances were observed in fewer than 24% of stream-miles (Table 2-3b). Several analytes (e.g., Alkalinity, Arsenic, Nickel, and Zinc) were within thresholds at all sites in the survey. Nonetheless, exceedances of certain constituents were extensive in individual watersheds (Table 2-3c). For example, Bifenthrin exceeded the benchmark in 35% of stream-miles in the Santa Monica Bay watershed, and 30% of the Lower Santa Ana, whereas Selenium exceeded its threshold in 40% of the Calleguas and 55% of the Santa Monica Bay watersheds. Geographic clustering of exceedances was evident for both Selenium and Chloride (Figure 2-2), suggesting a localized (perhaps geological) source for these constituents. Exceedances of the reference-based threshold for total dissolved solids (TDS; i.e., 498 mg/L) were also widespread, affecting 76% of stream-miles region-wide, and nearly all agricultural (97%) and urban (99%) stream-miles. However, a large extent (50%) of open stream-miles also exceeded this threshold, as did 100% of certain watersheds (i.e., Calleguas, Santa Monica, and Lower Santa Ana).

With the exception of Ammonia (whose threshold is based on its toxicity to aquatic invertebrates), nutrients frequently exceeded their benchmarks, based on concentrations observed at reference sites, and these extents were closely related to land use. For example, 71% of open streams were below the threshold for total nitrogen (TN), yet only 12% of urban and 13% of agricultural streams had similarly low concentrations of nitrogen. Exceedances for TN were relatively limited in the Ventura (26%) and Santa Clara (30%) watersheds, but pervasive within the Calleguas (94%). and Lower Santa Ana (90%) watersheds. Total phosphorous (TP) exceedances exhibited similar patterns. For example, 57% of stream-miles exceeded the reference-based benchmark of 0.03 mg/L. As with nitrogen, phosphorous exceedances were pervasive in urban (83% of stream-miles) and agricultural (72%) land uses, and were relatively common in open streams (29%).

Toxicity

Toxicity was detected in surprising geographic patterns. Sublethal toxicity (i.e., depressed reproduction) was somewhat common (evident in 25% of stream-length), and was more extensive in open (33%) than agricultural (30%) or urban (19%) streams (Table 2-4, Figure 2-3). Sublethal toxicity was particularly extensive in the Los Angeles (57%) and Santa Clara (49%) watersheds, but rare within neighboring watersheds, like the San Gabriel (6%) and Calleguas (8%) watersheds. In contrast, toxicity to survival endpoints was evident in only 6% of streams region-wide, and was less extensive in open streams (2%) than urban (8%) or agricultural (15%). Lethal toxicity was most extensive in the Central San Diego watershed (26%), but was fairly limited (extent <10%) in most other watersheds.

Physical habitat

Region-wide, the majority of stream-miles were within the reference distribution for all habitat variables examined, although the more aggregated measures of habitat condition tended to show the most extensive alteration (Table 2-5). For example, the three diversity metrics (i.e., Shannon_Flow, Shannon_Habitat, and Shannon_Substrate), as well as the fish cover metric (i.e., XFC_NAT_SWAMP) were depressed for more than 25% of stream-miles in the region (Figures 2-4 and 2-5).

With the exception of algal biomass variables, the extent of open streams exceeding a benchmark was typically close to the expected distribution at reference sites (i.e., 10%). For example, the Shannon flow metric was outside threshold in 32% of urban stream-miles, 20% of agricultural stream-miles, and only 7% of open stream-miles. This pattern, with the greatest extent of streams exceeding thresholds in urban, followed by agricultural streams, was typical of most habitat variables. A notable exception includes variables directly related to fine sediment (e.g., % sands and fines (PCT_SAFN) and % cobble embeddedness (XEMBED)) were more extensively above threshold in agricultural streams than in urban streams; these metrics may reflect channelization or other flood-control activities that reduce particulate substrates (such as cobbles and sand grains) in urban streams.

Biomass variables frequently exceeded reference-based thresholds across different land-use types, including undeveloped streams. For example, macroalgae cover (i.e., PCT_MAP) exceeded the threshold in 42% of urban streams, 31% of agricultural streams, and 17% of open streams. In contrast, variables related to habitat complexity or riparian vegetation showed a more familiar pattern across land use types.

The extent of altered habitat varied widely by watershed. For example, the extent of exceedances of biomass thresholds was about a third or less for most watersheds, with the notable exception of benthic Chlorophyll a and ash-free dry mass, where exceedances affected nearly two-thirds of the Santa Monica Bay watershed. The exceedances of the Shannon habitat metric affected 3% or less of the Ventura and Northern San Diego watersheds, but more than half of the Los Angeles, San Gabriel, and Middle Santa Ana watersheds. In fact, exceedances affected more than 50% of these three watersheds for many habitat variables.

Stressor prioritization

Nutrients, variables related to ionic concentration (e.g., TDS, sulfates), and several habitat variables were classified as very high priority stressors, having both high relative and attributable risks for several indicators (Tables 2-6 and 2-7, Figure 2-6). For example, TN had an attributable risk of 0.51 for the CSCI. Total dissolved solids and sulfate were also high priority because of their high attributable risk for the CSCI and S2. In contrast, metals and pyrethroids were typically classified as moderate priority. Some, like Bifenthrin or copper, had comparatively high relative risks (>1.5), but because of their limited extents, were estimated to affect less than 10% of the region. Variables related to biomass were also classified as moderate, but for the opposite reason: low risk, but extensive exceedances of threshold contributed to elevated attributable risks.

While there was general agreement among indices, risks were overall greater for the CSCI, followed by S2, with D18 showing the lowest risks. The same five stressors (TDS, PCT_BIGR, W1_HALL, TP, and TN) had the highest attributable risk for all indices. Copper and XEMBED had relatively high attributable risk for the algae indices, compared to the CSCI, which in turn had higher risk for several habitat complexity measures (e.g., Shannon_Substrate, XPCMG).

Discussion

Nutrients, altered physical habitat, and major ions were both widespread and strongly associated with altered biology. Although metals and pyrethroids may be important stressors at specific sites, they should be considered a lower priority for regional programs (generally because they affected only a limited extent of streams).

Although physical habitat was repeatedly identified as a high-risk stressor, it was not possible to characterize these impacts in a precise, unbiased manner. Many physical habitat variables show large site-to-site variability within undisturbed areas, reflecting the influence of environmental gradients, like watershed size, climate, and geology. Establishing site-specific benchmarks based on environmental setting would probably yield a more accurate assessment of physical habitat. Data collected at reference sites could be used to develop models that can set these benchmarks for different stream types. Additionally, integrating multiple physical habitat variables into one or more indices would probably provide a more comprehensive characterization of habitat condition than the metric-by-metric approach used here.

Why were nutrients so strongly associated with poor biology if elevated biomass, the presumed mechanism of impact, had only a moderately high risk? This apparent conflict could result from several possible reasons: 1) timing of sampling, which may miss peak algae biomass; 2) co-occurrence with other stressors (such as habitat alteration; Bernal *et al.* 2013), or 3) other mechanisms of impact, such as cyanotoxins or microsystins (e.g., Aboal *et al.* 2002). Because nutrients are such a high priority for the region, further investigation of these explanations may be warranted.

Table 2-1. Analyte threshold by category. Asterisks indicate thresholds that were used when hardness data were unavailable.

Category	Analyte	Threshold	Unit	Source
Ions	Alkalinity as CaCO3	20000	mg/L	EPA (1986)
Ions	Chloride	260	mg/L	EPA (1986)
Ions	Sulfate	250	mg/L	EPA (1986)
Field	pH	6.5 and 8.5		EPA (1986)
Field	Turbidity	3.8	NTU	Ref (n=47)
Field	Specific conductance	878	uS/cm	Ref (n=77)
Solids	Suspended solids	9.5	mg/L	Ref (n=65)
Solids	Dissolved solids	498	mg/L	Ref (n=19)
Metals	Arsenic	150	ug/L	EPA (2000)
Metals	Cadmium	2.2	ug/L	EPA (2000)
Metals	Copper	9*	ug/L	EPA (2000)
Metals	Nickel	2.5*	ug/L	EPA (2000)
Metals	Lead	52*	ug/L	EPA (2000)
Metals	Selenium	5	ug/L	EPA (2000)
Metals	Zinc	120*	ug/L	EPA (2000)
Nutrients	TN	0.42	mg/L	Ref (n=65)
Nutrients	Ammonia-N	1.71	mg/L	EPA 2000
Nutrients	TP	0.03	mg/L	Ref (n=64)
Pyrethroids	Allethrin	0	ug/L	Detection
Pyrethroids	Bifenthrin	0.0006	ug/L	Central Valley draft TMDL (2014)
Pyrethroids	Cyfluthrin	0.00005	ug/L	Central Valley draft TMDL (2014)
Pyrethroids	Cyhalothrin Lambda	0.0005	ug/L	Central Valley draft TMDL (2014)
Pyrethroids	Cypermethrin	0.0002	ug/L	Central Valley draft TMDL (2014)
Pyrethroids	Deltamethrin/Tralomethrin	0	ug/L	Detection
Pyrethroids	Esfenvalerate/Fenvalerate	0.003	ug/L	Central Valley draft TMDL (2014)
Pyrethroids	Permethrin	0.002	ug/L	Central Valley draft TMDL (2014)

Table 2-2. Thresholds for physical habitat variables. n: number of reference sites used to estimate reference distribution. Ref: estimated from reference distribution. RCMP: Reference Condition Monitoring Program, from Ode *et al.* (In review).

Variable	Description	Direction	Threshold	Units	n	Source
Biomass						
Chlorophyll□a	Benthic chlorophyll a	Increase	56	ug□cm^2	66	Ref
AFDM	Benthic ash-free dry mass	Increase	37	mg□cm^2	64	Ref
PCT□MAP	□ macro-algae cover	Increase	41	□	49	Ref
XMIATP	Mean microalgae thickness (where present)	Increase	1.0	mm	53	Ref
PCT□MIAT1	□ thick (□1 mm) microalgae cover	Increase	18	□	53	Ref
PCT□MCP	□ macrophyte cover	Increase	37	□	49	Ref
PCT□CPOM	□ coarse particulate organic matter cover	Increase	71	□	60	Ref
Instream habitat						
XFC□NAT□SWAMP	Natural fish cover	Decrease	18	□	73	Ref
Shannon□Habitat	Fish cover diversity	Decrease	1.1		73	Ref
Shannon□Flow	Flow habitat diversity	Decrease	2.4		61	Ref
PCT□FAST	□ fast-water habitat	Decrease	7	□	61	Ref
Riparian						
XCDENMID	□ shading	Decrease	17	□	72	Ref
XCMG	Mean riparian vegetation cover	Decrease	32	□	62	Ref
XPCMG	Proportion of reach with all three layers present	Decrease	0.09	Proportion	62	Ref
XPMGVEG	Mean vegetative cover	Decrease	0.23	Proportion	73	Ref
W1□HALL□SWAMP	Human activity metric	Decrease	1.5		60	RCMP
Substrate						
PCT□BIGR	□ large substrate (□128 mm)	Decrease	27	□	73	Ref
PCT□SAFN	□ sands and fines (□2 mm)	Increase	57	□	73	Ref
Shannon□Substrate	Substrate diversity	Decrease	0.53		73	Ref
XEMBED	□ cobble embeddedness	Increase	55	□	73	Ref

Table 2-3a. Regional extent and distributions for chemical stressors.

Stressor	n	% Below Threshold			Concentration		
		Estimate	95% CI		Median	Mean	SD
Ions							
Alkalinity as CaCO3	558	100	100	100	200	217	100
Chloride	513	81	77	84	108	182	316
Sulfate	507	55	51	59	228	294	327
Metals (dissolved)							
Arsenic (d)	443	100	100	100	1.9	2.3	2.7
Copper (d)	443	99	99	100	1.2	2.3	3.3
Nickel (d)	443	100	100	100	2.2	4.3	15.4
Lead (d)	443	100	100	100	0.00	0.05	0.17
Selenium (d)	469	89	86	91	0.99	2.59	6.51
Zinc (d)	486	100	100	100	2.0	4.1	7.2
Metals (total)							
Arsenic (t)	458	100	100	100	2.3	2.9	7.5
Copper (t)	458	96	94	98	2.0	5.2	9.6
Nickel (t)	458	100	100	100	2.6	5.9	18.1
Lead (t)	458	95	93	97	0.08	1.57	3.85
Selenium (t)	458	87	84	89	1.20	3.33	13.24
Zinc (t)	458	100	100	100	3.9	15.8	31.1
Nutrients							
TN	503	39	35	43	0.6	2.2	4.1
Ammonia-N	516	99	97	100	0.01	1.58	19.52
TP	513	43	39	47	0.05	3.91	65.11
Pyrethroids							
Bifenthrin	430	84	81	88	0	0.8	4.2
Cyfluthrin	430	93	90	96	0	0.2	1.6
Cyhalothrin lambda	430	95	92	97	0	0.022	0.228
Cypermethrin	430	92	88	95	0	0.20	1.32
Deltamethrin	169	89	84	94	0	0.0001	0.0022
Esfenvalerate/Fenvalerate	406	98	97	100	0	0.0282	0.3271
Permethrin	430	97	95	99	0	0.146	1.769
Solids							
Suspended solids	528	75	71	79	4	16	57
Dissolved solids	226	24	19	28	856	1034	774
Field							
pH	645	85	82	88	8.05	8.07	0.62
Turbidity	418	76	72	81	1.7	7.9	48.7
Specific conductance	656	75	72	78	1034	1259	1210

Table 2-3b. Extent and distributions for chemical stressors in each land use class. Only analytes with extents greater than 5% exceeding a threshold are shown.

Stressor	n	% Below Threshold			Concentration		
		Estimate	95% CI		Median	Mean	SD
Agricultural							
Ions							
Chloride	73	84	77	90	133	209	280
Sulfate	74	31	22	39	324	424	344
Metals (dissolved)							
Selenium	68	74	64	85	3.06	6.23	12.00
Metals (total)							
Selenium	67	77	66	88	3.31	6.34	11.83
Nutrients							
TN	72	13	7	20	2.5	6.5	9.9
TP	73	28	21	35	0.08	0.50	0.78
Pyrethroids							
Bifenthrin	62	90	82	97	0	0.2	1.1
Cyfluthrin	62	95	86	100	0	0.2	0.7
Cypermethrin	62	90	80	100	0	0.08	0.45
Esfenvalerate/Fenvalerate	58	89	78	99	0	0.31	1.07
Solids							
Suspended solids	73	79	69	89	5	43	144
Dissolved solids	25	3	0	9	983	1037	383
Field							
pH	87	94	91	97	7.98	8.03	0.45
Turbidity	56	70	58	81	2.4	45.0	159.0
Specific conductance	87	69	61	78	1322	1542	888
Open							
Ions							
Sulfate	220	73	68	77	71	170	214
Metals (total)							
Lead	178	93	89	97	0.03	1.40	3.37
Selenium	178	92	88	96	0.78	1.52	2.22
Nutrients							
TN	219	71	65	77	0.2	0.5	1.2
TP	225	71	66	76	0.02	0.09	0.43
Pyrethroids							
Bifenthrin	163	95	92	98	0	0.0	0.1
Deltamethrin	74	92	86	97	0	0	0
Solids							
Suspended solids	227	89	85	93	2	4	7
Dissolved solids	108	50	42	58	493	678	490

Stressor	n	% Below Threshold			Concentration		
		Estimate	95% CI		Median	Mean	SD
Field							
Turbidity	187	87	83	92	0.9	2.3	6.8
Specific conductance	291	91	88	94	478	672	570
Urban							
Ions							
Chloride	223	66	60	72	190	303	397
Sulfate	213	42	35	48	289	391	369
Metals (dissolved)							
Selenium	207	84	80	89	1.20	3.27	7.36
Metals (total)							
Selenium	213	84	80	88	1.30	4.17	17.41
Nutrients							
TN	212	12	6	19	1.5	3.0	3.4
TP	215	17	11	22	0.11	8.35	96.04
Pyrethroids							
Bifenthrin	205	76	69	83	0	1.4	5.7
Cyfluthrin	205	90	85	95	0	0.4	2.2
Cyhalothrin lambda	205	93	88	97	0	0.041	0.313
Cypermethrin	205	88	82	93	0	0.36	1.79
Deltamethrin	74	85	75	95	0	0	0
Solids							
Suspended solids	228	61	54	69	8	22	56
Dissolved solids	93	1	0	3	1093	1388	885
Field							
pH	272	72	66	79	8.17	8.24	0.69
Turbidity	175	65	57	74	2.3	7.2	19.8
Specific conductance	278	62	56	67	1397	1800	1439

Table 2-3c. Extent and distributions for chemical stressors in each watershed. Only analytes with extents greater 5% exceeding a threshold are shown. Physical habitat variable abbreviations are provided in Table 2-2.

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Region 4								
Ventura								
Ions	Sulfate	38	36	23	50	270	262	66
Nutrients	TN	38	74	64	84	0.1	0.5	1.0
Nutrients	TP	36	92	87	97	0	0.02	0.06
Pyrethroids	Bifenthrin	35	93	86	100	0	0.0	0.0
Solids	Dissolved solids	5	50	4	97	477	560	96
Field	Turbidity	8	76	39	100	0.5	1.9	1.7
Santa Clara								
Ions	Sulfate	75	59	50	68	221	305	333
Metals (dissolved)	Selenium	70	92	86	97	0.81	1.69	3.25
Metals (total)	Copper	59	91	85	98	0.8	6.3	16.1
Metals (total)	Lead	59	91	86	97	0.01	2.17	4.21
Metals (total)	Selenium	59	90	83	97	0.89	3.15	12.17
Nutrients	TN	70	70	61	78	0.2	0.9	2.4
Nutrients	TP	73	82	75	89	0.02	0.10	0.41
Pyrethroids	Bifenthrin	53	93	86	99	0	0.0	0.0
Pyrethroids	Cyfluthrin	53	92	85	100	0	0.1	0.6
Pyrethroids	Cypermethrin	53	94	87	100	0	0.00	0.02
Pyrethroids	Deltamethrin	33	84	73	95	0	0	0
Pyrethroids	Esfenvalerate/Fenvalerate	50	94	87	100	0	0.1178	0.6286
Solids	Suspended solids	73	91	84	98	2	16	83
Solids	Dissolved solids	45	28	15	42	667	751	467
Field	Turbidity	72	89	84	94	1.5	16.9	98.9
Calleguas								
Ions	Chloride	34	86	70	100	182	193	54
Ions	Sulfate	40	25	13	38	419	484	347
Metals (dissolved)	Selenium	38	60	46	74	4.16	7.14	11.46
Metals (total)	Selenium	37	60	47	74	4.18	7.12	11.01
Nutrients	TN	38	6	0	14	4.4	6.7	9.9
Nutrients	Ammonia-N	35	95	87	100	0.06	0.23	0.70
Nutrients	TP	37	23	6	39	0.13	0.83	1.02
Pyrethroids	Bifenthrin	37	86	76	97	0	0.2	1.0
Pyrethroids	Cypermethrin	37	92	82	100	0	0.15	0.53
Pyrethroids	Esfenvalerate/Fenvalerate	31	94	87	100	0	0.1290	0.7575
Solids	Suspended solids	33	72	56	88	6	27	89
Field	pH	34	86	75	98	7.94	8.04	0.47

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Field	Turbidity	9	73	43	100	1.4	2.9	3.0
Field	Specific conductance	34	60	43	77	1691	1785	597
Santa Monica Bay								
Ions	Chloride	47	86	80	93	190	199	72
Ions	Sulfate	54	8	4	12	884	954	570
Metals (dissolved)	Selenium	53	41	34	49	6.61	13.76	20.47
Metals (total)	Selenium	54	45	38	53	5.33	21.80	58.27
Nutrients	TN	50	30	22	39	0.6	1.3	2.0
Nutrients	TP	49	18	11	24	0.10	0.15	0.18
Pyrethroids	Bifenthrin	42	65	52	78	0	3.5	15.6
Pyrethroids	Cyfluthrin	42	89	81	97	0	1.0	4.7
Pyrethroids	Cyhalothrin lambda	42	74	62	86	0	0.237	1.083
Pyrethroids	Cypermethrin	42	83	73	93	0	0.42	1.73
Pyrethroids	Deltamethrin	24	71	56	87	0	0	0
Pyrethroids	Esfenvalerate/Fenvalerate	42	93	86	100	0	0.0291	0.1146
Pyrethroids	Permethrin	42	86	76	95	0	1.119	4.593
Solids	Suspended solids	47	88	81	96	2	10	44
Field	Turbidity	65	70	61	80	1.8	10.9	46.0
Field	Specific conductance	69	59	52	67	1640	1899	1265
Los Angeles								
Ions	Sulfate	32	86	76	96	84	137	152
Metals (total)	Copper	26	82	67	98	7.0	10.4	10.1
Metals (total)	Lead	26	92	82	100	0.65	1.60	2.26
Nutrients	TN	31	34	19	49	1.1	2.5	2.6
Nutrients	TP	22	18	0	36	0.17	0.20	0.16
Pyrethroids	Bifenthrin	26	73	57	89	0	0.5	1.1
Pyrethroids	Cypermethrin	26	92	80	100	0	0.55	1.90
Solids	Suspended solids	19	63	43	84	5	22	35
Solids	Dissolved solids	9	28	4	52	653	1061	837
Field	pH	42	66	53	78	8.25	8.45	0.79
Field	Turbidity	8	67	33	100	0.4	7.6	11.7
Field	Specific conductance	44	91	83	100	570	838	561
San Gabriel								
Ions	Chloride	29	89	76	100	146	127	97
Ions	Sulfate	28	79	59	99	168	151	115
Metals (total)	Copper	27	94	86	100	2.7	7.0	11.4
Metals (total)	Lead	27	91	81	100	0.16	2.04	5.39
Metals (total)	Selenium	27	88	80	97	1.29	2.16	2.00
Nutrients	TN	29	36	20	52	0.6	1.6	2.1
Nutrients	TP	30	44	26	62	0.06	0.12	0.24

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Pyrethroids	Bifenthrin	24	87	72	100	0	1.7	6.3
Pyrethroids	Cyfluthrin	24	87	72	100	0	0.8	2.9
Pyrethroids	Cyhalothrin lambda	24	87	72	100	0	0.105	0.371
Pyrethroids	Cypermethrin	24	87	72	100	0	0.82	3.10
Solids	Suspended solids	30	69	51	86	8	37	96
Solids	Dissolved solids	14	13	5	22	859	823	262
Field	pH	33	59	42	76	8.25	8.39	0.65
Field	Turbidity	17	67	44	90	2.1	4.3	4.3
<u>Region 8</u>								
Lower Santa Ana								
Ions	Chloride	29	81	68	94	179	186	91
Ions	Sulfate	24	40	22	58	300	372	248
Metals (dissolved)	Selenium	28	86	76	97	1.30	5.38	10.38
Metals (total)	Selenium	28	86	76	97	1.40	5.37	10.17
Nutrients	TN	24	10	0	20	2.2	3.4	3.5
Nutrients	TP	27	20	8	31	0.12	157.2	398.9
Pyrethroids	Bifenthrin	27	70	55	85	0	0.9	2.0
Pyrethroids	Cyhalothrin lambda	27	93	86	100	0	0.000	0.000
Pyrethroids	Permethrin	27	87	75	99	0	0.121	0.727
Solids	Suspended solids	36	63	52	75	6	11	15
Field	pH	41	87	80	94	7.98	7.97	0.64
Field	Turbidity	36	87	79	95	1.9	2.7	3.6
Field	Specific conductance	41	68	57	80	1408	1587	580
Middle Santa Ana								
Metals (dissolved)	Copper	10	89	70	100	3.1	3.9	3.5
Metals (total)	Copper	15	93	80	100	3.7	5.1	4.4
Nutrients	TN	23	16	2	30	2.0	4.1	4.4
Nutrients	TP	33	14	7	21	0.19	0.52	0.59
Solids	Suspended solids	35	72	62	83	5	8	8
Field	pH	55	65	54	75	8.20	8.29	0.90
Field	Turbidity	23	63	45	81	3.1	5.4	6.2
Field	Specific conductance	55	78	68	88	935	866	416
Upper Santa Ana								
Metals (dissolved)	Copper	12	93	81	100	0.9	1.8	2.8
Nutrients	TN	31	50	37	64	0.3	0.6	0.9
Nutrients	Ammonia-N	43	91	77	100	0.01	23.61	75.91
Nutrients	TP	42	54	42	67	0.02	0.29	0.66
Pyrethroids	Bifenthrin	15	90	77	100	0	0.0	0.0
Solids	Suspended solids	44	75	62	88	3	9	20

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Field	pH	67	83	75	91	7.98	7.66	0.96
Field	Turbidity	32	88	77	99	0.4	1.5	2.6
San Jacinto								
Ions	Chloride	16	83	73	94	16	90	142
Nutrients	TN	14	53	41	65	0.3	0.8	1.1
Nutrients	TP	17	18	2	36	0.08	0.17	0.23
Solids	Suspended solids	17	82	70	95	2	6	9
Field	pH	27	81	73	89	7.48	7.67	0.84
Field	Turbidity	6	66	32	99	2.3	38.1	57.4
Field	Specific conductance	27	84	75	94	192	451	568
Region 9								
San Juan								
Ions	Chloride	31	65	51	79	151	205	149
Ions	Sulfate	31	43	31	56	289	450	432
Metals (dissolved)	Selenium	30	76	62	90	1.96	5.00	6.85
Metals (total)	Lead	30	94	88	100	0.00	1.83	2.68
Metals (total)	Selenium	30	75	61	89	1.99	5.10	6.75
Nutrients	TN	30	56	40	71	0.3	0.7	1.1
Nutrients	TP	27	29	18	41	0.06	1.26	4.27
Pyrethroids	Bifenthrin	30	77	64	90	0	0.7	2.0
Pyrethroids	Cyfluthrin	30	86	75	97	0	0.2	0.6
Pyrethroids	Cyhalothrin lambda	30	92	84	100	0	0.017	0.097
Pyrethroids	Cypermethrin	30	86	75	97	0	0.08	0.24
Pyrethroids	Deltamethrin	13	92	84	100	0	0	0
Solids	Suspended solids	30	87	76	97	3	7	12
Solids	Dissolved solids	30	27	18	37	1193	1331	1061
Field	Turbidity	29	83	70	96	0.9	1.8	2.6
Field	Specific conductance	31	59	47	71	1394	1690	1191
Northern San Diego								
Ions	Chloride	31	74	61	87	120	161	141
Ions	Sulfate	31	58	41	75	220	203	190
Nutrients	TN	31	16	1	31	1.2	2.3	3.3
Nutrients	TP	29	51	36	67	0.03	0.07	0.10
Solids	Suspended solids	33	86	76	97	4	6	11
Solids	Dissolved solids	7	22	0	51	780	767	268
Field	Turbidity	28	83	70	96	0.7	6.0	17.5
Field	Specific conductance	33	63	49	77	834	1046	772
Central San Diego								
Ions	Chloride	36	42	29	55	289	507	631
Ions	Sulfate	36	23	13	32	330	359	273

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Metals (dissolved)	Selenium	31	89	78	100	1.09	1.65	1.85
Metals (total)	Selenium	31	89	78	100	1.14	1.74	2.03
Nutrients	TN	33	16	6	25	1.3	3.5	4.3
Nutrients	TP	29	12	3	21	0.09	0.10	0.06
Pyrethroids	Bifenthrin	31	77	62	92	0	2.2	5.7
Pyrethroids	Cyfluthrin	31	88	75	100	0	0.2	0.5
Pyrethroids	Cyhalothrin lambda	31	93	83	100	0	0.007	0.029
Pyrethroids	Cypermethrin	31	87	75	99	0	0.01	0.03
Pyrethroids	Deltamethrin	21	83	68	99	0	0	0
Pyrethroids	Permethrin	31	94	85	100	0	0.114	0.462
Solids	Suspended solids	35	52	36	67	9	15	23
Solids	Dissolved solids	9	16	0	38	1306	1112	517
Field	pH	36	95	86	100	7.89	7.90	0.32
Field	Turbidity	30	63	45	80	2.6	8.6	17.1
Field	Specific conductance	37	25	14	35	2112	2469	2151
Mission Bay and San Diego								
Ions	Chloride	30	37	32	42	447	398	332
Ions	Sulfate	30	41	35	46	314	345	334
Metals (dissolved)	Selenium	30	93	84	100	0.77	1.25	1.71
Metals (total)	Selenium	30	93	84	100	0.82	1.34	1.74
Nutrients	TN	28	28	19	37	1.1	2.2	3.4
Nutrients	TP	28	35	21	49	0.05	0.11	0.13
Pyrethroids	Bifenthrin	30	86	75	97	0	0.0	0.2
Pyrethroids	Cyfluthrin	30	93	86	100	0	0.0	0.1
Pyrethroids	Cyhalothrin lambda	30	91	83	99	0	0.004	0.020
Pyrethroids	Cypermethrin	30	89	79	99	0	0.00	0.02
Pyrethroids	Deltamethrin	19	94	85	100	0	0	0
Solids	Suspended solids	31	66	52	80	4	11	14
Solids	Dissolved solids	9	88	72	100	333	450	368
Field	pH	30	93	86	100	7.95	7.94	0.40
Field	Turbidity	26	64	50	77	2.5	4.8	5.1
Field	Specific conductance	30	39	32	47	2385	1933	1532
Southern San Diego								
Ions	Chloride	33	78	72	84	60	308	538
Ions	Sulfate	33	81	75	87	68	128	145
Metals (total)	Lead	30	93	84	100	0.09	1.21	2.36
Nutrients	TN	33	60	49	70	0.3	0.9	1.7
Nutrients	TP	30	38	22	54	0.04	0.23	0.83
Pyrethroids	Bifenthrin	30	98	95	100	0	0.0	0.1
Pyrethroids	Cypermethrin	30	98	95	100	0	0.00	0.03

Stressor		n	% Below Threshold			Concentration		
			Estimate	95% CI		Median	Mean	SD
Solids	Suspended solids	33	83	71	94	4	6	10
Solids	Dissolved solids	10	63	40	86	479	510	219
Field	Turbidity	29	71	55	86	1.6	3.5	4.1
Field	Specific conductance	33	54	42	65	671	1500	1911

Table 2-4. Extent of toxicity by subpopulation.

Subpopulation	n	% stream-miles with toxicity to survival	% stream-miles with toxicity to reproduction	% stream-miles with no toxicity
South Coast	431	6	25	67
Land Use				
Agricultural	67	15	30	55
Open	171	2	33	61
Urban	193	8	19	73
Watershed				
Region 4				
Ventura	34	1	15	77
Santa Clara	56	8	42	45
Calleguas	36	1	8	91
Santa Monica	38	7	33	60
Los Angeles	34	2	57	42
San Gabriel	26	1	6	90
Region 8				
Lower Santa Ana	28	0	26	67
Middle Santa Ana	22	0	4	96
Upper Santa Ana	14	11	12	77
San Jacinto	14	0	12	88
Region 9				
San Juan	25	8	23	69
Northern San Diego	30	3	23	74
Central San Diego	24	26	12	61
Mission Bay and San Diego River	26	4	31	65
Southern San Diego	24	13	11	76

Table 2-5a. Extent and mean values of selected physical habitat variables within the region. Abbreviations are provided in Table 2-2.

Variable	n	% Within Threshold			Median	Mean	SD
		Estimate	95% CI				
Biomass							
AFDM	526	82	78	85	7	652	2877
Chlorophyll a	531	83	79	87	10	165	880
PCT_CPOM	599	90	88	92	28	33	26
PCT_MAP	481	69	65	74	26	30	25
PCT_MCP	481	89	86	92	5	13	18
PCT_MIAT1	519	92	90	94	0	4	11
XMIATP	519	91	89	94	0.10	0.32	0.63
Instream habitat							
PCT_FAST	601	75	72	79	28	37	33
Shannon_Flow	601	80	76	83	2.7	2.7	0.3
Shannon_Habitat	634	68	65	72	1.4	1.2	0.5
XFC_NAT_SWAMP	634	73	69	76	51	54	41
Riparian							
W1_HALL_SWAMP	597	55	52	59	1.2	1.8	1.9
XCDENMID	617	69	66	73	43	45	35
XCMG	602	68	65	72	80	80	60
XPCMG	602	71	68	74	0.65	0.53	0.42
XPMGVEG	634	70	67	73	0.75	0.59	0.41
Substrate							
PCT_BIGR	634	49	45	52	25	30	28
PCT_SAFN	634	78	75	81	25	33	27
Shannon_Substrate	634	73	69	77	1.0	0.9	0.5
XEMBED	485	89	86	92	35	36	18

Table 2-5b. Extent and mean values of selected physical habitat variables by land use. Only variables with exceedances greater than 5% of a subpopulation are shown.

Variable		n	% Within Threshold			Median	Mean	SD
			Estimate	95% CI				
Agricultural								
Biomass	AFDM	75	72	62	81	13	703	2427
Biomass	Chlorophyll a	75	74	64	84	20	486	1837
Biomass	PCT_CPOM	76	86	79	94	36	38	27
Biomass	PCT_MAP	69	69	60	79	28	30	22
Biomass	PCT_MCP	69	88	81	95	12	18	18
InstreamHab	PCT_FAST	76	71	61	81	24	37	33
InstreamHab	Shannon_Flow	76	80	72	89	2.6	2.6	0.3
InstreamHab	Shannon_Habitat	81	80	73	87	1.4	1.3	0.4
InstreamHab	XFC_NAT_SWAMP	81	79	72	87	49	61	47
Riparian	W1_HALL_SWAMP	76	70	63	78	0.6	1.0	1.2
Riparian	XCDENMID	76	58	49	67	23	35	35
Riparian	XCMG	76	80	72	88	104	94	59
Riparian	XPCMG	76	76	68	84	0.79	0.61	0.41
Riparian	XPMGVEG	81	85	78	91	0.81	0.70	0.35
Substrate	PCT_BIGR	81	24	16	32	9	18	21
Substrate	PCT_SAFN	81	40	30	49	63	60	27
Substrate	Shannon_Substrate	81	78	69	88	0.8	0.9	0.4
Substrate	XEMBED	54	81	71	92	40	41	22
Open								
Biomass	AFDM	224	82	77	87	11	173	672
Biomass	Chlorophyll a	227	85	80	90	12	62	201
Biomass	PCT_CPOM	261	88	85	92	34	38	25
Biomass	PCT_MAP	203	83	78	88	14	21	21
Biomass	PCT_MCP	203	87	83	91	7	14	16
Biomass	PCT_MIAT1	217	94	90	97	0	4	9
Biomass	XMIATP	217	94	90	97	0.10	0.26	0.49
InstreamHab	PCT_FAST	263	92	89	95	40	46	29
InstreamHab	Shannon_Flow	263	93	90	95	2.8	2.8	0.3
InstreamHab	Shannon_Habitat	290	90	87	93	1.5	1.4	0.3
InstreamHab	XFC_NAT_SWAMP	290	93	89	97	71	72	35
Riparian	W1_HALL_SWAMP	261	91	87	94	0.2	0.5	0.8
Riparian	XCDENMID	289	85	82	89	61	58	31
Riparian	XCMG	264	93	89	98	108	106	45
Riparian	XPCMG	264	93	90	95	0.86	0.70	0.33
Riparian	XPMGVEG	290	93	90	96	0.91	0.78	0.29
Substrate	PCT_BIGR	290	82	78	86	54	49	24

Variable		n	% Within Threshold			Median	Mean	SD
			Estimate	95% CI				
Substrate	PCT□SAFN	290	88	84	91	24	29	21
Substrate	Shannon□Substrate	290	92	87	96	1.2	1.2	0.4
Substrate	XEMBED	276	91	88	94	35	36	16
Urban								
Biomass	AFDM	227	83	77	89	5	1089	3944
Biomass	Chlorophyll a	229	83	77	89	7	206	991
Biomass	PCT□CPOM	262	92	89	96	17	27	27
Biomass	PCT□MAP	209	58	50	65	37	38	27
Biomass	PCT□MCP	209	91	87	95	2	12	20
Biomass	PCT□MIAT1	232	90	86	94	0	5	12
Biomass	XMIATP	232	89	84	93	0.11	0.37	0.68
InstreamHab	PCT□FAST	262	62	55	69	14	30	34
InstreamHab	Shannon□Flow	262	68	62	74	2.6	2.6	0.2
InstreamHab	Shannon□Habitat	263	44	38	50	0.9	0.9	0.6
InstreamHab	XFC□NAT□SWAMP	263	50	45	56	19	34	36
Riparian	W1□HALL□SWAMP	260	23	87	98	2.9	3.0	1.8
Riparian	XCDENMID	252	54	48	60	20	32	35
Riparian	XCMG	262	44	39	49	22	54	62
Riparian	XPCMG	262	51	46	57	0.10	0.37	0.42
Riparian	XPMGVEG	263	44	39	49	0.09	0.37	0.42
Substrate	PCT□BIGR	263	20	15	24	1	13	21
Substrate	PCT□SAFN	263	74	69	79	25	33	30
Substrate	Shannon□Substrate	263	53	47	59	0.6	0.6	0.5
Substrate	XEMBED	155	86	80	92	35	35	20

Table 2-5c. Extent and mean values of selected physical habitat variables by watershed. Only variables with exceedances greater than 5% of a subpopulation are shown.

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
Region 4								
Ventura								
Biomass	AFDM	37	89	79	100	4	786	3883
Biomass	Chlorophyll a	37	89	79	100	5	88	384
Biomass	PCT□MAP	24	78	60	96	19	25	22
Biomass	PCT□MCP	24	93	85	100	1	7	14
InstreamHab	PCT□FAST	36	95	90	99	36	45	26
Riparian	W1□HALL□SWAMP	36	93	87	98	0.5	0.6	0.6
Riparian	XCDENMID	37	87	75	98	58	59	32
Riparian	XPMGVEG	38	90	78	100	0.69	0.66	0.23
Substrate	PCT□BIGR	38	86	79	94	62	62	22
Santa Clara								
Biomass	AFDM	73	78	70	86	23	153	917
Biomass	Chlorophyll a	75	83	75	92	18	64	200
Biomass	PCT□CPOM	72	73	63	83	54	54	26
Biomass	PCT□MAP	66	75	66	84	28	29	21
Biomass	PCT□MCP	66	84	76	92	18	19	18
Biomass	PCT□MIAT1	70	93	87	99	0	3	8
Biomass	XMIATP	70	91	84	98	0.02	0.24	0.43
InstreamHab	PCT□FAST	72	87	80	94	28	37	27
InstreamHab	Shannon□Flow	72	92	86	98	2.8	2.8	0.3
InstreamHab	Shannon□Habitat	83	86	78	93	1.5	1.4	0.3
InstreamHab	XFC□NAT□SWAMP	83	94	89	99	61	69	34
Riparian	W1□HALL□SWAMP	72	92	87	97	0.0	0.4	0.8
Riparian	XCDENMID	83	72	63	80	37	44	32
Riparian	XCMG	72	93	90	97	112	108	44
Riparian	XPCMG	72	89	84	94	0.86	0.69	0.35
Riparian	XPMGVEG	83	94	91	98	0.90	0.81	0.25
Substrate	PCT□BIGR	83	74	67	81	47	44	24
Substrate	PCT□SAFN	83	83	77	90	30	35	23
Substrate	Shannon□Substrate	83	92	86	98	1.3	1.2	0.4
Substrate	XEMBED	75	87	81	93	34	36	17
Calleguas								
Biomass	AFDM	40	73	59	88	9	1435	3373
Biomass	Chlorophyll a	40	68	53	83	23	1035	2807
Biomass	PCT□MAP	27	61	43	80	37	36	22
InstreamHab	PCT□FAST	37	84	73	94	30	37	25
InstreamHab	Shannon□Flow	37	89	80	98	2.7	2.7	0.2

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
InstreamHab	Shannon□Habitat	39	73	60	86	1.4	1.2	0.5
InstreamHab	XFC□NAT□SWAMP	39	74	62	86	41	38	27
Riparian	W1□HALL□SWAMP	37	28	14	43	2.7	2.6	1.3
Riparian	XCDENMID	39	60	47	72	25	33	30
Riparian	XCMG	37	67	54	81	58	56	40
Riparian	XPCMG	37	71	58	83	0.25	0.42	0.38
Riparian	XPMGVEG	39	67	55	79	0.40	0.44	0.36
Substrate	PCT□BIGR	39	27	14	41	8	18	23
Substrate	PCT□SAFN	39	62	49	76	43	42	29
Substrate	Shannon□Substrate	39	69	57	80	0.8	0.8	0.5
Substrate	XEMBED	26	89	80	99	32	38	19
Santa Monica Bay								
Biomass	AFDM	53	36	25	47	55	59	40
Biomass	Chlorophyll a	54	39	28	49	67	107	109
Biomass	PCT□CPOM	66	43	33	53	77	71	24
Biomass	PCT□MAP	60	53	42	63	40	40	26
Biomass	PCT□MCP	60	91	85	97	6	13	17
Biomass	PCT□MIAT1	60	91	85	98	0	5	13
Biomass	XMIATP	60	94	89	100	0.08	0.40	1.19
InstreamHab	PCT□FAST	66	77	70	85	17	21	17
InstreamHab	Shannon□Flow	66	86	79	93	2.7	2.8	0.3
InstreamHab	Shannon□Habitat	66	86	80	92	1.6	1.5	0.4
InstreamHab	XFC□NAT□SWAMP	66	90	85	95	84	82	44
Riparian	W1□HALL□SWAMP	66	69	61	78	0.6	1.1	1.3
Riparian	XCDENMID	66	88	82	94	83	71	31
Riparian	XCMG	66	86	81	92	138	124	54
Riparian	XPCMG	66	91	87	96	0.98	0.85	0.31
Riparian	XPMGVEG	66	85	79	91	0.95	0.81	0.34
Substrate	PCT□BIGR	66	70	63	76	43	44	28
Substrate	PCT□SAFN	66	92	87	96	17	24	20
Substrate	Shannon□Substrate	66	88	83	93	1.3	1.2	0.5
Los Angeles								
Biomass	AFDM	31	80	67	92	4	907	2294
Biomass	Chlorophyll a	31	74	61	87	7	133	364
Biomass	PCT□MAP	33	67	52	82	28	33	23
InstreamHab	PCT□FAST	44	77	65	89	53	51	37
InstreamHab	Shannon□Flow	44	72	61	83	2.6	2.6	0.2
InstreamHab	Shannon□Habitat	47	49	39	60	0.9	0.9	0.6
InstreamHab	XFC□NAT□SWAMP	47	45	33	57	14	32	36
Riparian	W1□HALL□SWAMP	44	45	33	56	2.8	2.7	2.4
Riparian	XCDENMID	47	58	45	70	21	31	34

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
Riparian	XCMG	44	32	20	43	16	32	36
Riparian	XPCMG	44	53	40	65	0.09	0.26	0.35
Riparian	XPMGVEG	47	37	26	48	0.00	0.27	0.38
Substrate	PCT□BIGR	47	40	30	50	1	21	26
Substrate	Shannon□Substrate	47	52	38	65	0.5	0.6	0.5
San Gabriel								
Biomass	AFDM	28	72	53	92	5	1758	3644
Biomass	Chlorophyll a	28	75	57	94	6	279	550
Biomass	PCT□MAP	28	52	35	68	36	40	33
InstreamHab	PCT□FAST	40	62	46	77	27	42	39
InstreamHab	Shannon□Flow	40	69	54	83	2.5	2.6	0.3
InstreamHab	Shannon□Habitat	40	39	28	50	0.7	0.8	0.6
InstreamHab	XFC□NAT□SWAMP	40	42	29	55	14	33	40
Riparian	W1□HALL□SWAMP	38	26	19	34	3.2	3.0	1.9
Riparian	XCDENMID	40	50	38	61	11	28	33
Riparian	XCMG	40	35	25	44	9	36	45
Riparian	XPCMG	40	39	28	49	0.00	0.27	0.39
Riparian	XPMGVEG	40	29	19	40	0.00	0.24	0.35
Substrate	PCT□BIGR	40	28	18	39	0	21	30
Substrate	PCT□SAFN	40	91	82	100	6	15	20
Substrate	Shannon□Substrate	40	47	34	60	0.5	0.6	0.6
Substrate	XEMBED	24	91	77	100	34	33	18
<u>Region 8</u>								
Lower Santa Ana								
Biomass	AFDM	29	91	82	99	4	193	754
Biomass	Chlorophyll a	29	91	82	99	9	89	354
Biomass	PCT□MAP	27	57	43	71	39	36	18
InstreamHab	PCT□FAST	38	57	43	71	16	23	28
InstreamHab	Shannon□Flow	38	59	45	74	2.5	2.5	0.3
InstreamHab	Shannon□Habitat	38	66	55	77	1.3	1.2	0.4
InstreamHab	XFC□NAT□SWAMP	38	71	60	82	53	53	45
Riparian	W1□HALL□SWAMP	38	17	7	26	2.3	2.7	1.5
Riparian	XCDENMID	38	50	36	65	18	36	38
Riparian	XCMG	38	46	31	60	27	47	41
Riparian	XPCMG	38	52	38	66	0.10	0.34	0.40
Riparian	XPMGVEG	38	53	38	68	0.28	0.45	0.42
Substrate	PCT□BIGR	38	35	22	47	7	21	25
Substrate	PCT□SAFN	38	69	55	82	48	45	27
Substrate	Shannon□Substrate	38	78	67	88	0.8	0.8	0.4
Substrate	XEMBED	28	87	73	100	37	37	20
Middle Santa Ana								

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
Biomass	AFDM	28	91	79	100	3	11	17
Biomass	PCT_CPOM	52	95	90	100	21	23	21
Biomass	PCT_MAP	32	87	79	95	15	21	20
Biomass	PCT_MCP	32	89	80	98	0	9	14
Biomass	PCT_MIAT1	32	77	63	91	1	13	21
Biomass	XMIATP	32	77	63	91	0.37	0.98	1.66
InstreamHab	PCT_FAST	53	42	31	53	2	22	32
InstreamHab	Shannon_Flow	53	39	29	50	2.3	2.4	0.4
InstreamHab	Shannon_Habitat	54	29	19	40	0.9	0.8	0.6
InstreamHab	XFC_NAT_SWAMP	54	41	32	49	11	28	35
Riparian	W1_HALL_SWAMP	52	49	40	58	1.6	2.0	1.7
Riparian	XCDENMID	54	39	29	48	2	27	36
Riparian	XCMG	53	54	46	62	42	51	49
Riparian	XPCMG	53	47	37	57	0.00	0.36	0.42
Riparian	XPMGVEG	54	58	51	66	0.41	0.46	0.43
Substrate	PCT_BIGR	54	23	17	29	0	17	29
Substrate	PCT_SAFN	54	63	56	69	31	41	40
Substrate	Shannon_Substrate	54	43	33	53	0.4	0.6	0.5
Substrate	XEMBED	28	94	86	100	33	33	20
Upper Santa Ana								
Biomass	PCT_MAP	27	90	82	98	3	13	19
Biomass	PCT_MCP	27	93	85	100	1	8	16
Biomass	XMIATP	27	94	87	100	0.14	0.28	0.52
InstreamHab	PCT_FAST	47	93	87	99	81	66	33
InstreamHab	Shannon_Flow	47	69	57	81	2.6	2.6	0.2
InstreamHab	Shannon_Habitat	52	58	47	68	1.2	1.1	0.5
InstreamHab	XFC_NAT_SWAMP	52	88	81	95	58	63	39
Riparian	W1_HALL_SWAMP	47	96	91	100	0.2	0.4	0.5
Riparian	XCDENMID	52	68	58	78	66	55	38
Riparian	XCMG	47	75	65	86	73	79	54
Riparian	XPCMG	47	63	51	74	0.68	0.51	0.42
Riparian	XPMGVEG	52	79	70	89	0.72	0.64	0.37
Substrate	PCT_BIGR	52	82	74	90	60	55	24
Substrate	PCT_SAFN	52	92	87	98	25	29	17
Substrate	Shannon_Substrate	52	92	86	99	1.1	1.1	0.4
Substrate	XEMBED	49	88	80	96	38	41	11
San Jacinto								
Biomass	AFDM	17	91	79	100	12	19	24
Biomass	PCT_MAP	22	88	76	99	5	13	15
Biomass	PCT_MCP	22	77	62	92	16	20	20
InstreamHab	PCT_FAST	26	44	31	58	5	20	28

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
InstreamHab	Shannon□Flow	26	53	38	69	2.4	2.5	0.2
InstreamHab	Shannon□Habitat	27	72	58	85	1.3	1.2	0.4
Riparian	W1□HALL□SWAMP	26	65	52	77	1.0	1.4	1.4
Riparian	XCDENMID	27	81	74	89	85	69	33
Riparian	XCMG	26	95	87	100	80	93	49
Riparian	XPCMG	26	79	67	91	0.77	0.67	0.39
Riparian	XPMGVEG	27	90	81	99	0.86	0.75	0.30
Substrate	PCT□BIGR	27	65	55	74	39	34	26
Substrate	PCT□SAFN	27	70	56	84	44	46	26
Substrate	Shannon□Substrate	27	83	71	95	1.1	1.0	0.4
Substrate	XEMBED	23	90	79	100	41	41	9
<u>Region 9</u>								
San Juan								
Biomass	AFDM	31	76	62	90	6	1916	7004
Biomass	Chlorophyll a	31	75	60	90	18	123	333
Biomass	PCT□MAP	28	48	31	65	42	41	25
Biomass	PCT□MCP	28	92	85	99	3	10	14
Biomass	PCT□MIAT1	30	82	70	93	0	7	12
Biomass	XMIATP	30	85	75	95	0.04	0.45	0.95
InstreamHab	PCT□FAST	31	83	72	94	31	36	26
InstreamHab	Shannon□Habitat	31	76	63	90	1.4	1.2	0.5
InstreamHab	XFC□NAT□SWAMP	31	74	59	88	46	43	29
Riparian	W1□HALL□SWAMP	31	46	33	58	2.1	2.5	2.1
Riparian	XCDENMID	31	77	62	91	53	50	29
Riparian	XCMG	31	71	56	87	77	74	53
Riparian	XPCMG	31	79	67	92	0.57	0.54	0.36
Riparian	XPMGVEG	31	69	54	83	0.72	0.57	0.42
Substrate	PCT□BIGR	31	54	39	69	29	29	23
Substrate	PCT□SAFN	31	88	80	97	39	36	21
Substrate	Shannon□Substrate	31	69	54	83	0.7	0.8	0.4
Substrate	XEMBED	25	90	80	99	34	34	14
Northern San Diego								
Biomass	AFDM	36	91	84	99	4	12	18
Biomass	Chlorophyll a	36	94	88	100	4	13	26
Biomass	PCT□CPOM	31	90	79	100	41	45	16
Biomass	PCT□MAP	29	76	63	89	13	21	23
Biomass	PCT□MCP	29	79	66	92	15	21	19
InstreamHab	PCT□FAST	31	73	61	85	26	25	24
InstreamHab	Shannon□Flow	31	82	68	96	2.7	2.6	0.3
Riparian	W1□HALL□SWAMP	31	96	91	100	0.1	0.4	0.5
Riparian	XCDENMID	29	93	87	100	70	71	25

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
Substrate	PCT□BIGR	33	55	38	72	28	31	26
Substrate	PCT□SAFN	33	45	20	70	58	57	24
Substrate	Shannon□Substrate	33	84	72	96	1.1	1.0	0.4
Substrate	XEMBED	21	75	54	97	35	40	21
Central San Diego								
Biomass	PCT□CPOM	27	78	62	94	55	55	22
Biomass	PCT□MAP	26	87	76	98	21	22	22
Biomass	PCT□MCP	26	86	74	99	12	20	26
Biomass	PCT□MIAT1	26	78	62	93	9	13	14
Biomass	XMIATP	26	69	51	88	0.66	0.76	0.64
InstreamHab	PCT□FAST	27	70	53	88	12	21	25
InstreamHab	Shannon□Flow	27	85	74	97	2.7	2.7	0.2
InstreamHab	Shannon□Habitat	31	74	58	91	1.5	1.4	0.5
InstreamHab	XFC□NAT□SWAMP	31	80	68	93	70	62	38
Riparian	W1□HALL□SWAMP	27	28	12	44	2.1	2.1	1.1
Riparian	XCMG	28	94	87	100	137	132	55
Riparian	XPCMG	28	90	78	100	0.90	0.77	0.34
Riparian	XPMGVEG	31	94	89	100	0.95	0.88	0.24
Substrate	PCT□BIGR	31	27	13	41	13	18	20
Substrate	PCT□SAFN	31	43	27	59	62	56	29
Substrate	Shannon□Substrate	31	80	65	95	1.1	1.0	0.5
Substrate	XEMBED	23	77	61	93	42	42	23
Mission Bay and San Diego								
Biomass	AFDM	30	95	87	100	4	10	13
Biomass	PCT□CPOM	27	90	82	97	47	48	18
Biomass	PCT□MAP	27	81	68	94	12	21	21
Biomass	PCT□MCP	27	72	58	86	15	22	18
Biomass	PCT□MIAT1	27	77	63	91	2	12	18
Biomass	XMIATP	27	77	62	91	0.44	0.71	0.68
InstreamHab	PCT□FAST	27	66	54	77	17	29	30
InstreamHab	Shannon□Flow	27	78	66	90	2.8	2.8	0.3
InstreamHab	Shannon□Habitat	27	84	75	94	1.5	1.4	0.4
InstreamHab	XFC□NAT□SWAMP	27	88	81	95	82	75	39
Riparian	W1□HALL□SWAMP	27	52	42	62	0.4	1.6	1.8
Riparian	XCDENMID	23	85	76	94	66	53	29
Riparian	XCMG	27	84	75	94	131	110	54
Riparian	XPCMG	27	84	75	94	0.86	0.69	0.35
Riparian	XPMGVEG	27	92	84	100	0.99	0.78	0.31
Substrate	PCT□BIGR	27	51	37	65	28	29	26
Substrate	PCT□SAFN	27	66	51	82	40	44	26
Substrate	Shannon□Substrate	27	88	81	95	1.1	1.1	0.5

Variable		n	% within Threshold			Median	Mean	SD
			Estimate	95% CI				
Substrate	XEMBED	21	91	82	100	39	38	18
Biomass	AFDM	32	76	62	90	5	23	35
Southern San Diego								
Biomass	PCT□CPOM	25	76	62	90	49	50	23
Biomass	PCT□MAP	25	66	50	82	10	24	28
Biomass	PCT□MCP	25	56	36	76	35	34	23
Biomass	PCT□MIAT1	25	89	80	99	4	8	9
Biomass	XMIATP	25	92	82	100	0.51	0.55	0.37
InstreamHab	PCT□FAST	26	85	77	92	29	32	21
InstreamHab	Shannon□Flow	26	94	87	100	2.9	2.8	0.2
InstreamHab	Shannon□Habitat	28	85	74	96	1.4	1.4	0.3
InstreamHab	XFC□NAT□SWAMP	28	94	85	100	60	67	36
Riparian	W1□HALL□SWAMP	25	93	87	99	0.3	0.5	0.6
Riparian	XCDENMID	24	90	77	100	53	58	28
Riparian	XPCMG	26	91	80	100	0.76	0.64	0.33
Substrate	PCT□BIGR	28	48	30	66	25	28	22
Substrate	PCT□SAFN	28	51	33	68	51	52	23
Substrate	Shannon□Substrate	28	95	88	100	1.1	1.0	0.3
Substrate	XEMBED	20	86	72	100	37	39	16

Table 2-6. Relative (RR) and attributable (AR) risks for selected indicators. n: number of sites included in the analysis. 95% CI: 95% confidence interval around estimate. (t) indicates that the total fraction of metals were used in the analysis. (d) indicates that the dissolved fraction of metals were used in the analysis. VH: Very high priority (i.e., attributable risk ≥ 0.25 for at least 1 indicator). H: High priority (i.e., attributable risk ≥ 0.1 for at least 1 indicator). M: Moderate priority (i.e., relative risk > 1). L: Low priority (relative risk ≤ 1). Physical habitat variable abbreviations are provided in Table 2-2. *Some chemistry variables are excluded because they had too few exceedances of thresholds to permit relative risk analysis.

Stressor	Priority	CSCI							D18							S2						
		RR	95% CI		AR	95% CI		n	RR	95% CI		AR	95% CI		n	RR	95% CI		AR	95% CI		n
Chemistry																						
Nutrients																						
TP	VH	2.8	2.1	3.7	0.51	0.39	0.61	469	2.4	1.8	3.1	0.46	0.34	0.56	411	2.1	1.7	2.6	0.08	0.06	0.11	411
TN	VH	2.7	2.0	3.8	0.51	0.36	0.63	473	1.7	1.4	2.2	0.32	0.18	0.43	439	2.7	1.9	3.8	0.53	0.37	0.65	439
NH4	M	1.1	0.5	2.5	0.00	0.00	0.01	473	1.0	0.5	2.4	0.00	0.00	0.01	412	0.6	0.1	2.9	0.00	0.00	0.00	412
Metals																						
Se (d)	M	1.8	1.6	2.0	0.08	0.05	0.11	454	1.5	1.4	1.7	0.06	0.04	0.09	437	1.5	1.3	1.8	0.06	0.03	0.09	438
Cu (d)	M	1.7	1.6	1.8	0.00	0.00	0.01	428	1.6	1.5	1.7	0.00	0.00	0.00	435	1.7	1.5	1.8	0.00	0.00	0.00	437
Se (t)	M	1.5	1.3	1.7	0.06	0.03	0.09	441	1.4	1.2	1.6	0.05	0.02	0.08	450	1.4	1.2	1.6	0.05	0.02	0.08	452
Cu (t)	M	1.4	1.1	1.8	0.02	0.00	0.04	441	1.2	0.9	1.7	0.01	0.00	0.03	450	1.6	1.4	1.9	0.02	0.01	0.04	452
Pb (t)	L	0.8	0.5	1.3	0.00	0.00	0.01	441	0.6	0.4	1.1	0.00	0.00	0.00	450	1.0	0.7	1.4	0.00	0.00	0.02	452
Pyrethroids																						
Bifenthrin	M	1.6	1.4	1.9	0.09	0.05	0.13	415	1.4	1.2	1.7	0.06	0.03	0.10	423	1.5	1.2	1.7	0.07	0.03	0.10	425
Delta□ Tralomethrin	M	1.6	1.1	2.3	0.05	0.00	0.11	162	1.1	0.7	1.5	0.01	0.00	0.04	168	0.4	0.2	0.9	0.00	0.00	0.00	168
Cypermethrin	M	1.5	1.3	1.8	0.04	0.01	0.07	415	1.2	0.9	1.6	0.01	0.00	0.04	423	1.4	1.1	1.8	0.03	0.00	0.06	425
Cyfluthrin	M	1.4	1.2	1.8	0.03	0.00	0.06	415	1.3	1.0	1.7	0.02	0.00	0.04	423	1.3	0.9	1.7	0.02	0.00	0.04	425
Cyhalothrin	M	1.3	1.0	1.6	0.01	0.00	0.03	415	1.1	0.8	1.6	0.01	0.00	0.03	423	1.0	0.7	1.5	0.00	0.00	0.02	425
Esfenvalerate□ Fenvalerate	M	1.3	0.8	2.1	0.01	0.00	0.02	391	1.2	0.8	2.0	0.00	0.00	0.01	399	1.2	0.7	2.0	0.00	0.00	0.01	401
Permethrin	M	1.1	0.7	1.6	0.00	0.00	0.02	415	1.6	1.5	1.7	0.02	0.01	0.03	423	0.8	0.5	1.4	0.00	0.00	0.01	425
Other chemistry																						
TDS	VH	5.2	2.1	12.6	0.76	0.44	0.90	221	1.8	1.3	2.6	0.38	0.16	0.55	222	3.1	1.9	5.3	0.62	0.39	0.76	222
pH	H	1.9	1.7	2.1	0.12	0.08	0.16	593	1.2	1.0	1.5	0.03	0.00	0.07	492	1.6	1.4	1.8	0.08	0.05	0.12	491
Cl	H	1.9	1.6	2.1	0.14	0.09	0.19	489	1.3	1.1	1.5	0.05	0.01	0.09	436	1.1	0.9	1.3	0.02	0.00	0.06	437
SO4	VH	1.8	1.5	2.1	0.26	0.17	0.34	489	1.5	1.3	1.7	0.19	0.11	0.26	459	1.4	1.2	1.7	0.17	0.08	0.24	459
SpCond	H	1.7	1.5	1.9	0.14	0.10	0.18	603	1.5	1.3	1.7	0.13	0.08	0.18	494	1.5	1.3	1.8	0.13	0.08	0.18	493
TSS	H	1.7	1.4	2.0	0.14	0.08	0.19	485	1.3	1.1	1.6	0.07	0.03	0.12	422	1.2	1.0	1.4	0.04	0.00	0.10	423

Stressor	Priority	CSCI							D18							S2						
		RR	95% CI		AR	95% CI		n	RR	95% CI		AR	95% CI		n	RR	95% CI		AR	95% CI		n
Turbidity	H	1.5	1.2	1.8	0.10	0.04	0.16	379	1.2	1.0	1.5	0.06	0.00	0.12	292	0.9	0.7	1.2	0.00	0.00	0.05	289
PHAB																						
Biomass																						
PCT_MAP	H	1.5	1.3	1.8	0.15	0.08	0.21	433	1.3	1.1	1.5	0.08	0.02	0.14	432	1.5	1.3	1.7	0.14	0.08	0.19	431
PCT_CPOM	M	1.2	1.0	1.5	0.02	0.00	0.04	534	1.1	0.9	1.4	0.01	0.00	0.04	494	1.0	0.8	1.2	0.00	0.00	0.02	493
Chl a	M	1.2	0.9	1.4	0.03	0.00	0.07	495	1.2	1.0	1.4	0.03	0.00	0.06	480	1.3	1.1	1.5	0.05	0.02	0.09	479
PCT_MIAT1	M	1.1	0.9	1.5	0.01	0.00	0.04	470	0.9	0.7	1.2	0.00	0.00	0.01	469	0.8	0.6	1.2	0.00	0.00	0.01	468
XMIATP	M	1.1	0.9	1.5	0.01	0.00	0.04	470	0.9	0.7	1.2	0.00	0.00	0.01	469	1.0	0.7	1.3	0.00	0.00	0.02	468
AFDM	M	1.0	0.8	1.3	0.01	0.00	0.05	490	1.1	0.9	1.3	0.02	0.00	0.06	477	1.2	1.0	1.4	0.04	0.00	0.08	476
PCT_MCP	L	0.9	0.7	1.2	0.00	0.00	0.02	433	0.9	0.7	1.2	0.00	0.00	0.02	432	0.8	0.6	1.1	0.00	0.00	0.00	431
Substrate																						
PCT_BIGR	VH	3.1	2.5	3.9	0.51	0.42	0.59	568	2.0	1.7	2.4	0.34	0.26	0.42	494	2.0	1.7	2.4	0.35	0.26	0.42	493
Shannon_Substrate	VH	2.4	2.1	2.7	0.27	0.21	0.32	568	1.4	1.2	1.7	0.11	0.05	0.16	494	1.6	1.4	1.8	0.14	0.09	0.19	493
XEMBED	M	1.3	0.9	1.9	0.04	0.00	0.08	432	1.5	1.3	1.9	0.04	0.01	0.07	374	1.7	1.3	2.3	0.04	0.02	0.07	372
PCT_SAFN	H	1.3	1.1	1.5	0.06	0.02	0.10	568	1.5	1.3	1.7	0.11	0.07	0.14	494	1.3	1.1	1.5	0.06	0.02	0.10	493
Instream habitat																						
XFC_NAT	VH	2.5	2.2	2.9	0.30	0.24	0.35	568	1.3	1.1	1.5	0.07	0.02	0.12	494	1.6	1.4	1.9	0.15	0.10	0.20	493
Shannon_Habitat	VH	2.3	2.0	2.6	0.28	0.22	0.34	568	1.3	1.1	1.5	0.09	0.04	0.15	494	1.6	1.4	1.9	0.17	0.11	0.22	493
PCT_FAST	H	1.7	1.4	1.9	0.14	0.09	0.19	536	1.3	1.1	1.5	0.07	0.02	0.11	494	1.3	1.1	1.5	0.07	0.02	0.11	493
Shannon_Flow	H	1.6	1.4	1.9	0.11	0.07	0.16	536	1.3	1.1	1.5	0.05	0.01	0.09	494	1.4	1.2	1.7	0.07	0.03	0.11	493
Riparian																						
W1_HALL	VH	3.0	2.5	3.6	0.47	0.40	0.54	534	1.8	1.5	2.1	0.25	0.18	0.32	494	1.8	1.6	2.1	0.26	0.19	0.33	493
XCMG	VH	2.4	2.1	2.7	0.30	0.25	0.36	537	1.4	1.2	1.6	0.11	0.06	0.16	494	1.5	1.3	1.8	0.14	0.09	0.20	493
XPMGVEG	VH	2.1	1.9	2.5	0.25	0.19	0.30	568	1.4	1.3	1.7	0.12	0.07	0.17	494	1.5	1.3	1.7	0.14	0.08	0.19	493
XPCMG	H	2.0	1.8	2.3	0.23	0.17	0.28	537	1.3	1.1	1.5	0.07	0.02	0.12	494	1.4	1.2	1.6	0.11	0.06	0.15	493
XCDENMID	H	1.9	1.7	2.3	0.22	0.16	0.28	551	1.2	1.0	1.4	0.05	0.00	0.10	478	1.3	1.1	1.5	0.08	0.03	0.14	477
Toxicity																						
Toxicity (lethal)	M	1.3	1.0	1.7	0.02	0.00	0.04	420	1.2	1.0	1.6	0.02	0.00	0.03	437	1.3	1.1	1.7	0.02	0.00	0.04	438
Toxicity (all endpoints)	M	1.0	0.8	1.2	0.00	0.00	0.05	420	1.2	1.0	1.4	0.05	0.00	0.11	437	1.0	0.8	1.2	0.01	0.00	0.06	438

Table 2-7. Summary of stressor prioritization.

Very high (AR > 0.25)	High (AR 0.1 to 0.25)	Moderate (RR >1)	Low (RR <1)
Water Chemistry	Water Chemistry	Water Chemistry	Water Chemistry
Nutrients	*Other chemistry*	*Nutrients*	*Metals*
TP	Cl	NH4	Pb (t)
TN	pH	*Metals*	Habitat
Habitat	TSS	As (t)	*Biomass*
Instream habitat	SpCond	Se (t, d)	PCT□MCP
XFC□NAT	Habitat	Cu (t, d)	
Shannon□Habitat	*Biomass*	*Pyrethroids*	
Substrate	PCT□MAP	Delta□Tralomethrin	
Shannon□Substrate	*Instream habitat*	Esfenvalerate□Fenvalerate	
PCT□BIGR	Shannon□Flow	Permethrin	
Riparian	PCT□FAST	Cyhalothrin	
XPMGVEG	*Substrate*	Cyfluthrin	
XCMG	PCT□SAFN	Cypermethrin	
W1□HALL	*Riparian*	Bifenthrin	
	XCDENMID	Habitat	
	XPCMG	*Biomass*	
		PCT□MIAT1	
		XMIATP	
		PCT□CPOM	
		AFDM	
		Chl a	
		Substrate	
		XEMBED	
		Toxicity	
		Reproduction	
		Survival	

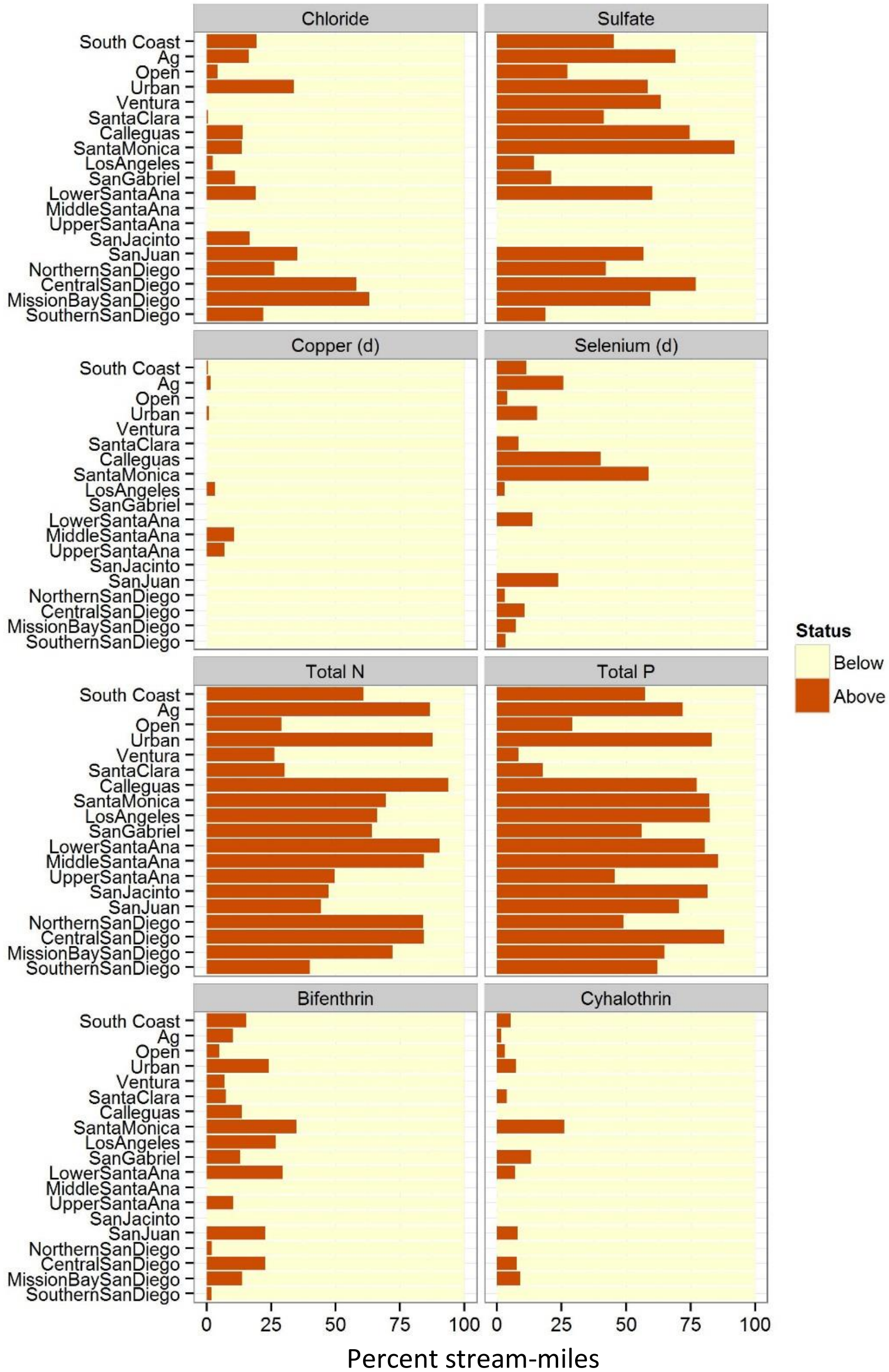


Figure 2-1. Extents of selected water-chemistry variables exceeding thresholds.

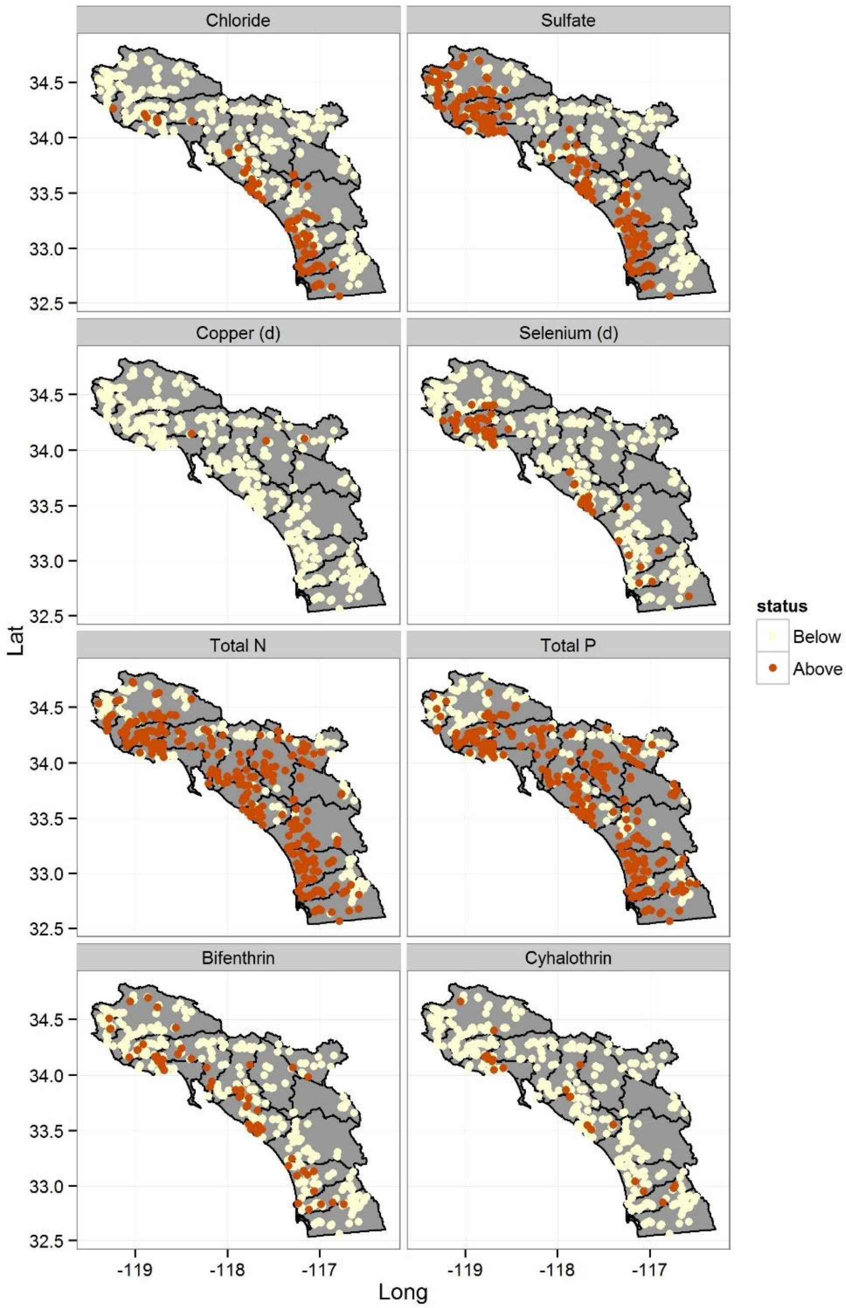


Figure 2-2. Maps of selected water-chemistry variables

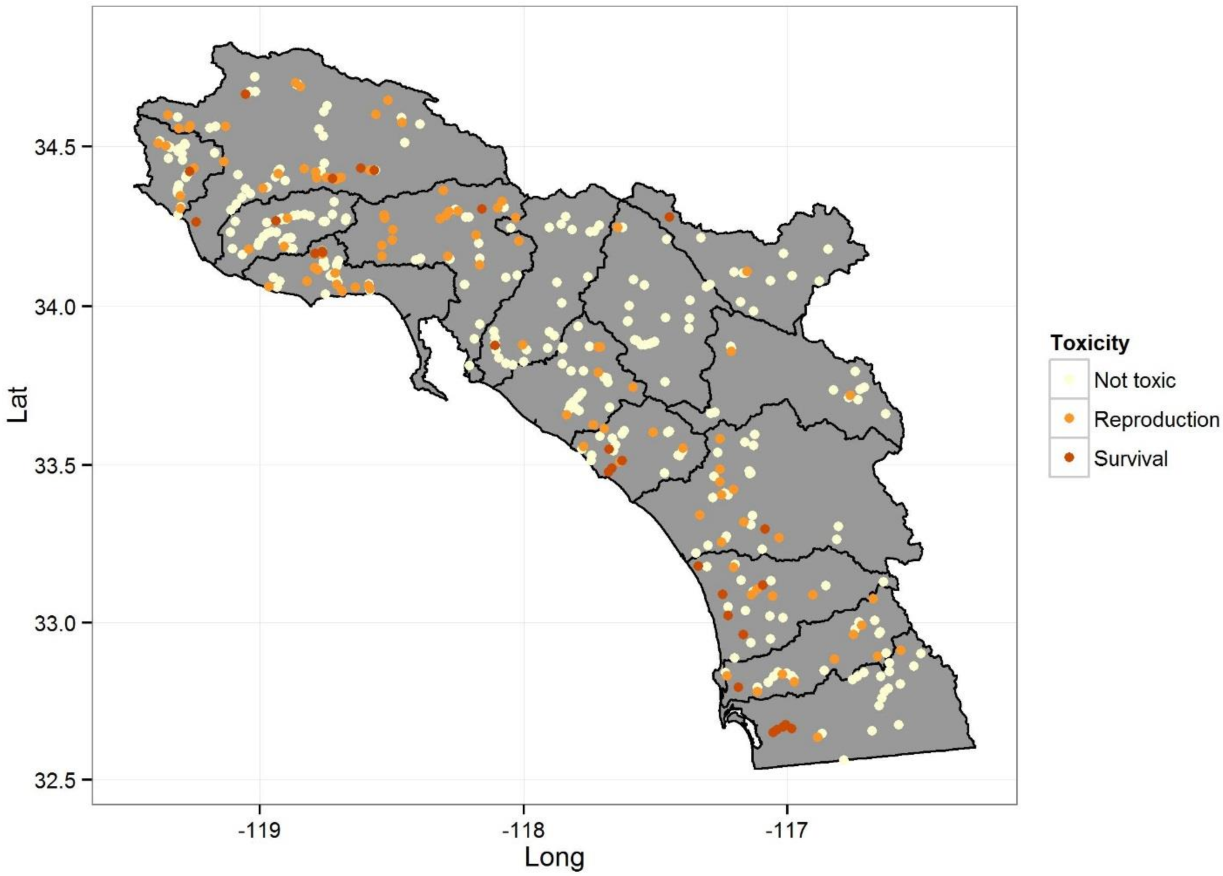


Figure 2-3. Map of toxicity.

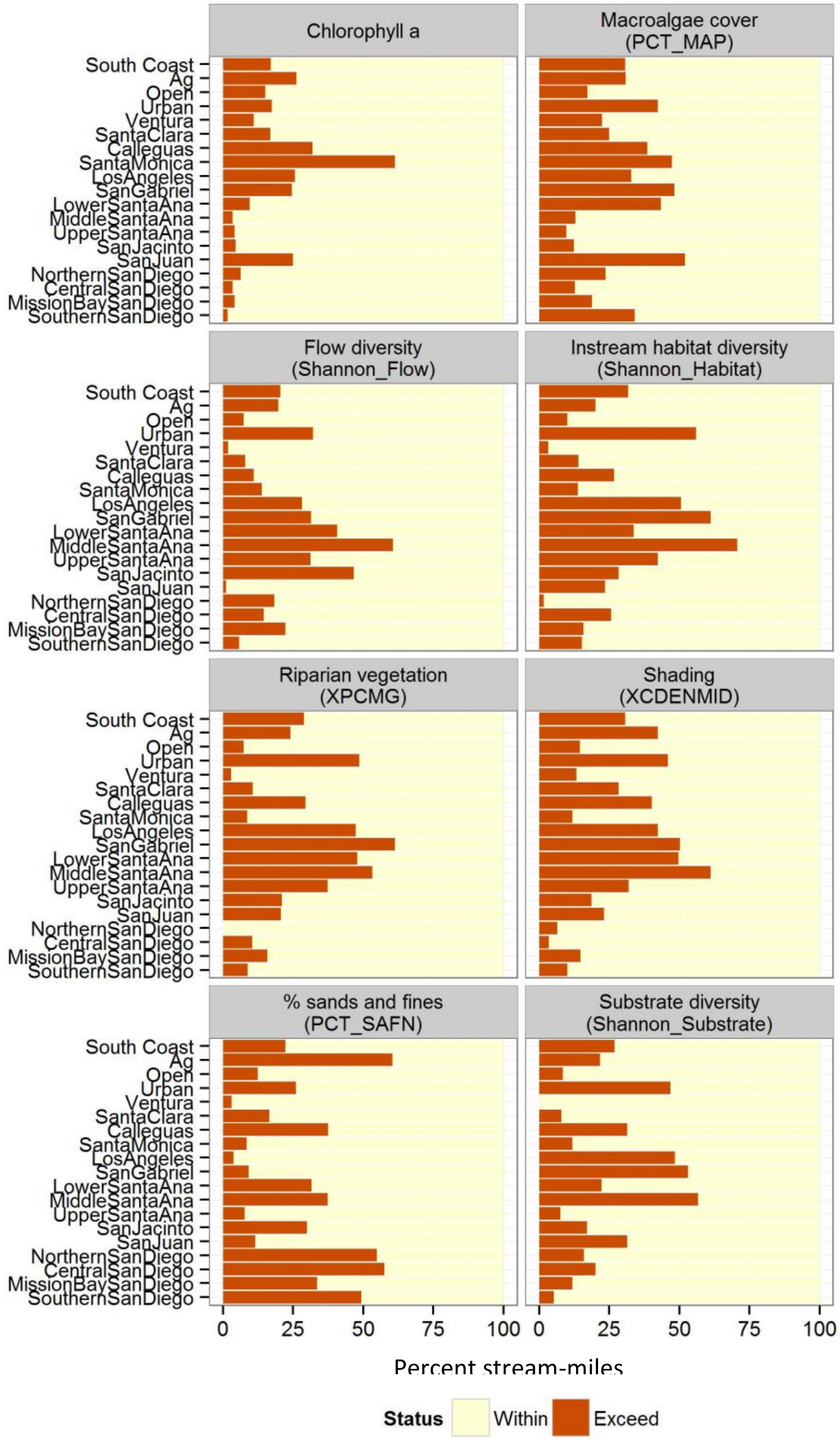


Figure 2-4. Extents of selected physical habitat variables.

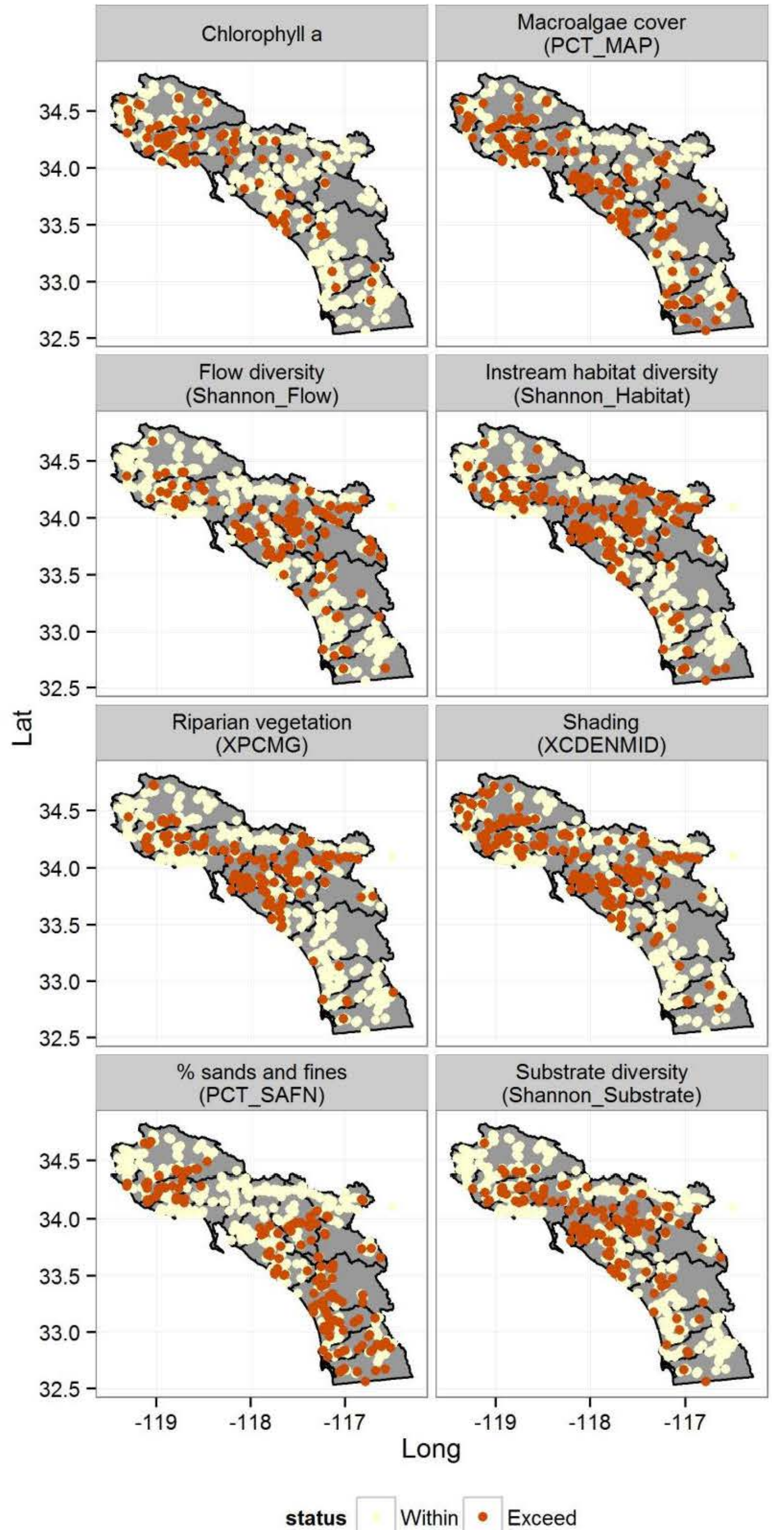


Figure 2-5. Map of selected physical habitat variables.

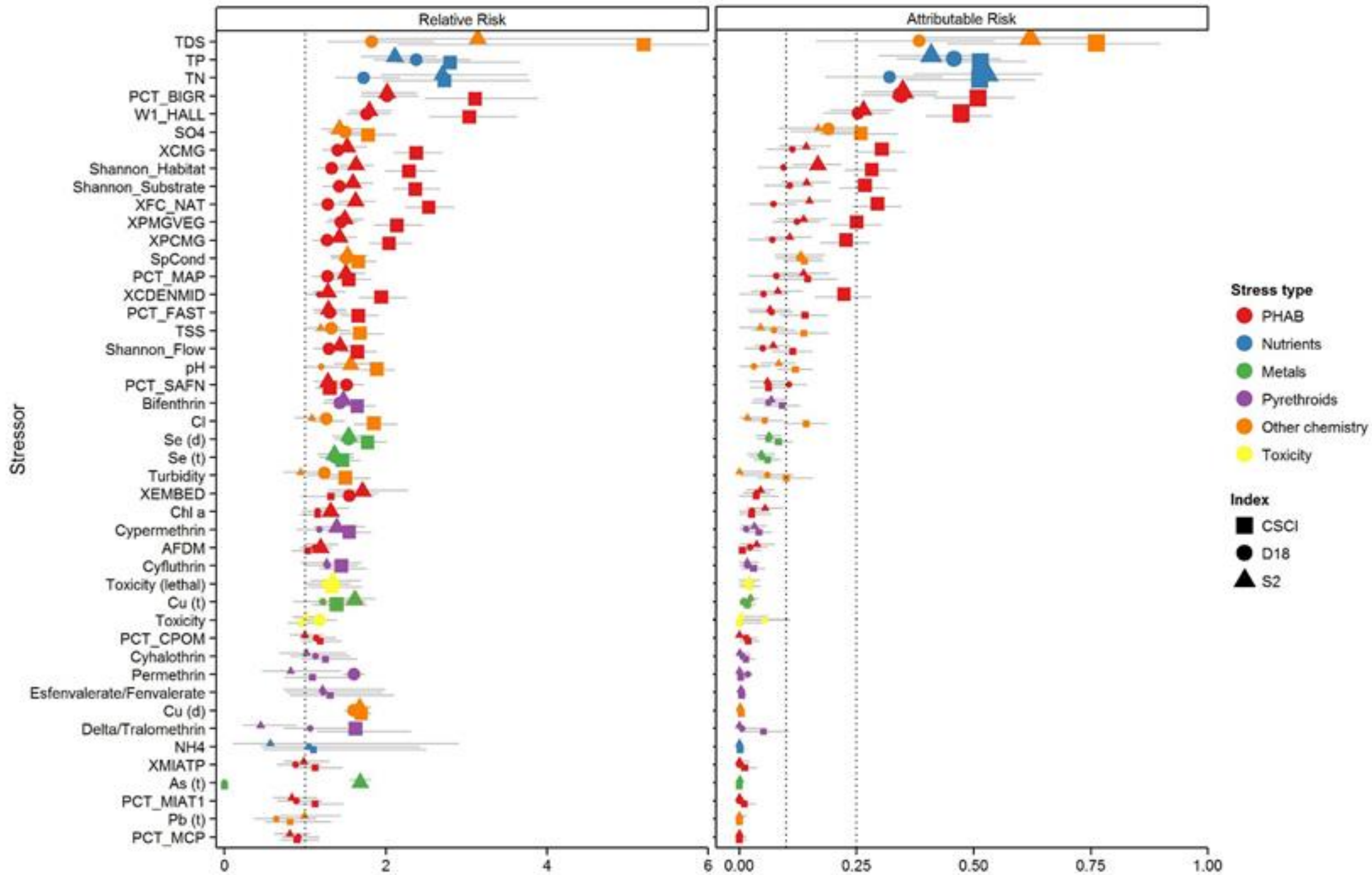


Figure 2.6. Relative and attributable risks. The horizontal lines represent the 95% confidence interval around each estimate. The dotted vertical lines represent the thresholds used to prioritize stressors.

QUESTION 3: HOW ARE BIOLOGICAL CONDITIONS CHANGING OVER TIME?

Murrieta Creek, Fall 2003

Murrieta Creek, Spring 2004

Changes in land use, such as the installation of a sand mining operation, can profoundly alter the habitat and degrade biological condition.
***Photos by Scott Johnson*.**

Introduction

Analysis of trends allows managers to assess the effects of policies that have been implemented during the study period, the influence of disturbances like wildfire, or other activities that might change the biological condition of streams in the region. Changes observed in the region provide context to understanding site specific changes. For example, if conditions deteriorate in less disturbed areas (such as open streams), then degradation observed at an urban site might be attributable to regional stressors, such as climate change or atmospheric deposition of nutrients, rather than to management activities.

Methods

Data Collection

Data were collected as described in the Survey Overview.

Data Aggregation

Where multiple samples were collected at a single site within a year, data were aggregated as the maximum value within a site. Missing values were ignored for all relevant analyses, where appropriate.

Thresholds

Thresholds were applied as described in the section on Question 1.

Weighted Magnitudes and Extent Estimates

Weighted estimates were calculated as described in the section on Question 1, using each year (or year within land use class) as a stratum. Extents of streams in each condition class were estimated for the CSCI, S2, D18, and CRAM. In addition, the extent of streams intact for all indicators was estimated as well.

Results

All data used in this report can be downloaded from ftp.sccwrp.org/pub/download/SMCReport/SMCDataFor5yearReport.zip.

Since 2009, no obvious trends were evident for any indicator, although all indicators showed a slight depression in scores in the year 2010 (Tables 3-1 and 3-2; Figure 3-1). The median score for the CSCI, S2, and CRAM fluctuated between Class 2 and 3, while D18 fluctuated between Class 3 and 4. The percent of streams that were intact for all four indicators was highest (at 36%) in 2012, but was only 14% in 2010 (Figure 3-2). Most of the fluctuations in score affected the open streams, while the extent of healthy agricultural and urban streams remained low throughout the survey (Table 3-1, 3-2). Extent estimates were particularly imprecise for agricultural streams, as in some years very few of these sites were sampled (e.g., 5 agricultural sites were sampled for all indicators in 2011 and 2012), leading to erratic confidence intervals

(Figure 3-1). Although CSCI scores were generally high in the earlier years of the survey, these estimates were based on very small sample sizes (<25 sites in any year), and should be interpreted with caution.

Discussion

We were unable to detect trends in condition. Our inability to detect trends stems from the relatively short time frame of the survey (i.e., 5 years), as well as a study design that did not include site revisits over multiple years. These two characteristics of the survey make it difficult to distinguish trends from natural variation driven by climate or other factors. Given that a different set of sites was examined each year, the regional focus of the program, and that only five years of data are presented, it is not surprising that no distinct trends were observed. For a trend at this regional scale to be evident, a longer time period would be required and/or site revisits. It is possible that site-specific management activities affecting stream health were within the sample frame, but may have been obscured by the overall regional focus. Revisiting sites sampled in early years of this survey would provide site-specific trend estimates, which could then provide a better estimate of trends across the region. Additionally, we would be able to explore potential drivers of any observed trends.

Table 3-1. Medians for key indicators by year.

Subpopulation	2009	2010	2011	2012	2013
South Coast					
CSCI	0.71	0.70	0.81	0.80	0.65
D18	55	50	54	59	57
S2	37	34	39	43	50
CRAM	71	62	72	69	67
Agricultural					
CSCI	0.70	0.74	0.79	0.79	0.71
D18	49	49	67	61	37
S2	25	17	17	41	38
CRAM	64	66	66	74	72
Open					
CSCI	0.95	0.77	0.93	0.95	0.96
D18	75	67	68	71	75
S2	83	75	52	68	61
CRAM	82	78	83	82	84
Urban					
CSCI	0.65	0.52	0.61	0.67	0.53
D18	52	41	41	39	35
S2	33	26	27	33	48
CRAM	56	45	40	37	52

Table 3-2. Percent of stream-miles within the 10th percentile of scores at reference sites for each year

Subpopulation	2009	2010	2011	2012	2013
South Coast					
CSCI	41	28	56	52	36
D18	41	35	38	45	43
S2	34	41	36	44	59
CRAM	46	34	50	48	39
Multiple indicators	23	14	24	36	31
Agricultural					
CSCI	42	39	47	35	39
D18	28	19	61	33	42
S2	15	4	19	28	17
CRAM	25	36	35	77	51
Multiple indicators	2	8	0	40	22
Open					
CSCI	84	46	88	87	82
D18	70	62	60	71	79
S2	70	86	54	84	72
CRAM	87	70	91	85	89
Multiple indicators	57	34	51	83	79
Urban					
CSCI	8	12	19	17	7
D18	20	24	17	26	20
S2	11	23	19	12	58
CRAM	23	13	12	15	11
Multiple indicators	1	4	0	1	3

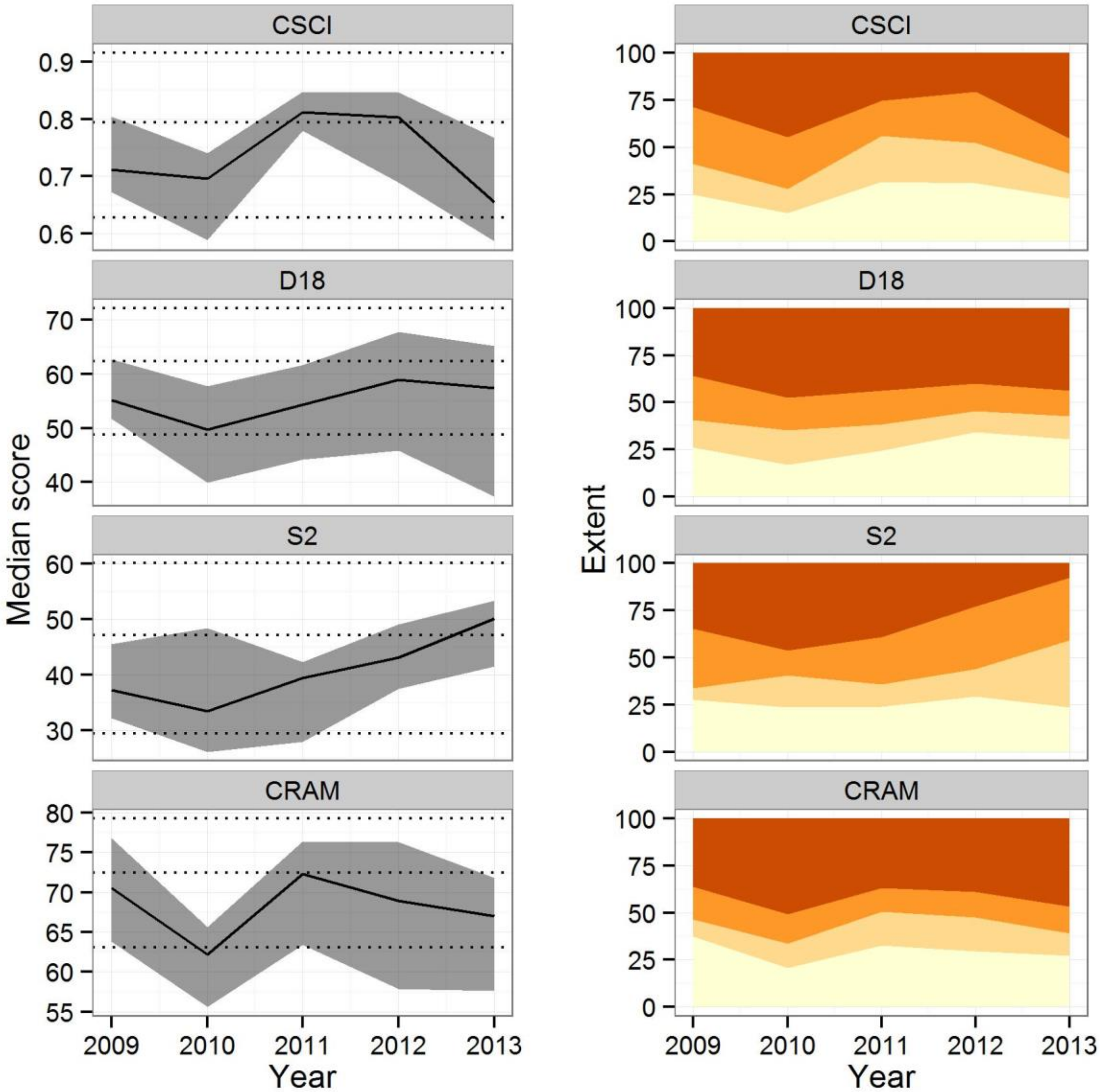


Figure 3-1. Median score and extent of condition classes by year for each indicator. The gray band in the left panel indicates the 95% confidence interval. Color in the right panel indicates condition class; lighter colors indicate better condition.

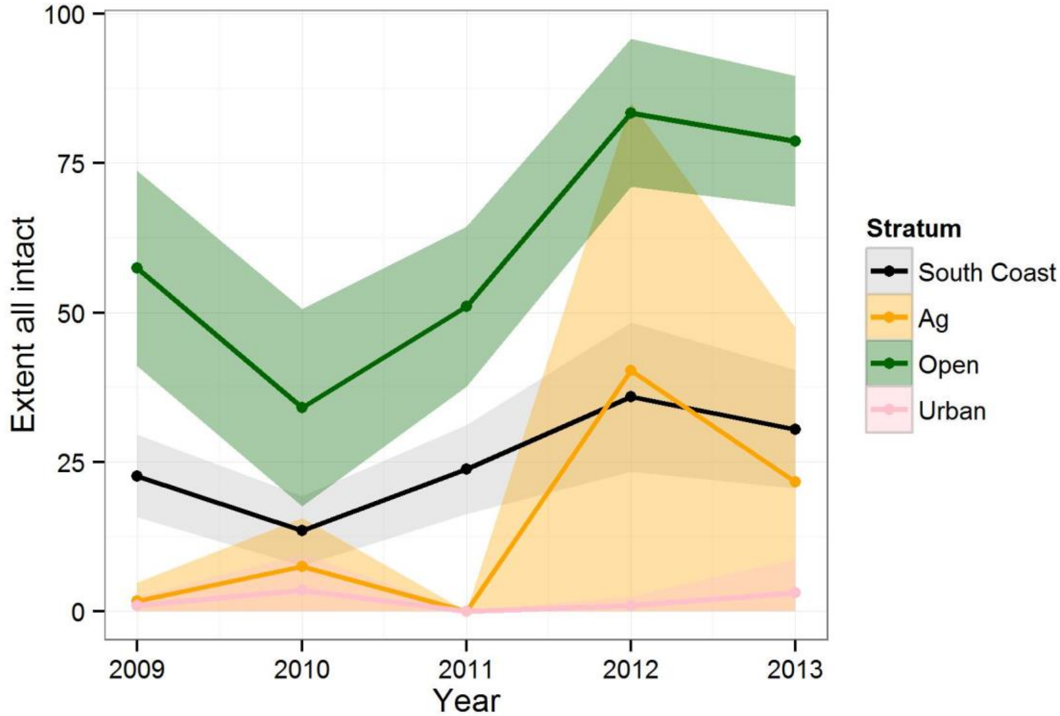


Figure 3-2. Percent of stream-miles that were intact for all four indicators

RECOMMENDATIONS

- Continue the survey for another five years, focusing on key biological indicators of stream condition, as well as high-priority stressors.
- Expand the survey to include nonperennial streams.
- Improve trend estimates by revisiting previously sampled probabilistic sites.
- Continue to investigate high priority stressors, such as habitat degradation and nutrient enrichment.
- Support studies that identify constraints on biological condition imposed by natural factors, channel engineering, water chemistry, and habitat degradation.

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Appendix 2

Appendix 7-B

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A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams

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ABSTRACT / We developed a benthic macroinvertebrate index of biological integrity (B-IBI) for the semiarid and populous southern California coastal region. Potential reference sites were screened from a pool of 275 sites, first with quantitative GIS landscape analysis at several spatial scales and then with local condition assessments (in-stream and riparian) that quantified stressors acting on study reaches. We screened 61 candidate metrics for inclusion in the B-IBI based on three criteria: sufficient range for scoring, responsiveness to watershed and reach-scale disturbance gradients, and minimal correlation with other responsive metrics. Final metrics included: percent collector-gatherer + collector-filterer individuals, percent noninsect taxa, percent tolerant taxa, Coleoptera richness, predator richness, percent intolerant individuals, and EPT richness. Three metrics had lower scores in chaparral reference sites than in mountain reference sites and were scored on separate scales in the B-IBI. Metrics were scored and assembled into a composite B-IBI, which was then divided into five roughly equal condition categories. PCA analysis was used to demonstrate that the B-IBI was sensitive to composite stressor gradients; we also confirmed that the B-IBI scores were not correlated with elevation, season, or watershed area. Application of the B-IBI to an independent validation dataset (69 sites) produced results congruent with the development dataset and a separate repeatability study at four sites in the region confirmed that the B-IBI scoring is precise. The SoCal B-IBI is an effective tool with strong performance characteristics and provides a practical means of evaluating biotic condition of streams in southern coastal California.

Assemblages of freshwater organisms (e.g., fish, macroinvertebrates, and periphyton) are commonly used to assess the biotic condition of streams, lakes, and wetlands because the integrity of these assemblages provides a direct measure of ecological condition of these water bodies (Karr and Chu 1999). Both multimetric (Karr and others 1986; Kerans and Karr 1994; McCormick and others 2001; Klemm and others 2003) and multivariate (Wright and others 1983; Hawkins and others 2000; Reynoldson and others 2001) methods have been developed to characterize biotic condition and to establish thresholds of ecological impairment. In both approaches, the ability to recognize degradation at study sites relies on an understanding of the organismal assemblages expected in the absence of disturbance. Thus, the adoption of a consistent and quantifiable method for defining reference condition is fundamental to any biomonitoring program (Hughes 1995).

KEY WORDS: Benthic macroinvertebrates; B-IBI; Biomonitoring; Mediterranean climate

Southern California faces daunting challenges in the conservation of its freshwater resources due to its aridity, its rapidly increasing human population, and its role as one of the world's top agricultural producers. In recent years, several state and federal agencies have become increasingly involved in developing analytical tools that can be used to assess the biological and physical condition of California's streams and rivers. For example, the US Environmental Protection Agency (EPA), the US Forest Service (USFS), and California's state and regional Water Quality Control Boards (WQCBs) have collected fish, periphyton and benthic macroinvertebrates (BMIs) from California streams and rivers as a critical component of regional water

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quality assessment and management programs. Together, these agencies have sampled BMIs from thousands of sites in California, but no analysis of BMI assemblage datasets based on comprehensively defined regional reference conditions has yet been undertaken. In the only other large-scale study within the state, Hawkins and others (2000) developed a predictive model of biotic integrity for third- to fourth-order streams on USFS lands in three montane regions in northern California. This ongoing effort (Hawkins unpublished) is an important contribution to bioassessment in the state, but the emphasis of this work has been concentrated on logging impacts within USFS lands. The lack of a broadly defined context for interpretation of BMI-based bioassessment remains the single largest impediment to the development of biocriteria for the majority of California streams and rivers. This article presents a benthic index of biotic integrity (B-IBI) for wadeable streams in southern coastal California assembled from BMI data collected in the region by the USFS, EPA, and state and regional WQCBs between 2000 and 2003.

Methods

Study Area

The Southern Coastal California B-IBI (SoCal B-IBI) was developed for the region bounded by Monterey County in the north, the Mexican border in the south, and inland by the eastern extent of the southern Coast Ranges (Figure 1). This Mediterranean climate region comprises two Level III ecoregions (Figure 1; Omernik 1987) and shares a common geology (dominated by recently uplifted and poorly consolidated marine sediments) and hydrology (precipitation averages 10–20 in./year in the lower elevations and 20–30 in./year in upper elevations, reaching 30–40 in./year in the highest elevations and in some isolated coastal watersheds (Spatial Climate Analysis Service, Oregon State University, www.climatesource.com). The human population in the region was approximately 20 million in 2000 and is projected to exceed 28 million by 2025 (California Department of Finance, Demographic Research Unit, www.dof.ca.gov).

Field Protocols and Combining Datasets

The SoCal B-IBI is based on BMI and physical habitat data collected from 275 sites (Figure 1) using the 3 protocols described in the following subsections. Sites were sampled during base flow periods between April and October of 2000–2003.

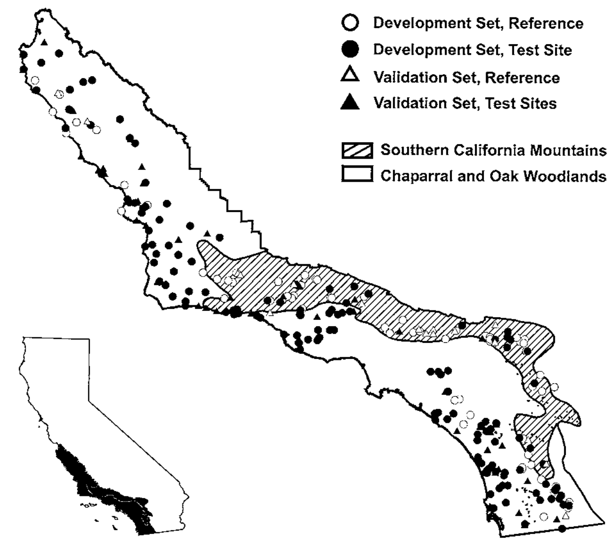

Figure 1. Map of study area showing the location of the study area within California, the distribution of test and reference sites and development and validation sites, and the boundaries of the two main ecoregions in the study area.

California Stream Bioassessment Protocol (CSBP, 144 sites). Several of the regional WQCBs in southern coastal California have implemented biomonitoring programs in their respective jurisdictions and have collected BMIs according to the CSBP (Harrington 1999). At CSBP sites, three riffles within a 100-m reach were randomly selected for sampling. At each riffle, a transect was established perpendicular to the flow, from which three separate areas of 0.18 m^2 each were sampled upstream of a 0.3-m-wide D-frame net and composited by transect. A total of 1.82 m^2 of substrate was sampled per reach and 900 organisms were subsampled from this material (300 organisms were processed separately from each of 3 transects). Water chemistry data were collected in accordance with the protocols of the different regional WQCBs (Puckett 2002) and qualitative physical habitat characteristics were measured according to Barbour and others (1999) and Harrington (1999).

USFS (56 sites). The USFS sampled streams on national forest lands in southern California in 2000 and 2001 using the targeted riffle protocol of Hawkins and others (2001). All study reaches were selected nonrandomly as part of a program to develop an interpretive (reference) framework for the results of stream biomonitoring studies on national forests in California. BMIs were sampled at study reaches (containing at least four fast-water habitat units) by disturbing two separate 0.09-m^2 areas of substrate upstream of a 0.3-m-wide D-frame net in each of four separate fast-water units; a total of 0.72 m^2 was disturbed and all sample material from a reach was composited. Field crews used a combination of qualitative and quantitative measures to collect physical habitat and water chemistry data (Hawkins and others 2001). A 500-organism subsample was processed from the composite sample and identified following methods described by Vinson and Hawkins (1996).

Environmental Monitoring and Assessment Program (EMAP, 75 sites). The EPA sampled study reaches in southern coastal California from 2000 through 2003 as part of its Western EMAP pilot project. A sampling reach was defined as 40 times the average stream width at the center of the reach, with a minimum reach length of 150-m and maximum length of 500-m. A BMI sample was collected at each site using the USFS methodology described earlier (Hawkins and others 2001) in addition to a standard EMAP BMI sample (not used in this analysis). A 500-organism subsample was processed in the laboratory according to EMAP standard taxonomic effort levels (Klemm and others 1990). Water chemistry samples were collected from the midpoint of each reach and analyzed using EMAP protocols (Klemm and Lazorchak 1994). Field crews recorded physical habitat data using EPA qualitative methods (Barbour and others 1999) and quantitative methods (Kaufmann and others 1999).

As part of a methods comparison study, 77 sites were sampled between 2000 and 2001 with both the CSBP and USFS protocols. The two main differences between the methods are the area sampled and the number of organisms subsampled (discussed earlier). To determine the effect of sampling methodology on assessment of biotic condition, we compared the average difference in a biotic index score between the two methods at each site. Biotic index scores were computed with seven commonly used biotic metrics (taxonomic richness, Ephemoptera, Plecoptera, and Trichoptera (EPT) richness, percent dominant taxon, sensitive EPT individuals, Shannon diversity, percent intolerant taxa, and percent scraper individuals) according to the following equation:

$$Score = \sum (x_i - \bar{x})/sem_i$$

where x_i is the site value for the ith metric, x is the overall mean for the ith metric, and SEM_i is the standard error of the mean for the ith metric. A score of zero is the mean value.

Because USFS-style riffle samples were collected at all EMAP sites, only two field methods were combined in this study. All EMAP and CSBP samples were collected and processed by the California Department of Fish and Game's Aquatic Bioassessment Laboratory (ABL) and all USFS samples were processed by the US Bureau of Land Management's Bug Lab in Logan, Utah. Taxonomic data from both labs were combined in an MS Access© database application that standardized BMI taxonomic effort levels and metric calculations, allowing us to minimize any differences between the two labs that processed samples. Taxonomic effort followed standards defined by the California Aquatic Macroinvertebrate Laboratory Network (CAMLnet 2002; www.dfg.ca.gov/cabw/camlnetste.pdf). Sites with fewer than 450 organisms sampled were omitted from the analyses.

Screening Reference Sites

We followed an objective and quantitative reference site selection procedure in which potential reference sites were first screened with quantitative Geographical Information System (GIS) land-use analysis at several spatial scales and then local condition assessments (instream and riparian) were used to quantify stressors acting within study reaches. We calculated the proportions of different land-cover classes and other measures of human activity upstream of each site at four spatial scales that give unique information about potential stressors acting on each site: (1) within polygons delimiting the entire watershed upstream of each sampling site, (2) within polygons representing local regions (defined as the intersection of a 5-km-radius circle around each site and the primary watershed polygon), (3) within a 120-m riparian zone on each side of all streams within each watershed, and (4) within a 120-m riparian zone in the local region. We used the ArcView® (ESRI 1999) extension ATtILA (Ebert and Wade 2002) to calculate the percentage of various land-cover classes (urban, agriculture, natural, etc.) and other measures of human activity (population density, road density, etc.) in each of the four spatial areas defined for each site. Two satellite imagery datasets from the mid-1990s were combined for the land-cover analyses: California Land Cover Mapping & Monitoring Program (LCMMP) vegetation data (CalVEG) and a recent dataset produced by the Central Coast Watershed Group (Newman and Watson 2003). Population data were derived from the 2000 migrated TIGER dataset (California Department of Forestry and Fire Protection, www.cdf.ca.gov). Stream layers were obtained from the US Geological Survey (USGS) National Hydrography Dataset (NHD). The road network was obtained from the California Spatial Information Library (CaSIL, gis.ca.gov) and elevation was based on the USGS National Elevation Dataset (NED). Frequency histograms of land-use percentages for all sites were used to establish subjective thresholds for elim-

Table 1. List of minimum or maximum landuse thresholds used for rejecting potential reference sites

Stressor metric	Definition	Threshold
N_index_L	Percentage of natural land use at the local scale	≤ 95%
Purb_L	Percental of urban land use at the local scale	> 3%
Pagt_L	Percentage of total agriculture at the local scale	> 5%
Rddens_L	Road density at the local scale	> 2.0 km/km^2
PopDens_L	Population density (2000 census) at the local scale	> 150 indiv./km^2
N_index_W	Percentage of natural landuse at the watershed scale	≤ 95%
Purb_W	Percentage of urban landuse at the watershed scale	> 5%
Pagt_W	Percentage of total agriculture at the watershed scale	> 3%
Rddens_W	Road density at the watershed scale	> 2.0 km/km^2
PopDens_W	Population density (2000 census) at the watershed scale	> 150 indiv./km^2

inating sites from the potential reference pool (Table 1). Sites were further screened from the reference pool on the basis of reach-scale conditions (obvious bank instability or erosion/ sedimentation problems, evidence of mining, dams, grazing, recent fire, recent logging).

Eighty-eight sites passed all the land-use and local condition screens and were selected as reference sites, leaving 187 sites in the test group. We randomly divided the full set of sites into a development set (206 sites total: 66 reference/140 test) and a validation set (69 sites total: 22 reference/47 test). The development set was used to screen metrics and develop scoring ranges for component B-IBI metrics; the validation set was used for an independent evaluation of B-IBI performance.

Screening Metrics and Assembling the B-IBI

Sixty-one metrics were evaluated for possible use in the SoCal B-IBI (Table 2). A multistep screening process was used to evaluate each metric for (1) sufficient range to be used in scoring, (2) responsiveness to watershed-scale and reach-scale disturbance variables, and (3) lack of correlation with other responsive metrics.

Pearson correlations between all watershed-scale and reach-scale disturbance gradients were used to define the smallest suite of independent (nonredundant) disturbance variables against which to test biological metric response. Disturbance variables with correlation coefficients $|r| \geq 0.7$ were considered redundant. Responsiveness was assessed using visual inspection of biotic metric versus disturbance gradient scatterplots and linear regression coefficients. Metrics were selected as responsive if they showed either a linear or a "wedge-shaped" relationship with disturbance gradients. Biological metrics often show a "wedge-shaped" response rather than a linear response to single disturbance gradients because the single gradient only defines the upper boundary of the biological response; other independent disturbance gradients and natural limitations on species distributions might result in lower metric values than expected from response to the single gradient. Biotic metrics and disturbance gradients were log-transformed when necessary to improve normality and equalize variances. Metrics that passed the range and responsiveness tests were tested for redundancy. Pairs of metrics with product–moment correlation coefficients $|r| \geq 0.7$ were considered redundant and the least responsive metric of the pair was eliminated.

Scoring ranges were defined for each metric using techniques described in Hughes and others (1998), McCormick and others (2001), and Klemm and others (2003). Metrics were scored on a 0–10 scale using statistical properties of the raw metric values from both reference and nonreference sites to define upper and lower thresholds. For positive metrics (those that increase as disturbance decreases), any site with a metric value equal to or greater than the 80th percentile of reference sites received a score of 10; any site with a metric value equal to or less than the 10th percentile of the nonreference sites received a score of 0; these thresholds were reversed for negative metrics (20th percentile of reference and 90th percentile of nonreference). In both cases, the remaining range of intermediate metric values was divided equally and assigned scores of 1 through 9. Before assembling the B-IBI, we tested whether any of the final metrics were significantly different between chaparral and mountain reference sites in the southern California coastal region, in which case they would require separate scoring ranges in the B-IBI. Finally, an overall B-IBI score was calculated for each site by summing the constituent metric scores and adjusting the B-IBI to a 100-point scale.

Table 2. The 61 BMI metrics screened for use in the SoCal IBI

Candidate metrics	Disturbance variables: U_index_W	Pagt_W	Purb_L	RdDens_L	Channel Alteration	Bank Stability	Percent Fines	Total Dissolved Solids	Total Phosphorus	Total Nitrogen	Range Test
Taxonomic group metrics											
Coleoptera richness*	M	w	M	S	S	—	—	—	—	—	P
Crustacea + Mollusca richness	—	—	—	—	—	—	—	—	—	—	F
Diptera richness	—	—	—	—	—	—	—	—	—	—	P
Elmidae richness	w	—	w	M	S	M	S	M	—	—	F
Ephemerellidae richness					S	M	M	S	—	M	F
Ephemeroptera richness	S	S	M	S	w	M	S	S	—	S	P
EPT richness*	S	S	S	S	S	S	S	S	—	S	P
Hydropsychidae richness	—	—	w	—	S	—	—	—	—	—	F
Percent Amphipoda individuals	—	—	—	—	—	—	—	—	—	—	P
Percent Baetidae individuals	—	—	—	—	w	—	—	—	—	—	P
Percent Chironomidae individuals	—	—	—	—	—	—	—	—	M	—	P
Percent Corbicula individuals	—	—	—	—	—	—	—	—	—	—	P
Percent Crustacea individuals	—	—	—	—	—	—	—	—	—	—	P
Percent Diptera individuals	—	w	—	—	—	—	—	—	—	—	P
Percent Elmidae individuals	—	—	—	w	M	S	S	w	—	M	P
Percent Ephemeroptera individuals	—	w	w	—	M	w	—	—	—	—	P
Percent EPT individuals	—	—	M	M	M	M	—	—	—	—	P
Percent Gatropoda individuals	—	—	—	w	—	—	—	—	—	—	P
Percent Glossosomatidae individuals	—	—	—	—	w	—	—	—	—	M	F
Percent Hydropsychidae individuals	—	—	—	M	w	M	—	—	—	—	P
Percent Hydroptilidae individuals	—	—	—	M	—	w	—	—	—	—	F
Percent Mollusca individuals	—	—	—	w	w	—	—	—	—	—	P
Percent non-*Baetis/Fallceon* Ephemeroptera individuals	w	w	—	M	w	M	—	—	w	—	P
Percent non-*Hydropsyche* Hydropsychidae individuals	—	—	—	M	w	w	—	—	—	—	F
Percent non-*Hydropsyche/Cheumatopsyche* Trichoptera individuals	w	w	—	M	w	M	M	w	—	—	P
Percent non-insect Taxa*	M	w	M	M	w	—	—	—	w	M	F
Percent Oligochaeta individuals	—	—	—	—	w	—	—	—	—	—	P
Percent Perlodidae individuals	—	—	—	w	w	—	—	—	—	—	F
Percent Plecoptera individuals	—	—	—	M	M	M	M	M	w	S	P
Percent Rhyacophilidae individuals	—	—	—	w	S	S	w	—	—	M	F
Percent Simuliidae individuals	—	w	—	w	S	w	—	—		—	P
Percent Trichoptera	w	—	—	M	M	M	M	w	w	—	P
Plecoptera richness	M	S	w	M	w	w	M	S	—	S	F
Total taxa richness	M	M	w	S	w	w	w	w	w	M	P
Trichoptera richness	S	S	S	S	S	M	S	w	—	w	P

Table 2. Continued.

Candidate metrics	Disturbance variables: U_index_W	Pagt_W	Purb_L	RdDens_L	Channel Alteration	Bank Stability	Percent Fines	Total Dissolved Solids	Total Phosphorus	Total Nitrogen	Range Test
Functional feeding metrics											
Collector (filterers) richness	w	—	M	S	S	M	w	—	—	—	F
Collector (gatherers) richness	—	—	—	—	—	—	—	—	—	w	P
Percent collector (filterer) + collector (gatherer) individuals*	M	—	—	S	—	w	—	M	w	M	P
Percent collector (filterer) individuals	—	—	—	w	M	M	w	—	—	—	P
Percent collector (gatherer) individuals	—	—	—	w	M	—	—	w	M	w	P
Percent predator individuals	—	—	—	w	M	—	—	—	—	—	P
Percent scraper individuals	w	w	—	M	M	w	w	—	—	—	P
Percent scraper minus snails individuals	—	—	—	w	—	w	—	—	—	—	P
Percent shredder individuals	—	—	—	w	w	—	—	—	—	—	P
Predator richness*	S	S	w	M	w	—	—	S	—	M	P
Scraper richness	S	M	M	S	S	S	S	S	—	S	P
Shredder richness	M	M	—	M	S	—	—	—	—	M	F
Tolerance metrics											
Average tolerance value	M	w	w	S	w	—	M	—	—	w	P
Intolerant EPT richness	M	w	w	M	S	—	S	S	—	S	P
Intolerant taxa richness	M	w	w	M	S	M	S	S	—	S	P
Percent intolerant Diptera individuals	—	—	—	—	—	—	—	—	—	—	F
Percent intolerant individuals*	M	w	—	M	S	M	M	S	—	M	P
Percent intolerant scraper individuals	—	—	—	w	M	w	w	w	—	—	P
Percent of intolerant Ephemeroptera individuals	—	—	—	w	w	—	w	w	—	—	P
Percent of intolerant Trichoptera individuals	—	w	—	—	w	w	w	w	—	—	P
Percent sensitive EPT individuals	w	w	—	M	M	M	M	M	w	M	P
Percent tolerant individuals	—	—	—	—	—	—	w	w	—	—	P
Percent tolerant taxa*	w	—	w	M	—	—	—	w	—	M	P
Tolerant taxa richness	—	—	—	—	—	M	—	—	—	—	P
Others											
Percent dominant taxon	—	—	—	—	—	—	—	—	—	—	P
Shannon Diversity Index	w	w	w	M	M	w	—	w	w	w	P

Note: Each metric is indicated as having either no response (—), weak response (w), moderate response (M), or strong response (S) to each of eleven minimally correlated disturbance variables and whether each metric passed (P) or failed (F) the range test. The final seven minimally correlated metrics are indicated with an asterisk (*).

Table 3. Scoring ranges for seven component metrics in the SoCal B-IBI

Metric score	Coleoptera taxa (all sites)	EPT taxa		Predator taxa (all sites)	% Collector individuals		% Intolerant individuals		% Noninsect taxa (all sites)	% Tolerant taxa (all sites)
		6	8		6	8	6	8		
10	>5	>17	>18	>12	0–59	0–39	25–100	42–100	0–8	0–4
9		16–17	17–18	12	60–63	40–46	23–24	37–41	9–12	5–8
8	5	15	16	11	64–67	47–52	21–22	32–36	13–17	9–12
7	4	13–14	14–15	10	68–71	53–58	19–20	27–31	18–21	13–16
6		11–12	13	9	72–75	59–64	16–18	23–26	22–25	17–19
5	3	9–10	11–12	8	76–80	65–70	13–15	19–22	26–29	20–22
4	2	7–8	10	7	81–84	71–76	10–12	14–18	30–34	23–25
3		5–6	8–9	6	85–88	77–82	7–9	10–13	35–38	26–29
2	1	4	7	5	89–92	83–88	4–6	6–9	39–42	30–33
1		2–3	5–6	4	93–96	89–94	1–3	2–5	43–46	34–37
0	0	0–1	0–4	0–3	97–100	95–100	0	0–1	47–100	38–100

Note: Three metrics have separate scoring ranges for the two Omernik Level III ecoregions in southern coastal California region (6 = chaparral and oak woodlands, 8 = Southern California mountains).

Validation of B-IBI and Measurement of Performance Characteristics

To test whether the distribution of B-IBI scores in reference and test sites might have resulted from chance, we compared score distributions in the development set to those in the validation set. We also investigated a separate performance issue that ambient bioassessment studies often neglect: spatial variation at the reach scale. Although our use of a validation dataset tests whether the B-IBI scoring range is repeatable (Fore and others 1996; McCormick and others 2001), we designed a separate experiment to explicitly measure index precision. Four sites were resampled in May 2003. At each site, nine riffles were sampled following the CSBP, and material from randomly selected riffles was combined into three replicates of three riffles each. B-IBI scores were then calculated for each replicate. Variance among these replicates was used to calculate the minimum detectable difference (MDD) between two B-IBI scores based on a two-sample t-test model (Zar 1999). The index range can be divided by the MDD to estimate the number of stream condition categories detectable by the B-IBI (Doberstein and others 2000; Fore and others 2001).

Results

Combining Datasets

Unmodified CSBP samples (900 count) had significantly higher biotic condition scores ($t = -6.974$, $P < 0.0001$) than did USFS samples (500 count). However, there was no difference in biotic condition scores between USFS samples and CSBP samples that were randomly subsampled to reduce the 900 count to 500 ($t = -0.817$, $P = 0.416$). Thus, data from both targeted-riffle protocols were combined in B-IBI development.

Selected Metrics

Ten nonredundant stressor gradients were selected for metric screening: percent watershed unnatural, percent watershed in agriculture, percent local watershed in urban, road density in local watershed, qualitative channel alteration score, qualitative bank stability score, percent fine substrates, total dissolved solids, total nitrogen, and total phosphorous. Twenty-three biotic metrics that passed the first two screens (range and dose response) were analyzed for redundancy with Pearson product–moment correlation, and a set of seven minimally correlated metrics was selected for the B-IBI: percent collector-gatherer + collector-filterer individuals (% collectors), percent noninsect taxa, percent tolerant taxa, Coleoptera richness, predator richness, percent intolerant individuals, and EPT richness (Table 3). All metrics rejected as redundant were derived from taxa similar to those of selected metrics, but they had weaker relationships with stressor gradients. Dose–response relationships of the selected metrics to the 10 minimally correlated stressor variables are shown in Figure 2 and reasons for rejection or acceptance of all metrics are listed in Table 2. Regression coefficients were significant at the $P \leq 0.0001$ level among all seven selected metrics and at least two stressor gradients: percent watershed unnatural and road density in local watershed (Table 4). The final seven metrics included several metric types: richness, composition, tolerance measures, and func-

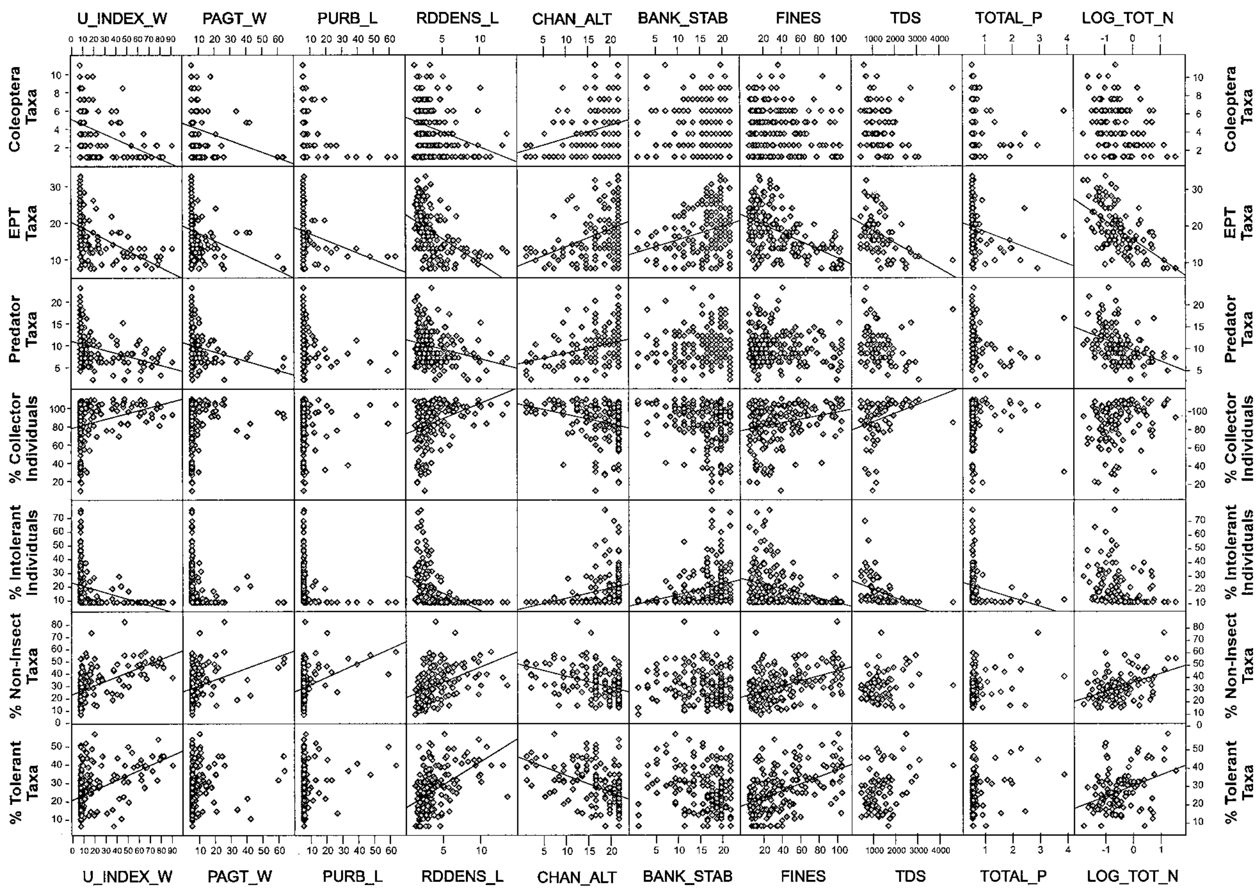

Figure 2. Scatterplots of dose–response relationships among 10 stressor gradients and 7 macroinvertebrate metrics (lines represent linear "best-fit" relationships; see text for abbreviations).

Table 4. Significance levels of linear regression relationships among 10 stressor metrics and 7 biological metrics

Metric	Coleoptera taxa	EPT taxa	Predator taxa	% Collector individuals	% Intolerant individuals	% Noninsect taxa	% Tolerant taxa
Bank Stability	0.813	**<0.0001**	0.3132	0.0009	0.0001	0.1473	0.0013
Fines	0.0017	**<0.0001**	0.0171	**0.0003**	**<0.0001**	**<0.0001**	**<0.0001**
Chan_Alt	**<0.0001**	**<0.0001**	**<0.0001**	**0.0003**	**<0.0001**	**<0.0001**	**<0.0001**
Log_U_Index_W	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
Log_PAgT_W	**0.0007**	**<0.0001**	**0.0004**	0.0054	0.0014	**<0.0001**	0.0012
Log_PUrb_L	0.0367	**0.0007**	0.0344	0.6899	0.0045	**0.0002**	0.0215
Log RdDens_L	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
Log_TDS	0.0094	**<0.0001**	0.0035	**0.0005**	**<0.0001**	0.0271	0.004
Log_Tot_N	0.0019	**<0.0001**	**<0.0001**	0.0078	0.0019	**<0.0001**	**<0.0001**
Log_Tot_P	0.062	**<0.0001**	0.0085	0.0162	**0.0001**	0.0018	0.0059

Note: Significant *P*-values corrected for 70 simultaneous comparisons ($P < 0.0007$) are highlighted in bold. Abbreviations are defined in Table 1 and in the text.

tional feeding groups. Because there are only seven metrics in the B-IBI, final scores calculated using this IBI are multiplied by 1.43 to adjust the scoring range to a 100-point scale.

The B-IBI scores were lower in chaparral reference sites than in mountain reference sites when calculated using unadjusted metric scores (Mann–Whitney *U*-test; $P = 0.02$). Although none of the final seven metrics

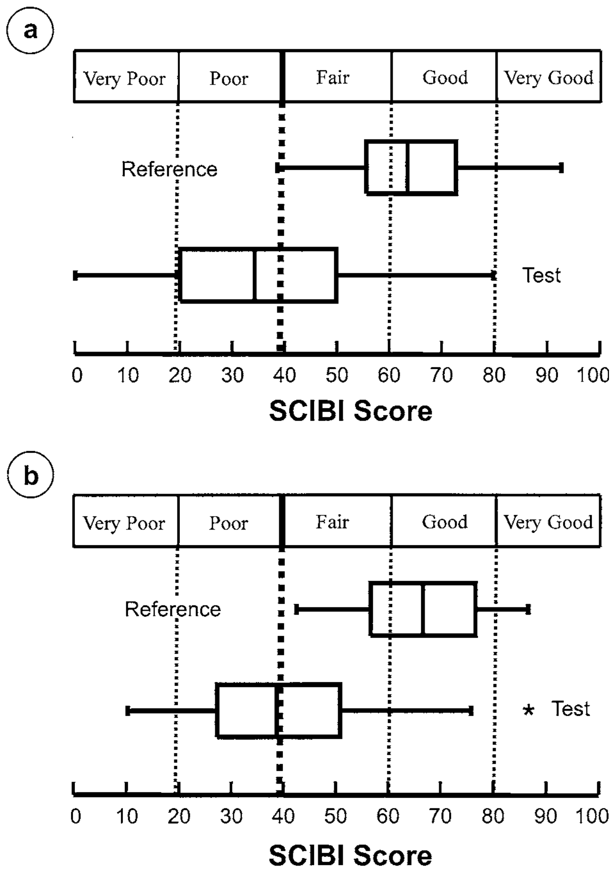

Figure 3. Box plots of B-IBI site scores for reference and test groups showing B-IBI scoring categories: (a) development sites and (b) validation sites. Dotted lines indicate condition category boundaries and heavy dotted lines indicate impairment thresholds.

were significantly different between chaparral reference sites and mountain reference sites at the $P = 0.05$ level ($P < 0.007$ after Bonferroni correction), scores for three metrics (EPT richness, percent collector-gatherer + collector-filterer individuals, and percent intolerant individuals) were substantially lower in chaparral reference sites than in mountain reference sites. We adjusted for this difference by creating separate scoring scales for the three metrics in the two ecoregions (Table 3). There was no difference in B-IBI scores between reference sites in the two ecoregions after the adjustment (Mann–Whitney *U*-test, $P = 0.364$).

Validation of B-IBI and Measurement of Performance Characteristics

The distribution of B-IBI scores at reference and nonreference sites was nearly identical between the development and validation data sets (Figure 3), indicating that our characterization of reference conditions and subsequent B-IBI scoring was repeatable and not likely due to chance. Based on a two-sample *t*-test model (setting $\alpha = 0.05$ and $\beta = 0.20$), the MDD for the SoCal IBI is 13.1. Thus, we have an 80% chance of detecting a 13.1-point difference between sites at the $P = 0.05$ level. Dividing the 100-point B-IBI scoring range by the MDD indicates that the SoCal B-IBI can detect a maximum of seven biological condition categories, a result similar to or more precise than other recent estimates of B-IBI precision (Barbour and others 1999; Fore and others 2001). We used a statistical criterion (two standard deviations below the mean reference site score) to define the boundary between "fair" and "poor" conditions, thereby setting B-IBI = 39 as an impairment threshold. The scoring range below 39 was divided into two equal condition categories, and the range above 39 was divided into three equal condition categories: 0–19 = "very poor", 20–39 = "poor", 40–59 = "fair", 60-79 = "good", and 80–100 = "very good" (Figure 3).

We ran two principle components analyses (PCAs) on the environmental stressor values used for testing metric responsiveness: 1 that included all 275 sites for which we calculated 4 watershed scale stressor values and another based on 124 sites for which we had measurements of 9 of the 10 minimally correlated stressor variables. We plotted B-IBI scores as a function of the first multivariate stressor axis from each PCA. We log-transformed percent watershed unnatural, percent watershed in agriculture, percent local watershed in urban, road density in local watershed, total nitrogen, and total phosphorous. Only PCA Axis 1 was significant in either analysis, having eigenvalues larger than those predicted from the broken-stick model (McCune and Grace 2002). In both PCAs, the B-IBI score decreased with increasing human disturbance (Figure 4) and was correlated (Spearman ρ) with PCA Axis 1 ($r = -0.652$, $P < 0.0001$ for all 275 sites; $r = -0.558$, $P \leq 0.0001$ for 124 sites). In the analysis of all 275 sites, all 4 watershed-scale stressors had high negative loadings, with percent watershed unnatural and local road density being the highest (Figure 5a). In the analysis of 124 sites, percent watershed unnatural, percent watershed in agriculture, and local road density had the highest negative loadings on the first axis, and channel alteration had the highest positive loading (Figure 4b).

Finally, we found no relationship between B-IBI scores and ecoregion (Mann–Whitney U, $P = 0.364$), Julian date ($R^2 = 0.01$, $P = 0.349$), watershed area ($R^2 = 0.002$, $P = 0.711$), or elevation ($R^2 = 0.01$, $P = 0.349$), indicating that the B-IBI scoring is robust with respect to these variables (Figure 5). Our ecoregion scoring adjustment probably corrects for the

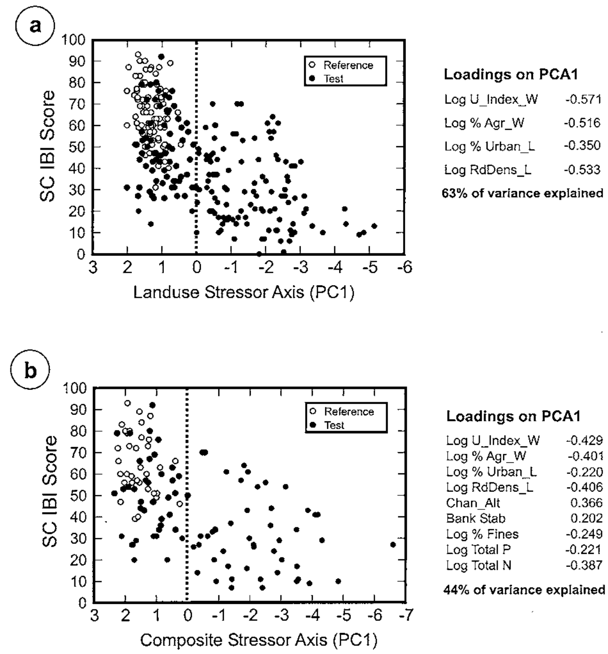

Figure 4. Scatterplots of SoCal B-IBI scores against two composite stressor axes from PCA: (a) values for all 275 sites; composite axis includes 4 land-use gradients; (b) values for 124 sites; composite axis includes 9 local and watershed scale stressor gradients.

strongest elevation effects, but there is no evidence that B-IBI scores are related to elevation differences within each ecoregion.

Discussion

The SoCal B-IBI is the most comprehensive assessment to date of freshwater biological integrity in California. As in other Mediterranean climate regions, the combination of aridity, geology, and high-amplitude cycles of seasonal flooding and drying in southern coastal California makes its streams and rivers particularly sensitive to disturbance (Gasith and Resh 1999). This sensitivity, coupled with the burgeoning human population and vast conversion of natural landscapes to agriculture and urban areas, has made it the focus of both state and federal attempts to maintain the ecological integrity of these strained aquatic resources.

Unfortunately, growing interest in biomonitoring is unmatched by financial resources available for this monitoring. Thus, combination of data among programs is very desirable, although this goal is rarely achieved in practice. We demonstrated that macroinvertebrate bioassessment data from multiple agencies could be successfully combined to produce a regional index that is useful to all agencies involved. This index is easy to apply, its fundamental assumptions are transparent, it provides precise condition assessments, and it is demonstrated to be responsive to a wide range of anthropogenic stressors. The index can also be applied throughout a long index period (mid-spring to mid-fall): Just as biotic factors tend to have more influence on assemblage structure during the summer dry period of Mediterranean climates than during the wet season when abiotic factors dominate (Cooper and others 1986; Gasith and Resh 1999), it is likely that our biotic index is more sensitive to anthropogenic stressors during the summer dry period. Because of these qualities, we expect the SoCal B-IBI to be a practical management tool for a wide range of water quality applications in the region.

This B-IBI is a regional adaptation of an approach to biotic assessment developed by Karr (1981) and subsequently extended and refined by many others (Kerans and Karr 1994; Barbour and others 1996; Fore and others 1996; Hughes and others 1998). We drew heavily upon recent refinements in multimetric index methodology that improve the objectivity and defensibility of these indices (McCormick and others 2001; Klemm and others 2003). A central goal of bioassessment is to select metrics that maximize the detection of anthropogenic stress while minimizing the noise of natural variation. One of the most important recent advances in B-IBI methods is the emphasis on quantitative screening tools for selecting appropriate metrics. We also minimized sources of redundancy in the analysis: (1) between watershed and local-scale stressor gradients for dose–response screening of biotic metrics and (2) in the final selection of metrics. The former guards against a B-IBI that is biased toward a set of highly correlated stressors and is, therefore, of limited sensitivity; the latter assures a compact B-IBI with component metrics that contribute independent information about stream condition. Combined with an assessment of responsiveness to specific regional disturbance gradients, these screening tools minimize the variability of B-IBI scores and improve its sensitivity.

The seven component metrics used in this B-IBI are similar to those selected for other B-IBIs (DeShon 1995; Barbour and others 1995, 1996; Fore and others 1996; Klemm and others 2003), but some of the metrics are either unique or are variations on other commonly used metrics. Like Klemm and others (2003), we found noninsect taxa to be responsive to human stressors, but richness was more responsive than percent of individuals. Some authors have separated the EPT metric into two or three metrics based on its component orders because the orders provided unique signals (Clements 1994; Fore and others 1996; Klemm

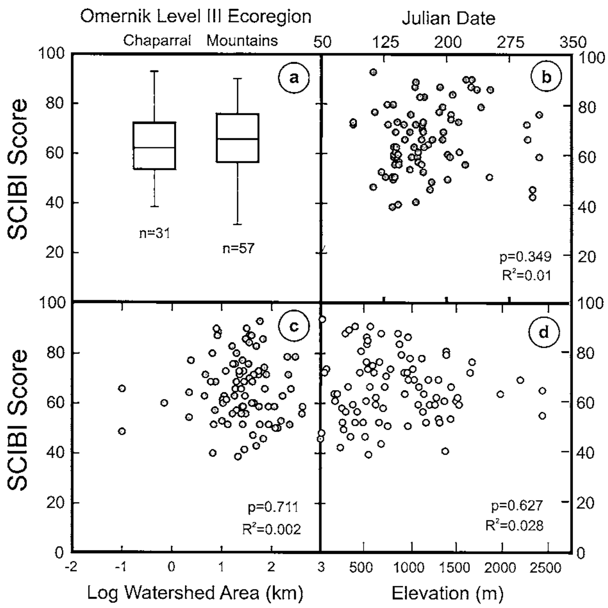

Figure 5. Relationship between B-IBI scores at 88 reference sites and (a) Omernik Level III ecoregion, (b) Julian date, (c) log watershed area, and (d) elevation.

and others 2003), but we found very similar patterns in these orders' response to various stressors we measured. To our knowledge, Coleoptera richness has not previously been included in a B-IBI, but beetle taxa might be a good indicator of the effects of fine sediments at impaired sites in this region (Brown 1973). A recent study of benthic assemblages in North Africa noted a high correspondence between EPT and EPTC (EPT + Coleoptera) (Beauchard and others 2003), but these orders were not highly correlated in our dataset. Feeding groups appear less often in B-IBIs than other metric types (Klemm and others 2003), but they were represented by two metrics in this B-IBI: predator richness and percent collectors (gatherers and filterers combined). Scraper richness was also responsive, but was rejected here because it was highly correlated with EPT richness.

The SoCal IBI should prove useful as a foundation for state and regional ambient water quality monitoring programs. Because the 75 EMAP sites were selected using a probabilistic statistical design, it will also be possible to use those samples to estimate the percentage of stream miles that are in "good", "fair", and "poor" condition in the southern California coastal region. These condition estimates, combined with stressor association techniques, have great potential to serve as a scientifically defensible basis for allocating precious monitoring resources in this region.

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Appendix 3

Bioassessment in complex environments: designing an index for consistent meaning in different settings

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Abstract: Regions with great natural environmental complexity present a challenge for attaining 2 key properties of an ideal bioassessment index: 1) index scores anchored to a benchmark of biological expectation that is appropriate for the range of natural environmental conditions at each assessment site, and 2) deviation from the reference benchmark measured equivalently in all settings so that a given index score has the same ecological meaning across the entire region of interest. These properties are particularly important for regulatory applications like biological criteria where errors or inconsistency in estimating site-specific reference condition or deviation from it can lead to management actions with significant financial and resource-protection consequences. We developed an index based on benthic macroinvertebrates for California, USA, a region with great environmental heterogeneity. We evaluated index performance (accuracy, precision, responsiveness, and sensitivity) throughout the region to determine if scores provide equivalent ecological meaning in different settings. Consistent performance across environmental settings was improved by 3 key elements of our approach: 1) use of a large reference data set that represents virtually all of the range of natural gradients in the region, 2) development of predictive models that account for the effects of natural gradients on biological assemblages, and 3) combination of 2 indices of biological condition (a ratio of observed-to-expected taxa [O/E] and a predictive multimetric index [pMMI]) into a single index (the California Stream Condition Index [CSCI]). Evaluation of index performance across broad environmental gradients provides essential information when assessing the suitability of the index for regulatory applications in diverse regions.
Key words: bioassessment, predictive modelling, predictive multimetric index, reference condition

A major challenge for conducting bioassessment in environmentally diverse regions is ensuring that an index provides consistent meaning in different environmental settings. A given score from a robust index should indicate the same biological condition, regardless of location or stream type. However, the performance (e.g., accuracy, precision, responsiveness, and sensitivity) of an index may vary in different settings, complicating its interpretation (Hughes et al. 1986, Yuan et al. 2008, Pont et al. 2009). Effective bioassessment indices should account for naturally occurring variation in aquatic assemblages so that deviations from reference conditions resulting from anthropogenic disturbance are minimally confounded by natural variability (Hughes et al. 1986, Reynoldson et al. 1997). When bioassessment indices are used in regulatory applications, such as measuring compliance with biocriteria (Davis and Simon 1995, Council of European Communities 2000, USEPA 2002, Yoder and Barbour 2009), variable meaning of an index score may lead to poor stream management, particularly if the environmental factors affecting index performance are unrecognized. Those who develop bioassessment indices or the policies that rely on them should evaluate index performance carefully across the different environmental gradients where an index will be applied.

A reference data set that represents the full range of environmental gradients where an index will be used is key for index development in environmentally diverse regions. In addition, reference criteria should be consistently defined so that benchmarks of biological condition are equivalent across environmental settings. Indices based on

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benthic macroinvertebrates (BMI) for use in California were developed with reference data sets that used different criteria in different regions (e.g., Hawkins et al. 2000, Herbst and Silldorff 2009, Rehn 2009). For example, several reference sites used to calibrate an index for the highly urbanized South Coast region had more nonnatural land use than any reference site used to develop an index for the rural North Coast region (Ode et al. 2005, Rehn et al. 2005). Furthermore, lower-elevation settings were poorly represented in these reference data sets. In preparation for establishing statewide biocriteria, regulatory agencies and regulated parties desired a new index based on a larger, more consistently defined reference data set that better represented all environmental settings. Considerable effort was invested to expand the statewide pool of reference sites to support development of a new index (Ode et al. 2016). The diversity of stream environments represented in the reference pool necessitated scoring tools that could handle high levels of complexity.

Predictive modeling of the reference condition is an increasingly common way to obtain site-specific expectations for diverse environmental settings (Hawkins et al. 2010b). Predictive models can be used to set biological expectations at test sites based on the relationship between biological assemblages and environmental factors at reference sites. Thus far, predictive modeling has been applied almost exclusively to multivariate indices focused on taxonomic completeness of a sample, such as measured by the ratio of observed-to-expected taxa (O/E) (Moss et al. 1987, Hawkins et al. 2000, Wright et al. 2000), or location of sites in ordination space (e.g., **BE**nthic **A**ssessment of **S**edimen**T** [BEAST]; Reynoldson et al. 1995). Applications of predictive models to multimetric indices (i.e., predictive multimetric indices [pMMIs]) are relatively new (e.g., Cao et al. 2007, Pont et al. 2009, Vander Laan and Hawkins 2014). MMIs include information on the life-history traits observed within an assemblage (e.g., trophic groups, habitat preferences, pollution tolerances), so they may provide useful information about biological condition that is not incorporated in an index based only on loss of taxa (Gerritsen 1995). Predictive models that set site-specific expectations for biological metric values may improve the accuracy, precision, and sensitivity of MMIs when applied across diverse environmental settings (e.g., Hawkins et al. 2010a).

A combination of multiple indices (specifically, a pMMI and an O/E index) into a single index might provide more consistent measures of biological condition than just one index by itself. Variation in performance of an index would be damped by averaging it with a 2nd index, and poor performance in particular settings might be improved. For example, an O/E index may be particularly sensitive in mountain streams that are expected to be taxonomically rich, whereas a pMMI might be more sensitive in lowland areas, where stressed sites may be well represented in calibration data. Moreover, pMMIs and O/E indices characterize assemblage data in fundamentally different ways. Thus, they provide complementary measures of stream ecological condition and may contribute different types of diagnostic information. Taxonomic completeness, as measured by an O/E index, and ecological structure, as measured by a pMMI, are both important aspects of stream communities, and certain stressors may affect these aspects differently. For example, replacement of native taxa with invasive species may reduce taxonomic completeness, even if the invaders have ecological attributes similar to those of the taxa they displaced (Collier 2009). Therefore, measuring both taxonomic completeness and ecological structure may provide a more complete picture of stream health.

Our goal was to construct a scoring tool for perennial wadeable streams that provides consistent interpretations of biological condition across environmental settings in California, USA. Our approach was to design the tool to maximize the consistency of performance across settings, as indicated by evaluations of accuracy, precision, responsiveness, and sensitivity. We first constructed predictive models for both a taxon loss index (O/E) and a pMMI. Second, we compared the accuracy, precision, responsiveness, and sensitivity of the O/E, pMMI, and combined O/E + pMMI index across a variety of environmental settings. Our primary motivation was to develop biological indices to support regulatory applications in the State of California. However, our broader goal was to produce a robust assessment tool that would support a wide variety of bioassessment applications, such as prioritization of restoration projects or identification of areas with high conservation value.

METHODS

Study region

California contains continental-scale environmental diversity within 424,000 km^2 that encompass some of the most extreme gradients in elevation and climate found in the USA. It has temperate rainforests in the North Coast, deserts in the east, and chaparral, oak woodlands, and grasslands with a Mediterranean climate in coastal regions (Omernik 1987). Large areas of the state are publicly owned, but vast regions have been converted to agricultural (e.g., the Central Valley) or urban (e.g., the South Coast and the San Francisco Bay Area) land uses (Sleeter et al. 2011). Forestry, grazing, mining, other resource extraction activities, and intensive recreation occur throughout rural regions of the state, and the fringes of urban areas are undergoing increasing development. For convenience, we divided the state into 6 regions and 10 subregions based on ecoregional (Omernik 1987) and hydrologic boundaries (California State Water Resources Control Board 2013) (Fig. 1).

Compilation of data

We compiled data from >20 federal, state, and regional monitoring programs. Altogether, we aggregated data from

Figure 1. Regions and subregions of California. Thick gray lines indicate regional boundaries, and thin white lines indicate subregional boundaries. NC = North Coast, CHco = Coastal Chaparral, Chin = Interior Chaparral, SCm = South Coast mountains, SCx = South Coast xeric, CV = Central Valley, SNws = Sierra Nevada-western slope, SNcl = Sierra Nevada-central Lahontan, DMmo: Desert/Modoc-Modoc plateau, DMde =Desert/Modoc-deserts.

4457 samples collected from 2352 unique sites between 1999 and 2010 into a single database. We excluded BMI samples with insufficient numbers of organisms or taxonomic resolution (described below) from analyses. We treated observations at sites in close proximity to each other (within 300 m) as repeat samples from a single site. For sites with multiple samples meeting minimum requirements, we randomly selected a single sample for use in all analyses described below, and we withheld repeat samples from all analyses, except where indicated below. We used 1318 sites sampled during probabilistic surveys (e.g., Peck et al. 2006) to estimate the ambient condition of streams (described below).

Biological data

Fifty-five percent of the BMI samples were collected following a reach-wide protocol (Peck et al. 2006), and the other samples were collected with targeted riffle protocols, which produce comparable data (Gerth and Herlihy 2006, Herbst and Silldorff 2006, Rehn et al. 2007). For most samples, taxa were identified to genus, but this level of effort and the total number of organisms/sample varied among samples, necessitating standardization of BMI data. We used different data standardization approaches for the pMMI and the O/E. For the pMMI, we aggregated identifications to 'Level 1' standard taxonomic effort (most insect taxa identified to genus, Chironomidae identified to family) as defined by the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT; Richards and Rogers 2011) and used computer subsampling to generate 500-count subsamples. We excluded samples with <450 individuals (i.e., not within 10% of target). For the O/E index, we used operational taxonomic units (OTUs) similar to SAFIT Level 1 except that we aggregated Chironomidae to subfamily. We excluded ambiguous taxa (i.e., those identified to a higher level than specified by the OTU). We also excluded samples with >50% ambiguous individuals from O/E development, no matter how many unambiguous individuals remained. We used computer subsampling to generate 400-count subsamples, and we excluded samples with <360 individuals. A smaller subsample size was used for the O/E index than for the pMMI because exclusion of ambiguous taxa often reduced sample size to <500 individuals. A final data set of 3518 samples from 1985 sites met all requirements and was used for development and evaluation of both the O/E and pMMI indices.

Environmental data

We collected environmental data from multiple sources to characterize natural and anthropogenic factors known to affect benthic communities, such as climate, elevation, geology, land cover, road density, hydrologic alteration, and mining (Tables 1, 2). We used geographic information system (GIS) variables that characterized natural, unalterable environmental factors (e.g., topography, geology, climate) as predictors for O/E and pMMI models and variables related to human activity (e.g., land use) to classify sites as reference and to evaluate responsiveness of O/E and pMMI indices to human activity gradients. We calculated most variables related to human activity at 3 spatial scales (within the entire upstream drainage area [watershed], within the contributing area 5 km upstream of a site [5 km], and within the contributing area 1 km upstream of a site [1 km]) so that we could screen sites for local and catchment-scale impacts. We created polygons defining these spatial analysis units using ArcGIS tools (version 9.0; Environmental Systems Research Institute, Redlands, California).

Classification of sites along a human activity gradient

We were unable to measure stress directly with this data set, so instead, we used a human activity gradient under the assumption that it was correlated with stress (Yates and Bailey 2010). We divided sites into 3 sets for development and evaluation of indices: reference (i.e., low activity), moderate-, and high-activity sites. We defined reference

Table 1. Natural gradients and their importance (Gini = mean decrease in Gini index), MSE = % increase in mean squared error) for random-forest models for the observed (O)/expected (E) taxa index and each metric used in the predictive multimetric index (pMMI). Predictors that were evaluated but not selected for any model include % sedimentary geology, nitrogenous geology, soil hydraulic conductivity, soil permeability, S-bearing geology, calcite-bearing geology, and magnesium oxide-bearing geology. Sources: A = National Elevation Dataset (http://ned.usgs.gov/), B = PRISM climate mapping system (http://www.prism.oregonstate.edu), C = generalized geology, mineralogy, and climate data derived for a conductivity prediction model (Olson and Hawkins 2012). Dashes indicate that the predictors were not used to model the metric.

Variable	Description	O/E		Taxonomic richness MSE	% intolerant MSE	# Shredder taxa MSE	Clinger % taxa MSE	Coleoptera % taxa MSE	EPT % taxa MSE	Data source
		Gini	MSE							
Location										
New lat	Latitude	90.5	0.09	18.8	0.0063	1.26	0.0054	0.00079	0.0027	
New long	Longitude	–	–	25.3	0.0058	0.99	0.0030	–	0.0024	
SITE_ELEV	Elevation	89.5	0.11	11.8	–	–	–	0.00231	–	A
Catchment morphology										
LogWSA	Log watershed area	86.6	0.06	–	0.0020	1.23	–	–	–	A
ELEV_RANGE	Elevation range	–	–	2.4	–	–	0.0026	–	–	A
Climate										
PPT	10-y (2000–2009) average precipitation at the sampling point	74.8	0.07	8.4	0.0063	0.92	–	–	0.0016	B
TEMP	10-y (2000–2009) average air temperature at the sampling point	81.9	0.09	9.3	0.0052	–	0.0023	–	0.0019	B
SumAve_P	Mean June to September 1971–2000 monthly precipitation, averaged across the catchment	–	–	5.5	–	–	–	–	0.0033	B
Geology										
BDH_AVE	Average bulk soil density	–	–	5.7	–	–	0.0021	–	–	C
KFCT_AVE	Average soil erodibility factor (k)	–	–	6.2	–	–	0.0027	–	0.0025	C
Log_P_MEAN	Log % P geology	–	–	3.7	–	–	–	–	–	C

Table 2. Stressor and human-activity gradients used to identify reference sites and evaluate index performance. Sites that did not exceed the listed thresholds were used as reference sites. Sources A = National Landcover Data Set (http://www.epa.gov/mrlc/nlcd-2006.html), B = custom roads layer, C = National Hydrography Dataset Plus (http://www.horizon-systems.com/nhdplus), D = National Inventory of Dams (http://geo.usace.army.mil), E = Mineral Resource Data System (http://tin.er.usgs.gov/mrds), F = predicted specific conductance (Olson and Hawkins 2012), G = field-measured variables. WS = watershed, 5 km = watershed clipped to a 5-km buffer of the sampling point, 1 km = watershed clipped to a 1-km buffer of the sampling point, W1_HALL = proximity-weighted human activity index (Kaufmann et al. 1999), Code 21 = landuse category that corresponds to managed vegetation, such as roadsides, lawns, cemeteries, and golf courses. * indicates variable used in the random-forest evaluation of index responsiveness.

	Variable	Scale	Threshold	Unit	Data source
*	% agricultural	1 km, 5 km, WS	<3	%	A
*	% urban	1 km, 5 km, WS	<3	%	A
*	% agricultural + % urban	1 km, 5 km, WS	<5	%	A
*	% Code 21	1 km and 5 km	<7	%	A
*		WS	<10	%	A
*	Road density	1 km, 5 km, WS	<2	km/km^2	B
*	Road crossings	1 km	<5	crossings	B, C
*		5 km	<10	crossings	B, C
*		WS	<50	crossings	B, C
*	Dam distance	WS	<10	km	D
*	% canals and pipelines	WS	<10	%	C
*	Instream gravel mines	5 km	<0.1	mines/km	C, E
*	Producer mines	5 km	0	mines	E
	Specific conductance	Site	99/1[a]	prediction interval	F
	W1_HALL	Reach	<1.5	NA	G
	% sands and fines	Reach		%	G
	Slope	Reach		%	G

[a] The 99th and 1st percentiles of predictions were used to generate site-specific thresholds for specific conductance. The model underpredicted at higher levels of specific conductance (data not shown), so a threshold of 2000 μS/cm was used as an upper bound if the prediction interval included 1000 μS/cm.

sites as 'minimally disturbed' sensu Stoddard et al. (2006) and selected them by applying screening criteria based primarily on landuse variables calculated at multiple spatial scales (i.e., 1 km, 5 km, watershed; Table 2). We calculated some screening criteria at only 1 spatial scale (e.g., in-stream gravel mine density at the 5-km scale and W1_HALL, a proximity-weighted index of human activity based on field observations made within 50 m of a sampling reach; Kaufmann et al. 1999). We excluded sites thought to be affected by grazing or recreation from the reference data set, even if they passed all reference criteria. Identification of high-activity sites was necessary for pMMI calibration (described below) and for performance evaluation of both pMMI and O/E. We defined high-activity sites as meeting any of the following criteria: ≥50% developed land (i.e., % agricultural + % urban) at all spatial scales, ≥5 km/km^2 road density, or W1_HALL ≥ 5. We defined sites not identified as either reference or high-activity as moderate-activity sites. We further divided sites in each set into calibration (80%) and validation (20%) subsets and stratified assignment to calibration and validation sets by subregion to ensure representation of all environmental settings in both sets (Fig. 1). Only 1 reference site was found in the Central Valley, so that region was combined with the Interior Chaparral (whose boundary was within 500 m of the site) for stratification purposes.

Development of the O/E index

Development of an O/E index or pMMI follows the same basic steps: biological characterization, modeling of reference expectations from environmental factors, selection of metrics or taxa, and combining of metrics or taxa into an index. pMMI development has an additional intermediate step to set biological expectations for sites with high levels of activity (Fig. 2). Taxonomic completeness, as measured by O/E, quantifies degraded biological condition as loss of expected native taxa (Hawkins 2006). E represents the number of taxa expected in a specific sample, based on its environmental setting, and O represents the number of those expected taxa that were actually observed. We developed models to calculate the O/E index following the general approach of Moss et al. (1987). First, we defined groups of reference calibration sites based on their

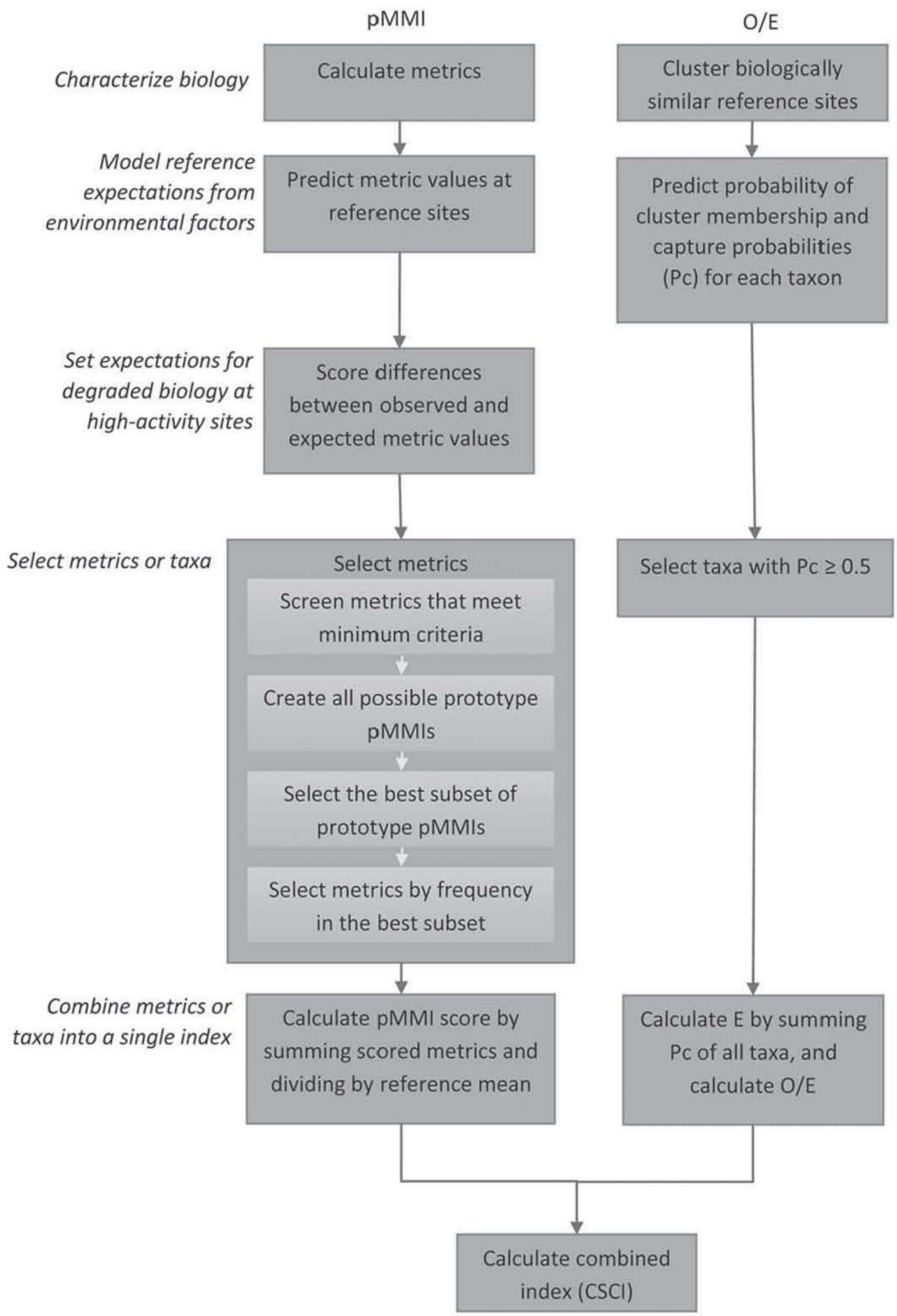

Figure 2. Summary of steps in developing the predictive multimetric index (pMMI) and observed (O)/expected (E) taxa index. Pc = probability of observing a taxon at a site, CSCI = California State Condition Index.

taxonomic similarity. Second, we developed a random-forest model (Cutler et al. 2007) to predict group membership based on naturally occurring environmental factors minimally affected by human activities. We used this model to predict cluster membership for test sites based on their natural environmental setting. The probability of observing a taxon at a test site (i.e., the capture probability) was calculated as the cluster-membership-probability-weighted frequencies of occurrence summed across clusters:

$$Pc_j = \sum_{i=1}^{k}(G_iF_i), \qquad \text{(Eq. 1)}$$

where Pc_j is the probability of observing taxon j at a site, G_i is the probability that a site is a member of group i, F_i is the relative frequency of the taxon in group i, and k is the number of groups used in modeling. The sum of the capture probabilities is the expected number of taxa (E) in a sample from a site:

$$E = \sum_{j=1}^{m}Pc_j, \qquad \text{(Eq. 2)}$$

where m is the number of taxa observed across all reference sites. We used Pc values ≥ 0.5 when calculating O/E because excluding locally rare taxa generally improves precision of O/E indices (Hawkins et al. 2000, Van Sickle et al. 2007). This model was used to predict E at reference and nonreference sites based on their natural environmental setting.

We used presence/absence-transformed BMI data from reference calibration sites to identify biologically similar groups of sites. We excluded taxa occurring in <5% of reference calibration samples from the cluster analysis because inclusion of regionally rare taxa can obscure patterns associated with more common taxa (e.g., Gauch 1982, Clarke and Green 1988, Ostermiller and Hawkins 2004). We created a dendrogram with Sørensen's distance measure and flexible β (β = −0.25) unweighted pair group method with arithmetic mean (UPGMA) as the linkage algorithm in R (version 2.15.2; R Project for Statistical Computing, Vienna, Austria) with the *cluster* package (Maechler et al. 2012) and scripts written by J. Van Sickle (US Environmental Protection Agency, personal communication). We identified groups containing ≥10 sites and subtended by relatively long branches (to maximize differences in taxonomic composition among clusters) by visual inspection of the dendrogram. We retained rare taxa that were excluded from the cluster analysis for other steps in index development.

We constructed a 10,000-tree random-forest model with the *randomForest* package in R (Liaw and Wiener 2002) to predict cluster membership for new test sites. We excluded predictors that were moderately to strongly correlated with one another (|Pearson's r| ≥ 0.7). When we observed correlation among predictors, we selected the predictor that was simplest to calculate (e.g., calculated from point data rather than delineated catchments) as a candidate predictor. We used an initial random-forest model based on all possible candidate predictors to identify those predictors that were most important for predicting new test sites into biological groups as measured by the Gini index (Liaw and Wiener 2002). We evaluated different combinations of the most important variables to identify a final, parsimonious model that minimized the standard deviation (SD) of reference site O/E scores at calibration reference sites with the fewest predictors.

We evaluated O/E index performance in 2 ways. First, we compared index precision with the lowest and highest precision possible given the sampling and sample-processing methods used (Van Sickle et al. 2005). SD of O/E index scores produced by a null model (i.e., all sites are in a single group, and capture probabilities for each taxon are the same for all sites) estimates the lowest precision possible for an O/E index. SD of O/E values based on estimates of variability among replicate samples (SDRS) estimates the highest attainable precision possible for the index. Second, we evaluated the index for consistency by regressing O against E for reference sites. Slopes close to 1 and intercepts close to 0 indicate better performance.

Development of the pMMI

We followed the approach of Vander Laan and Hawkins (2014) to develop a pMMI. In contrast to traditional MMIs, which typically attempt to control for the effects of natural factors on biological metrics via landscape classifications or stream typologies, a pMMI accounts for these effects by predicting the expected (i.e., naturally occurring) metric values at reference sites given their specific environmental setting. A pMMI uses the difference between the observed and predicted metric values when scoring biological condition, whereas a traditional MMI uses the raw metric for scoring. Traditional approaches to MMI development may reduce the effects of natural gradients on metric values through classification (e.g., regionalization or typological approaches; see Ode et al. 2005 for a California example), but they seldom produce site-specific expectations for different environmental settings (Hawkins et al. 2010b).

We developed the pMMI in 5 steps (Fig. 2): 1) metric calculation, 2) prediction of metric values at reference sites, 3) metric scoring, 4) metric selection, and 5) assembly of the pMMI. Apart from step 2, the process for developing a pMMI is comparable to that used for a traditional MMI (e.g., Stoddard et al. 2008). We developed a null MMI based on raw values of the selected metrics to allow us to estimate how much predictive modeling improved pMMI performance. The process was intended to produce a pMMI that was unbiased, precise, responsive, and able to characterize a large breadth of ecological attributes of the BMI assemblage.

Metric calculation We calculated biological metrics that characterized the ecological structure of BMI assemblages for each sample in the data set. We used custom scripts in R and the *vegan* package (Oksanen et al. 2013) to calculate a suite of 48 widely used bioassessment metrics, chosen because they quantify important ecological attributes, such as taxonomic richness or trophic diversity (a subset of which is presented in Table 3). Many of these metrics are widely used in other bioassessment indices (e.g., Royer et al. 2001, Stribling et al. 2008). Different formulations of metrics based on taxonomic composition (e.g., Diptera metrics) or traits (e.g., predator metrics) were assigned to thematic metric groups representing different ecological attributes (Table 3). These thematic groups were used to help ensure that the metrics included in the pMMI were ecologically diverse.

Prediction of metric values at reference sites We used random-forest models to predict values for all 48 metrics at reference calibration sites based on the same GIS-derived candidate variables that were used for O/E devel-

Table 3. Metrics evaluated for inclusion in the predictive multimetric index (pMMI). Only metrics that met all evaluation criteria are shown. EPT = Ephemeroptera, Plecoptera, and Trichoptera; Resp = direction of response; I = metric increases with human-activity gradients; D = metric decreases with human-activity gradients; Var Exp = % variance explained by the random-forest model; r^2 (cal) = squared Pearson correlation coefficient between predicted and observed values at reference calibration sites; r^2 (val) = squared Pearson correlation coefficient between predicted and observed values at reference validation sites; t (null) = t-statistic for the comparison of the raw metric between the reference and high-activity samples within the calibration data set; t (mod) = t-statistic for the comparison of the residual metric between the reference and high-activity samples within the calibration data set; F = F-statistic for an analysis of variance of metric residual values from reference calibration sites among regions shown in Fig. 1; S:N = signal-to-noise ratio; Freq = frequency of the metric among the best-performing combinations of metrics. Tolerance, functional feeding group, and habit data were from CAMLnet (2003). * indicates metric selected for inclusion in the pMMI.

Metric	Resp	Var Exp	r^2 (cal)	r^2 (val)	t (null)	t (mod)	F	S:N	Freq
Taxonomic diversity									
*Taxonomic richness	D	0.27	0.27	0.15	21.6	23.7	1.0	6.7	0.83
Functional feeding group									
Scrapers									
No. Scraper taxa	D	0.40	0.40	0.29	15.3	19.1	1.2	7.6	0.17
Shredders									
% Shredder taxa	D	0.27	0.27	0.46	17.6	10.6	1.0	4.1	0.33
* No. Shredder taxa	D	0.39	0.39	0.35	19.2	15.2	1.9	5.4	0.50
Habit									
Clingers									
* % Clinger taxa	D	0.34	0.34	0.42	21.7	14.6	0.2	4.8	1.00
No. Clinger taxa	D	0.39	0.40	0.32	26.0	25.3	0.5	11.1	0
Taxonomy									
Coleoptera									
* % Coleoptera taxa	D	0.30	0.31	0.22	10.3	15.8	1.0	5.0	0.83
No. Coleoptera taxa	D	0.34	0.34	0.29	13.6	20.9	0.6	6.2	0.17
EPT									
* % EPT taxa	D	0.31	0.32	0.46	30.0	23.1	0.4	6.0	0.67
No. EPT taxa	D	0.40	0.40	0.31	27.8	25.3	1.4	10.0	0.17
Tolerance									
* % Intolerant taxa	D	0.23	0.23	0.15	21.7	15.6	0.5	5.1	0.67
% Intolerant taxa	D	0.51	0.51	0.58	32.7	25.3	1.5	6.9	0.17
No. Intolerant taxa	D	0.52	0.52	0.53	28.4	21.8	1.5	9.6	0
Tolerance value	I	0.22	0.25	0.20	−21.5	−17.0	0.4	5.0	0
% Tolerant taxa	I	0.22	0.24	0.38	−26.1	−22.3	1.4	4.9	0.17

opment (Table 1). Manual refinement was impractical because of the large number of models that were developed, so we used an automated approach (recursive feature elimination [RFE]) to select the simplest model (the model with the fewest predictors) whose root mean square error (RMSE) was ≤2% greater than the RMSE of the optimal model (the model with the lowest RMSE). We considered only models with ≤10 predictors. Limiting the complexity of the model typically reduces overfitting and improves model validation (Strobl et al. 2007). We implemented RFE with the *caret* package in R using the default settings for random-forest models (Kuhn et al. 2012). We used the *randomForest* package (Liaw and Wiener 2002) to create a final 500-tree model for each metric based on the predictors used in the model selected by RFE. We then used these models to predict metric values for all sites. We used out-of-bag predictions for the reference calibration set (an out-of-bag prediction is based only on the subset of trees in which a calibration site was excluded during model training). To evaluate how well each model predicted metric values, we regressed raw observed values against predicted values for reference sites. Slopes close to 1 and intercepts close to 0 indicate better model performance. If the pseudo-R^2 of the model (calculated as 1 – mean squared error [MSE]/variance) was >0.2, we used the model to adjust metric values (i.e., observed – predicted), otherwise we used the observed metric values. Hereafter, 'metric' is used to refer to both raw and adjusted metric values.

Metric scoring Scoring is required for MMIs because metrics have different scales and different responses to stress (Blocksom 2003). Scoring transforms metrics to a standard scale ranging from 0 (i.e., most stressed) to 1 (i.e., identical to reference sites). We scored metrics following Cao et al. (2007). We scored metrics that decrease with human activity as

$$(\text{Observed}-\text{Min})/(\text{Max}-\text{Min}), \qquad \text{(Eq. 3)}$$

where Min is the 5th percentile of high-activity calibration sites and Max is the 95th percentile of reference calibration sites. We scored metrics that increase with human activity as

$$(\text{Observed}-\text{Max})/(\text{Min}-\text{Max}), \qquad \text{(Eq. 4)}$$

where Min is the 5th percentile of reference calibration sites, and Max is the 95th percentile of high-activity sites. We trimmed scores outside the range of 0 to 1 to 0 or 1. We used 5th and 95th percentiles instead of minimum or maximum values because they are more robust estimates of metric range than minima and maxima (Blocksom 2003, Stoddard et al. 2008).

Metric selection We selected metrics in a 2-phase process: 1) based on their individual performance, and 2) based on their frequency in high-performing prototype pMMIs. Evaluating the performance of many prototype pMMIs avoids selection of metrics with spuriously good performance and is preferable to selecting metrics or pMMIs based on performance evaluations conducted 1 metric at a time (Hughes et al. 1998, Roth et al. 1998, Angradi et al. 2009, Van Sickle 2010). Initial elimination of metrics based on their individual performance alleviates the computational challenge of evaluating large numbers of prototype pMMIs.

We used several performance criteria to eliminate metrics from further analysis. We assessed responsiveness to human activity by computing t-statistics based on comparisons of mean metric values at reference sites and sites with high levels of activity and eliminated metrics with a t-statistic < 10. We assessed bias by determining whether metric values varied among predefined geographic regions (Fig. 1). We considered metrics with an F-statistic > 2 derived from analysis of variance (ANOVA) by geographic region to have high regional bias and eliminated them. Other screening criteria were modified from Stoddard et al. (2008). We excluded metrics with >⅔ zero values across samples and richness metrics with range < 5. We also eliminated metrics with a signal-to-noise ratio (ratio of between-site to within-site variance estimated from data collected at sites with multiple samples) < 3.

We further screened metrics by evaluating the performance of all possible combinations as prototype pMMIs and selecting metrics that were frequent among prototypes with the best performance. First, we assembled all nonredundant combinations of metrics that met minimum performance criteria into prototype pMMIs. Limiting the redundancy of metrics increases the number of thematic groups included in prototypes, thereby improving the ecological breadth of the pMMI. Redundant combinations of metrics included those with multiple metrics from a single metric group (e.g., tolerance metrics; Table 3) or correlated metrics (|Pearson's $r \geq$ |0.7|). Prototype pMMIs ranged in size from a minimum of 5 to a maximum of 10 metrics, a range that is typical of MMIs used for stream bioassessment (e.g., Royer et al. 2001, Fore and Grafe 2002, Ode et al. 2005, Stoddard et al. 2008, Van Sickle 2010). We calculated scores for these prototype pMMIs by averaging metric scores and rescaling by the mean of reference calibration sites, which allows comparisons among prototype pMMIs.

Subsequently, we ranked prototype pMMIs to identify those with the best responsiveness and precision. Biased metrics already had been eliminated from consideration, and none of the prototypes exhibited geographic bias (results not shown), so we did not use accuracy to rank prototype pMMIs. We estimated responsiveness as the t-statistic based on mean scores at reference and high-activity calibration sites and precision as the SD of scores from reference calibration sites. We identified the best subset of prototype pMMIs as those appearing in the top quartile for both criteria. Therefore, prototype pMMIs in the best subset possessed several desirable characteristics: ecological breadth, high responsiveness, and high precision.

We assembled the final pMMI by selecting metrics in order of their frequency in the best subset of prototype pMMIs. We added metrics in order of decreasing frequency and avoided adding metrics from the same thematic group or correlated (Pearson's $r \geq 0.7$) metrics. We excluded metrics that appeared in <⅓ of the best prototype pMMIs from the final pMMI.

Aggregation of the pMMI We calculated scores for the final pMMI by averaging metric scores and rescaling by the mean of reference calibration sites (as for prototype pMMIs). Rescaling of pMMI scores ensures that pMMI and O/E are expressed in similar scales (i.e., as a ratio of observed to reference expectations) and improves comparability of the 2 indices.

We calculated scores for a combined index (the California Stream Condition Index [CSCI]) by averaging pMMI and O/E scores. We calculated a null combined index by averaging null MMI and null O/E scores.

Performance evaluation Evaluation of index performance focused on accuracy, precision, responsiveness, and sensitivity (Table 4). We compared the performance of each index to that of its null counterpart. Many of our approaches to measuring performance also have been used widely in index development (e.g., Hawkins et al. 2000, 2010a, Clarke et al. 2003, Ode et al. 2008, Cao and Hawkins 2011). We scored all indices on similar scales (i.e., a minimum of 0, with a reference expectation of 1), so no adjustments were required to make comparisons (Herbst and Silldorff 2006, Cao and Hawkins 2011). We conducted all performance evaluations separately on calibration and validation data sets.

We regarded indices as accurate if scores at reference sites were not influenced by environmental setting or time of sampling. Precise indices were those with low variability among reference sites and among samples from repeated visits within sites. Responsive indices were those that showed large decreases in response to human activity. Sensitive indices were those that frequently found nonreference sites to be below an impairment threshold (e.g., 10^{th} percentile of scores at reference sites).

Performance of the indices along a gradient of expected numbers of common taxa (E) The performance of an ideal index should not vary with E. For example, index accuracy should not be influenced by the expected richness of a site. We evaluated the accuracy, precision, and sensitivity of the indices against E by grouping sites into bins that ranged in the number of expected taxa (bin size = 4 taxa). We chose this bin size because it was the smallest number that allowed analysis of a wide range of values of E with large numbers of sites in each bin (i.e., ≥37 sites for accuracy and precision estimates and 15 sites for sensitivity estimates). We measured accuracy as the proportion of reference sites in each bin with scores $\geq 10^{th}$ percentile of reference calibration sites. We measured precision as the SD of reference sites in each bin and sensitivity as the

Table 4. Summary of performance evaluations. SD = standard deviation.

Aspect	Description	Indication of good performance
Accuracy and bias	Scores are minimally influenced by natural gradients	• Approximately 90% of validation reference sites have scores $>10^{th}$ percentile of calibration reference sites • Landscape-scale natural gradients explain little variability in scores at reference sites, as indicated by a low pseudo-R^2 for a 500-tree random-forest model • No visual relationship evident in plots of scores at reference sites against field measurements of natural gradients
Precision	Scores are similar when measured under similar settings	• Low SD of scores among reference sites (1 sample/site) • Low pooled SD of scores among samples at reference sites with multiple sampling events
Responsiveness	Scores change in response to human activity gradients	• Large t-statistic in comparison of mean scores at reference and high-activity sites • Landscape-scale human activity gradients explain variability in scores, as indicated by a high pseudo-R^2 for a 500-tree random-forest model
Sensitivity	Scores indicate poor condition at high-activity sites	• High percentage of high-activity sites have scores $<10^{th}$ percentile of calibration reference sites

proportion of high-activity sites within each bin with scores <10th percentile of reference calibration sites. We repeated all analyses with scores from indices based on null models.

Unlike accuracy and precision, the sensitivity of an ideal index (if measured as described above) may vary with E, but only to the extent that stress levels vary with E. However, how stress levels truly varied with E is unknown because human activity gradients were used to approximate stressor gradients, and direct, quantitative measures of stress levels are not possible. Even direct measures of water chemistry or habitat-related variables are at best incomplete estimates of the stress experienced by stream communities, and these data were not available for many sites in our data set. Therefore, we supplemented analyses of sensitivity against E by evaluating the difference in sensitivity between the pMMI and O/E against E. We calculated the difference as the adjusted Wald interval for a difference in proportions with matched pairs (Agresti and Min 2005) with the *PropCIs* package in R (Scherer 2013). The difference between the indices should be constant if E has no influence on sensitivity, or if E affects both indices in the same way. In the absence of direct measures of stress levels, these analyses provide a good measure of the influence of E on index sensitivity.

Establishment of biological condition classes, and application to a statewide assessment

We created 4 condition classes based on the distribution of scores at reference calibration sites, with a recommended interpretation for each condition class: likely to be intact (>30th percentile of reference calibration site CSCI scores), possibly altered (10th–30th percentiles), likely to be altered (1st–10th percentile), and very likely to be altered (<1st percentile). We used the *qnorm*() function in R to estimate thresholds from the observed mean and SD of reference calibration site CSCI scores. We explored other approaches to setting thresholds, such as varying thresholds by ecoregion or setting thresholds from environmentally similar reference sites, but rejected these approaches because of their added complexity and minimal benefits (Appendix S1).

We applied thresholds to a subset of sites from probabilistic surveys (n = 1318 sites) to provide weighted estimates of stream condition in California and for each major region. We also used the thresholds to make unweighted estimates of reference, moderate-activity, and high-activity sites for each region of the state. We used unweighted estimates because few reference probabilistic samples were available in certain regions. For weighted estimates, we calculated site weights by dividing total stream length in each stratum by the number of sampled sites in that stratum (these strata were defined as the intersections of strata from each contributing survey). All weight calculations were conducted using the *spsurvey* package (Kincaid and Olsen 2013) in R (version 2.15.2). We used site weights to estimate regional distributions for environmental variables using the Horvitz–Thompson estimator (Horvitz and Thomson 1952). Confidence intervals for estimates of the proportion of California's stream length meeting reference criteria were based on local neighborhood variance estimators (Stevens and Olsen 2004).

RESULTS

Biological and environmental diversity of California

Biological assemblages varied markedly across natural gradients in California, as indicated by cluster analysis. We identified 11 groups that contained 13 to 61 sites (Fig. 3). A few of these groups were geographically restricted, but most were distributed across many regions of the state. For example, sites in group 10 were concentrated in the Transverse Ranges of southern California, and sites in group 7 were entirely within the Sierra Nevada. In contrast, sites in groups 1 and 4 were broadly distributed across the northern ⅔ of California.

Environmental factors differed among several groups. Groups 8 through 11, all in the southern portions of the state, were generally drier and hotter than other groups, whereas groups 1 through 5, predominantly in mountainous and northern regions, were relatively wet and cold. Expected number of taxa also varied across groups. For example, the highest median E (i.e., sum of capture probabilities > 0.5) (17.2) was observed in group 3, whereas the lowest (7) was observed in group 8. The median E was <10 for 3 of the 11 groups (groups 8, 10, and 11). Sites in low-E groups were preponderantly (but not exclusively) in the southern portions of the state.

Development of predictive models

Predicting the number of locally common taxa for the O/E index The random-forest model selected to predict assemblage composition used 5 predictors: latitude, elevation, watershed area, mean annual precipitation, and mean annual air temperature (Table 1). The model explained 74 and 64% of the variation in O at calibration and validation sites, respectively. Regression slopes (1.05 and 0.99 at calibration and validation sites, respectively) and intercepts (−0.36 and 0.52) were similar to those expected from unbiased predictions (i.e., slope = 1 and intercept = 0, p > 0.05). The random-forest model was modestly more precise (SD = 0.19) than the null model (SD = 0.21) but substantially less precise than the best model possible (SD = 0.13).

Predicting metric values and developing the pMMI Predictive models explained >20% of variance in 17 of the 48 metrics evaluated for inclusion in the pMMI (a subset of which are shown in Table 3). For 10 metrics, ≥30% of

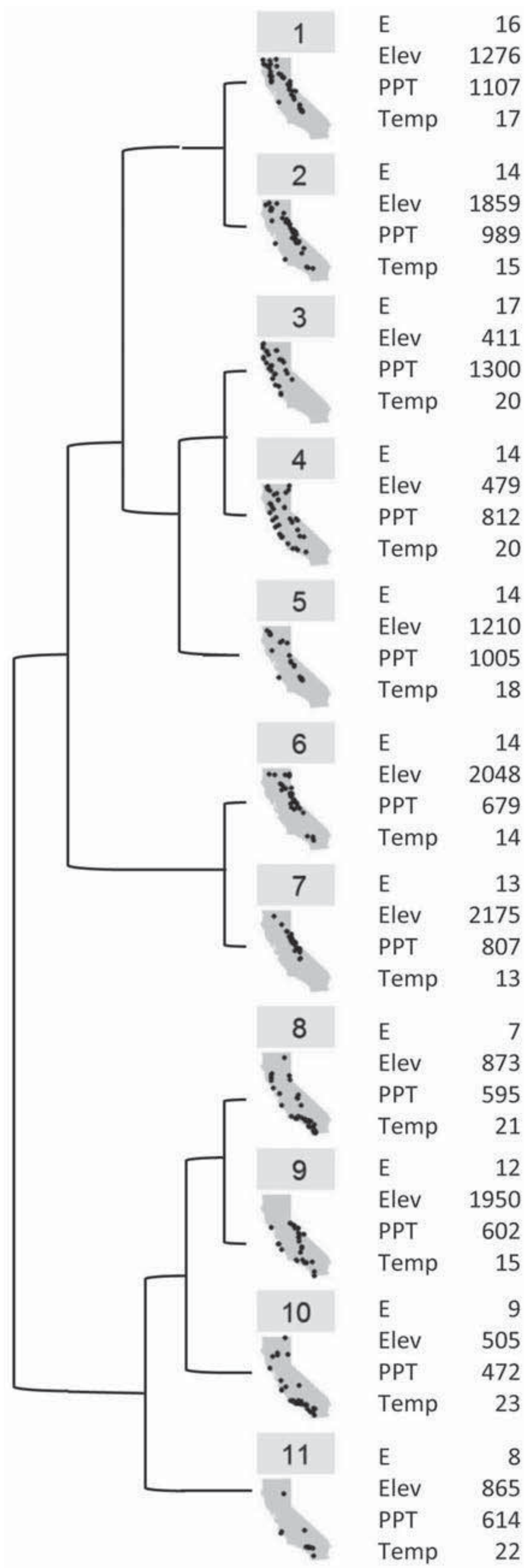

Figure 3. Dendrogram and geographic distribution of each group identified during cluster analysis. Numbers next to leaves are median values for expected number of taxa (E), elevation (Elev, m), precipitation (PPT, mm), and air temperature (Temp, °C).

the variance was explained, and for 2 metrics (no. intolerant taxa and % intolerant taxa), >50% of the variance was explained. Squared correlation coefficients (r^2) between predicted and observed metric values ranged from near 0 (e.g., Simpson diversity) to >0.5 (no. and % intolerant taxa metrics). Results for validation reference sites were consistent with results for calibration sites, but r^2 values differed markedly between calibration and validation data sets for some metrics (Table 3). In general, models explained the most variance for %-taxa metrics, and the least for %-abundance metrics, but this pattern was not consistent for all groups of metrics.

Metrics selected for the pMMI Of the 48 metrics evaluated, 15 met all acceptability criteria (Table 3). The bias criterion was the most restrictive and eliminated 21 metrics, including all raw metrics and 2 modeled metrics (% climber taxa and % predators). The discrimination criterion eliminated 15 metrics, most of which were already eliminated by the bias criterion. Other criteria eliminated few metrics, all of which were already rejected by other criteria. The 15 acceptable metrics yielded 28,886 possible prototype pMMIs ranging in size from 5 to 10 metrics, but only 234 prototype pMMIs contained uncorrelated metrics or metrics belonging to unique metric groups (data not shown). All of these prototype pMMIs contained ≤7 metrics. Of these 234 prototypes, only 6 were in the top quartile for both discrimination between reference and high-activity calibration samples and for lowest SDs among reference calibration samples.

The final pMMI included 1 metric from each of 6 metric groups (Table 3). Some of the selected metrics (e.g., Coleoptera % taxa) were similar to those used in regional indices previously developed in California (e.g., Ode et al. 2005). However, other widely used metrics (e.g., noninsect metrics) were not selected because they were highly correlated with other metrics that had better performance (pairwise correlations not shown).

The random-forest models varied in how much of the variation in the 6 individual metrics they explained (Pseudo-R^2 range: 0.23–0.39). Regressions of observed on predicted values for reference calibration data showed that several intercepts were significantly different from 0 and slopes were significantly different from 1 (i.e., $p < 0.05$), but these differences were small. The number of predictors used in each of the 6 models ranged from 2 (for no. Coleoptera taxa) to 10 (for taxonomic richness) (Table 1). Predictors related to location (e.g., latitude, elevation) were widely used, with latitude appearing in every model. In contrast, predictors related to geology (e.g., soil erodibility) or catchment morphology (e.g., watershed area) were used less often. In general, the most frequently used predictors also had the highest importance in the predictive models, as measured by % increase in mean square error. The least frequently used predictor (i.e., % P geology) was used in 1 model (taxonomic richness).

Performance of predictive models

Effects of predictive modeling on metrics For most metrics, reducing the influence of natural gradients through predictive modeling reduced the calculated difference between high-activity and reference sites, a result suggesting that stressor and natural gradients can have similar and confounded effects on many metric values (Table 3). For example, for 27 of the 48 metrics evaluated, the absolute t-statistic was much higher (difference in $|t| > 1$) for the raw metric than for the residuals. In contrast, the absolute t-statistic for residuals was higher for only 12 metrics.

Performance evaluation of the O/E, pMMI, and combined indices By all measures, predictive indices (whether used alone or combined) performed better than their null counterparts, particularly with respect to accuracy/bias (Table 5). For example, mean regional differences in null index scores at reference sites were large and significant (Fig. 4A, C, E), and responses to natural gradients were strong (Fig. 5A–O). In contrast, all measures of biases were greatly reduced for predictive indices (Fig. 4B, D, F).

Predictive modeling improved several aspects of precision. Variability of scores among reference sites was lower for all predictive indices than for their null counterparts, particularly for the pMMI (Table 5). Regional differences in precision were larger for the pMMI than O/E (both predictive and null models), and combining these 2 indices into the CSCI improved regional consistency in precision (Fig. 4B, D, F). Predictive modeling had a negligible effect on within-site variability (Table 5).

In contrast to precision and accuracy, responsiveness was more affected by index type than whether predictive or null models were used. Both predictive and null MMIs appeared to be slightly more responsive than the combined indices, which in turn were more responsive than O/E indices. This pattern was evident in all measures of responsiveness, such as magnitude of t-statistics, variance explained by multiple human-activity gradients in a random-forest model, and steepness of slopes against individual gradients (Table 5, Fig. 6A–I).

Analysis of sensitivity indicated stronger sensitivity of the pMMI than the O/E, and the combined index had intermediate sensitivity. Overall, 47% of nonreference sites had scores <10th percentile of reference calibration sites for the CSCI, in contrast with 52% of the pMMI and 35% of the O/E. Despite the overall difference between the pMMI and the O/E, agreement was relatively high (76%) when the 10th percentile was used as an impairment threshold (i.e., O/E $\geq$ 0.76 and pMMI $\geq$ 0.77). When the 1st percentile was used to set thresholds (i.e., O/E $\geq$ 0.56 and pMMI $\geq$ 0.58), the agreement rate was 90%.

Table 5. Performance measures to evaluate California State Condition Index (CSCI), MMI = multimetric index, and observed (O)/expected (E) taxa index at calibration (Cal) and validation (Val) sites. For accuracy tests, only reference sites were used. Ref mean = mean score of reference sites (* indicates value is mathematically fixed at 1), F = F-statistic for differences in scores at calibration sites among 5 regions (shown in Fig. 1, Central Valley excluded; residual df = 467), Var = variance in index scores explained by natural gradients at reference sites, among sites = standard deviation of scores at reference sites, within sites = standard deviation of within-site residuals for reference Cal (n = 220 sites) and Val (n = 60) sites with multiple samples, t = t-statistic for difference between mean scores at reference and high-activity sites, var = variance in index scores explained by human-activity gradients at all sites.

		Accuracy						Precision				Responsiveness			
		Ref mean		F		Var		Among sites		Within sites		t		Var	
Index	Type	Cal	Val	Cal	Val	Cal	Val	Cal	Val	Cal	Val	Cal	Val	Cal	Val
CSCI	Predictive	1.01	1.01	1.3	1.4	−0.08	−0.13	0.16	0.17	0.11	0.1	28.5	13	0.49	0.42
	Null	1*	1	52.9	4.7	0.41	0.12	0.21	0.2	0.11	0.11	28.6	14.8	0.64	0.58
MMI	Predictive	1*	0.98	0.8	1.3	−0.15	−0.09	0.18	0.19	0.12	0.12	30.9	14.4	0.54	0.48
	Null	1*	1	62.2	8.7	0.46	0.2	0.24	0.24	0.12	0.12	29.2	15.3	0.67	0.61
O/E	Predictive	1.02	1.03	1.2	1	0.01	−0.12	0.19	0.2	0.16	0.13	21.0	9.3	0.31	0.25
	Null	1*	1	23.5	0.9	0.23	−0.03	0.21	0.22	0.15	0.13	24.1	11.8	0.48	0.41

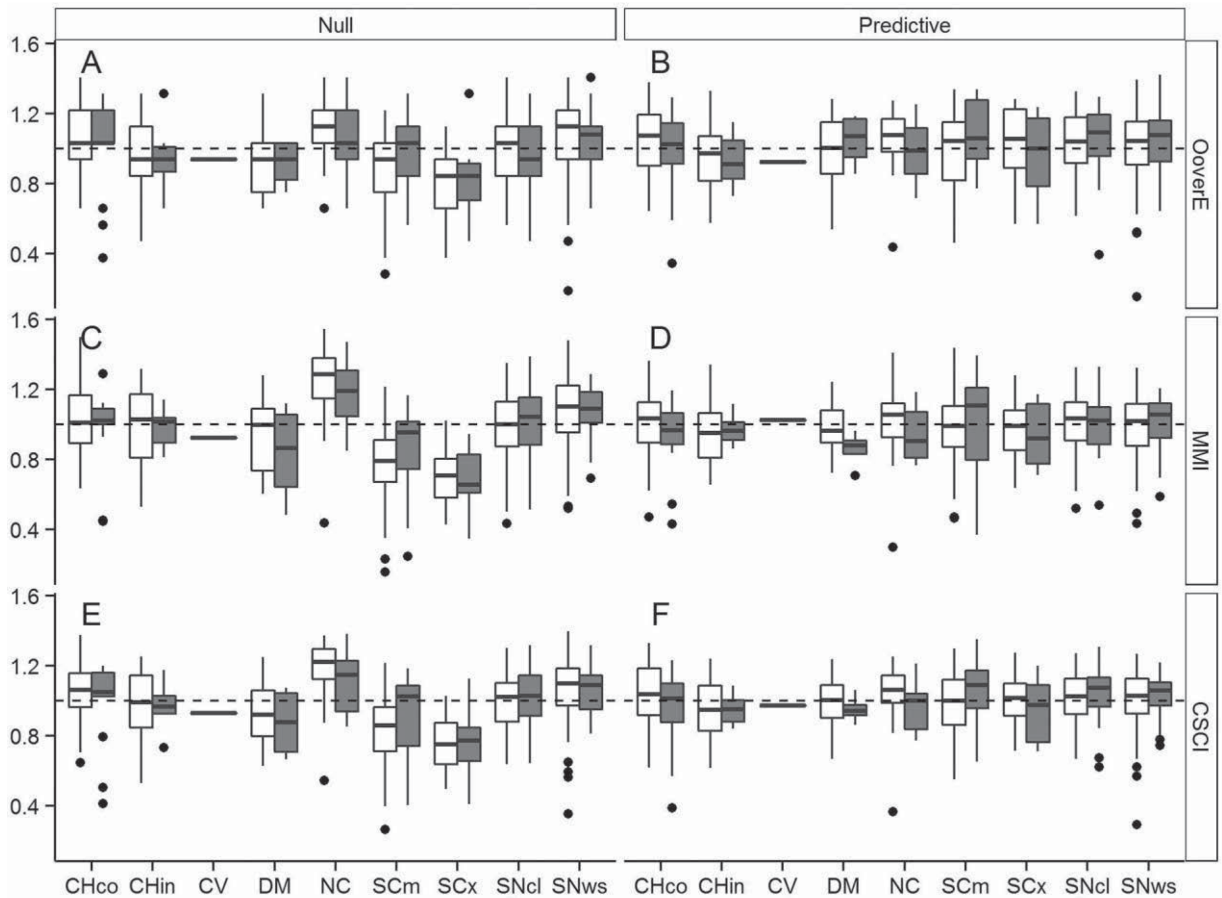

Figure 4. Box-and-whisker plots for distribution of scores for null (A, C, E) and predictive (B, D, F) models for the observed (O)/expected (E) taxon index (A, B), multimetric index (MMI) (C, D), and the combined index (CSCI) (E, F) scores by geographic region (see Fig. 1 for codes). White boxes indicate scores at calibration sites, and gray boxes indicate scores at validation sites. The horizontal dashed lines indicate the expected value at reference sites (= 1). Lines in boxes are medians, box ends are quartiles, whiskers are 1.5× the interquartile range, and dots are outliers (i.e., values >1.5× the interquartile range).

Effect of E on performance By most measures, performance was better at high-E than at low-E sites, but predictive indices were much more consistent than their null equivalents. For example, the accuracy of null indices was very poor at low-E sites (0.46–0.54 at E = 5; Fig. 7A), whereas predictive indices were much more accurate (0.73–0.86 at E = 5; Fig. 7E. At high-E sites, accuracy was >0.90 for both predictive and null indices. Precision was better at high-E sites for the pMMI and O/E index, but the CSCI had better and more consistent precision than the other indices at all values of E (Fig. 7B, F). For example, precision ranged from 0.22 to 0.15 (range = 0.07) for both the pMMI and the O/E, whereas it ranged from 0.18 to 0.14 (range = 0.04) for the CSCI.

In contrast to the weak associations between E and accuracy and precision, E was very strongly associated with sensitivity, as measured by the percentage of high-activity sites with scores <10th percentile threshold (Fig. 7C, G). The pMMI classified a larger proportion of sites as in nonreference condition across nearly all values of E than the O/E index did, but the difference was largest at low-E sites (Fig. 7D, H). For example, at the lowest values of E analyzed (5), the pMMI identified 87% of high-activity sites as biologically different from reference, whereas O/E identified only 47% of sites as in nonreference condition. As E increased, the difference between the 2 indices in proportion of sites classified as nonreference decreased. Wald's interval test indicated significant differences between the indices for values of E up to 13. At low-E sites, the sensitivity of the CSCI was between the 2 indices, but at high-E sites, CSCI was more similar to pMMI. All 3 indices showed that low-E sites were more pervasively in nonreference condition than high-E sites, and the proportion of sites with scores <10th percentile of reference calibration sites decreased as E increased. In contrast to precision and accuracy, sensitivity was more consistent across settings for

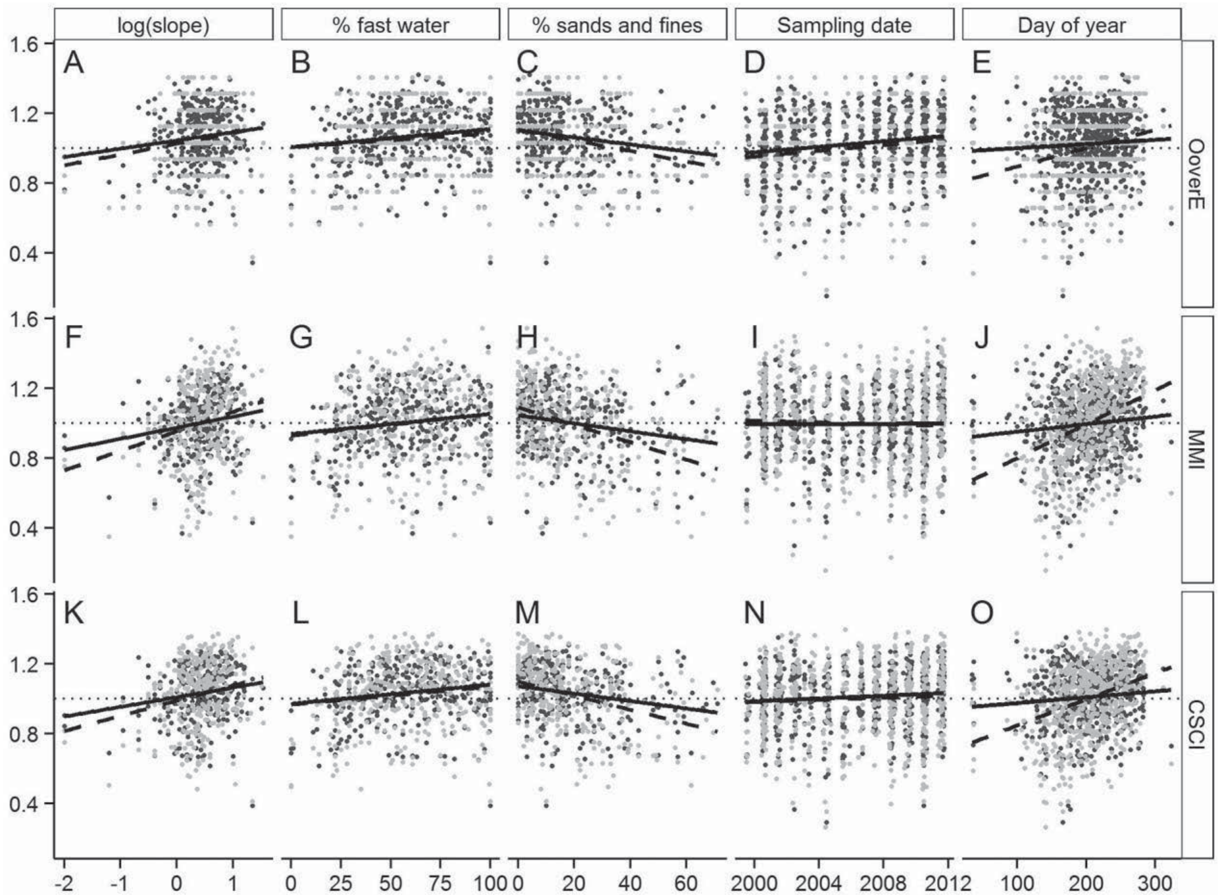

Figure 5. Relationships between observed (O)/expected (E) taxon index (A–E), multimetric index (MMI) (F–J), and the combined index (CSCI) (K–O) scores and slope (A, F, K), % fast water (area of reach with riffle, run, cascade, or rapid microhabitats) (B, G, L), % sand and fines (C, H, M), sampling date (D, I, N), and day of the year (E, J, O) at reference sites for predictive (black symbols, solid lines) and null (gray symbols, dashed lines) indices. The dotted line indicates a perfect relationship without bias.

null than predictive indices. For all analyses of performance relative to E, validation data yielded similar results (not shown).

Establishment of biological condition classes and application to a statewide assessment

We established 4 biological condition classes based on the distribution of CSCI scores at reference calibration sites. Statewide, 52% of streams were likely to be intact (i.e., CSCI ≥ 0.92 [30th percentile of reference calibration sites]). Another 18% were possibly altered (i.e., CSCI ≥ 0.79 [10th percentile]), 11% were likely to be altered (i.e., CSCI ≥ 0.63 [1st percentile]), and 19% were very likely to be altered (i.e., CSCI < 1st percentile) (Table 6). Although many (i.e., 49%) high-activity sites were very likely to be altered, this number varied considerably by region. Few high-activity sites were in this condition class in the more forested regions (e.g., 24% in the North Coast, 15% in the Sierra Nevada), whereas higher numbers were observed in relatively arid regions (e.g., 100% in the Desert/Modoc region and 68% in the Central Valley). In contrast, the percentage of reference sites in the top 2 classes varied much less across regions, from a low of ~85% in the South Coast and Desert/Modoc regions to a high of 98% in the North Coast (Table 6).

DISCUSSION

Our evaluation of index performance across different environmental settings demonstrates that, to the greatest extent possible with existing data, we have designed an index with scores that have comparable meanings for different stream types in an environmentally heterogeneous region of the USA. Each site is benchmarked against appropriate biological expectations anchored by a large and consistently defined reference data set, and deviations from these expectations reflect site condition in a consistent way across environmental settings. Thus, the index can be used to evaluate the condition of nearly all perennial streams in California, despite the region's considerable environmental and biological complexity. Three ele-

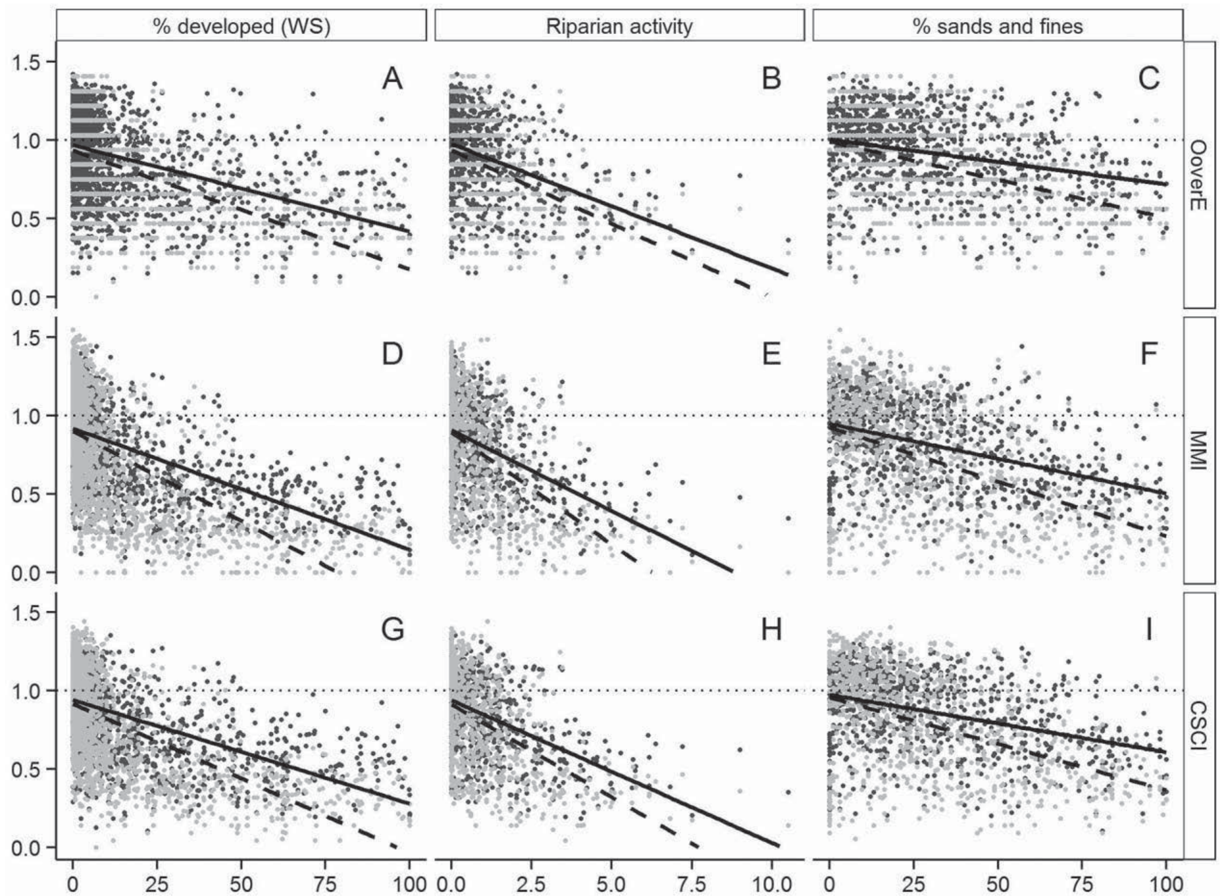

Figure 6. Relationships between observed (O)/expected (E) taxon index (A–C), multimetric index (MMI) (D–F), and the combined index (CSCI) (G–I) scores and % developed area of the watershed (WS) (A, D, G), riparian activity (B, E, H), and % sand and fines (C, F, I) for predictive (black symbols, solid lines) and null indices (gray symbols, dashed lines). The dotted line indicates the reference expectation of 1.

ments of the design process contributed to the utility of this index in an environmentally complex region: a robust reference data set, predictive modeling, and the combination of multiple endpoints into a single index.

Large, representative reference data sets

The 1st element was the large, representative, and rigorously evaluated reference data set (Ode et al. 2016). Natural factors that influence biological assemblages must be adequately accounted for to create an assessment tool that performs well across environmental settings (Cao et al. 2007, Schoolmaster et al. 2013). The strength of relationship between natural factors and biology varies with geographic scale (Mykrä et al. 2008, Ode et al. 2008), and representing locally important factors (such as unusual geology types with limited geographic extent, e.g., Campbell et al. 2009) contributes to the ability of the index to distinguish natural from anthropogenic biological variability in these environmental settings. Our reference data set was spatially representative and encompassed >10 y of sampling. Long-term temporal coverage improves the representation of climatic variability, including El Niño-related storms and droughts. The spatial and temporal breadth of sampling at reference sites provides confidence in the applicability of the CSCI for the vast majority of wadeable perennial streams in California.

Predictive modeling

The 2nd element of the CSCI's design, predictive modeling, enabled the creation of site-specific expectations for 2 indices, and these models created indices superior to those created by null models in nearly every aspect, particularly with respect to bias in certain settings. These results are consistent with a large body of literature showing similar results for indices that measure changes in taxonomic composition (e.g., Reynoldson et al. 1997, Hawkins et al. 2000, Van Sickle et al. 2005, Hawkins 2006, Mazor et al. 2006). However, few studies to date showed that the benefits extend to MMIs (e.g., Bates Prins and Smith 2007, Pont et al. 2009, Hawkins et al. 2010b, Schoolmaster et al. 2013, Vander Laan and Hawkins 2014).

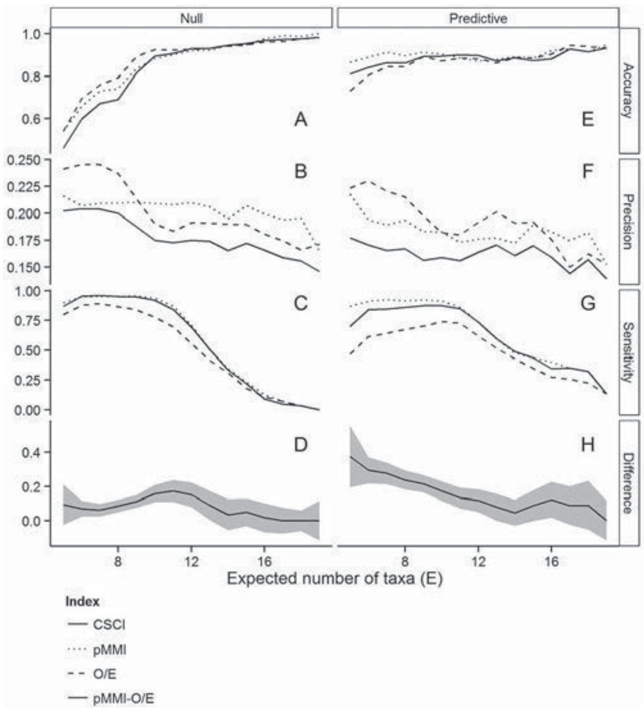

Figure 7. Effect of expected number of taxa (E) on accuracy (A, E), precision (B, F), sensitivity (C, G), and difference in sensitivity between the predictive multimetric index (pMMI) and the observed (O)/expected (E) taxa indices (D, H) for null (A–D) and predictive (E–H) index performance. The gray bands in the bottom panels C and G indicate the 95% confidence interval around the difference. Accuracy = proportion of reference calibration sites in reference condition (i.e., score >10th percentile of reference calibration sites) for each index. Precision = standard deviation of reference calibration sites for each index. Sensitivity = proportion of high-activity sites not in reference condition.

Our preference for predictive over traditional MMIs is not based only on the superior performance the pMMI relative to its null counterpart. The null MMI evaluated in our study was simplistic and did not reflect typical typological approaches to MMI development, which include regionalization in metric selection (e.g., Stoddard et al. 2008), regionalization in scoring (e.g., Ode et al. 2005), or normalization to watershed area (e.g., Klemm et al. 2003) to account for variability across reference sites. However, traditional MMIs based on regionalization usually lack metric and scoring standardization, which complicates interregional comparisons. Even if typological approaches provided equivalent performance to predictive indices, the latter would be preferred because of their ability to set site-specific management goals because predictive indices can better match the true potential of individual sites (Hawkins et al. 2010b). Thus, a watershed manager could take action to maintain a level of diversity a stream can truly support, rather than a level typical of potentially dissimilar reference sites.

Combining multiple indices

The 3rd element of the CSCI's design that contributed to its utility in different stream types was inclusion of both the pMMI and the O/E index. Regulatory agencies expressed a strong preference for a single index to support biocriteria implementation, and we thought that the CSCI was preferable to either the pMMI or O/E index. The different sensitivities of the 2 components should enhance the utility of the CSCI across a broad range of disturbances and settings. Together, they provide multiple lines of evidence about the condition of a stream and provide greater confidence in the results than a single index that might be biased in certain settings. Use of both metric and multivariate indices is widespread in assessments of coastal condition (e.g., the M-AMBI index; Muxika et al. 2007) specifically because the combination takes advantage of the unique sensitivities of each index in different habitat types (Sigovini et al. 2013). Applications of a multiple-index approach in stream assessment programs are uncommon, but the need has been suggested (e.g., Reynoldson et al. 1997, Mykrä et al. 2008, Collier 2009).

The decision to use both the pMMI and O/E index was based, at least partly, on observations that they had different sensitivities in different settings, particularly at low-E sites. The difference between the 2 indices might mean that the O/E index correctly indicates a greater resilience to stress at certain stream types or that the pMMI is more finely tuned to lower levels of stress simply because it was specifically calibrated against high-activity sites in similar settings. Mechanistically, the difference probably occurred because O/E index scores are mainly affected by the loss of common taxa. For example, in low-E sites (which were common in dry, low-elevation environments in southern and central coastal California), the O/E index predicted occurrence of only a small number of highly tolerant taxa (e.g., baetid mayflies) because only these tolerant taxa occur with high probability in these naturally stressful environments. Sensitive taxa also occur at reference sites in drier, low-elevation settings, but they were typically too rare to affect the O/E index (Appendix S2).

The interpretive value of rare, sensitive taxa in estimation of biological integrity of an individual site is unclear, but the ability of a site to support these taxa may be important to the health of a dynamic metacommunity, where rare taxa occupy only a small subset of suitable sites at any one time. Although several investigators have shown that exclusion of rare taxa usually enhances precision of O/E indices (e.g., Ostermiller and Hawkins 2004, Van Sickle et al. 2007), our results suggest that in certain settings, this exclusion may obscure an important response to

Table 6. Percentage of sites in different condition classes by region and site status. Percentiles refer to the distribution of scores at reference calibration (Cal) sites. Overall estimates are based on sites from probabilistic surveys and are not split into Cal or validation (Val) sets. For reference, moderate-, and high-activity sites, numbers in the last 6 columns are percentage of sites. For overall assessments, these numbers are percentage of stream miles. Dashes indicate that no sites were analyzed.

	Total sites		Likely to be intact ≥30th percentile (CSCI ≥ 0.92)		Possibly altered 30th–10th percentile (CSCI ≥ 0.79)		Likely to be altered 1st–10th percentile (CSCI ≥ 0.63)		Very likely to be altered <1st percentile (CSCI < 0.63)	
Region	Cal	Val	Cal	Val	Cal	Val	Cal	Val	Cal	Val
Statewide										
Reference	473	117	75	74	15	16	8	8	1	3
Moderate activity	626	156	53	56	20	20	18	17	8	7
High activity	497	122	13	18	13	14	25	22	49	46
Overall	919		52		18		11		19	
North Coast										
Reference	60	16	85	63	13	31	0	6	2	0
Moderate activity	88	26	58	50	26	15	9	27	7	8
High activity	45	9	29	67	33	33	13	0	24	0
Overall	162		58		23		10		9	
Chaparral										
Reference	74	19	68	63	20	26	9	0	3	11
Moderate activity	146	34	47	65	18	15	29	15	6	6
High activity	126	28	18	21	13	7	18	11	50	61
Overall	147		34		16		17		33	
South Coast										
Reference	96	23	70	70	16	9	14	22	1	0
Moderate activity	202	52	49	52	22	23	19	17	9	8
High activity	241	60	5	10	12	13	32	27	52	50
Overall	387		44		16		16		24	
Sierra Nevada										
Reference	221	55	77	82	14	11	7	5	1	2
Moderate activity	148	35	68	60	20	29	8	9	5	3
High activity	27	8	56	25	11	38	19	13	15	25
Overall	106		70		19		6		5	
Central Valley										
Reference	1	0	100	–	0	–	0	–	0	–
Moderate activity	8	1	0	0	0	0	38	100	63	0
High activity	47	13	0	0	4	8	28	38	68	54
Overall	60		2		8		18		71	
Desert/Modoc										
Reference	21	4	71	75	14	25	14	0	0	0
Moderate activity	34	8	44	63	9	0	29	13	18	25
High activity	5	4	0	50	0	0	0	50	100	0
Overall	57		48		14		9		30	

stress. Including rare taxa in certain environmental settings while excluding them in others may improve the consistency of an O/E index in complex regions, but we did not explore this option. The observation that sensitivity of all indices was lowest where E was highest was unexpected, and may be attributed to several potential causes. Most probably, anthropogenic stress was less severe at high-E than at low-E sites. High-activity sites were identified via indirect measures based on stressor sources (e.g., development in the watershed) rather than direct measures of water or habitat quality, so we could not ensure homogenous levels of disturbance among this set of sites. Alternatively, high-E settings might be more resilient to stress, perhaps because of their greater diversity (Lake 2000). Thus, the indices may have different responses to the same level of stress in different settings, depending on E.

Despite the lower sensitivity of the O/E index at low-E sites, we think that including it in a combined index was preferable to using the more sensitive pMMI by itself. Combining the 2 indices was a simple way to retain high sensitivity at low-E sites, while retaining the advantages of the O/E as a measure of biodiversity (Moss et al. 1987, Hawkins et al. 2000). The ability of the O/E index to measure taxonomic completeness has direct applications to conservation of biodiversity and makes it particularly sensitive to replacement of native fauna by invasive species. Furthermore, because it is calibrated with only reference sites, the O/E index is not influenced by the distribution or quality of high-activity sites. In contrast, we used the pMMI under the assumption that the set of high-activity sites adequately represented the types of stressors that might be encountered in the future. Inclusion of the O/E index in the CSCI provides a degree of insurance against faulty assumptions about the suitability of the high-activity site set for pMMI calibration.

We combined the 2 indices as an unweighted mean for several technical reasons, but primarily because this was the simplest approach to take without stronger support for more complicated methods. As we demonstrated, the CSCI has less variable performance across stream types than its 2 components. Approaches that let the lowest (or highest) score prevail are more appropriate when the components have similar sensitivity, but in our case would be tantamount to using the pMMI alone and muting the influence of the O/E index. Approaches that weight the 2 components based on site-specific factors (e.g., weighting the pMMI more heavily than the O/E index at low-E sites) are worthy of future exploration. Evaluating the pMMI and O/E indices independently to assess biological condition at a site might be useful, particularly at low-E sites, but the combined index is preferred for applications where statewide consistency is important, such as designation of impaired waterbodies.

Unexplained variability

In our study, predictive models were able to explain only a portion of the variability observed at reference sites—sometimes a fairly small portion. For example, the SD of the predictive O/E was only slightly lower than the SD of the null O/E (0.19 vs 0.21) and much larger than that associated with replicate samples (0.13). None of the selected random-forest models explained >39% (for the no. shredder taxa metric) of the variability at reference calibration sites. The unexplained variability may be related to the additional effects of environmental factors that are unsuitable for predicting reference condition (e.g., alterable factors, like substrate composition or canopy cover), environmental factors unrelated to those used for modeling (e.g., temporal gradients, weather antecedent to sampling), field and laboratory sampling error, metacommunity dynamics (Leibold et al. 2004, Heino 2013), or neutral processes in community assembly that are inherently unpredictable (Hubbell 2001, Rader et al. 2012). The relative contribution of these factors is likely to be a fruitful area of bioassessment research. Given the number and breadth of environmental gradients evaluated for modeling, we think it unlikely that additional data or advanced statistical methods will change the performance of these indices.

Setting thresholds

Some investigators have suggested that thresholds for identifying impairment in environmentally complex regions may require different thresholds in different settings based on the variability of reference streams in each setting. For example, Yuan et al. (2008) proposed ecoregional thresholds for an O/E index for the USA based on the observation that index scores at reference sites were twice as variable in some ecoregions as in others. Alternatively, site-specific thresholds could be established based on the variability of a subset of environmentally similar reference sites. We rejected both of these approaches in favor of uniform thresholds based on the variability of all reference calibration sites. We rejected ecoregional thresholds or other typological approaches because the validity of ecoregional classifications may be questionable for sites near boundaries. We rejected site-specific thresholds based on environmentally similar reference sites because they did not improve accuracy or sensitivity relative to a single statewide threshold when predictive indices are used (Appendix S1). These results are consistent with those of Linke et al. (2005), who showed that indices calibrated with environmentally similar reference sites had similar performance to indices based on predictive models that were calibrated with all available reference sites. Other approaches, such as direct modeling of the SD of index scores as a function of natural factors, also might improve comparability of scores across settings (R. Bailey, Cape Breton University, personal communication).

Conclusions and recommended applications

Many recent technical advances in bioassessment have centered on improving the performance of tools used to score the ecological condition of water bodies. Much of the progress in this area has come from regional, national, and international efforts to produce overall condition assessments of streams in particular regions (e.g., Simpson and Norris 2000, Van Sickle et al. 2005, Hawkins 2006, Hering et al. 2006, Stoddard et al. 2006, Paulsen et al. 2008). A key challenge in completing these projects has been incompatibility among scoring tools designed to assess streams in multiple regions, each calibrated for unique and locally important environmental gradients (Cao and Hawkins 2011). This issue has been well documented for large-scale programs in which investigators have attempted to integrate scores from a patchwork of assessment tools built for smaller subregions (Heinz Center 2002, Hawkins 2006, Meador et al. 2008, Pont et al. 2009), but far less attention has been paid to the meaning of index scores at individual stream reaches (Herlihy et al. 2008, Ode et al. 2008). Assessment of CSCI performance across the range of environmental settings in California was essential because the CSCI is intended for use in regulatory applications that affect the management of individual reaches, and consistent meaning of a score was a key requirement of regulatory agencies and stakeholders. We attempted to maximize consistency of the CSCI by using a large and representative reference set and by integrating multiple indices based on predictive models. Consistent accuracy was attained through the use of predictive models, whereas the consistency of precision and sensitivity was improved through the use of multiple endpoints.

The CSCI was designed for condition assessments, but we think it has broad application to many aspects of stream management. For example, it could be used to select comparator sites with similar biological expectations to test sites for use in causal assessments (e.g., CADDIS; USEPA 2010) or to prioritize streams that can support rare or threatened assemblages for restoration or conservation (Linke et al. 2011). The predictions generated by the index can inform management decisions about streams for which no biological data are available. Predictive indices, such as the CSCI, are powerful additions to the stream manager's tool kit, especially in environmentally complex areas. We recognize the challenges in enabling the general public to calculate an index as complex as the one presented here. Fortunately, online automation of many of the steps is possible. For example, much of the GIS analysis can be simplified by using publicly available resources like StreamStats (US Geological Survey 2012). An automated tool is in development, but people who are interested in using the CSCI or examining its component models are encouraged to contact the authors.

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Appendix S1. Nearest-neighbor thresholds do not improve performance of predictive indices.

Variable impairment thresholds may be useful when the precision of an index varies greatly across settings (Death and Winterbourn 1994). For example, Yuan et al. (2008) observed 2-fold differences in variability at reference sites across ecoregions in an observed (O)/expected (E) taxa index for the USA, results that justified different thresholds for each region. In such circumstances, a uniform threshold may increase the frequency of errors in the more variable settings. Reference sites with scores below a uniform threshold may be disproportionately common in settings where the index is less precise. A variable threshold that is lower in more variable settings may reduce this error rate (i.e., the reference error rate).

To determine if variable impairment thresholds based on site-specific characteristics could lead to an unbiased distribution of errors across regions, we evaluated 2 approaches to establishing thresholds: 1) a traditional approach, where a single number (based on variability in scores at all reference calibration sites) was used as a threshold, and 2) a site-specific approach, where thresholds were based on only a subset of the most environmentally similar reference calibration sites. In both cases, we considered sites to be in reference condition if their index score was >10th percentile of the relevant set of reference calibration site values. We measured environmental similarity as standard Euclidean distances along all environmental gradients used in predictive models (Table 1). We evaluated several different sizes of reference-site subsets (25, 50, 75, 100, and 200, and the full set of 473). We calculated the error rate for all regions (except for the Central Valley, which had only 1 reference site) as the proportion of sites with scores below the threshold. We plotted these regional error rates against the number of reference sites used to calculate the threshold (Fig. S1) and transformed scores at test sites into percentiles relative to each of these distributions. We used the predictive California Stream Condition Index

(CSCI) and its null equivalent in this analysis.

Variable thresholds greatly reduced the regional bias of the error rate of the null index, but had a negligible effect on the predictive index. For example, the null index had a very high error rate (0.30) in the South Coast when a uniform threshold was used, but this error rate dropped to 0.10 when variable thresholds based on 25 or 50 reference sites were used. In contrast, the regional error rate of the predictive index was always <0.15 and was not highly influenced by the number of reference sites used to establish thresholds.

We recommend a uniform threshold used in conjunction with a predictive index because of the added complexity and minimal benefits provided by the variable, site-specific thresholds.

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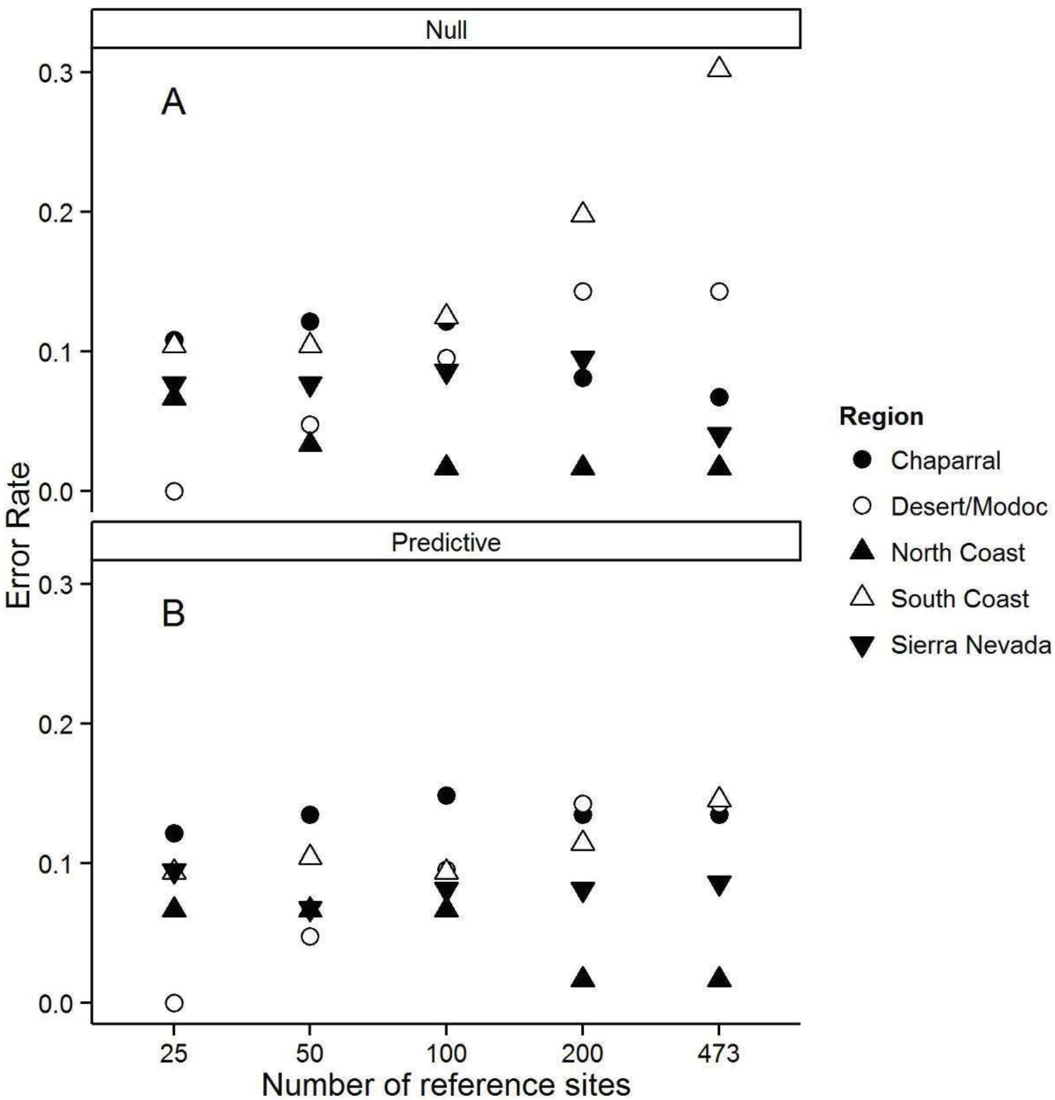

Fig. S1. Effects of nearest neighbor thresholds on error rates, calculated as the proportion of reference calibration sites below the threshold for null (A) and predictive (B) indices. Each point represents a different region. The highest number of reference sites is equivalent to the uniform threshold used in the main study.

Appendix S2. Index responsiveness as a function of predicted % sensitive taxa: a comparison of a predictive metric approach and the observed (O)/expected (E) taxa index.

The responsiveness of a bioassessment index depends on its ability to change in response to stress, and the loss of sensitive taxa is typically one of the strongest responses to stress (Rosenberg and Resh 1993, Statzner et al. 2004). To see if the ability to detect the loss of sensitive taxa depends on number of common taxa (E), we compared the proportion of sensitive taxa expected by an O/E index and a predictive multimetric index (pMMI) under different values of E. For the pMMI, this proportion was calculated as the predicted % intolerant taxa metric, as described in the accompanying manuscript. For the O/E, this proportion was calculated as the % of expected operational taxonomic units (OTUs) that are sensitive (OTUs with tolerance value < 3. For OTUs consisting of multiple taxa with different tolerance values, we used the median tolerance value). CAMLnet (2003) was the source of tolerance values. Estimates from both the O/E and pMMI were plotted against E to see whether the 2 indices allowed consistent ranges of response across values of E. These predictions were compared with the observed % intolerant taxa at reference sites to confirm the validity of these estimates.

At high-E sites (E > 14), both the pMMI and O/E had a consistent capacity to detect loss of sensitive taxa (Fig. S2A, C). Furthermore, both indices estimated similar proportions of sensitive taxa (~40%), suggesting that the 2 indices have similar sensitivity in these settings. Both indices also predicted a decline in the proportion of sensitive taxa at low-E sites, indicating that E affects the sensitivity of the pMMI and O/E. However, at the lowest levels of E, the O/E had no capacity to detect loss of sensitive taxa, whereas the pMMI predicted ~20% sensitive taxa at these sites, preserving a limited capacity to respond to loss of sensitive taxa. This capacity explains why the pMMI was more sensitive than the O/E at low-E sites.

Inspection of the data at reference sites indicates that sensitive taxa were truly present at these low-E sites (Fig. S2B, D) and that modeling the metric directly sets more accurate expectations for sensitive taxa in these settings (metric prediction vs observed R^2 = 0.80; O/E prediction vs observed R^2 = 0.55). However, these taxa were excluded from the index because of the minimum capture probability (i.e., 50%). Therefore, the predictive metric and not the O/E will be able respond to the loss of sensitive taxa at low-E sites.

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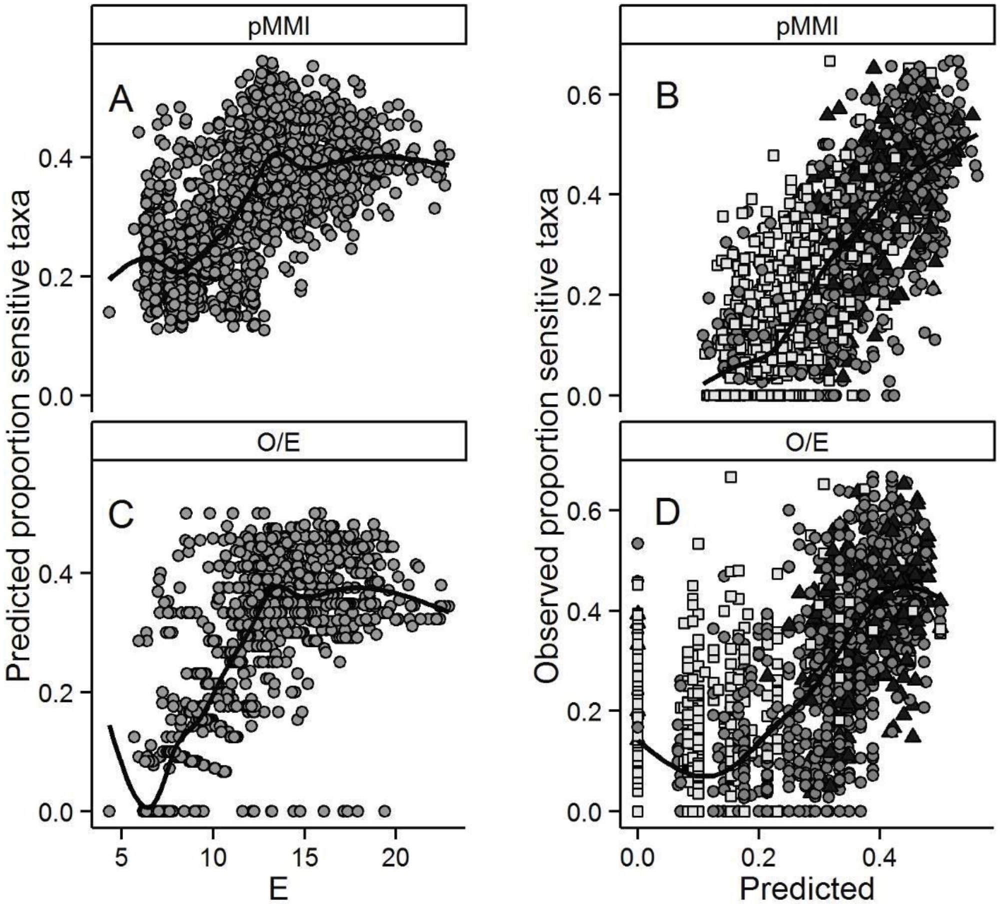

Fig. S2. Proportion of sensitive taxa predicted by a predictive multimetric index (pMMI) (A, B) and an observed (O)/expected (E) taxa index (C, D) at all sites (A, C), or observed at reference calibration (B, D) sites. Dark triangles represent sites with high (>15) numbers of expected taxa, gray circles represent sites with moderate (10–15) numbers of expected taxa, and white squares represent sites with low (<10) numbers of expected taxa. The solid line represents a smoothed fit from a generalized additive model.

Appendix 4

Comparability of biological assessments derived from predictive models and multimetric indices of increasing geographic scope

Peter R. Ode[1], Charles P. Hawkins[2] and Raphael D. Mazor

Abstract

As the use of bioassessment techniques expands, the demand for tools that can score biological condition from aquatic community data has spurred the creation of a large number of predictive models (e.g., observed over expected (O/E) indices) and multimetric indices (MMIs). The geographic and environmental scopes of these indices vary widely and coverages often overlap. If indices developed for large, environmentally heterogeneous regions provide results that are equivalent to those developed for smaller regions, then regulatory entities could adopt indices developed for larger regions rather than fund the development of multiple local indices. This potential was evaluated by comparing the performance (precision, bias, responsiveness, and sensitivity) of benthic macroinvertebrate O/E and MMIs developed for California (CA) with indices developed for two large-scale condition assessments of United States (US) streams: the US Environmental Protection Agency's Western Environmental Monitoring and Assessment Program's (WEMAP) stream project and the western portion of the national Wadeable Streams Assessment (WSA-West). Both WSA-West and WEMAP O/E scores were weakly correlated with CA O/E index scores, had lower precision than the CA index, were influenced by two related natural gradients (percent slope and percent fast water habitat) for which the CA index was not, and disagreed with 21 - 22% of impairment decisions derived from the CA index. The WSA-West O/E index produced many fewer impairment decisions than the CA index. In the MMI comparisons, both WEMAP and WSA-West MMI scores were much more strongly associated with CA MMI scores than those found in the O/E comparisons. However, the WSA-West and WEMAP MMIs produced many fewer impairment determinations than the CA MMI. Because the WEMAP and WSA-West indices were biased and differed in responsiveness compared with CA indices, they could produce different estimates of regional condition compared with indices that are calibrated to local conditions. Furthermore, the lower precision of the WEMAP and WSA-West indices compromises their use in site-specific assessments where both precision and accuracy are important. However, because the magnitude of differences in impairment decisions was very sensitive to the thresholds used to define impaired conditions, it may be possible to adjust for some of the systematic differences among the models, thus rendering the larger models more suitable for local application. Future work should focus on identifying the geographic and environmental scale that optimizes index performance, determining the factors that most strongly influence index performance, and identifying ways of more accurately specifying reference condition from geographically extensive sets of reference site data.

Introduction

The widespread adoption of bioassessment techniques for assessing the ecological condition of waterbodies has generated an abundance of indices available to water resource managers (Reynoldson *et al*. 1997, Hughes *et al*. 1998, Barbour and Yoder

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2000, Hawkins *et al* 2000a, Van Sickle *et al*. 2005, Bonada *et al*. 2006). Because these tools were generated to meet different needs, their geographic scopes differ widely and often overlap.

As the proliferation of new indices continues, end-users (e.g., regulatory entities developing numeric biocriteria, Yoder and Rankin 1995) will need guidance for selecting among these different indices and evaluating how many different indices a region needs for effective bioassessment. If local and regional assessments based on indices developed for broad geographical areas are equivalent to assessments based on indices developed for smaller areas, then regulatory entities could profit by adopting the large-scale indices and abandoning the development and maintenance of multiple, smaller-scale indices. This potential is attractive because indices that apply to large geographic areas have already been developed for many regions of the world, including: Great Britain (Moss *et al*. 1987), Australia (Simpson and Norris 2000), Europe (Statzner *et al*. 2001), and the United States (Stoddard *et al*. 2006, 2008; Yuan *et al*. 2008). Widespread use of common indices would facilitate consistency in data interpretation among the variety of users of ecological condition indices (Bonada *et al*. 2006, Hawkins 2006).

However, indices developed for large geographic regions may have limitations that could restrict their value for both site and regional assessments. Most notably, such indices must account for natural variation that occurs within large regions. Performance characteristics of both multimetric and predictive model indices are limited by their capacity to account for variability among the reference sites used to develop indices (Moss *et al*. 1987, Hughes 1995, Reynoldson *et al*. 1997, Karr and Chu 1999, Hawkins *et al*. 2000a, Bailey *et al*. 2004, Bonada *et al*. 2006).

It is a central principle of ecology that biological assemblages naturally vary along many environmental gradients (Andrewartha and Birch 1954, Hutchinson 1959, Hynes 1970). The precision and accuracy of any index will therefore depend on how well the mechanics of index calculation account for the effects of these natural gradients on assemblage structure (Johnson *et al*. 2004, Johnson *et al*. 2007, Van Sickle *et al*. 2005, Hawkins 2006, Heino *et al*. 2007, Mykrä *et al*. 2007, 2008). If biological variation associated with local environmental gradients (e.g., reach slope or substrate size) is masked by environmental factors that vary over large spatial scales (e.g., climatic factors and geology), then indices developed from more spatially restricted datasets may be required for site-specific assessments.

Recently derived biological indices developed for the EPA's national WSA and the WEMAP project (Stoddard *et al*. 2005, 2006; EPA 2006) presented an opportunity to evaluate this idea by comparing performance metrics (precision, bias, responsiveness, and sensitivity) of these indices with those of indices developed specifically for California (Ode *et al*. 2005, Rehn *et al*. 2005). The comparability of both site-specific and regionally aggregated biological assessments, where CA indices <WEMAP indices <WSA-West indices in geographic extent and geoclimatic heterogeneity, were evaluated. For these comparisons, assessments of an independent set of evaluation (test) sites that had not been used in developing any of the indices were conducted. To the extent that the test dataset permitted, parallel analyses for both MMI and O/E indices of benthic macroinvertebrate (BMI) assemblage condition were performed.

Methods

O/E Development

Three sets of predictive models were used to produce the O/E index values for comparison. All the O/E models were developed following a standardized process (Clarke *et al*. 2003, Hawkins *et al*. 2000a, Moss *et al*. 1987) described in the EMAP Western Streams and Rivers Statistical Summary (Stoddard *et al*. 2006). The process included: 1) sampling a set of environmentally diverse sites for BMIs, 2) specifying which of these sites would be used as reference sites, 3) applying a standard taxonomy (operational taxonomic units; OTUs) to all samples, 4) clustering of reference sites according to their similarity in BMI assemblage composition, 5) calculating and screening candidate predictor variables, and 6) calibrating linear discriminant functions models for predicting assemblage composition at new sites. All models were developed with map-level predictor variables (with the exception that field measured reach slope was used in one model) to allow more universal applicability of models (Table 1). Aside from the specific combination of predictor variables used in the models, the major difference among models was the range of environmental heterogeneity or geographic extent encompassed by the reference sites used in each model. Models were based on data from either targeted-riffle benthic samples (CA models) or a combination of targeted-

Table 1. Predictor variables used for all predictive models.

	California Models	WEMAP Models	WSA Model (no sub-models)
Sub-model 1	Watershed area Longitude Latitude Temperature	No predictors (null models)	Watershed area Longitude Day of year Minimum temperature Elevation Precipitation Slope
Sub-model 2	Longitude Preipitation Day of year Watershed area	Watershed area Longitude Elevation Precipitation	
Sub-model 3	Watershed area Temperature	No predictors (null models)	

riffle and reach-wide, multiple-habitat samples (WEMAP and WSA-West models). These two types of samples appear to be generally comparable for CA streams (Rehn *et al*. 2007). Other aspects of model development were similar (Table 2).

WSA-West model

A single western US model (WSA-West) developed during the national wadeable streams assessment (Yuan *et al*. 2008) encompassed the most heterogeneous environmental conditions and the largest geographic scope (~2,500,000 km^2; Figure 1). The WSA-West model was developed for all mountainous and xeric regions of the western United States and excluded only plains ecoregions (Figure 1; see Environmental Protection Agency 2006). To produce the WSA-West O/E index, 519 reference sites were clustered into 31 groups, and 7 predictor variables were selected to predict group membership (Table 1).

WEMAP models

The same data used to construct the WSA-West model had been previously used to develop five separate ecotype-specific submodels (Stoddard *et al*. 2006, 2008). All sampled sites (reference and non-reference) were assigned to one out of five broad ecotypes based on a k-means classification (MacQueen 1967) of long-term climatic (temperature and precipitation), geographic variables (latitude, longitude and elevation), and topographic variables (watershed area and channel slope). This pre-classification of sites was mainly designed to reduce the range of environmental heterogeneity encompassed by each model. The geographic scope of the resulting submodels ranged from ~200,000 km^2 to ~1,800,000 km^2 (Figure 2). Of the five submodels developed for the WEMAP study area (Stoddard *et al*. 2005, 2006), four submodels applied to geoclimatic conditions found in California. One model used predictor variables, whereas the other three were null models that predicted the same biota at all

Table 2. Comparison of BMI collection method, taxonomic effort levels and organism counts used both to build models and score test sites. See methods for definitions.

Indicator	Model	Field Method	Taxonomic Effort	Organism Count
O/E	WEMAP	RWB	Some species, but mostly genus (including Chironomidae)	300 (after removal of ambiguous individuals)
	WSA	RWB		
	2 CA sub-models	TRB		
MMI	WEMAP	RWB	Some species, but mostly genus (including Chironomidae)	300
	WSA	RWB	Some species, but mostly genus (including Chironomidae)	300
	CA model (NCIBI / SCIBI)	TRB	Genus, Chironomidae to family	500

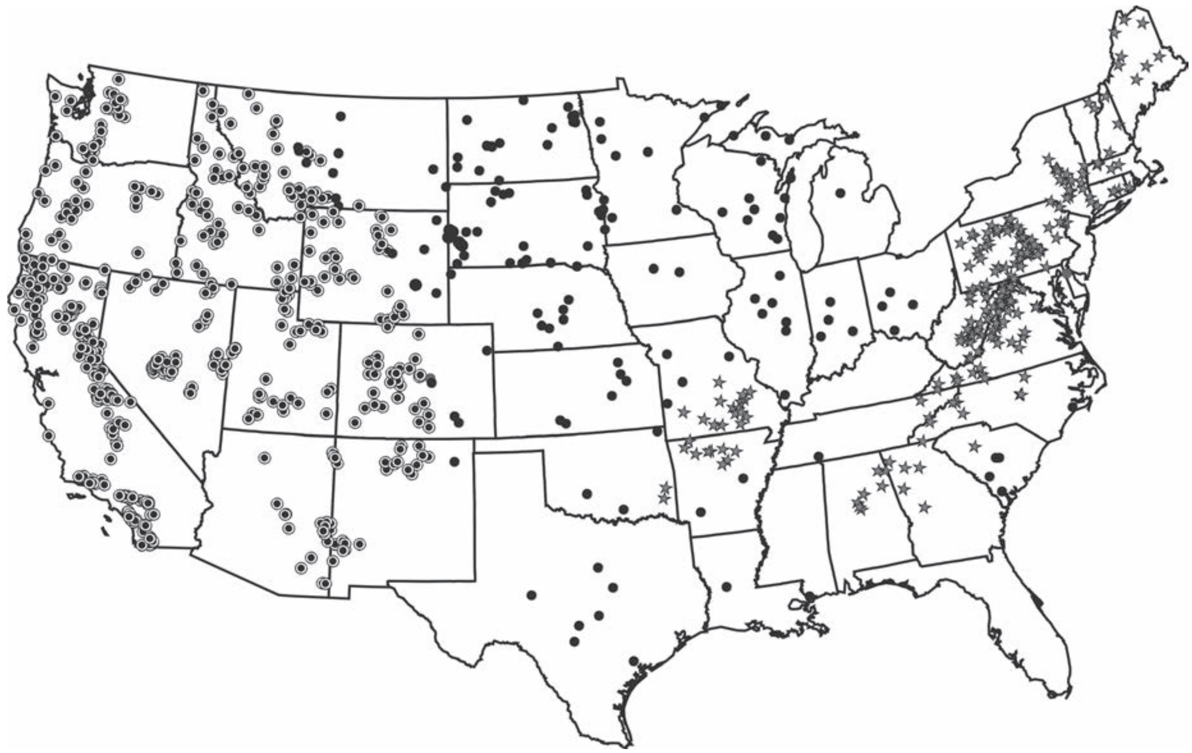

Figure 1. Location of reference sites used to create the three WSA predictive sub-models. Only the western sub-model applies to California sites. Each symbol represents a different sub-model.

sites within a geoclimatic region (Van Sickle *et al*. 2005; Table 1).

CA models

The third model set included three submodels that were developed for three types of climatic conditions in CA: cool-wet sites (mean monthly temperature (MMT) >9.9ºC and mean monthly precipitation (MMP) >895 mm), warm-dry sites (MMT >9.9ºC and MMP <895 mm), and cold-mesic sites (MMT <9.9ºC; Figure 3). The three CA submodels were calibrated from data collected at 209 reference sites, 179 of which were also used in calibrating WEMAP and WSA-West models (the other 30 sites were used as validation samples in the WEMAP and WSA projects). The spatial extent of the reference sites for these submodels was ~150,000 km^2 each (Figure 3). These three submodels also used unique combinations of predictor variables (Table 1).

MMI Development

The WSA, WEMAP, and CA MMIs were developed following similar methods as first developed by Karr (1981) and extended by others (Kerans and Karr 1994, Hughes *et al*. 1998, McCormick *et al*. 2001, Klemm *et al*. 2003): 1) assignment of a large pool of sites to either reference or test sets based on their degree of anthropogenic stress, 2) division of the site pool into calibration and validation sets, 3) using the calibration set to screen biological response metrics based on their responsiveness to important stressor gradients, their signal-to-noise ratios, and their non-redundancy with other metrics,

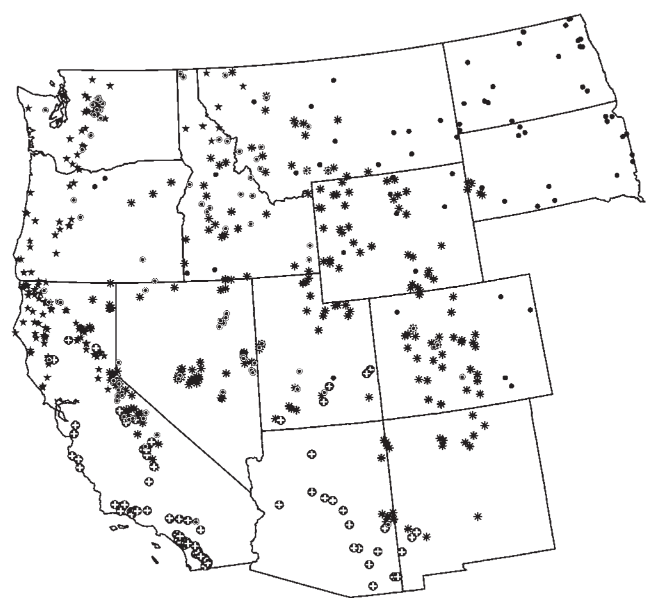

Figure 2. Location of reference sites used to create the five WEMAP predictive sub-models. Note that four of the five sub-models apply to California.

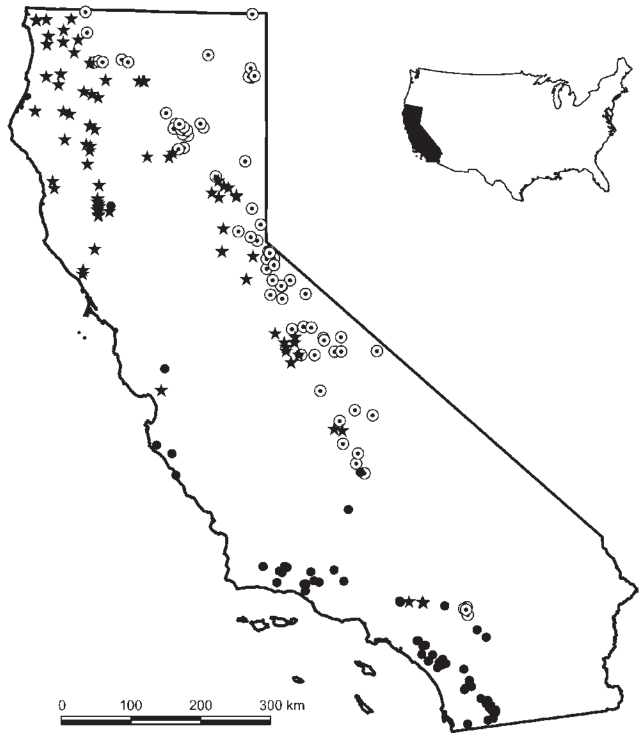

Figure 3. Location of reference sites used to create the three CA predictive sub-models. Each symbol represents a different sub-model.

4) establishing scoring ranges for selected metrics, 5) assembling a composite MMI from the component metrics, 6) establishing impairment thresholds for the index, and 7) evaluating index performance against the validation dataset (Herlihy *et al*. 2008, Stoddard *et al*. 2008).

These MMIs differed in a few important respects (Tables 2 and 3). The CA indices were based on subsamples of 500 organisms collected from targeted-riffle habitats (TRB) and identified primarily to genus level, but the WSA-West and WEMAP indices were based on subsamples of 300 organisms collected from multiple reach-wide composite habitats (RWB) with some individuals identified to species level (see text below for details on field and lab methods).

WSA-West MMIs

The EPA's WSA program developed two MMIs (xeric and western mountain ecoregions; Omernik 1987) to support its assessments of western streams using a calibration dataset of 775 sites (235 xeric and 540 mountain; Stoddard *et al*. 2008, EPA 2006). Both indices used six metrics, five of which were in common (Table 3). Scoring ranges for both WSA-West MMIs were scaled from 0 to 100 (Van Sickle and Paulsen 2008).

WEMAP MMIs

WEMAP developed three MMIs (xeric, plains and mountain ecoregions) for its analyses (Stoddard *et al*. 2005, 2006), two of which (xeric and mountain) applied to CA sites. The calibration dataset was comprised of 244 xeric and 565 mountain sites, nearly all of which (754 of 809) were used in WSA-West MMI development. As in the WSA-West index, the xeric and mountain versions of the WEMAP MMI consisted of six metrics, but shared fewer metrics in common (Table 3). Index values for both WEMAP MMIs were scaled from 0 to 100 (Stoddard *et al*. 2005).

CA MMIs

Two MMIs were developed for use in coastal California: the Southern Coastal California Index of Biotic Integrity or SCIBI (Ode *et al*. 2005) and the Northern Coastal California Index of Biotic Integrity or NCIBI (Rehn *et al*. 2005). The two CA MMIs included both the mountain and xeric aggregate ecoregions used for the WSA and WEMAP MMIs, and separate metric scoring ranges were established for the Omernik Level III (1987) ecoregions within each CA MMI development area (Figure 4). Of the 502 sites used to develop the CA MMIs, 119 were also used in WEMAP and WSA-West MMI development. The NCIBI consisted of eight metrics, whereas the SCIBI consisted of seven metrics, with four metrics in common (Table 3). The CA MMIs were also scaled from 0 to 100 (Ode *et al*. 2005, Rehn *et al*. 2005).

Test Site Data

These analyses incorporate BMI data collected for two large-scale probability surveys of CA streams. For clarity, use of the term "test sites" was restricted to refer only to these probabilistic samples of evaluation sites and not to non-reference sites used to calibrate MMIs, which are sometimes referred to as "test sites" in MMI development. For the O/E comparisons, data collected from 127 sites during the WEMAP 2000-2003 survey were used. For the MMI comparisons, data from 68 sites sampled by the California State Monitoring and Assessment Program (CMAP) between 2004 and 2006 were used. It was necessary to use different test sets for the O/E and MMI analyses because: 1) the restricted geographic boundaries of the CA MMI models limited the number of sites shared between O/E and MMI data sets, and 2) the MMI calibration datasets were

Table 3. BMI metrics comprising the multimetric indices. EPT = Ephemeroptera, Plecoptera, and Trichoptera.

Metric	California		WEMAP		WSA	
	NCIBI	SCIBI	Mountain	Xeric	Mountain	Xeric
EPT Richness	X	X	X	X	X	X
% Individuals in Top 5 Taxa			X		X	X
% Non-Insect Taxa	X	X		X		
Clinger % Taxa				X	X	X
% Intolerant Individuals	X	X				
% Non-Insect Individuals			X			X
% Tolerant Taxa		X	X			
Coleoptera Richness	X	X				
Scraper Richness					X	X
Tolerant % Taxa					X	X
% Burrower Individuals			X			
% Collector Individuals		X				
% EPT Taxa					X	
% Intolerant Taxa				X		
% Non-Gastropod Scraper Individuals	X					
% Omnivore Taxa			X			
% Predator Individuals	X					
% Shredder Taxa	X					
Diptera Richness	X					
Predator Richness		X				
Shannon Diversity				X		
Shredder Richness				X		

partially comprised of sites used for the O/E test set. The 127 sites used to evaluate predictive models were distributed throughout California (Figure 4a), whereas the 68 sites used to evaluate MMI models were restricted to coastal watersheds (Figure 4b). Most MMI test sites were concentrated in the northern half of the state (61 sites north of Monterey Bay), and the majority of these sites (40) were located within the boundaries of the NCIBI calibration sites (Figure 4b). The remaining 21 northern California sites were concentrated in the San Francisco Bay and Santa Cruz Mountains regions, which lie between the development regions of the two CA MMIs (Figure 4b). We used the NCIBI to score sites located between the NCIBI and SCIBI regions for the cross-index comparisons because this region is ecologically more similar to the North Coast than the South Coast and because reference conditions for this area were better represented in the NCIBI (Rehn *et al*. 2005). SCIBI scores were used for another 14 sites located within the region defined by the SCIBI calibration sites. Although the different geographic distributions in test sites may affect comparisons between MMIs and O/E indices, they do not affect comparisons of the performance of each type of index among the three geoclimatic scales.

Test site, field, and laboratory methods

All test sites were sampled in accordance with standard WEMAP field methods (Peck *et al*. 2006). A sampling reach was defined as 40 times the average stream width at the center of the reach, with a minimum reach length of 150 m. Two BMI samples were collected from each reach with standard 500-µm D-frame nets: 1) a RWB sample consisting of eleven 0.09-m^2 samples taken from equally spaced locations throughout the reach and 2) a TRB sample consisting of eight 0.09-m^2 samples taken from fast water habitat units within the reach (Hawkins *et al*. 2003).

All BMI samples used for the test datasets were processed at the California Department of Fish and Game's Aquatic Bioassessment Laboratory in Chico, CA. At least 500 individuals were identified to the standard taxonomic resolution targets described in Richards and Rogers (2006), i.e., those levels of taxonomic resolution that can be consistently achieved. A true, fixed 500-count random subsample was then

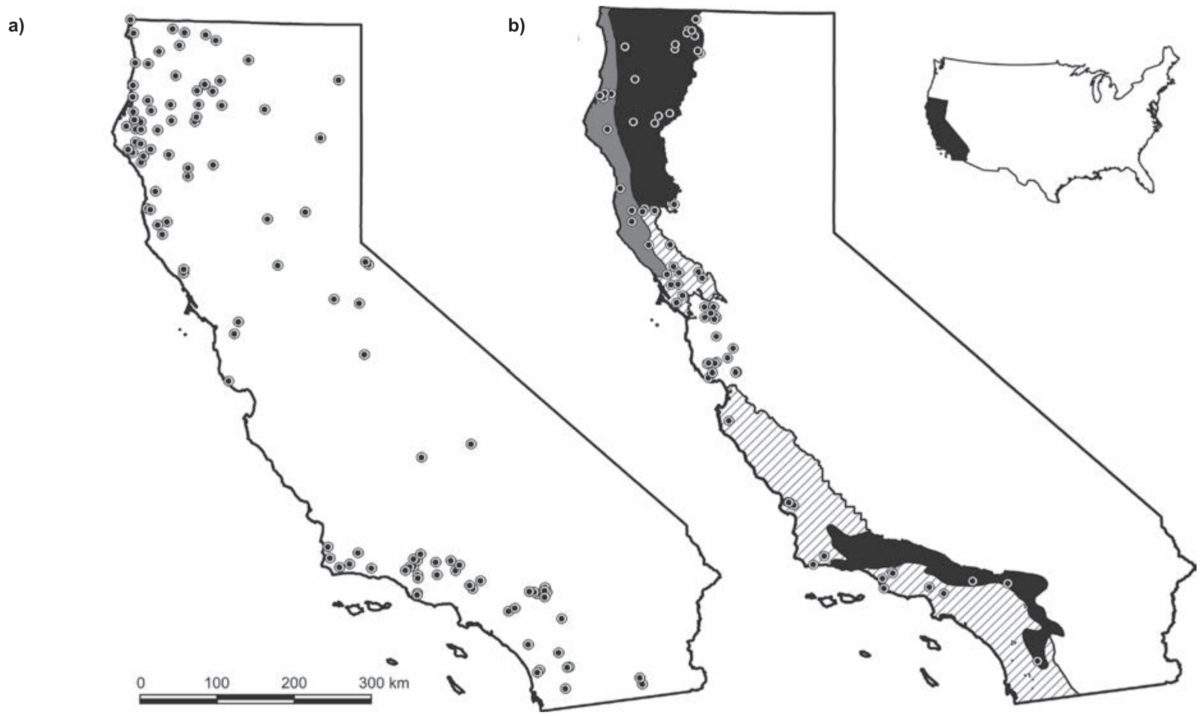

Figure 4. Location of test sites used for comparative analyses: 127 test sites used in O/E comparisons (a) and 68 test sites used in IBI comparisons (b). The three solid shaded regions correspond to mountain ecoregions used in the western and national models, whereas the three hatched regions correspond to the xeric ecoregions used in the western and national models. The two solid shaded regions in the northwest part of the state circumscribe the region for which the North Coast IBI was developed. The hatched regions and the continuously shaded region in southwestern part of the state circumscribe the region for which the South Coast IBI was developed. The inset shows the location of California in the United States.

obtained by computer resampling the sample data. Samples with between 450 and 500 individuals were retained in analyses. These raw data were then used to produce the standardized taxa lists and metrics needed for the various indices (Table 3). All analyses were based on the field methods, sample sizes and taxonomic levels used to develop each index (as indicated in Table 2).

Scoring Sites: Predictive Models

BMI taxonomic data

The raw subsample count data were further processed for use with the predictive models by:
1) converting the original identifications to the taxonomic levels used in the models (e.g., OTUs),
2) eliminating individuals that could not be assigned to an OTU (i.e., ambiguous individuals), and
3) resampling the remaining non-ambiguous individuals to 300-count samples. Samples with <300 individuals were retained in analyses.

Predictor variables

Geographic coordinates (latitude and longitude) were obtained via GPS measurements taken during sample collection. Watershed area were calculated after delineating upstream watershed boundaries for each site with automated GIS scripts or manual delineation where necessary. Long-term MMP, MMT, and MMA values for each site were estimated from GIS grids of (1961-1990) obtained from the Oregon Climate Center (http://www.ocs.orst.edu/prism). Site elevations were derived from 30-meter digital elevation models (http://ned.usgs.gov). Channel (reach) slope was measured in the field (as it was in model development).

Geographic and environmental attributes were used to assign each site to the appropriate WEMAP and CA models. Assignment of sites to the five WEMAP models was based on latitude, longitude, elevation, MMP, MMT, watershed area, and channel slope. These assignments were made prior to model building during the k-means analysis (MacQueen 1967). Assignment of test sites to the appropriate CA model was conducted after model development. This study used a simple classification and regression tree model based on long-term precipitation and air temperature to assign sites to the CA submodels.

O/E values were calculated based on just those taxa with site probabilities of capture ≥0.5 because these values result in more precise O/E values that are also usually more sensitive to stress (Hawkins *et al*. 2000a, Ostermiller and Hawkins 2004, Van Sickle *et al*. 2007) than O/E values based on all taxa in the reference calibration data set. When reporting impairment decisions for the test sites, impairment thresholds were set at two standard deviations below the mean value of reference sites for all O/E models (Table 4).

Scoring Sites: MMIs

BMI taxonomic data

Because the MMIs differed with respect to organism count and taxonomic resolution, MMI scores were calculated based on the sample counts and taxonomy used when developing each index (Table 2). MMI values were then calculated for test samples that had been collected in a standard manner to avoid confounding comparisons with inter-method variability. All sites were assigned to either the xeric or mountain aggregate ecoregions, with mountain ecoregions being further divided into Southern California Mountains, Klamath Mountains, Coast Ranges, and Southern and Central California Chaparral and Oak Woodlands for the CA MMIs (Omernik 1987). MMI values were then calculated based on the specific scoring ranges developed for each individual metric and region and rescaled these MMI values from 0 to 100. As for O/E models, impairment thresholds for all MMIs were set at two standard deviations below the mean value at reference sites (Table 4).

TRB was used as the default sample type, although RWB samples were used at six sites where TRB samples were unavailable or had low sample counts (<450 organisms). Because it was found elsewhere that RWB samples on average scored 7.8 points lower on the CA IBIs than TRB samples (Rehn *et al*. 2007), 7.8 points were added to CA IBI scores for these RWB samples. To evaluate the potential effect of using TRB samples instead of RWB samples (the method used in national and western model development; Table 2) in comparisons, an additional analysis was performed in which both the TRB and RWB data from 21 sites with all three MMIs were scored. If paired t-tests indicated significant differences between methods, RWB scores were adjusted by a correction factor corresponding to the difference between mean site scores.

Comparison of Index Scores

The CA index values were used as a benchmark for comparing the performance of the WSA-West and WEMAP indices. Comparisons were based on index precision, bias, responsiveness, and sensitivity.

O/E comparisons

Precision was measured as the standard deviation (sd) of reference site O/E values. Bias was measured as the tendency for reference site O/E values to vary systematically with one or more of four

Table 4. Standard deviation (sd) values and impairment thresholds (IT) for each predictive model (O/E) and coefficients of variation (CV) and impairment thresholds (IT) for MMIs. Note that only WEMAP sub-models 2 through 5 apply to California.

California O/E			WEMAP O/E			WSA O/E		
Sub-model	sd	IT	Sub-model	sd	IT	Model	sd	IT
1	0.13	0.74	1	0.24	0.52	West	0.20	0.59
2	0.17	0.66	2	0.15	0.70			
3	0.16	0.68	3	0.20	0.60			
			4	0.20	0.60			
			5	0.17	0.66			

California MMI			WEMAP MMI			WSA MMI		
Sub-model	CV	IT	Sub-model	CV	IT	Sub-model	CV	IT
NCIBI	0.14	52	Mountain	0.13	55	Mountain	0.26	28
SCIBI	0.19	39	Xeric	0.23	36	Xeric	0.25	34

natural gradients (reach slope, elevation, watershed area, and percent of reach with fast water habitats). The study also assessed relative bias between pairs of O/E indices using linear regression; slopes were tested for significant differences from 1, and intercepts were were tested for significant differences from 0. The consequences of these types of biases were illustrated by plotting the pair-wise differences in index scores against these natural gradients. Responsiveness was measured as the mean difference between reference and test sites in O/E values. Sensitivity was measured as the proportion of test sites assessed as impaired by the models. This measure of sensitivity is a joint function of precision, bias, and responsiveness. For these assessments, the threshold values for inferring impairment were defined as 2 sds below the reference (calibration) means (Table 4). Binomial tests (Zar 1999) were used on sites with disagreeing impairment decisions to determine if the indices were equally likely to detect impairment. This test was performed within each of the three CA submodels, as well as on all sites combined. In addition to comparison of impairment determinations based on 2 sds thresholds, two different threshold corrections for ecoregional differences were also evaluated. In the WSA, impairment thresholds were established separately for xeric and mountain ecoregions at the 5th percentile of the calibration reference population (estimated as 1.64 standard deviations below the reference mean; Herlihy *et al*. 2008). We also estimated separate thresholds for mountain and xeric regions at 2 sd below the mean for each ecoregion, an approach consistent with previous comparisons. For all relevant analyses, Bonferroni adjustments were applied for multiple comparisons when the correction was conservative. That is, the correction was not applied when we were screening natural gradients as potential drivers of bias, but was applied for hypothesis tests of index agreement (e.g., impairment decisions, responsiveness tests).

Multimetric index comparisons

MMI analyses paralleled the O/E comparisons. However, raw MMI scores were not directly comparable because the scores at calibration reference sites differed among the MMIs. Therefore, MMI scores were rescaled by dividing the raw score by the index's reference mean. These adjusted scores were then used as a "common currency" in all analyses in which scores were compared directly. Thus, the MMI scaling in these analyses was similar to the ~1.0 reference mean in O/Es. Only the comparisons of impairment decisions were based directly on the raw MMI scores.

Results

O/E Comparisons

Precision

The predictions of the WSA-West and WEMAP models were less precise (reference site O/E sd = 0.17 to 0.20) than those of the CA models (sd = 0.13 to 0.17; Table 4). Imprecision in model predictions contributed, in part, to weak relationships between the CA O/E indices and the WSA-West and WEMAP O/E indices (CA vs. WSA-West r^2 = 0.32, CA vs. WEMAP r^2 = 0.35; Figure 5). However, the stronger agreement between the less precise WSA-West and WEMAP O/E indices (WSA-West vs. WEMAP r^2 = 0.58) indicates that factors other than precision (e.g., bias) must also be affecting differences in agreement (Figure 5).

Bias

The WSA-West and WEMAP O/E values were biased predictors of the CA O/E values and each other, with slopes and y-intercepts significantly different ($p < 0.001$) than 1 and 0, respectively, for all comparisons (Figure 5). Differences were large, with slopes as low as 0.58 and intercepts as high as 0.36. These results showed that the nature of the bias was not constant across all sites. Instead, differences in index scores depended on the site-specific differences among models in how they either over- or under-estimated E (the expected number of predicted taxa) relative to one another. The reason that the O/E indices were biased predictors of one another occurred, at least in part, because the WSA-West and WEMAP models failed to adjust predictions of E for the effects of at least one natural gradient. This failure is illustrated by systematic variation in reference site O/E values produced by the WSA-West and WEMAP models across percent slope (WSA-West score = 0.025% slope + 0.80, p = 0.001; WEMAP score = 0.023% slope + 0.67, p = 0.002) and percent fast water habitat gradients (WSA-West score = 0.0051% fast water + 0.747, $p < 0.001$; WEMAP score = 0.0045% fast water + 0.63, $p < 0.001$). No such relationships were evident for CA O/E values (CA score = 0.0086% slope + 0.78, p = 0.259; CA score = 0.0016% fast water + 0.77, p = 0.205). The reason the CA O/E indices were unrelated to reach slope is probably related to the fact that, within CA, channel

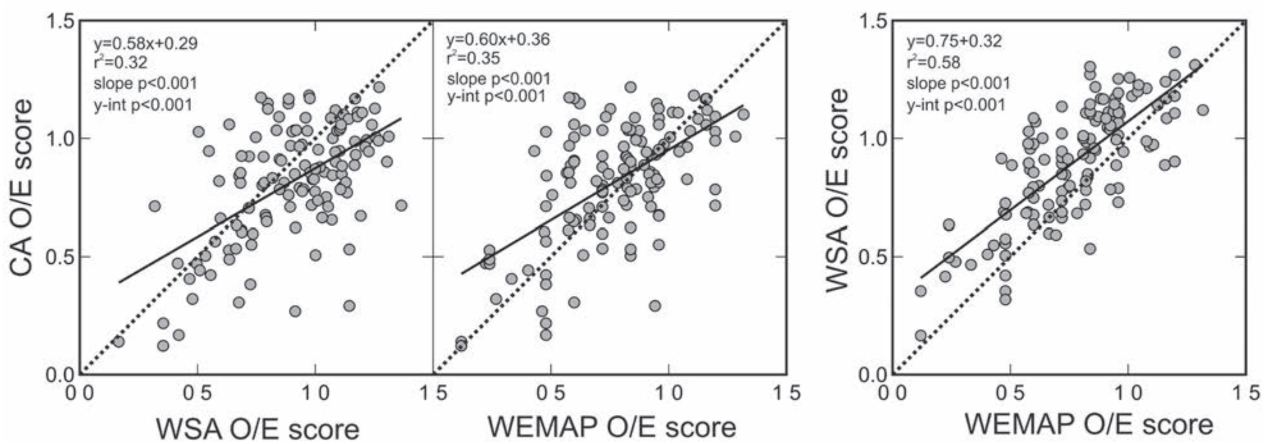

Figure 5. Regressions between O/E scores at CA test sites for all combinations of models. The dotted diagonal lines represent perfect 1:1 relationship between the models, and the thick solid lines indicate linear best-fit relationships. Significance tests are for y-intercept (y-int) = 0 and slope = 1.

slope was associated with watershed area (Area), a predictor in all three CA models (square root slope = 4.11 -0.531*log Area – 0.040*latitude across all reference sites, n = 209, r^2 = 0.14, model p <0.001). It is therefore possible that watershed area was a surrogate predictor of reach slope within CA. Percent fast water was measured at too few sites to determine its relationship with watershed area within CA. As a consequence of the bias between the WSA-West and WEMAP model predictions, pair-wise differences between O/E values for both the WSA-West and WEMAP indices and the CA indices were significantly related to channel slope and percent fast-water habitat (Figure 6). Similar biased predictions associated with either elevation or watershed area were not observed, nor were any of these relationships observed for pair-wise differences in values between WSA-West and WEMAP (Figure 6; Table 5). Furthermore, correlation coefficients were low for all of these relationships (Table 5), indicating that very little variance in differences between the indices was explained by these natural gradients. Although not related to the four natural gradients we examined, there was a tendency for the WSA-West model to produce higher O/E scores than the WEMAP submodels, especially at lower O/E values (p <0.005; Table 5; Figures 5 and 6).

Responsiveness

The WEMAP models tended to produce the lowest O/E values and the WSA-West models the highest O/E values at the test sites (Table 6). O/E values based on the CA models tended to be intermediate in magnitude. This pattern generally occurred for both mountain and xeric ecoregions, although differences were not always statistically significant. However, the magnitude of difference in mean test site O/E values between mountain and xeric test sites varied with the models used. The CA models resulted in lower average O/E values for xeric than for mountain sites (Table 6), whereas both the WEMAP and WSA-West models produced statistically similar mean O/E values at xeric and mountain test sites.

Index sensitivity and concordance among assessments

The WSA-West O/E was much less likely to lead to inferences of impairment (16 of 127 sites; Table 7) than either the WEMAP O/E (43 of 127 sites) or the CA O/E (35 of 127 sites, binomial tests, p <0.001). When an ecoregion correction based on 2 sds (consistent with primary analyses) was applied, there was no effect on any impairment decision (16 out of 127 sites impaired) because the separate xeric and mountain thresholds were within 2 points on a 100 point scale of their combined threshold. However, when an ecoregion correction based on the 5th percentile threshold used for the national wadeable streams assessment (Herlihy *et al*. 2008) was applied, the number of sites determined to be impaired by the WSA-West index (27 of 127 sites) was not significantly different from the 35 impairment decisions produced by the CA O/E index (binomial test, p = 0.081; Table 7).

Multimetric Index Comparisons: Comparison of TRB vs. RWB for WSA and WEMAP MMIs

MMI scores derived from the TRB and RWB sampling methods were highly correlated for both

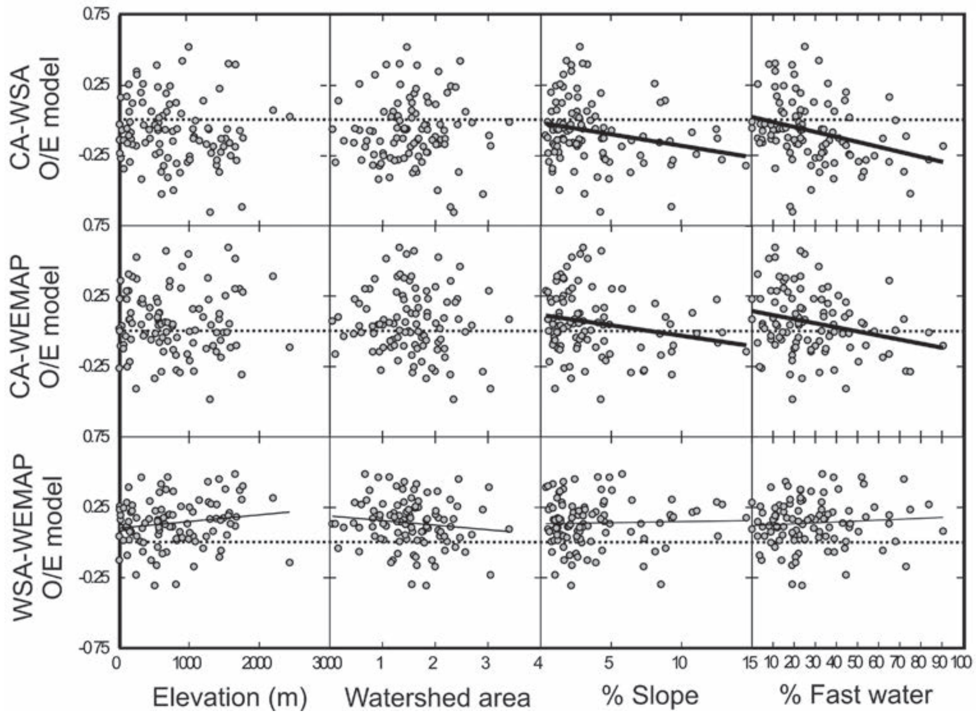

Figure 6. Scatterplots and regressions between the pair-wise differences in O/E values for three different O/E indices and four environmental gradients at CA test sites. The dashed horizontal lines represent zero difference. Thick solid lines denote regressions with r^2 and slopes significantly different from 0; thin solid lines denote those with intercepts significantly different from 0 but non-significant slope.

WSA and WEMAP indices (WSA $r^2 = 0.75$, WEMAP $r^2 = 0.73$), as has been shown elsewhere for CA MMIs (Rehn *et al*. 2007). For WEMAP MMIs, RWB samples collected in the mountain ecoregion scored on average 7.2 points lower than TRB samples (paired t test, $p < 0.001$), but samples based on the two methods collected in the xeric ecoregion produced statistically indistinguishable scores ($p = 0.65$). Mountain WSA MMI values were also lower for RWB samples (4 points, $p = 0.02$), but RWB MMI values from the xeric region were higher than TRB samples by 6 points ($p = 0.002$). For the purpose of inter-index comparisons, these scoring biases were corrected by adding 7.2 points to the MMI values for those mountain WEMAP RWB samples used in comparisons (three sites), adding 4 points to values for the mountain WSA RWB samples, and subtracting 6 points from values for xeric WSA RWB samples (three sites). However, only TRB samples were used in remaining MMI analyses.

Precision

The northern and southern CA MMIs were more precise (reference site CVs = 0.14 and 0.19) than the WSA-West mountain and xeric MMIs (CVs = 0.26, 0.25), but comparable to those of the WEMAP mountain and xeric MMIs (CVs = 0.13, 0.23; Table 4). Associations among the rescaled MMI indices (CA vs. WSA-West $r^2 = 0.70$, CA vs. WEMAP $r^2 = 0.76$, and WSA-West vs. WEMAP $r^2 = 0.75$; Figure 7) were much stronger than we observed for the O/E indices (Figure 5).

Bias

The rescaled WSA-West MMI was a biased predictor of both the CA and WEMAP MMIs, with slopes significantly different ($p < 0.001$) from 1 (Figure 7). In addition, the WEMAP MMI on average produced higher scores at test sites than the CA MMI (Table 6). The WEMAP MMI rated low-scoring sites higher than the WSA-West MMI and high-scoring sites lower than the WSA-West MMI (Figure 7). However, most of these differences in MMI values were not associated with the natural gradients we considered, except for the significant relationships between CA and WEMAP pairwise differences and both elevation and watershed area (Figure 8).

Responsiveness

On average, the rescaled CA MMIs scored test sites lower than the rescaled WEMAP MMIs, which

Table 5. Regressions (y = a + bx) for relationships shown in Figures 6 and 10 where y is the difference between the index scores of two models and x is a natural gradient variable. Asterisks indicate significant slopes, y-intercepts, or r^2 values at p = 0.05 level (significance threshold not adjusted for multiple comparisons).

Index	Natural Gradient	Model Difference	b	p-value for b	a	p-value for a	r^2
O/E (n = 101)	Elevation	CA-WSA	-0.000043	0.283	-0.043	0.259	0.01
		CA-WEMAP	0.0000042	0.918	0.059	0.132	0
		WSA-WEMAP	0.000048	0.112	0.1	<0.001*	0.03
	log Watershed Area	CA-WSA	0.0029	0.928	-0.081	0.125	0
		CA-WEMAP	-0.025	0.424	0.1	0.06	0.01
		WSA-WEMAP	-0.028	0.23	0.18	<0.001*	0.01
	Percent Slope	CA-WSA	-0.016	0.019*	-0.017	0.606	0.05*
		CA-WEMAP	-0.015	0.035*	0.12	<0.001*	0.04*
		WSA-WEMAP	0.0015	0.77	0.13	<0.001*	0
	Percent Fastwater	CA-WSA	-0.0035	0.002*	0.023	0.543	0.09*
		CA-WEMAP	-0.0029	0.012*	0.14	0.001*	0.06*
		WSA-WEMAP	0.00064	0.458	0.12	<0.001*	0.01
MMI-rescaled (n = 68)	Elevation	CA-WSA	0.000047	0.586	-0.24	<0.001*	0
		CA-WEMAP	0.00012	0.041	-0.15	<0.001*	0.06
		WSA-WEMAP	0.000073	0.415	0.086	0.028*	0.01
	log Watershed Area	CA-WSA	-0.043	0.19	-0.13	0.105	0.03
		CA-WEMAP	-0.057	0.01	0.011	0.832	0.1
		WSA-WEMAP	-0.014	0.674	0.14	0.095	0
	Percent Slope	CA-WSA	0.0024	0.832	-0.23	<0.001*	0
		CA-WEMAP	0.011	0.151	-0.14	<0.001*	0.03
		WSA-WEMAP	0.0085	0.46	0.09	0.020*	0.01
	Percent Fastwater	CA-WSA	0.0021	0.182	-0.28	<0.001*	0.03
		CA-WEMAP	-0.00071	0.518	-0.1	0.004*	0.01
		WSA-WEMAP	-0.0028	0.086	0.18	<0.001*	0.04

in turn scored test sites lower than rescaled WSA-West MMIs (Table 6). This trend generally held for both mountain and xeric ecoregions, although the WSA-West vs. WEMAP mountain contrast was not significantly different. All MMIs tended to score test sites in the xeric ecoregion lower than test sites in the mountain ecoregion, although the difference in mean values based on the WSA-West MMI was not significant (Table 6).

Index sensitivity and concordance among assessments

As with the O/E indices, impairment decisions differed considerably among the rescaled MMI indices (Table 8). The number of sites assessed as impaired was far fewer for the WSA-West and WEMAP MMIs (21 and 17 sites of 68 total sites, respectively) than the CA MMI (39 of 68 sites, binomial tests, p <0.001). This pattern occurred in both xeric and mountain ecoregions but was only significant in the xeric ecoregions (binomial tests: mountain p = 0.219, xeric p <0.001).

Summary of WEMAP and WSA-WEST indices performance relative to CA indices

Differences in index precision, bias, and responsiveness can each contribute to differences in index performance as measured by index sensitivity, the likelihood that an assessment will identify impairment. In this study, assessment differences between WEMAP or WSA-West indices and CA indices depended on the type of index examined and specific differences in index precision, bias, and responsiveness (Table 9). Although the large-scale indices tended to lead to different inferences regarding biological condition than the CA indices, the specific differences

Table 6. Results of t-test comparisons for differences in index responsiveness between sets of mountainous and xeric test sites, or between model pairs. Mean 1 and Mean 2 indicate the mean scores of the first and second members of each tested pair. All MMI scores were rescaled by dividing scores by the appropriate reference mean.

Test Dataset	Comparison Type	Test group	Indices in Test	Mean 1	Mean 2	Difference	p (*significant α =0.0167)	Test (2-tailed)
O/E	***Index Comparison***	*Both Ecoregions (n = 127)*	CA vs. WSA	0.82	0.90	0.09	<0.001*	paired t-test
			CA vs. WEMAP	0.82	0.77	0.04	0.032	
			WSA vs. WEMAP	0.90	0.77	0.13	<0.001*	
		MTN only (n = 74)	CA vs. WSA	0.87	0.93	0.06	0.023	paired t-test
			CA vs. WEMAP	0.87	0.80	0.07	0.002*	
			WSA vs. WEMAP	0.93	0.80	0.13	<0.001*	
		XER only (n = 53)	CA vs. WSA	0.75	0.87	0.12	0.005*	paired t-test
			CA vs. WEMAP	0.75	0.74	0.00	0.938	
			WSA vs. WEMAP	0.87	0.74	0.12	<0.001*	
	Ecoregion Comparison	*MTN vs. XER*	CA	0.87	0.75	0.12	0.006*	2 sample t-test
			WSA	0.93	0.87	0.06	0.156	
			WEMAP	0.80	0.74	0.05	0.248	
MMI	***Index Comparison***	*Both Ecoregions (n = 68)*	CA vs. WSA	0.65	0.88	0.23	<0.001*	paired t-test
			CA vs. WEMAP	0.65	0.77	0.12	<0.001*	
			WSA vs. WEMAP	0.88	0.77	0.11	<0.001*	
		MTN only (n = 30)	CA vs. WSA	0.80	1.00	0.20	<0.001*	paired t-test
			CA vs. WEMAP	0.80	0.88	0.07	0.009*	
			WSA vs. WEMAP	1.00	0.88	0.13	0.018	
		XER only (n = 38)	CA vs. WSA	0.53	0.78	0.24	<0.001*	paired t-test
			CA vs. WEMAP	0.53	0.69	0.15	<0.001*	
			WSA vs. WEMAP	0.78	0.69	0.09	0.006*	
	Ecoregion Comparison	*MTN vs. XER*	CA	0.80	0.53	0.27	<0.001*	2 sample t-test
			WSA	1.00	0.78	0.23	0.0219	
			WEMAP	0.88	0.69	0.19	0.001*	

Table 7. Counts of CA sites declared impaired (I) and not impaired (NI) by CA O/E estimates and corresponding WEMAP and WSA O/E estimates. WSA-Adjusted: Impairment thresholds set at 5th percentile for each ecoregion.

		CA Sub-model 1 (n = 58)		CA Sub-model 2 (n = 44)		CA Sub-model 3 (n = 25)		Total (n = 127)		All Sites
		I	NI	I	NI	I	NI	I	NI	
CA	I	13	-	16	-	6	-	35	-	35
	NI	-	45	-	28	-	19	-	92	92
WEMAP	I	10	7	11	8	4	3	25	18	43
	NI	3	38	5	20	2	16	10	74	84
WSA	I	5	1	7	2	0	1	12	4	16
	NI	8	44	9	26	6	18	23	88	111
WSA-Adjusted	I	9	4	9	4	0	1	18	9	27
	N	4	41	7	24	6	18	17	83	100

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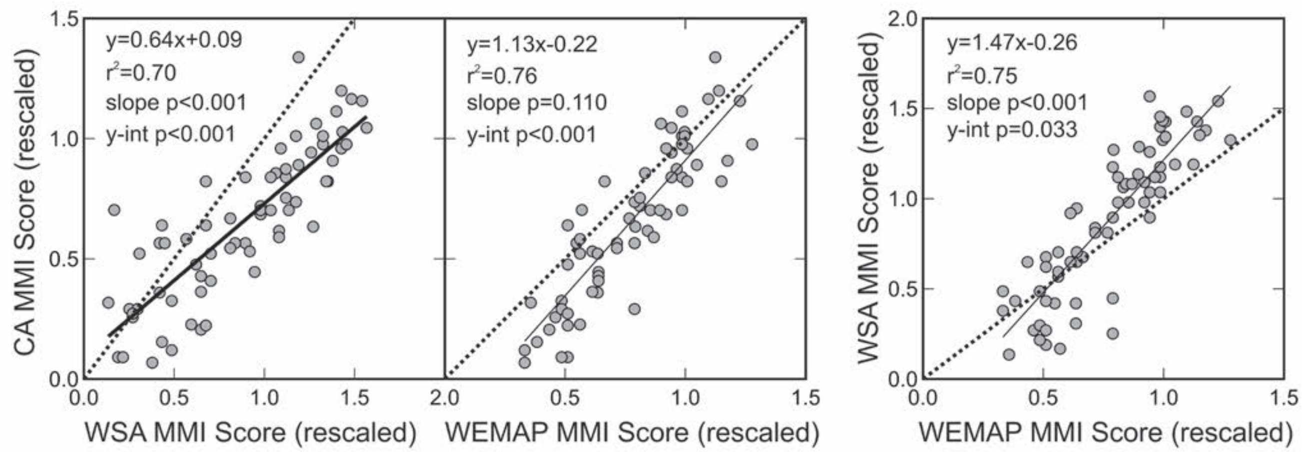

Figure 7. Regressions between rescaled scores at CA test sites between rescaled index scores for different combinations of the MMIs. The dashed diagonal lines represent perfect 1:1 relationship between the models, and the thick and thin solid lines indicate linear best-fit relationships. Significance tests are for y-intercept (y-int) = 0 and slope = 1.

among indices were variable. These differences lead to the WEMAP O/E index having similar sensitivity to the CA O/E indices, whereas the WSA-West O/E index was less sensitive. The difference between these two large-scale indices appeared to be largely associated with differences in their responsiveness. The MMI comparisons showed the opposite response in that the WEMAP MMI was slightly more sensitive than the CA MMI in mountain regions while the WSA-West MMI was less sensitive than the CA MMI in xeric regions. As we saw for the O/E comparisons, the differences between the WEMAP and WSA-West MMI sensitivities were also most clearly associated with differences in their responsiveness.

Discussion

The multiple spatial scales over which environmental gradients influence the taxonomic and functional composition of freshwater assemblages has been the focus of considerable interest in recent

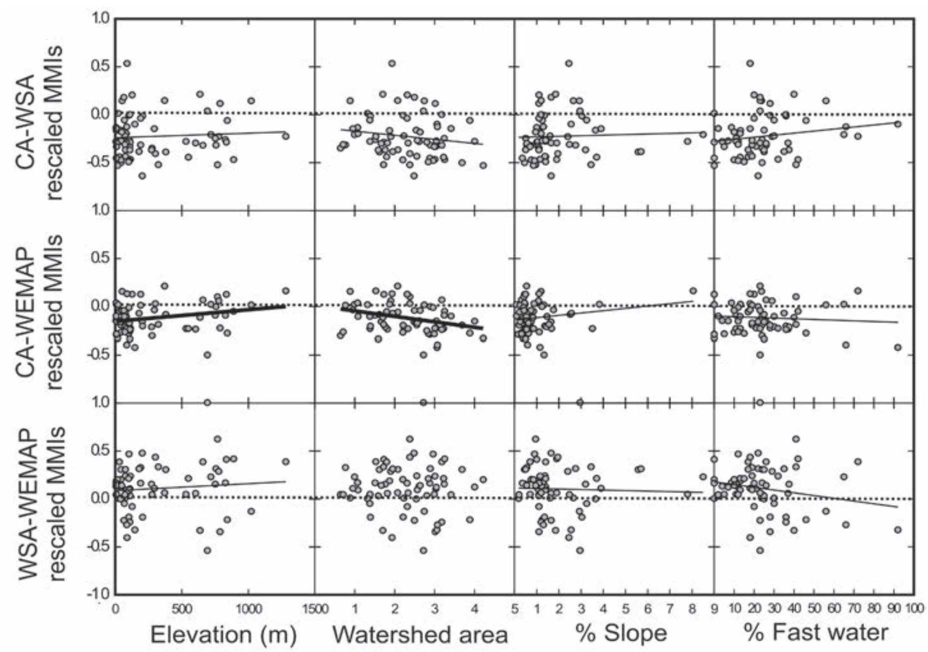

Figure 8. Scatterplots and regressions between the pair-wise differences in rescaled MMI values for the three different MMIs and four environmental gradients at CA test sites. The dashed horizontal lines represent zero difference. Thick solid lines denote regressions with r^2 and slopes significantly different from 0; thin solid lines denote those with intercepts significantly different from 0 but non-significant slope.

Table 8. Counts of CA sites declared impaired (I) and not impaired (NI) by CA MMI estimates and corresponding WEMAP and WSA MMI estimates.

		CA Mountain (n = 30)		CA Xeric (n = 38)		Total (n = 68)		All Sites
		I	NI	I	NI	I	NI	
CA	I	10	-	29	-	39	-	39
	NI	-	20	-	9	-	29	29
WEMAP	I	5	1	15	0	20	1	21
	NI	5	19	14	9	19	28	47
WSA	I	5	1	11	0	16	1	17
	NI	5	19	18	9	23	28	51

years (Poff 1997, Johnson *et al*. 2004, Johnson *et al*. 2007, Heino *et al*. 2007, Hoeinghaus *et al*. 2007, Mykrä *et al*. 2007, Mykrä *et al*. 2008). At the heart of all of these studies is a desire to clarify understanding of the factors that determine species distribution limits, one of the central goals of ecological theory (Levins 1966, Wiens 1989, Peters 1991, Brown *et al*. 1996, Guisan and Zimmermann 2000). This issue has significant implications for the utility of biotic indices because their effectiveness depends understanding how distribution patterns of individual taxa are influenced by landscape and waterway environmental heterogeneity, and how those effects are expressed at different scales of observation.

Index Comparability

O/E indices

Matching test sites with appropriate reference condition is a critical element of all bioassessments (Moss *et al*. 1987, Hughes *et al*. 1995, Stoddard *et al*. 2007). Errors in specifying the correct reference condition can lead to either under- or over-estimates of the true biological condition at individual sites. Our results show that the failure of the large-scale predictive models to account for the effects of some naturally occurring environmental factors caused substantial systematic differences among the O/E values derived from these models relative and those derived from the CA models. The fact that the most spatially extensive models (WEMAP and WSA-West models) did not adjust for the effects of local environmental heterogeneity (i.e., slope, percent fast-water habitats) on E, and hence O/E, shows that such spatially extensive models may have limited applicability for site-specific assessments and use of these assessments to generate regional assessments. There are several reasons the more spatially extensive models may have failed to account for the effects of reach slope and percent fast water on assemblage composition. First, available map-derived variables may not have been good surrogates for these variables when used at large scales. For example, watershed area is likely related to one or more factors that influence taxa presence at a site, including channel slope and amount of fast-water habits (Hynes 1970, Allan and Castillo 2007). However, watershed area might not be consistently associated with channel slope across a region the size of the western United States. In the three sets of models we examined, watershed area appeared to account for differences among sites in channel reach for only the spatially less extensive CA models. Even in those models that used direct measures of channel slope as a predictor variable (e.g., the WSA-West model), the relationship between invertebrate taxa and slope may be obscured by strong relationships between invertebrate composition and predictors that vary markedly across regions, such as temperature and precipitation. Furthermore, a predictive model based on linear relationships between biotic composition and predictor variables will fail to accurately describe any non-linear relationships and hence inaccurately predict the taxa that should occur under specific states of that variable. In contrast, over a smaller range of environmental conditions, surrogate predictors such as watershed area, temperature, or precipitation may adequately capture differences between sites in local habitat features such as channel slope and type of habitat. In general, these problems of prediction bias might be reduced in the future by both improving how well reference site networks represent all

Table 9. Summary of differences in precision, bias, responsiveness, and sensitivity of the WEMAP and WSA indices relative to CA indices. M = mountain ecoregion, X = xeric ecoregion. The term "similar" indicates no statistical difference; the terms "lower" and "higher" indicate the direction of a significant difference.

Performance Measure	O/E		MMI	
	WEMAP	WSA	WEMAP	WSA
Precision	Lower	Lower	Similar	Lower
Bias	Yes	Yes	Yes	Yes
Responsiveness	Lower	Lower	Lower	Lower
Sensitivity	Similar	Lower	Lower	Lower

streams of interest (in terms of both sample size and types of streams) and by using robust predictors such as Random Forests (Cutler *et al*. 2007) that do not assume linear relationships.

The fact that the WSA-West model strongly underestimated impairment relative to the CA model has at least two possible explanations: 1) poorer precision in the WSA-West model resulted in lower impairment thresholds and thus fewer impairment decisions, and 2) WSA underestimated the probabilities of capture of some of the taxa that contribute to the O/E calculations. The second result could have arisen if the reference sites used to predict the fauna in California streams were less rich on average than the otherwise similar California sites assessed. Vinson and Hawkins (1996) reported that invertebrate taxa richness in streams draining mountainous regions of California (Coast Range Mountains and Sierra Nevada) was higher than streams draining other mountainous regions in the western USA. Models based on a mix of reference sites from across the western United States might therefore be expected to under-predict richness at CA mountain sites. This explanation seems plausible for the WSA-West model, because average WSA-West O/E values for CA mountainous reference sites were greater than 1 on average (Sierra Nevada = 1.04, Southern Coastal Mountains = 1.11, and Klamath Mountains = 1.04). However, WEMAP reference site O/E values did not exhibit this trend. It seems prudent that we should refine models to explicitly account for the effects of biogeographic history on taxa richness. Such modeling might be accomplished through the use of categorical predictive variables that classify sites by their relevant zoogeographic region rather than general purpose ecoregions (Hawkins and Vinson 2000, Hawkins *et al*. 2000b). The contrasting result for the WEMAP model (i.e., that WEMAP model did not underestimate impairment relative to the CA model despite precision values intermediate between the CA and WSA models) is likely the consequence of the tendency of the WEMAP model to score sites lower than the WSA model.

Multimetric indices

Although, agreement among the MMI scores was considerably stronger than for the O/E indices, the relationships between scores were not consistent across the scoring range, indicating differences in responsiveness of the indices at low vs. high biotic condition sites. Also, although the WEMAP and WSA-West MMIs were derived from nearly identical datasets, there were numerous differences in the performance of the two larger MMIs, including precision, responsiveness and sensitivity. These differences reflect the different approaches used to develop the MMIs (Ode *et al*. 2005; Rehn *et al*. 2005; Stoddard *et al*. 2005, 2008).

Differences in MMI responsiveness were likely caused by one or more of the following: 1) differences in how metrics were scaled in the separate indices, 2) differences in the quality of sites used to calibrate the indices, or 3) differences in how individual metrics in each MMI respond to stress. Because there was considerable overlap in metrics among the indices, much of the difference among the MMIs in their assessments probably lies in differences in the scoring ranges of specific metrics. For example, although the number of EPT taxa is a nearly ubiquitous metric in MMIs (Karr and Chu 1999), the scoring range for this metric varies among regions. An EPT scoring range established from reference site data combined across a large spatial extent will not necessarily reflect local reference conditions. In some regions, test sites will be underscored; in others they will be overscored. We found evidence of this effect in the number of disagreements in impairment decisions made under the different MMIs. Furthermore, the WSA-West MMI did not indicate a difference in biotic condition between mountain and xeric test sites, whereas the CA and WEMAP MMI did. This finding was echoed in the way impairment decisions differed between WEMAP and WSA-West indices in xeric and mountain regions. Both WEMAP and WSA-West MMIs tended to overestimate impairment at mountain sites relative to the CA MMI, whereas the WSA-West MMI underestimated impairment at xeric sites relative to the CA MMI.

A final potential explanation is that differences in MMI performance were related to differences in the calibration sets used to derive the metric scoring ranges. Because MMIs are calibrated with both reference and test data, any difference in the biological quality of either set of calibration sites can affect a site's scoring, just as they can in O/E models (Hawkins 2006). Because of incomplete information regarding the quality of reference and test sites used to calibrate the different indices, how seriously such differences affected index performance could not be addressed at this time.

Effects of spatial scale on index performance

It has been long known that taxonomic composition is influenced by natural environmental gradients. How these relationships are expressed at different spatial scales, and hence affect biological indices, is much less clear, but is of increasing interest (Finn and Poff 2005, Heino *et al*. 2007, Cao *et al*. 2007, Mykrä *et al*. 2008). MMIs and predictive models use different methods for accounting or adjusting for natural gradients. Predictive models are explicitly designed to describe how natural environmental gradients affect the distribution of individual taxa (Wright *et al*. 1989, 2000). However, some natural gradients may be important at certain geographic scales, but cease to matter at other scales, as shown in this study and elsewhere (Mykrä *et al*. 2008).

In contrast to O/E indices, MMIs attempt to minimize the effects of natural gradients by a priori classification of reference sites into environmentally homogeneous sets of sites. In addition, metrics are selected to be insensitive to natural gradients, or by adding correction factors that adjust for scoring differences along gradients (Karr and Chu 1999). In this study, for example, scoring ranges for the EPT richness metric varied little across spatial scales within ecoregions (Ode *et al*. 2005; Rehn *et al*. 2005; Stoddard *et al*. 2005, 2008), and the CA MMI for the North Coast explicitly corrects for watershed area in affected metrics (Rehn *et al*. 2005).

In this study, the large-scale predictive models were not completely successful in adjusting for two of the gradients (percent slope and percent fastwater habitats) we examined. Likewise, the CA and WSA-West MMIs were not completely effective at controlling for an elevation gradient.

Index performance and model traits

All the biological indices in our evaluations produce scores by comparing biological expectations to observed biology. Although E in O/E is explicitly modeled (i.e., predicted), MMI expectations are derived from a set of reference sites that are grouped (by ecoregion, stream size, etc.) to maximize similarity of the biological assemblages at reference sites. Thus, both O/E and MMI are indices based on modeled expectations. Levins (1966) postulated that there is an inherent tradeoff among three desirable model traits: reality (i.e., accuracy, or lack of bias), precision, and generality (see also Guisan and Zimmermann 2000). Although these model traits are not necessarily mutually exclusive, we cannot expect the models used to predict biotic conditions to optimize each trait. In creating standardized indices applicable across a large range of geoclimatic conditions, generality was improved at the expense of both reality and precision. This tradeoff points to the need to develop more localized models for bioassessment programs, especially those that use biocriteria to infer if streams are supporting their designated aquatic life uses. However, the fact that impairment decisions can be very sensitive to the thresholds used to define impaired conditions (as seen when an ecoregion-based correction was applied to the WSA-West model for O/E comparisons), suggests that it may be possible to adjust for some of the systematic differences among the models. Larger models could be rendered more suitable for local application by calibrating impairment thresholds to local reference conditions. In practice, a local regulatory entity could recalculate the standard deviations for O/E or MMI models based only on local reference sites and use these to set locally relevant thresholds.

Concluding Remarks

The answer to the central question of whether indices developed from geoclimatically extensive data can substitute for more locally produced indices depends both on their intended use and the type of indicator. In regional condition assessments, accuracy (lack of bias) is more important than precision. That is, for low precision can be compensated by looking at large numbers of samples with the expectation that the estimated average condition will still be accurate. For the purpose of regional assessments, use of the WEMAP O/E index produced results that were generally comparable to the CA indices. In contrast, because of its strong bias, the WSA-West O/E index would probably underestimate regional impairment. Likewise, lower precision and differences in responsiveness across the scoring range make the WSA-West MMIs less desirable for regional condition assessments.

For site-specific assessments, where both accuracy and precision are important, it seems clear that locally derived indices should outperform large-scale indices for both types of index (see also Mykrä *et al*. 2008). Because most applications of bioassessment tools are site-specific, there is a clear need to continue to develop regional models that explicitly take locally important gradients into account (Heino *et al*. 2007). However, because the WEMAP MMI had similar precision and WEMAP MMI scores were highly correlated with CA MMI scores, the WEMAP MMI might provide an acceptable substitute in California (and potentially other regions in the western US) until local MMIs are developed, assuming care is taken to adjust impairment thresholds to reflect local reference conditions.

Finally, these results suggest three related applied research needs: 1) identifying the geographic or geoclimatic scale that optimizes index performance, 2) determining the factors that most strongly influence index performance and identifying the geographic scales at which they vary, and 3) identifying ways of more accurately specifying the reference condition from geoclimatically extensive sets of reference site data. It is not known much about which factors influence the optimal geographic scale for producing either predictive models or multimetric indices, but the rapidly expanding field of bioassessment would benefit greatly from the ability to predict these factors.

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Appendix 5

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SWAMP
Surface Water Ambient Monitoring Program

Final Technical Report | **2009**

Recommendations for the Development and Maintenance of a Reference Condition Management Program (RCMP) to Support Biological Assessment of California's Wadeable Streams

March 2009

California Water Boards

www.waterboards.ca.gov/swamp

Recommendations for the development and maintenance of a reference condition management program (RCMP) to support biological assessment of California's wadeable streams

Report to the State Water Resources Control Board's
Surface Water Ambient Monitoring Program (SWAMP)

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March 2009

Technical Report 581

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EXECUTIVE SUMMARY

Direct measures of the ecological condition of waterbodies have received a recent surge in interest within California's water quality management and regulatory programs because biology-based assessments have several advantages over chemistry- or toxicity-based assessments. Biological assessments are more closely linked to the beneficial uses to be protected and chemistry- or toxicity-based criteria usually lack the predictive ability to infer biological condition. Ultimately, California needs to develop biology-based standards, or biocriteria, as a regulatory tool for monitoring and protecting aquatic life use.

Biological assessment tools, including biocriteria, attempt to objectively "score" the biological integrity at a given site. A crucial component to the development of assessment tools is understanding biological expectations at reference sites that consist of natural, undisturbed systems. These reference systems set the biological condition benchmarks for comparisons to the site(s) being evaluated. Two recent external reviews of the State Water Board's Surface Water Ambient Monitoring Program (SWAMP) affirmed the importance of a sound statewide reference condition program (i.e., TetraTech 2002, SPARC 2006).

In October 2007, the SWAMP bioassessment committee assembled a technical panel of statewide and national experts in bioassessment. The panel met for three days to develop a set of recommendations that the SWAMP program could use to establish and maintain a comprehensive reference condition management program (RCMP). The program accounts for biological variation caused by natural environmental gradients and balances statewide consistency with the flexibility needed to adapt to California's diverse regional settings. Furthermore, the plan allows for adaptive refinement over time.

The panel defined a general strategy for establishing the RCMP that has four components:

1. California will be divided into different geographic regions based on coarse biogeographic similarities in order to partition some of the natural variability among regions (these boundaries should be consistent with those used for the SWAMP Perennial Streams Assessment)
2. A pool of reference sites will be assembled within each region through a sequential process of identification and screening of candidate sites
3. The sites within each reference pool will be managed through iterative review of data to refine regional boundaries, ensure continued suitability of sites and ensure adequate representation of natural gradients
4. A monitoring design will be created for sampling this pool of reference sites to document the range of biological and physical condition at reference sites, and monitor for changes to this condition over time

The panel recommended identifying and screening candidate locations to create a pool of verified reference sites using either a "standard model" or an "alternative model". The standard model will cover the vast majority of the state where high quality sites are available. The alternate model will apply in those regions where an insufficient quantity of high quality sites exist and another strategy is required for selecting candidates for the reference pool. This may include regions such as the agriculturally dominated Central Valley or the intensely urbanized southern California coastal plain.

The standard model is a synthesis of widely used techniques for selection and screening candidate sites using a toolbox consisting of existing site data, GIS techniques, expert knowledge and site visits. The alternative approach consists of two general strategies: 1) modification of standard tools (e.g., lowering the GIS screening thresholds, collecting more intensive site data) and 2) use of non-standard approaches. The non-standard approaches include:

- Select best sites using existing biological indices
- Species pool approach
- Factor-ceiling approach
- Model taxon preferences for limiting environmental gradients

These different approaches are not mutually exclusive and several panel members recommended they be used in combination to provide weight-of-evidence that candidate sites are acceptable for the reference pool in these difficult locations.

The panel outlined a monitoring strategy for the RCMP, which included recommendations for sampling methods, sampling density and frequency, and the set of biological, chemical and physical attributes that should be collected at each reference site. The panel strongly recommended that the RCMP should be compatible with ongoing statewide monitoring programs such as the newly developed SWAMP Perennial Streams Assessment. For the monitoring design, the panel recommended both random and targeted sites. A probabilistic rotating panel was suggested for the random design because it provides an unbiased method for defining natural variability while still optimizing large-scale trend detection. Targeted repeated sampling designs are useful for detecting trends at specific locations; some of these sites have been sampled for years and provide a rich history that should not be lost.

To guide the SWAMP program as it implements the RCMP, the panel made a series of recommendations for prioritizing the elements of the plan. The panel recommended that the implementation begin by screening existing datasets for reference sites, followed by a combination of GIS screens and site visits to fill in gaps in regions with few reference sites.

FOREWORD

The recommendations in this document were developed by a technical panel composed of experts in bioassessment. The panel reflected a broad range of local, statewide, and national experiences with freshwater bioassessment, specifically with defining reference conditions for bioassessment and biocriteria. The panel met for three days on October 17-19, 2007 to outline the content of this document. The meeting followed a four-step process:

1) Defining the background of the problem
2) Establishing a set of guiding philosophies for the development of a reference site management plan
3) Providing general guidance by outlining an overall approach
4) Providing detailed guidance for specific technical issues

This document follows a similar format. This document captures all of the items agreed to by consensus of the group and attempts to point out diverging opinions or unresolved issues. On occasion, we expand on key concepts that were implicit to our discussions, but may not have been discussed directly. Where appropriate, we use sidebars, tables, and figures to illustrate key concepts or provide additional information. Thank you to Dr. Robert Hughes (Oregon State University) for additional document review.

Panel Members (from left to right): David Herbst (University of California at Santa Barbara, Sierra Nevada Aquatic Research Laboratory), Peter Ode (California Department of Fish and Game, Aquatic Bioassessment Laboratory), Raphael Mazor (Southern California Coastal Water Research Project), D. Phil Larsen (US EPA retired, Western Ecology Division), Andrew Rehn (California Department of Fish and Game, Aquatic Bioassessment Laboratory), Lenwood Hall (University of Maryland, Wye Research and Education Center), Terrence Fleming (US EPA Region IX, Office of Water), Charles Hawkins (Utah State University, Western Center for Monitoring and Assessment of Freshwater Ecosystems), Alan Herlihy (Oregon State University, Department of Fisheries and Wildlife), Kenneth Schiff (facilitator, Southern Coastal California Water Research Project).

CONTEXT: LINKING BIOASSESSMENT TO BIOCRITERIA[1]

Aquatic bioassessment is the applied science of interpreting the ecological condition of waterbodies directly from the organisms that inhabit them. Biocriteria are narrative or numeric standards that define whether the integrity of biological communities is impaired at a specific site. Water quality regulatory programs can receive many benefits from adopting biology-based standards as targets of their policies and management actions. The key to using biology-based methods effectively is the establishment of benchmarks that objectively define the biological expectations (or potential) of a given site. Reference conditions provide these objective benchmarks.

Why bioassessment?

The Clean Water Act (Section 101a) requires states to "restore and maintain the chemical, physical and biological integrity" of their waterbodies. For decades, most state water quality monitoring programs have focused on the chemical integrity (and to a lesser extent physical integrity) of waterbodies largely because these parameters are relatively simple to sample, relatively straightforward to measure and evaluate, and methods for developing chemical criteria are relatively standardized. While chemical/ toxicological and physical condition monitoring may provide indirect measures of ecological condition, exclusive focus on these measures is inadequate for protection of aquatic life uses, one of the primary beneficial uses of concern in water quality management. Because many chemical/ physical water quality thresholds are based on toxicity to aquatic organisms (USEPA WQS handbook, 2nd Edition 1994), these indirect measures are often surrogates for the beneficial use that is the target of protection efforts. Furthermore, biological integrity is frequently impaired by factors other than chemical contamination (e.g., hydrologic alteration, instream and riparian habitat alteration). Ultimately, ecological condition assessments provide the most appropriate assessment endpoint for protecting beneficial uses associated with aquatic life.

Why biocriteria?

Adoption of biology-based regulatory standards has the potential to provide significant enhancements to the protection of water resource integrity because biocriteria provide a regulatory mechanism for applying bioassessment's benefits to numerous water resource objectives.

The State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) is supporting the biocriteria goal by developing tools for using benthic macroinvertebrates as indicators of the health of aquatic life in perennial streams. SWAMP's objective is to develop the bioassessment infrastructure (i.e., standardized methods, analytical tools, objective reference conditions, interpretive framework) that will enable water quality programs to employ biocriteria in a variety of regulatory applications.

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[1] Much of the information summarized in this section was synthesized from several key sources: Barbour *et al*. 1996a, Karr 1995, 1997, Stoddard *et al*. 2006.

Importance of reference conditions to bioassessment and biocriteria

The development of chemical criteria for aquatic life follows a relatively straightforward process in which numerical standards are based on results from lab-based toxicity testing. For most chemical contaminants, management objectives are focused on keeping concentrations below these toxicity-derived numerical thresholds. In contrast, biological objectives are based on maintaining the integrity of an assemblage (or multiple assemblages) of organisms. The challenge in developing biocriteria is translating what is currently a narrative standard into an ecologically relevant numerical standard. Development of biological criteria, however, is complicated by the fact that the composition of stream communities varies naturally even in the absence of anthropogenic stress. Thus, biocriteria will require a fundamentally different approach to establishing the expectations for unimpaired waterbodies.

Reference conditions (based on reference sites) provide a widely accepted mechanism for defining appropriate expectations and accounting for this natural variability (Hughes *et al*. 1986, Barbour *et al*. 1996, Karr and Chu 1999, Bailey *et al*. 2004). Reference sites are sections of streams that represent the desired state of stream condition (*sensu* Meyer 1997) for a region of interest. Once suitable reference reaches have been identified, these are used to characterize the range of biotic conditions expected for minimally disturbed sites. Deviation from this range is then used as evidence that test sites are impaired. [2]

A standardized lexicon of terms used to define biological expectations (adapted from Stoddard *et al.* 2006):

Reference Condition (RC(BI)) — Because this term has been used for a wide range of meanings, Stoddard *et al.* (2006) argue that the term should be restricted to meaning "reference condition for biological integrity" — in the absence of significant human disturbance or alteration"

Minimally Disturbed Condition (MDC) — stream condition in the absence of "significant" human disturbance. Assumes all streams have some anthropogenic stresses, but in most cases will approach true RC(BI)

Historical Condition (HC) — stream condition at a specific point in time (e.g., pre-Columbian, pre-industrial, pre-intensive agriculture, etc.)

Least Disturbed Condition (LDC) — the best physical, chemical and biological conditions currently available ("the best of what's left"). This definition is sufficiently flexible to establish biological expectations even in highly altered systems

Best Attainable Condition (BAC) — the expected ecological condition of least disturbed sites given use of best management practices for an extended period of time. This definition is helpful for communicating the potential for improving ecological condition above the currently best available conditions

Tiered aquatic life use (TALU) framework

The potential for biocriteria to improve aquatic life beneficial use protection can be greatly enhanced by a flexible framework for interpreting beneficial use attainment in a variety of settings. The current system of aquatic life use designations in California is outdated and does not adequately take advantage of advances in our ability to assess aquatic life use attainment. The USEPA and other states (notably, Maine and Ohio) have recognized this problem and have

[2] Approaches to the selection of reference sites have been discussed extensively (Hughes and Larsen 1988, Hughes 1995, Rosenberg *et al.* 1999, Stoddard *et al*. 2006). Although there has been much debate about terminology used to describe expected biological conditions, the concept is flexible and can be applied either very narrowly (e.g., the condition of waterbodies before European invasions) or more broadly (e.g., the "least disturbed" or "best available" conditions currently found in a region of interest). The strategy in this document follows terminology usage recommended by Stoddard *et al*. 2006 (see text box).

developed a “tiered” system of aquatic life use designations, which utilize the power of biological information to develop graduated levels of protection.

“Tiered aquatic life uses” (TALU), supported by numeric biocriteria, can be thought of as defining different management levels for biological condition across a quality continuum that ranges between “natural” conditions to complete loss of the natural biological community (Figure 1). In the TALU system, “tiers” represent classes of waterbodies that are grouped based on similarities in anthropogenic disturbance levels, resulting biological condition, and recovery potential (USEPA 2005). Under this flexible system, designated uses to support aquatic life can cover a broad continuum of biological conditions, with some waters being closer to the ideal of “natural” or “minimal human impact” than others. Biocriteria applied in a framework of TALU designations can help shift the regulatory focus from performance-based standards (e.g., limiting the number of chemical criteria exceedences) to impact-based standards (e.g., attainment of ecological condition targets).

Reference conditions play two distinct roles in the TALU framework

The y-axis in the TALU framework (see Figure 1) is biological condition, a scale that measures ecological integrity of a site. The upper limit of the biological condition axis is anchored by an idealized target that represents the natural state of ecological conditions, or RC(BI) in the strict sense of Stoddard *et al.* (2006).

In addition, within each tier, there is some best attainable condition (BAC, *sensu* Stoddard *et al.* 2006) for waterbody classes in these tiers.

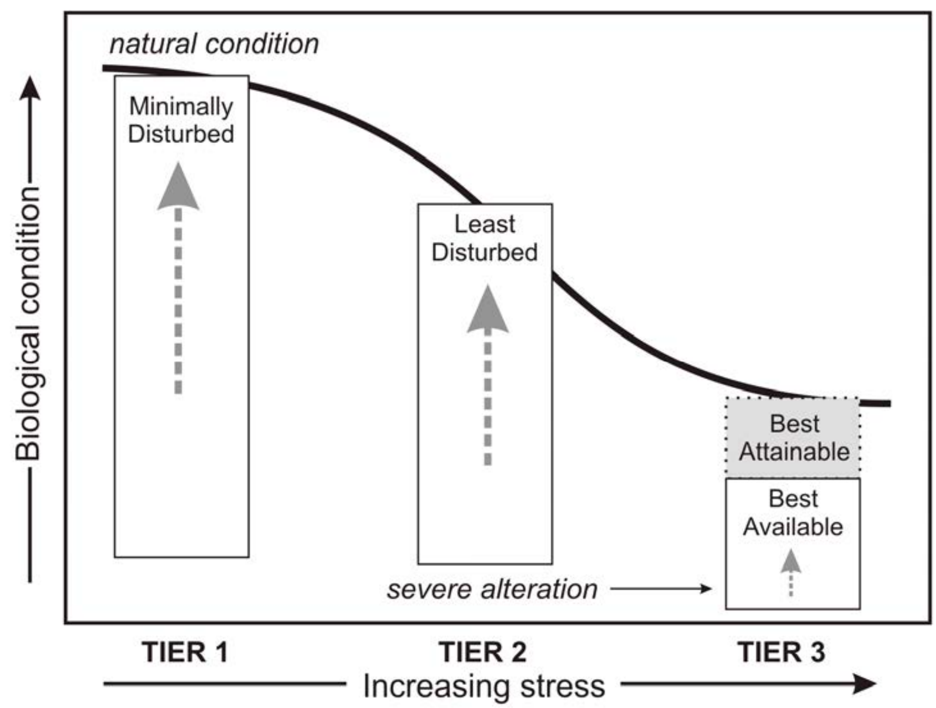

Figure 1. The biological condition gradient (BCG) used to define stream condition tiers in the TALU framework. Boxes indicate the expected range of biological condition scores at sites within each tier. Figure modified from Stoddard *et al*. 2006.

INTRODUCTION

General background

As the use of biological information in states' water quality regulatory programs has expanded across the US, these programs have followed a typical progression in which biosurveys (collection of biological samples, often as supplements to existing chemical monitoring) are followed by bioassessments (assessing ecological condition from biological data), finally progressing to full biocriteria (use of biological data to make regulatory decisions about aquatic life use condition).

As other programs proceeded along the path toward standardized interpretation of bioassessment data, they all recognized the need for grounding their programs with explicitly defined expectations for biological condition. Although criteria and procedures used to identify reference sites vary from program to program, the basic approaches used by most programs are quite similar. A partial review of water quality assessment programs in the North America (both state and federal programs), European Union (Water Framework Directive) and Australia (Water Reform Framework) revealed that many programs employed a similar GIS-based landscape-scale analysis to identify candidate watersheds, followed by site reconnaissance to evaluate reach-scale impacts (Barbour *et al*. 1996a, Whittier *et al*. 1987, Rosenberg *et al*. 1999, ANZECC and ARMCANZ 2000, Drake 2003, REFCOND 2003, Grafe 2004).

Reference sites manage natural variation

The composition of organisms at a site is a function of both natural and anthropogenic factors. These factors can be viewed as a series of "filters" that determine which taxa occur at a site (Poff and Ward 1990, Poff 1997, Statzner *et al*. 2001). For example, the pool of benthic macroinvertebrate taxa occurring within a large region like California's Sierra Nevada is a function of large scale processes (e.g., parent geology, climate and evolutionary history); the subset of taxa that occur at a given site at a given point in time is determined by a series of biotic and abiotic filters (e.g., life history traits, competition and predation, substrate composition, pH, thermal and hydrologic regimes, pollution tolerance) that further limit the occurrence of each taxon. The central challenge in bioassessment is to develop techniques that maximize the detection of signals of anthropogenic stress filters while minimizing the noise from natural filters. The identification of reference sites (that captures sources of natural variation) is a key component of most strategies for meeting this challenge (Hughes 1995, Wright and Li 2002, Bailey *et al*. 2004).

California's progress toward biocriteria implementation has followed a similar path. Since the early 1990s, bioassessment samples have been collected from more than 4000 sites by state and federal agencies alone (Figure 2). Some of these programs have been spatially extensive probability assessments of environmental condition such as the US EPA's Environmental Monitoring and Assessment Program (EMAP) and the California's Monitoring and Assessment Program (CMAP). Others are more directed studies to assess watershed-specific conditions or trends at locations of interest such as regional SWAMP monitoring, US Forest Service monitoring, and the US Geological Survey's National Water Quality Assessment Program (NAWQA). In addition, an abundance of additional sites have been sampled for National Pollutant Discharge Elimination System (NPDES) permit monitoring, and by citizen monitoring groups.

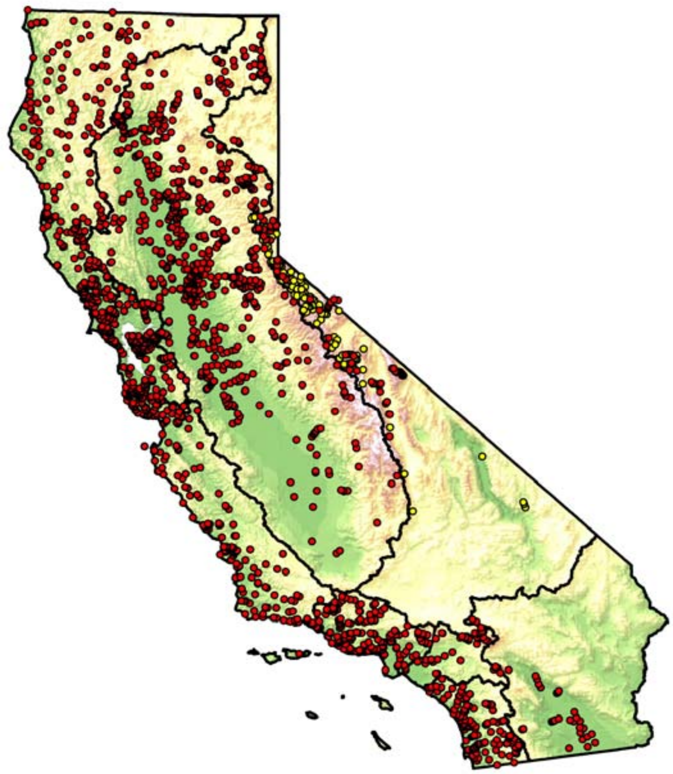

Figure 2. Approximately 3000 bioassessment sampling locations in California sampled between 1994 and 2007. Red circles represent sites processed by Aquatic Bioassessment Laboratory, yellow circles represent those processed by Sierra Nevada Aquatic Research Laboratory. More than 1000 other sites have been sampled by other state and federal agencies, permitted dischargers and citizen monitoring groups.

Because the early applications of bioassessment techniques in California were fragmented, the procedures for defining reference condition were largely *ad hoc* or project specific, with little or no attempt to apply consistent methods from project to project. Most of the reference or "control" sites used in early California bioassessment studies (e.g., point source enforcement cases, watershed specific bioassessments) were selected to define local expectations and were not selected using common criteria that would enable comparisons among projects.

Several large scale efforts to screen reference sites were undertaken in the early 2000's to support biological index development or as part of large state probability surveys: Western EMAP (2000-2003) and CMAP (2004-2007). In a concurrent effort, the USFS collaborated with scientists at Utah State University to identify over 200 reference sites on forest service lands in California between 1998 and 2000. Sites from these sampling programs were combined with other regional datasets to produce several of the main biotic indices used in California (statewide O/E models, North Coast IBI, South Coast IBI). Separate reference sites were used to develop the Eastern Sierra IBI (Herbst and Silldorf 2006).

In all of the large-scale studies between 1998 and 2007, both landscape scale and local scale factors were used for screening reference sites. Although common approaches were used to screen sites for most of these projects, little or no attempt was made to ensure consistency in screening among projects. This limits the utility of existing reference sites for statewide applications for several reasons. First, each project may use very different factors for selecting reference sites (e.g., one program may rely more on landscape scale factors while another may rely more on local scale factors). Second, some projects may use similar factors to select reference sites, but use different thresholds to screen sites (e.g., road density cutoffs or % upstream development cutoffs). Third, even when similar screening criteria are used for the same landscape or local scale factors, temporal variation in the reference site data has rarely been accounted for.

Why SWAMP needs an RCMP

The recent commitment by the SWAMP program to develop bioassessment/ biocriteria infrastructure provides us with an opportunity and impetus to standardize the reference site selection process statewide. The SWAMP program has long recognized this need, recently devoting a significant portion of its funding to developing reference condition datasets. Three recent peer reviews of SWAMP affirmed the importance of this effort:

1. In 2002, the SWAMP program funded an external review of bioassessment programs throughout California. That review was conducted by the lead author of the USEPA's bioassessment guidance document for streams and rivers.[3]

2. In 2005-06, the entire SWAMP program was peer-reviewed by an external "Scientific Planning and Review Committee" (SPARC), comprised of water quality experts from around the country.[4] The SPARC strongly recommended that SWAMP continue to develop its bioassessment program as a very high priority, specifically commenting that: a) the state board should consider revamping its entire standards program to make better use of biological endpoints (i.e., bioassessments) and b) the bioassessment program should focus particular attention on fostering consistency in its scoring indices.

3. In 2008, the USEPA (2009) conducted a Critical Elements Review of SWAMP's progress toward developing the technical elements to support biocriteria. The review stressed the fundamental importance of defining reference conditions and supported CA's reference condition strategy.

Establishing consistency in SWAMP's reference site selection process is clearly a key to effective implementation of biocriteria. However, identifying reference sites for California's perennial streams is complicated by its size (i.e., there are more than 300,000

[3] The external review, conducted by Dr. Michael T. Barbour and Colin Hill of Tetra Tech, Inc., produced a final report in January 2003 titled *The Status and Future of Biological Assessment for California Streams*, which may be viewed on the Internet at http://www.swrcb.ca.gov/swamp/reports.html
[4] The SPARC's final report is posted at:
http://www.waterboards.ca.gov/swamp/docs/reports/sparc486_swampreview.pdf

stream kilometers), diverse ecological settings (12 Level III Omernik ecoregions are present in California, Figure 3), and anthropogenic settings (vast regions of the state are entirely converted to either agricultural or urban land uses). There are many natural gradients within each ecoregion. For example, the elevation in the Southern California Coastal Ecoregion extends from sea level to 8,000 feet encompassing cold water, high gradient mountain streams, but also includes warm water, low gradient streams in the flood plain. To complicate matters further, there are extreme natural temporal cycles of dry and wet years, which may not occur in all regions of the state during the same year. This is compounded by the episodic natural disturbance of flooding and fires. Finally, human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity.

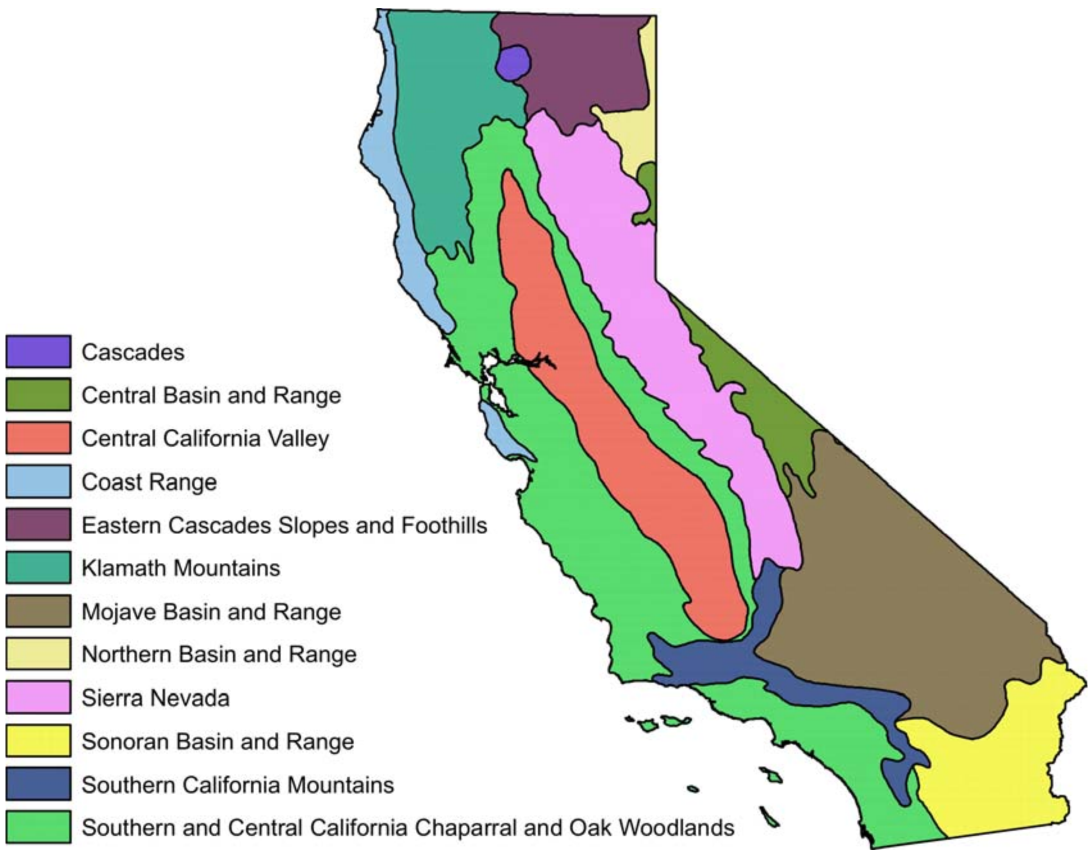

Figure 3. Boundaries of 12 Level III Omernik ecoregions present in California.

GOALS AND OBJECTIVES

This document summarizes recommendations to SWAMP for the development and maintenance of a Reference Condition Management Program (RCMP) that will support its regulatory biological assessment programs. The goal of the SWAMP RCMP is to provide an objective system for defining the expected biological and physical condition for wadeable streams and rivers in California. This system will identify pools (populations) of verified reference sites and outline procedures for sampling them to determine the range of biological expectations in these pools.

The monitoring objective

Data collected from reference sites will be used to answer a primary question: "what is the expected natural composition of lotic freshwater organisms in each of the major biogeographical regions of California"? The answer needs to be determined with sufficient rigor to serve as the basis for setting defensible numeric biocriteria. Our primary focus is on establishing expectations for benthic macroinvertebrate assemblages in perennial wadeable streams, but we expect that the approach will allow similar assessments of algal and fish assemblages as well as instream habitat condition and riparian condition.

Accounting for natural variability

An extension of the central monitoring question is: "what is the range of biotic measures (e.g., taxonomic composition, individual metrics and biological indices) in high quality sites and which natural environmental gradients (both spatial and temporal) are most strongly related to this variation." Ultimately, the goal is to identify the major sources of natural variability for all biological response measures (Figure 4). To account for these gradients, reference sites should be distributed to represent the full gradient range.

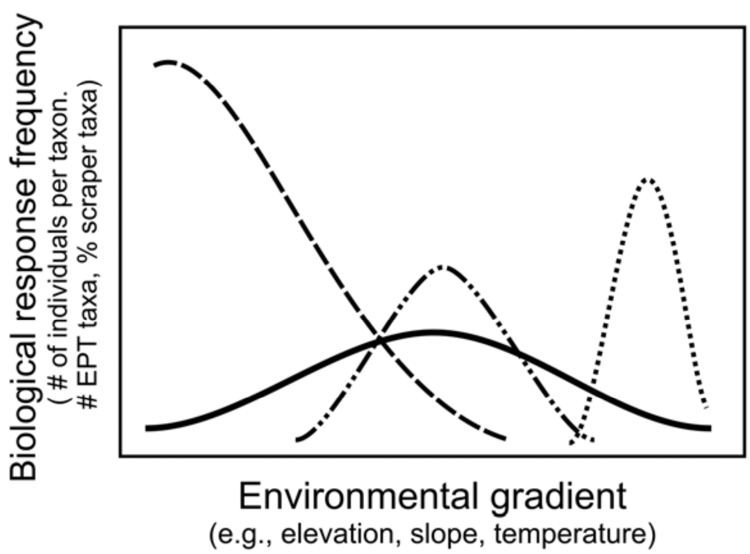

Figure 4. Hypothetical frequency distribution relationships between biological responses and environmental gradients.

GUIDING PHILOSOPHIES

In order to guide the development of the RCMP, the panel agreed upon a set of basic philosophies. These philosophical principals were used to guide their decision-making:

- **Use natural condition as the desired state whenever possible -** The panel's goal was to identify sites in natural or near-natural conditions whenever possible. However, the panel recognized that there are regions in the state where an insufficient number of sites in near-natural condition were likely to be found. The panel agreed that setting biological expectations were no less important in these regions. Therefore, the panel endeavored to identify the best attainable condition in these suboptimal regions of the state.

- **Balancing statewide consistency with regional flexibility** - The panel agreed that the reference strategy should balance a set of desirable, but sometimes naturally conflicting, traits: objectivity, consistency and flexibility. For example, a reference program that works for all of California can't be both perfectly consistent and perfectly flexible. This strategy aims to balance the competing demands of statewide consistency with the flexibility needed to adapt to unique regional conditions.

- **Reference site management is an iterative process -** The management of a reference site network is an ongoing and iterative process. The monitoring program should be responsive to new information and perspectives gained from selecting and monitoring reference sites. The general strategy should build in analysis of data to optimize selection strategies (process of selecting sites) and management design (e.g., how many sites, regional boundaries, which natural gradients to account for).

- **The RCMP should be transparent -** The technical process of determining reference conditions should be transparent to external review. As the state moves toward implementation of biocriteria, transparency and comprehension of the RCMP process will improve stakeholder confidence and provide structure for discussions about setting objective standards.

- **These recommendations are a starting point -** The panel understood that their recommendations provide a starting point for evaluating reference condition rather than an exhaustive set of operating procedures for selecting reference sites. This document is written assuming that SWAMP will develop a technical workplan that details a more refined program as the RCMP is implemented.

GENERAL GUIDANCE

The general approach for establishing the SWAMP reference site network has four components:

1. California should be divided into different geographic regions based on coarse biogeographic similarities in order to partition some of the natural variability among regions
2. A pool of reference sites should be assembled within each region through a sequential process of identification and screening of candidate sites
3. The reference pools should be managed through iterative review of data to refine regional boundaries, ensure continued suitability of sites and ensure adequate representation of natural gradients
4. A monitoring design should be created for sampling this pool of reference sites to document the range of biological and physical condition at reference sites, and monitor for changes to the condition of reference sites over time

All but the second component, site selection, apply equally to all regions of the state. The site selection process has two versions depending on the availability of high quality reference sites. We refer to the two versions in this document as: 1) the "standard model", which applies to regions with a sufficient number of reaches with relatively low levels of anthropogenic stress; and 2) the "alternate model", which applies to regions that do not have a sufficient number of high quality reaches. The vast majority of California should be able to apply the standard model.

Component I: Partitioning CA into biogeographic regions

Two general schemes are available for delineating California's ecoregions (Omernik 1995 and Bailey *et al.* 1994). We follow Omernik's divisions here because the boundary delineation decisions were generally based on a broader range of geology, climate and zoogeography than Bailey's. Omernik Level III ecoregions have been delineated for all of North America (Omernik 1995), with 12 Level III ecoregions falling in California (Figure 3).

Partitioning the state into different regions based on habitat similarities has some precedence in California bioassessment. The SWAMP Perennial Streams Assessment (PSA) has relied on a combination of Omernik ecoregions and regional board boundaries to partition the state for assessment purposes (Figure 5). Because these definitions include significant ecological gradients that contribute to natural variability in biological assemblages, and because they comprised existing assessment units, the panel agreed that these delineations were appropriate to use as initial boundaries for the reference network. However, the panel also stressed that ecoregions do not always adequately capture natural gradients that are key drivers of aquatic assemblages (insert references here, Hawkins and Norris 2000). Thus, data analyses must address the suitability of these boundaries as the program collects more data.

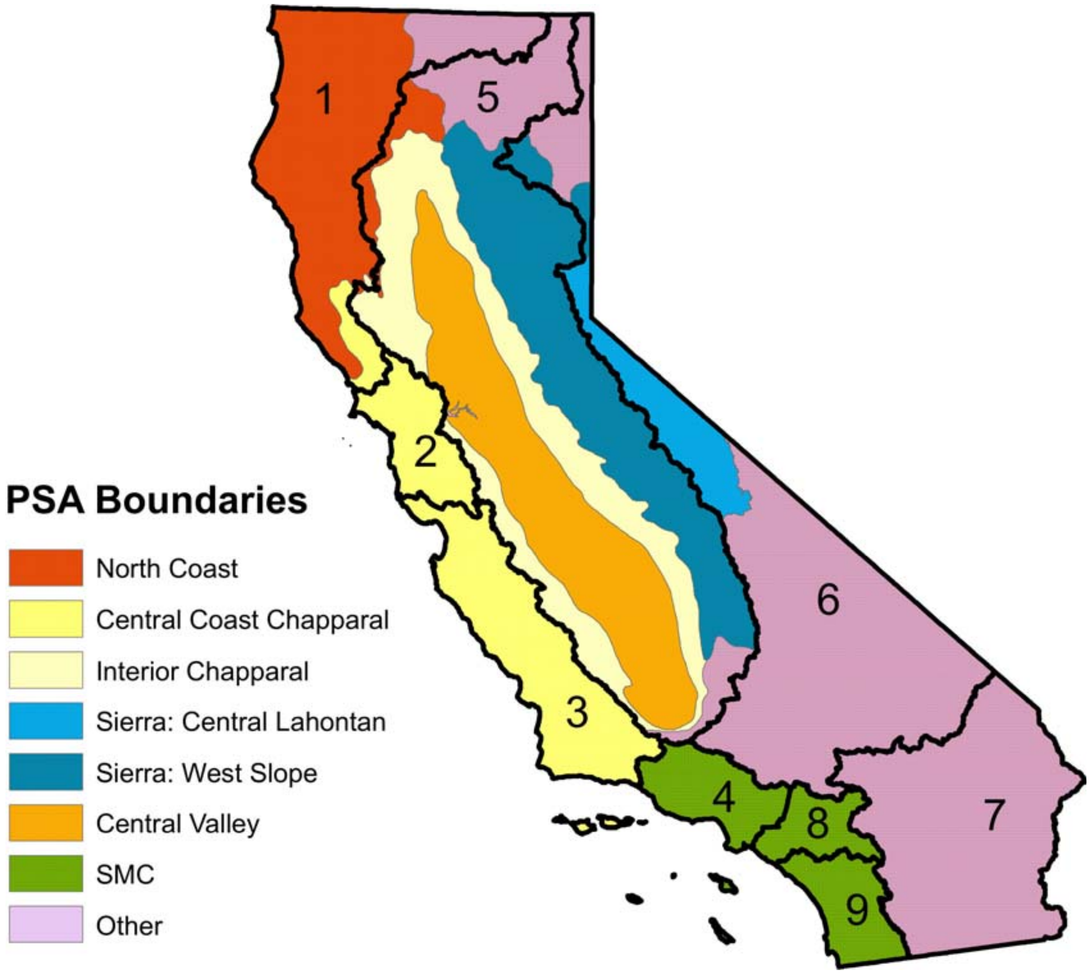

Figure 5. Boundaries used for defining the regional subunits of the SWAMP Perennial Stream Assessment (PSA) survey. SWAMP regional board boundaries one through nine are indicated by thick lines. SMC=Southern Coastal California Stormwater Monitoring Council.

Component II (a): Selecting sites: the "standard model"

The second step in the general approach is the most resource intensive and technically challenging: to develop a large pool of reference sites within each ecoregion. The ability to precisely establish biological expectations within each region is a function of the number of sites that are sampled and natural variability within each region. Therefore, the pool of reference sites should be large enough to provide a robust characterization of natural variability. Furthermore, reliance on a small number of reference sites is risky because it increases the consequences of catastrophic failure of individual sites. The size of the site pool in each region will depend on the number of major environmental gradients in each region (e.g., elevation, temperature, etc.) and the strength of influence of these gradients on biotic assemblages.

The panel recommended a sequential approach for assembling a set of candidate reference sites and screening suitable sites for the final reference pools within each region. The process includes: 1) screening data from previous site visits to identify candidate sites, 2) application of remote sensing and point-source GIS data screens of all potential stream reaches (combining landscape and local scale) to identify candidate sites, 3) use of best professional judgment/ local knowledge to add sites to the candidate pool.

Once a set of candidate sites is assembled, each candidate site should receive an on-site visit to evaluate its suitability. The exact type of data collected for evaluations during this stage will vary by region, but at a minimum should include: observations of local landuse activities, instream and channel habitat condition, riparian condition, evidence of recent natural disturbance. Some regions may require additional chemical data (water column or sediment) or toxicological data to confirm site suitability.

Sites that pass both the remote sensing and field reconnaissance screens become part of the reference pool for that region.

Component II (b): Selecting sites: the "alternate model"

The panel recognized that the standard model is not likely to work in all regions of California. The conversion of natural landscapes to agricultural and urban land uses is so extensive in some parts of the state that the entire region is devoid of waterbodies that could be used to define reference condition. Most regions of California should be able to use the standard model; the alternate model should only be used when the standard model is not feasible.

The panel defined the following criteria as triggers for acceptable use of alternate site selection strategies (both criteria must apply):

1) Insufficient high quality sites are available within one of the main regions (or a large section of one of the main regions) to adequately characterize ecological potential. Suitable stream reaches are unavailable for one or more of the following reasons:
    a) Anthropogenic landuse is a dominant factor in all watersheds within the region (or subregion)
    b) Normal flow is modified (e.g., flow diversions, dams, withdrawal or augmentation)
    c) Natural channels are altered (e.g., all or most channels converted to conveyances, irrigation supply/drains)
    d) Riparian corridors are impacted throughout the region (e.g., concretized riparian or surrounding landscape modified)

2) No comparable region exists from which to draw inference about biological expectations. That is, the areas are unique in their biological expectation so regions with few reference sites are not able to incorporate sites from another region.

This situation is not unique to California streams and many large programs have recognized the need to deal with regions with insufficient reference sites (REFCOND 2003, Stoddard *et al*. 2005, Paulsen *et al*. 2006). National guidance for developing state biocriteria programs highlighted the need for special treatment of these conditions (Barbour *et al*. 1996a,b). While the unique needs of these regions are widely recognized, the approaches for establishing ecological potential for reference-poor regions are far from standardized.

The RCMP panel outlined a general strategy for approaches to explore in reference-poor regions. The RCMP panel did not take any strong position on the relative strengths of these alternatives nor how different approaches should be combined to define expected conditions in reference-poor regions. Some of the alternative strategies included:

1. Use a modified version of the standard approach (e.g., use lower thresholds, emphasize local condition measures)
2. Alternate approaches
    a. Use existing tools to screen sites
    b. Species pool approach
    c. Factor-ceiling approach
    d. Model taxon preferences for key environmental gradients

These alternative strategies are not mutually exclusive and, when appropriate, should be used as multiple lines of evidence to reinforce an objective definition of biological expectation in regions without reference sites. In the "specific guidance" sections of this document (see Alternate Strategies for Selecting Sites) we describe these approaches and discuss strategies for applying them to California's challenging landscapes.

Component III: Managing the regional site pools

After the site pools have been assembled for each region, the RCMP requires an ongoing evaluation of data from these sites to address several key management questions. There are two major components to managing the reference pools: 1) evaluation of the regional representation of natural gradients and 2) periodic review of sites to evaluate changes to their suitability.

The ability to effectively understand natural sources of biological variation is fundamental to establishing sound biocriteria[5]. Therefore, the RCMP must directly assess the reference pools to ensure representation of regionally important natural gradients. This review should include a periodic review of the suitability of the initial regional boundaries proposed here.

The second aspect to site management is periodic review of sites in the reference pools to assess their continued suitability as reference sites. Conditions within stream reaches and in their upstream drainages can change over time (e.g., timber harvest, conversion of natural landscapes to agricultural or urban/suburban/exurban uses). Furthermore, we may discover sources of stress that were unknown when sites were initially added to the reference pools (e.g., discovery of nonpoint source discharges, mines, flow withdrawals/diversions, small-scale placer mining, etc.). Sites that fall into this category may be monitored to measure the impacts of these stressors, but they should be removed

[5] See discussion on p. 5.

from the reference site pools. In contrast, natural disturbances (e.g., forest fires, catastrophic flooding or landslides) can also alter the biological condition at sites and they should be excluded for sampling temporarily, but should remain in the reference site pool[6].

Component IV: The monitoring strategy

The panel recommended an integrated probabilistic and targeted sampling design for the RCMP. The probabilistic approach will sample a rotating subset of randomly-selected (rotating panel design) sites from within the reference pool each year to estimate average biological condition. A subset of the randomly-selected sites should be sampled annually to measure year-to-year variability at sites and improve SWAMP's ability to detect drift in reference condition within each region over time. This design provides an unbiased assessment of natural variability with enhanced trend detection.

Targeted sampling is comprised of fixed sites near locations of special interest, but this should be supplemental to the probabilistic sampling effort. Fixed sites provide additional power to detect trends, but suffer from its inability to extrapolate to other locations. However, many agencies already monitor reference sites and, provided they meet the RCMP selection criteria, these sites have the added benefit of years of historical data. As SWAMP extends its reference monitoring program through collaboration with other state and federal programs, it should retain the ability to incorporate these sites.

The panel emphasized sampling more probabilistically selected sites over targeted sites, but did not make any recommendations about relative proportion of each type. This decision should reflect the relative importance to the SWAMP program of estimating current biological expectation versus detecting changes in the reference state. Changes in the reference state may become increasingly important due to factors such as climate change.

[6] A special study of natural disturbance recovery could be especially enlightening with regard to understanding natural variation.

SPECIFIC GUIDANCE

1.0 Site Selection: Assembling the reference candidate pool

The panel recommended a sequential approach for assembling a pool of potential reference sites using a series of tools to identify candidate sites (Figure 6). The toolbox components included: 1) use of existing data from previous site visits, 2) GIS data screens of all potential stream reaches using databases of stressor data (combining landscape and local scale), 3) expert selection of site locations based on regional experience.

1.1 Use of existing sites

Previously sampled sites are an excellent source of candidate reference sites and where available in sufficient numbers, can constitute a ready-made pool of reference sites. However, previously sampled sites vary widely in the amount of information associated with them, and they fall into two categories: 1) sites with a large amount of associated environmental data that is sufficient to evaluate without additional data collection, 2) sites that require additional data collection to produce adequate evaluations. Several programs in the state have collected sufficient data to meet the first condition (e.g., EMAP, Central Valley WEMAP, CMAP, SNARL, some regional board programs), but most sampled sites fall into the second class.

The current distribution of existing candidate sites in California is illustrated in Figure 7. Sites were pre-screened from ABL and SNARL databases and sorted into one of three tiers based on the availability of different types of screening data. Under the RCMP, Tier 1 sites would pass to the pool of verified reference sites if they passed a BPJ screen (see following section), sites in other tiers would be placed in the candidate pool and be subjected to the full site screening process (Figure 6).

1.2. GIS data screens of all potential stream reaches using databases of stressor data [7]

If regions do not have sufficient existing sites to fill the final pool of fully screened reference sites (steps 1 - 3 of the general guidance), then new candidate sites should be identified through use of geographic information systems (GIS) techniques for screening remote sensing data and GIS databases of point source stressors. GIS-based searches for candidate reaches are expected to contribute the majority of sites in many regions.

Ode (2002) described a GIS based method for identifying candidate stream reaches using a series of remote sensing data filters. Under this approach, candidate watersheds are identified for a region with GIS techniques and then stream reaches within these watersheds are targeted for reconnaissance to verify reference quality characteristics. The RCMP generally follows this approach, which consists of the following steps:

[7] GIS techniques are used at two different stages of the RCMP process: 1) searching for potential new reference streams (described in this section) and 2) quantifying impacts to existing sites (described in the following section). The techniques are very similar, but differ somewhat in their application. The search phase is a relatively coarse screen of candidate watersheds while the verification phase is site specific and allows for multiple spatial scales of GIS analysis (see Figure 8).

1.2.1 Assemble GIS layers of important landuse disturbances
The list of potential impacts to stream condition is very long and includes multiple point and non-point sources of disturbance. Quantitative measures of many human or human-influenced activities are available in digital spatial (GIS) formats from various state and federal agencies (see Tables 1 and 2), but there is a very large amount of variation in the degree to which datasets are accurate, current, and consistent across wide geographical ranges.

1.2.2 Determine appropriate reporting units (areas of analysis) and create necessary GIS layers~ Current GIS applications for locating least disturbed waterbodies in a region (see ATtILA text box) calculate summary stressor metrics (e.g., % urban landuse, road density) for each reporting unit (typically watersheds) in the region of interest. Candidate stream sites are then selected from within these watershed areas. It is recommended that the RCMP use a modified version of watershed polygons developed by the national NHD+ program.[8]

1.2.3 Use ATtILA extension to calculate stressor metrics using remote sensing and point source datasets (see ATtILA text box)~ ATtILA produces summary output in a spreadsheet containing multiple stressor metrics for each candidate watershed (i.e., % agricultural landuse, % impervious surface, # of mines, # road crossings/stream km).

1.2.4 Analyze distribution of stressor metrics and select appropriate thresholds
Screening thresholds for GIS stressor metrics can be set using a variety of approaches: 1) visual inspection of frequency histograms for natural breaks in distributions, 2) statistical criteria[9] (e.g., eliminate watersheds with road densities greater than 1.5 standard deviations above the mean for all watersheds in the region, or eliminate all but the lowest 25th percentile of all road densities), 3) established (i.e., literature based) impact thresholds. At this stage in the screening process, the RCMP panel recommended the use of fairly liberal screening thresholds since GIS data are often inexact and impacted sites can be screened during later stages of the site verification process.

1.2.5 Eliminate watersheds that fail GIS screens
Because of the large number of stressor variables that are quantified in this step, there will be a large number of metrics to evaluate. The panel discussed two options for how to combine the information from these different screens:

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[8] With funding from the SWAMP program, CSU Chico's Geographic Information Center (GIC) has developed a method for creating nested watersheds from the native polygons available from the NHD+ program. The NHD+ polygons are limited in their utility as reporting units because they are non-overlapping. Thus, 2nd order watershed boundaries in NHD+ do not include their tributary 1st order basins. The GIC's modification creates new watershed polygons that are aggregates of all upstream polygons (e.g., 4th order watersheds contain all upstream 3rd, 2nd and 1st order polygons).

[9] Effective of statistical properties of distributions to define thresholds depends on a normal distribution of scores. Some distributions (e.g. highly skewed or bimodal) may be better interpreted by looking for natural breaks or using literature based criteria.

a) Screens could be applied as a series of filters, with failure in any metric resulting in elimination of the watershed from the candidate pool.

b) Alternately, a multi-metric index of stressors could be used to create a composite score for each candidate site and low scoring watersheds would be removed from the candidate pool.

The panel recommended the use of a hybrid approach, in which the multi-metric scoring would be used to screen watersheds, but "kill-switches" would be employed to eliminate watersheds that exceeded high impact thresholds for particular stressors (e.g., eliminate watersheds with > 10% urban landuse).

As an additional consideration, the panel recommended that the RCMP explore quantitative methods for deciding which impacts to use for selection. For example, some stressors may have a greater effect than others and, thus, should be weighted more heavily than relatively benign influences. A corollary would apply to data sets with different levels of confidence. For example, information about mine locations may be available, but not about which are actively contributing contaminants to streams.

ATtILA extension for GIS Landscape Analysis

http://www.epa.gov/esd/land-sci/attila/intro.htm

To quantify landuse activities occurring upstream of sites, the Ebert and Wade (2004) developed a user friendly interface that accepts a range of GIS data layers and produces summary statistics for areas defined by the user. The extension, Analytical Tools Interface for Landscape Analysis (ATtILA), is a plugin to ESRI's ArcView (version 3.x) GIS software (ESRI Products) and takes advantage of ESRI's Spatial Analyst extension to run the spatial calculations.

- The ATtILA extension calculates the percentages of various landuse activities occurring in specified areas (urban; forested; agricultural-row crops; agricultural- orchards/vineyards; agricultural-total), other correlated measures of human activity (population density; road length; road density; road crossings/stream mile; percent impervious surface), and estimated nitrogen and phosphorus loadings.
- ATtILA can use polygons of any spatial extent as reporting units (e.g., entire upstream basin, local buffers)
- In 2007, the SWAMP program provided funds for a project to adapt the ATtILA extension to meet the GIS needs the RCMP process. Specific enhancements being developed include the ability to add custom stressor coverages, summarize point source data, and facilitate rapid adjustment of stressor thresholds for screening candidate sites. The project will be coordinated with the implementation of the RCMP
- It is expected that the capabilities of the modified ATtILA extension will expand as the RCMP process develops over time.

1.2.6 Identify candidate stream reaches within candidate watersheds[10]

After eliminating watersheds using GIS screens, the remaining watersheds represent potential candidates for the reference pool. These areas may be able to be further refined to further isolate candidate stream reaches (see Figure 8).

[10] An alternative strategy is to select candidate stream segments directly using analytical tools designed to work with the NHD+ datasets. Under this approach, confluence points would be the the reporting unit and NHD+ tools would summarize all upstream landuses. Errors in the current version of NHD+ (primarily problems with flowline connectivity) currently limit the effectiveness of this approach, but it may become more useful as NHD+ improves. The RCMP should remain open to both approaches and revisit this issue as new versions of NHD are released.

1.3 Use of local knowledge to add sites to the candidate pool

Although existing data and GIS searches will contribute the majority of sites to the candidate pool, a few sites may be added to the candidate pool on the basis of local knowledge. Local knowledge can sometimes help in identifying candidate sites because GIS datasets are imperfect and GIS screens may pass over good sites because of inaccurate or outdated disturbance information. These sites, however, should be critically evaluated because subpar sites based on local knowledge will dilute the quality of the reference pool. More rigorous evaluation of these sites should include examination of existing data.

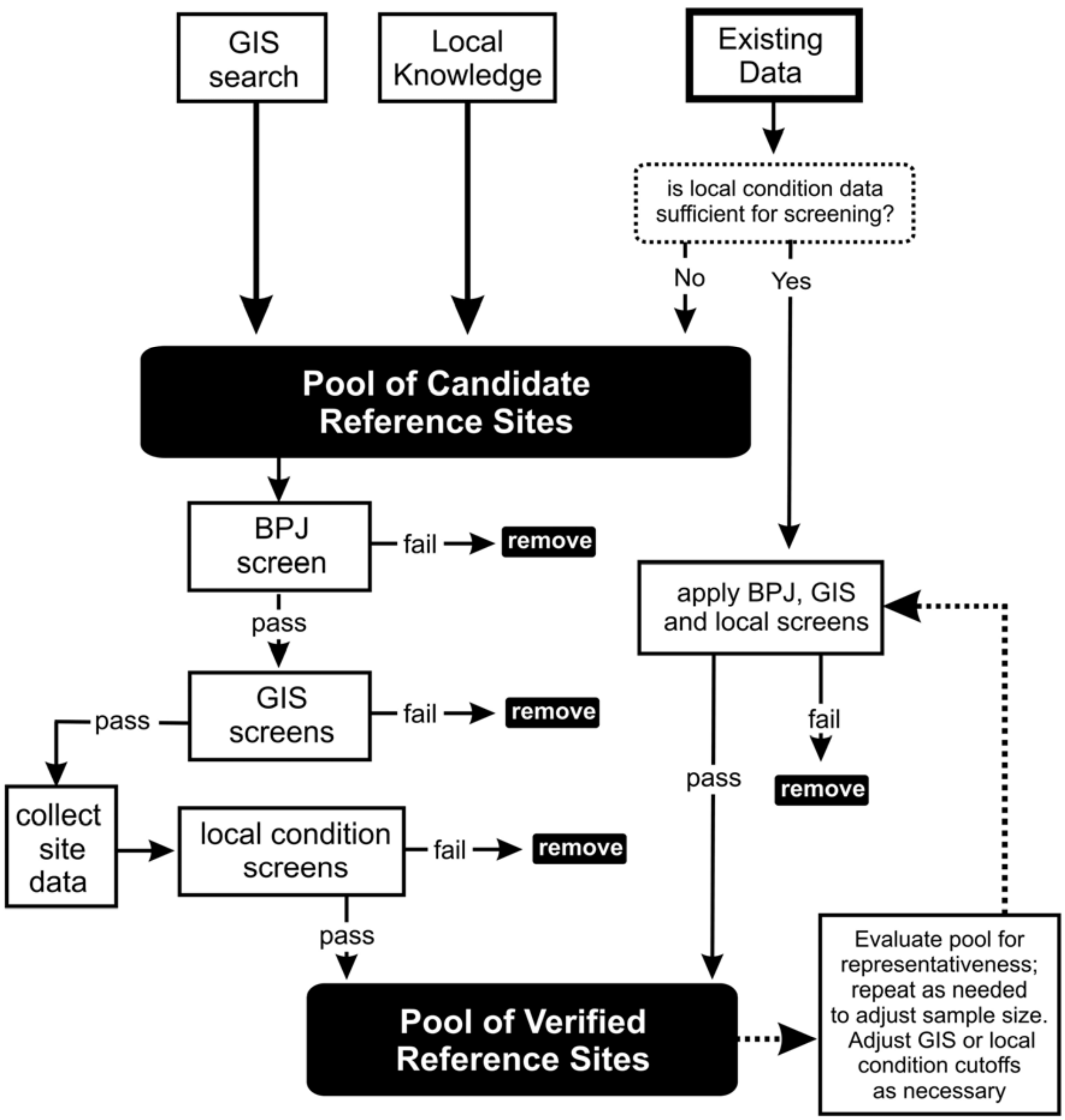

Figure 6. Schematic of the standard reference site selection and verification process.

Table 1. Potential GIS data coverages for nonpoint sources.

NON POINT-SOURCE COVERAGES			
Information Type	**Data Source(s)**	**Notes**	**Coverage**
Landuse/Landcover	National Landcover Dataset (NLCD), MRLC	1992, 2001 satellite imagery, allows for 9-yr landcover change assessments	Statewide
Impervious Surface	NLCD, Others	Quality varies regionally	NLCD statewide, others patchy
Road Density	USFS, TIGER		Statewide, but patchy
Timber Harvest	CDF, THPs		
Vegetative Change/ Vegetative Change Cause (LCMMP)	USFS/CDF		Not Statewide
Population Density	Census Blocks, CDF	Produced in conjunction with decadal population censuses; censuses can be combined to estimate population change	Statewide
Grazing	Cattlemen's Association		Not Statewide
Fire History	CDF, USFS		Best for FS lands

Table 2. Potential GIS data coverages for point sources.

POINT-SOURCE COVERAGES			
Information Type	**Data Source(s)**	**Notes**	**Coverage**
Mining	USGS	Possibly outdated	Statewide
NPDES	EPA	Prone to inaccuracies	Statewide
303(d) listed streams	SWRCB	Every three years	Statewide
Water Diversions/ Extractions	USGS, NHD□	Possibly outdated	Statewide
Dams	CalWater	Doesn't include overflow info	Statewide
Stormwater Inputs	NHD□, Counties	Uneven coverages	Patchy
POTW	EPA	Prone to inaccuracies	Statewide
Landslide Datasets	CalTrans		Statewide

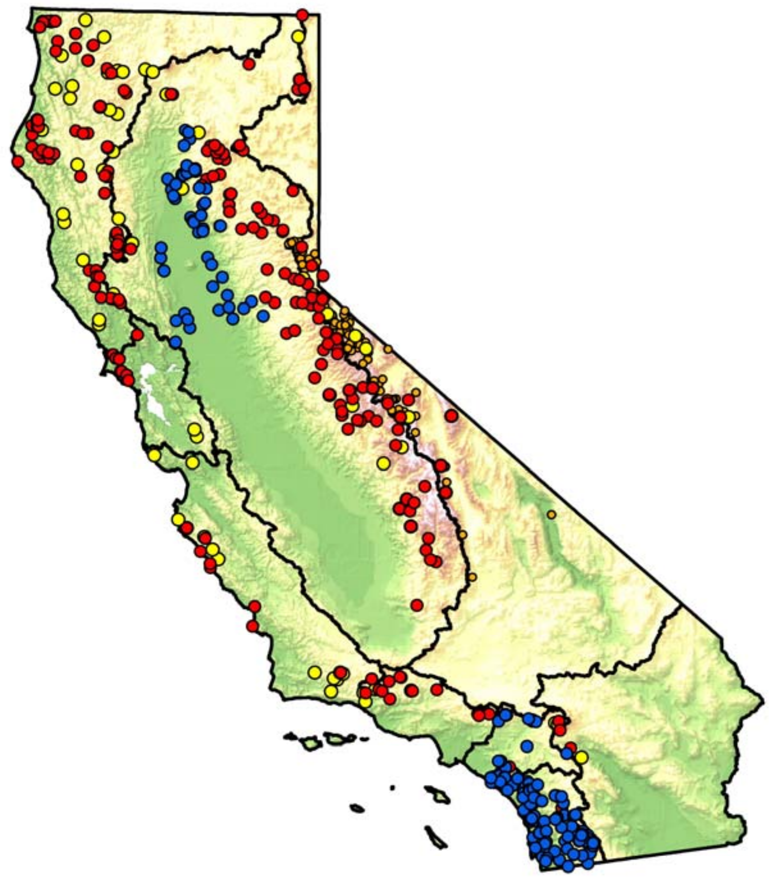

Figure 7. Partial set of bioassessment sites available for initial screens assigned to one of three tiers. Tier 1 sites (yellow circles) are EMAP and CMAP sites that passed a full suite of screens based on the most complete data for evaluation. Chemical and habitat thresholds were based on Stoddard *et al*. (2005) and landuse thresholds were based on Ode *et al*. (2005) and Rehn *et al*. (2005). Tier 2 sites (red circles) are USFS and Regional Water Board sites that have passed a less stringent screening process, but might very well be reference and need additional data before they either passed into Tier 1 or eliminated from the candidate pool. Tier 2 sites were screened based on land use, less extensive physical habitat data and limited or no chemical data. Tier 3 sites (blue circles) are cases in the Sacramento Valley, Sierra Nevada foothills and southern coastal California that probably need an alternative reference screening process (e.g., the factor ceiling approach). SNARL sites (orange circles in Eastern Sierra Nevada) used different screening thresholds, but are likely equivalent to Tier 1 sites.

2.0 Site Selection: Screening the candidate pool

Once a large set of sites is selected for the candidate pool, sites in the pool undergo a series of screening steps to either validate sites as appropriate reference sites or eliminate them from the pool. The major screening tools are: 1) expert opinion (BPJ), 2) landscape screens (GIS), and 3) local condition screens.

2.1 BPJ screens

While BPJ can play a role in identification supplementing the pool of candidate sites, it plays a bigger role in eliminating candidate sites. Sites should be eliminated on the basis of BPJ knowledge that there are known problems that aren't accounted for in GIS datasets. For example, GIS datasets may miss recent development, known pollutant spills, or nonpoint sources. This step should include coordination with local watershed groups, landowner groups and other stakeholders to eliminate inappropriate sites. The rationale for rejection should be documented.

2.2 Landscape scale screens (GIS)

Just as GIS techniques are essential for adding sites to the candidate pool (Figure 6), they also play a crucial role in reference site verification. The datasets and techniques used in this step are essentially the same as those used in searching for candidate watersheds/ stream segments, but the application of the tools differs somewhat. Whereas the GIS analyses were applied at a fairly coarse spatial scale in Section 1.2, GIS tools can be applied at multiple spatial scales during the screening stage.

The first step in the second GIS stage is to convert candidate watershed areas into specific sampling sites by selecting a common point on the stream segments in each watershed (e.g., the downstream confluence point), making them equivalent to other sites in the candidate pool (as in Figure 8a).

The chief benefit to the two-stage application of GIS techniques is that it gives us the opportunity to identify multiple sampling locations within reference watersheds.
While sites would normally be screened using stream confluence points as the candidate site locations, site locations could be moved to other points in the watersheds to identify additional reference sites within good watersheds or to avoid portions of the watershed with undesirable sources of human disturbance (Figure 8b).[11]

Using watershed delineation tools and local site buffering tools currently available for use with GIS software, polygons should be created to represent different spatial scales upstream of each site (e.g., the entire watershed draining to the site, the upstream area within a 5 km radius of the site, the area within a 200m buffer on either side of the stream within 1km upstream). Once created, these areas can be used as reporting units for

[11] Although the two stage application of GIS techniques gives us greater flexibility to identify multiple candidate stream reaches within each candidate watershed, an alternative strategy would be to eliminate the coarse search for watershed described in Section 1.2 and go straight to the more refined screening analysis indicated in Figure 8a.

ATtILA analyses. Metrics calculated for the different spatial scales can be screened as in Section 1.2.5.

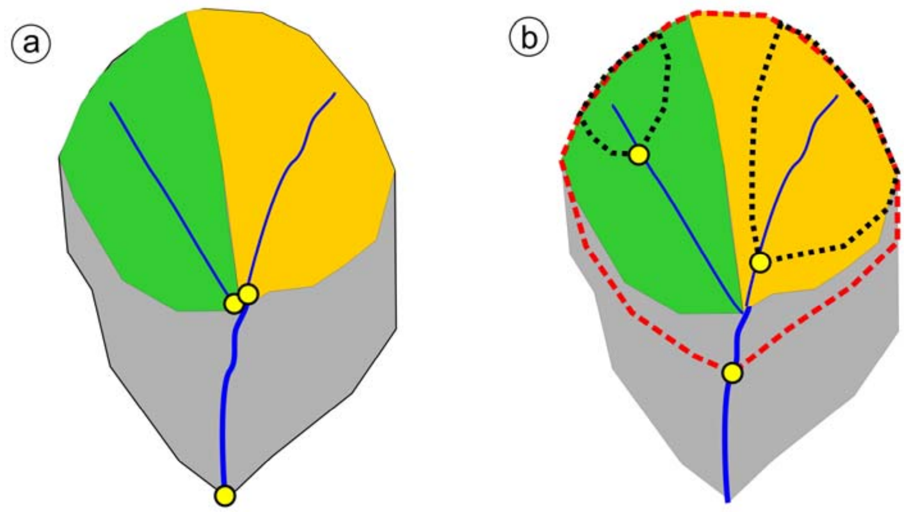

Figure 8. Illustration of alternative applications of the second stages of GIS analysis in the RCMP using a hypothetical second order watershed containing two first order watersheds: a) normal site locations represented by yellow circles, b) alternate site locations and their watershed boundaries (represented by dotted lines).

2.3 Local Condition Screens

Sites that have passed BPJ and GIS screens are then subjected to an evaluation of site scale stressors. Some of the local scale information can be obtained from aerial photography of sites, but the majority of this information will come from site visits and in some cases collection of water quality data.

2.3.1 Site scale data: Aerial photography

Aerial photography provides a unique view of potential site scale stressors. Digital orthophoto quadrangles (DOQs) are available for the entire state of California (DFG). Google Earth is another source of digital satellite imagery. DOQs and other sources of aerial photographic images can provide excellent information about local stressors not available through other sources, but are subject to the same timeframe limitations as other digital sources.

2.3.2 Site scale data: Site visits

The panel strongly recommended site visits as a crucial component of reference site verification. Once candidate list have been narrowed down to sites that meet BPJ, GIS and DOQ screens, land ownership should be determined for each site and owners contacted to obtain access permission and or sampling permits as needed. Site owners can also be contacted at this point to determine if there are any reasons for rejecting sites.

Field visits should be used to collect both qualitative (e.g., presence of obvious disturbances) and quantitative data (e.g., % intact riparian zone). Quantitative measures should focus on data that can be collected and analyzed cost-effectively.

2.3.3 Qualitative data

Visual assessments of site suitability should include a minimum set of observations:

- Upstream impoundments, or evidence of water withdrawal or diversion
- Evidence that the site is non-perennial
- Evidence of recent fire, flooding or landslides
- Local grazing impacts
- Presence of significant anthropogenic use (e.g., campgrounds, etc.)

2.3.4 Quantitative data

At a minimum, site visits should include characterization of physical habitat using the SWAMP Physical Habitat Procedures (Ode 2007) and conventional water chemistry. Physical habitat characteristics should include measures of both instream and riparian condition. SWAMP habitat procedures may be supplemented with riparian condition measures collected with the California Rapid Assessment Method (CRAM) for riverine wetlands. Water chemistry analyses should include the following analytes: chloride, turbidity, pH, total nitrogen, total phosphorus, conductivity, and alkalinity. Some chemical analytes may not be needed in all regions. For example, sulfate (a good indicator of mining activity) is not likely to be informative in xeric regions. One recommendation was to create a checklist of activities by region. Another option is to supplement with sediment and/or water column toxicity. While these tests may be expensive, they are less expensive than a screen for a long list of toxic constituents.

2.3.5 Combining site data for screening decisions

As with GIS screens (Section 1.2.5), there are many ways to combine site data to make determinations. The panel again recommended use of a hybrid approach in which site scale data is combined to calculate a multi-metric site condition score. The use of kill switches was also recommended for excessively high or low scores for individual habitat or chemistry.

3.0 Alternate strategies for selecting reference sites

While most regions of California can follow the standard approach for selecting reference sites, there are at least two large regions in California that lack sufficient high quality sites. The first is the Central Valley where natural landscapes have been almost entirely converted to agricultural and urban land uses. Most natural stream reaches in this region have been channelized or otherwise modified to support irrigation and flood control. The second is in coastal southern California (elevations below 1200 ft – upper elevations can follow standard model) where conversion to urban and suburban land uses has led to the channelization of most stream reaches. Recent studies in these regions demonstrate that at least some waterbodies in highly modified regions can support fairly rich BMI assemblages, even under considerable alteration and agricultural development (Griffith *et* *al*. 2003, deVlaming *et al*. 2004, deVlaming *et al*. 2005, Ode *et al*. 2005). Thus, there is enough range in biotic condition to differentiate degrees of impairment in these regions.

The panel recognized the unique limitations of these regions and recommended that a separate set of approaches be developed for them. Despite the differences in methodology, the goal of the alternate strategy is the same as the standard approach: to characterize the best attainable biological condition in these regions. This section outlines a set of approaches that the RCMP could follow. These fall into two general categories:

- Use a modified version of the standard approach
- Explore non-standard approaches

3.1 Modified use of standard approach

The first option is to use the set of techniques described for the standard approach, but to modify the way the techniques are applied. Modifications fall into two general types: 1) much greater emphasis on reach scale screening data, 2) use of less stringent criteria for rejecting sites.

One of the panel's philosophies is that potential reference sites in highly modified regions need a much larger amount of supporting data to verify their status than in less modified regions. In both the Central Valley and southern coastal California lowlands, streams exist in a landscape matrix with a universally high level of unnatural land uses. Furthermore, many streams have extensive flow manipulation, including water diversion, re-introduction, and inter-basin transfers that render watershed based tools irrelevant. For both these reasons, watershed based stressor analyses are less informative screening tools. Accordingly, much greater reliance should be placed on data collected from direct site visits than on remote sensing data. The panel recommended increased emphasis on riparian condition, instream habitat condition, and water column chemistry. In some cases, additional data (e.g., sediment and or water column toxicity) will be necessary to verify sites.

Selective relaxation of screening thresholds may also be an effective means of identifying the best available sites in a region. For example, acceptable road densities are likely to be much higher in southern coastal California than in other regions of the state. Likewise, acceptable local agricultural landuse percentages and acceptable levels of fine sediments are likely to be higher in the Central Valley than in less modified regions. While less stringent thresholds may help identify some of the best sites in highly modified regions, the use of kill switches is an essential safeguard against accepting unacceptably low thresholds. Specific cutoffs such as >10% local impervious surface, or toxin concentrations greater than the standards set by the California Toxic Rule may be more appropriate in these heavily modified landscapes.

A version of this modified standard approach was applied to search for reference sites in the Central Valley (Ode *et al*. 2005). Remote sensing data (e.g., landuse percentages) and other GIS datasets (e.g., pesticide application rates) was used as a coarse screening tool, but this data was de-emphasized in favor of riparian condition and instream habitat scores. This study identified approximately 20 potential reference creeks in the Sacramento Valley (see Figure 7), but these still need to be screened for water chemistry and toxicity before they are acceptable.

3.2 Non-standard approaches

Although modified use of the standard techniques can go a long way toward providing the data needed to adequately characterize biological expectations in these areas, it is unlikely to resolve the entire problem of identifying a sufficient number of candidate reference sites. The panel recommended the exploration of several different alternative, non-standard techniques:

- Select best sites using existing biological indices
- Species pool approach
- Factor-ceiling approach
- Model taxon preferences for limiting environmental gradients

All of the non-standard strategies suffer to a greater or lesser degree from circularity since the establishment of a biological reference site is being established with biological data. However, the extreme lack of reference sites in these regions requires us to consider accepting some circularity while adding additional steps to guard against the risks of circularity. The best way to guard against these risks is to use independent datasets to select the biotic response metrics.[12]

3.2.1 Use of existing indices to select sites with high quality biology

A straightforward alternate approach is to use existing biological assessment tools from the same region to identify sites that could be used to establish biological expectation in problem regions.[13] High scoring sites would be assumed to represent the "least disturbed" sites in the region. The method assumes that BMI assemblages in the target region have similar responses to anthropogenic stress as the region(s) for which the indices were created. Issues with circularity are mitigated by the fact that the scoring tools were derived objectively using independent datasets.

A variation on this approach is possible in regions where only a few reference sites can be identified (either using the standard methods or the modified standard described above). Under this variation, a model (either MMI or O/E) would be created using a small number of reference sites. Then new sites with similar BMI assemblages would be added to the reference pool and the model recalculated. This recursive approach results in more explanatory power because it is based on a larger number of reference sites, but it is inherently circular because the new sites are not chosen based on independent information.

[12] Note also that some have argued that the circularity concern is less of a problem in highly modified systems than more pristine systems because relationships between metrics and stressors are simpler (Karr and Chu 1999).
[13] Examples of existing biological assessment tools include the Southern California IBI (Ode *et al*. 2005), northern California IBI (Rehn *et al*. 2005) and the California RIVPACS models (Hawkins unpublished).

3.2.2 Species pool

Another option is the species pool approach, which uses the total faunal diversity of a region (i.e., central valley or southern California coastal urban lowlands) to establish a biological condition axis. The process involves assembling a pool of all BMI taxa ever collected from the region, then using taxonomic richness as the measure of biological integrity at test sites. The inventory could be compiled from existing data sets, historical records (i.e., museums or other voucher collections), or directed field surveys. This technique assumes that richness is a good measure of condition, that there hasn't been extensive extinction of native fauna and that the constituent species in the pool are all potential colonists of any test stream.

The utility of this approach could be enhanced in at least two ways. The number of richness metrics could be increased by breaking richness out by taxonomic groups (midges, worms, mayfies, etc.), isolating the different information content in these groups. Further, the species pool could be modeled to associate expected taxa with key environmental gradients (i.e., substrate composition, elevation, etc.) and the proportion of taxa present at reference sites could be a potential target for attainment of reference state. If this approach were taken, then the species pool concept should be tested first in a region where identifying reference sites are not problematic as proof of concept.

3.2.3 Factor-ceiling approach

Carter and Fend (2005) developed a technique for defining a range of biotic expectation that takes into account the decrease in biotic condition caused by physical modification along an axis of increasing urbanization. In their example, a simple statistical technique (partitioned least squares regression, OLS) was used to identify the highest biotic scores along an urbanization gradient. Upper values define the range of expected biotic conditions for the region. Since a full urbanization gradient was used to take into account decreasing biotic potential with increasing urbanization, the resulting range of expected conditions is a conservative estimate of biotic potential for the region. While this approach could be used in both the Central Valley and southern coastal California lowlands, the method would work especially well in the Central Valley because the agricultural impact gradient is not as strongly confounded by elevation or other longitudinal gradients as the urban ones studied by Carter and Fend (2005).

The first step is to identify key measures of physical modification (hydrologic modification, channel modification, streambed modification) and to combine these into a multifactor axis of agricultural modification (i.e., the primary axis in a PCA of these stressors). The second step would be to identify appropriate metrics for detecting biotic impairment in valley streams.

3.2.4 Modeling taxon preferences for limiting environmental gradients

The final alternate strategy involves modeling taxon preferences for key environmental gradients, or limiting environmental differences (LED) and then using these relationships to select the most appropriate sites for setting biological benchmarks. Different habitat features (e.g., climate, channel morphology, water chemistry, substrate characteristics) can be thought of as acting as "filters" that select for particular species traits (Poff 1997).

This conceptual framework provides a way of accounting for the influence of both natural and anthropogenic factors on species distributions. Chessman and others (Chessman 1995, 2006, Chessman and Royal 2004, Chessman *et al*. 2008) recently developed a technique for using the tolerance or preference of individual taxa for key environmental filters (e.g., water temperature range, substrate composition, flow regime) to predict the assemblage of taxa that could be expected to occur at any test site under minimal human stress. Deviation from that expectation is used to infer degradation just as it is in predictive models (e.g., RIVPACS).

This is a promising approach; even the primitive assignment of taxa to simple preference classes used by Chessman and Royal (2004) resulted in stronger associations between their water quality assessments and independent measures of human disturbance than did the Australian predictive models developed from reference sites. They achieved similar results when applying the technique to fish assemblages (Chessman *et al*. 2007).

To adapt this to California's heavily modified regions, there is a need to develop models of the environmental affinities of Central Valley and southern coastal California lowland BMI taxa. It will likely take several years to collect enough samples to characterize individual BMI responses across key environmental gradients, but some of this data has already been collected and could be worked with now.

3.3 Combining approaches

The alternatives described in this section are not mutually exclusive; the RCMP could use more than one in each region. It is possible that not all approaches will work equally well in all regions and, as a result, different alternatives might be used in different regions. The panel was silent on which approaches, or which combinations of approaches should be prioritized.

The panel cautioned that using these non-standard approaches would require significant effort. Since these non-standard approaches have been used sparingly elsewhere, and essentially not at all in California, pilot studies looking into their applicability was recommended. The first step in the panel's recommendation was to evaluate existing datasets to determine if historical data exists for implementing any of these approaches. As mentioned in section 3.2.2, these approaches should be tested in a location where reference sites exist. Developing any non-standard approach needs to be ground-truthed before widespread use of the tool should be applied. Once this proof-of-concept occurs, then targeted data collection in one of the reference-poor regions can be initiated.

MANAGING THE REFERENCE POOLS

Accounting for natural variation

Classification of streams according to natural gradients can help partition natural sources of variation in biological assemblages and thereby improve our ability to detect deviation from reference condition (see Hughes 1995 for a review of the history of stream classifications). The RCMP needs to ensure that the regional reference site pools are representative of the most important regional gradients. The best way to test the representation of these gradients is through ordination of BMI datasets to determine which natural gradients explain most BMI variation in each region. Assessment of natural variation should include a periodic review of the suitability of the initial regional boundaries. The initial boundaries may either expand or contract and regions may need to be subdivided or merged as we gain more detailed information about the drivers of natural biological variation in each region.

However, since most regions do not have many reference sites to begin with, these analyses will have to take place iteratively as the program builds up a sufficient number of sites in each region. As initial guide, the panel recommended that the RCMP attempt to distribute sites to represent the following natural gradients:

- Stream size (stream order, discharge volume, etc.)
- Geology (with special attention to gradients in calcareous composition)
- Climate (temperature and precipitation)
- Elevation
- Reach slope (an important driver of stream morphology and substrate composition)
- Conductivity and natural nutrient gradients (associated with alkalinity)

The second component to site management is periodic review of sites in the reference pools to assess their continued suitability as reference sites. Conditions within stream reaches and in their upstream drainages can change over time (e.g., timber harvest, conversion of natural landscapes to agricultural or urban/suburban/exurban uses). Furthermore, we may discover sources of stress that were unknown when sites were initially added to the reference pools (e.g., discovery of point source discharges, mines, flow withdrawals/diversions, small-scale placer mining, etc.). Sites that fall into this category may be monitored to measure the impacts of these stressors, but they should be removed from the reference pools.

Dealing with natural disturbance

Natural disturbances such as forest fires, catastrophic floods and landslides can have a significant impact on biological assemblages and physical habitat conditions. As such, they can contribute considerable noise to reference distributions, thereby reducing the precision of biological assessment tools based on these distributions.

There are several competing philosophies for how to handle sites with recent natural disturbances. For example, Idaho's program flagged sites affected by natural disturbance to assess in parallel with other reference sites (Grafe 2004). In contrast, Oregon explicitly included these sites with other reference sites, as a means of incorporating natural disturbance as a component of natural variability (Drake 2003). The RCMP will keep these sites in the reference pools, but will not sample them after the disturbance. The appropriate time to avoid sampling disturbed reference sites is not currently known and should be the subject of targeted research or special study.[14]

[14] The San Diego Regional Water Quality Control Board has funded a multi-year project with the ABL to track biological assemblage recovery in reference and test sites following two large scale forest fires events in 2003 and 2007.

MONITORING STRATEGY

Monitoring Design

The primary question to be answered from the monitoring of the RCMP is "what is the expected natural composition of lotic freshwater organisms in each of the major biogeographical regions of California"? In order to answer this question, the panel agreed it is most important to gather information from a large number of sites in order to capture the full range of natural variability within a region. To collect this information in a spatially balanced and unbiased fashion, the panel advocated a probabilistic sampling design. Probabilistic designs were used in the REMAP, WEMAP, CMAP and PSA surveys in order to get unbiased estimates of stream condition and the approach for this design would be similar. In this case, the regional reference pool would represent the sample frame where sites would be selected at random for sampling. As in the PSA, these randomly drawn sites could be stratified to ensure the spatial distribution across natural gradients such as stream order, elevation, slope, geology, precipitation, or other factors.

An important secondary component to answering the monitoring question is to assess how the range of natural conditions changes over time. Certainly year-to-year variability can alter the distribution and abundance of organisms based on climatic conditions (i.e., wet vs. dry year, warm vs. cold year, etc.). Revisiting sites is the most powerful way to gather this type of temporal information. Two designs lend themselves to answering this question. The first would be to revisit a subset of the probabilistic sites. The panel favored this type of design, termed "rotating panel", because it provides both temporal and spatial variance terms. Urquhart and Kincaid (1999) and Larsen *et al*. (2004) describe the rotating panel strategy in more detail. However, a large number of potential reference sites are already being monitored on a regular basis. Provided these sites can pass the large- and local-scale screening criteria, the panel recommended sampling these sites as a cost-effective method to gain trends information at specific locations of interest. The main drawback to the targeted design, however, is the lack of ability to extrapolate to other reference locations.

Indicators and methods

Once the reference site pools are established, they can be sampled to meet the needs of a variety of programs. However, the panel agreed that a base program should monitor those indicators that are currently being used for SWAMP's statewide assessments (see PSA text box). These indicators include BMIs, physical habitat quality and basic water quality measurements. In some instances, enhancement of the indicators in certain regions or at certain sites may be needed to

Indicators sampled for the SWAMP Perennial Stream Assessment (PSA)

Biological
- BMIs
- Algae (diatoms, soft algae)
- CRAM riverine wetland methods

Physical Habitat
- SWAMP instream and riparian condition (derived from EMAP field protocols)

Chemical
- Nutrients (SRP, NO_2, NO_3,TP, TN, Si)
- Major ions (Cl, $S0_4$)
- SSC, turbidity
- pH
- Hardness, alkalinity, conductance

address local concerns. Region-specific enhancements were deemed acceptable as long as the base program is not handicapped to implement the enhancements. For example, additional biological indicators such as fish have been used by others (Hughes *et al*. 2005; Brown and Moyle 2005). Field and laboratory methods and quality assurance measures should also be consistent with SWAMP.

Number of reference sites

The appropriate number of sites to sample in each region depends on the extent of variation related to natural gradients, which is currently unknown for most regions. The panel therefore could not provide specific guidance on sample size. Instead the panel made two recommendations:

1. The RCMP should sample approximately 50 sites in each region to support assessments of natural variability. Intensification of sampling in initial years was recommended to establish the reference baseline, with potentially reduced intensity in later years.

2. The RCMP should conduct power analysis to determine the optimal sample size for assessing confidence in the statistical parameters of the distribution of biological metrics (Figure 9). For example, an assessment of variance at reference sites within a region can be calculated based on existing data (although not all regions have enough sites to support this at present). The inflection point of this power curve represents an efficient sample size where additional sites provide little improvement in confidence, yet fewer sites might dramatically broaden the confidence limits.

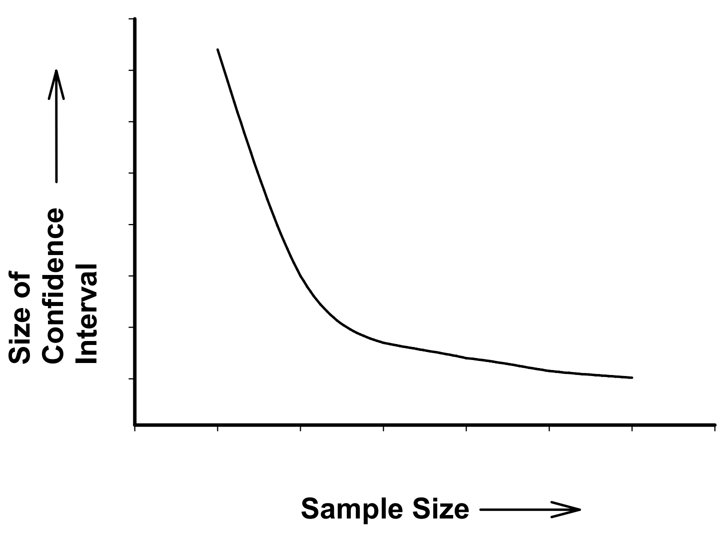

Figure 9. Example power curve defining sample sizes relative to site variability.

Sampling frequency
Sampling frequency affects trend detection. The optimal sampling frequency for trend detection is a function of sampling design. Trend detection as part of the probabilistic design is a function of number of sites (spatial variability), sampling frequency (temporal variability), amount of change to be detected, and other factors. The panel recommended a subset of probabilistic sites be sampled once within the appropriate index period for the region (should be consistent with the index period used for the SWAMP PSA). The recommended index period should capture a time frame where benthic macroinvertebrate communities are sufficiently stable to produce repeatable results, but prior to stress from late season flow reductions. Revisiting a subset of probabilistic sites each year will provide an estimate of interannual variability, thus improving large-scale trend detection. The proportion of revisited sites was not addressed specifically by the panel, but could be optimized using power analysis.

The panel agreed that targeted sites were an efficient way to assess long-term trend detection. Sampling frequency at targeted sites is a function of variability in the biological metrics, the amount of time required to detect a trend, and the amount of detectable change. The panel recommended that the RCMP use power analysis to establish the optimal sampling frequency (Figure 10). Once again, this could possibly be accomplished using data from existing sites that have been sampled for a number of years.

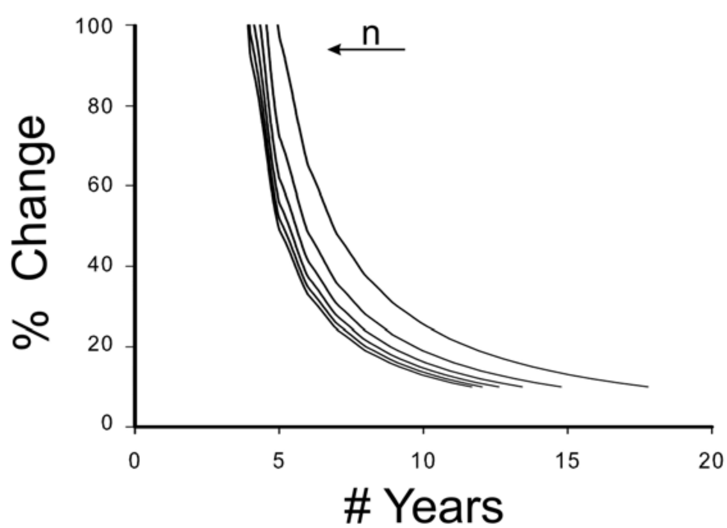

Figure 10. Theoretical power curves describing the relationship between the number of samples collected and the magnitude of detectable change at fixed sites. Individual curves represent different numbers of samples per year, with higher numbers toward the left of the figure.

ADDITIONAL RECOMMENDATIONS

Funding

Defensible bioassessment techniques and biocriteria require a reference condition program that can document both spatial and temporal variation. While the panel did not recommend a minimum level of funding, they advised that funding will need to be long term and stable. Several cost-effective strategies are available, but options discussed included trade-offs between probabilistic and targeted sites, optimizing sample size using power analysis (see previous section on sample size and frequency), and finding additional partners to help support the RCMP (see section below on collaboration). Regardless, SWAMP should prioritize some sampling effort every year to document annual variation in reference condition.

Inter-regional consistency

The RCMP should continue to focus on the issue of fostering consistency among the various regions of the state. Statewide assessments and comparisons among regions require a common currency for interpreting statewide assessments, and for inter-regional comparisons. However, this goal is complicated by the need for regional specific reference selection criteria. While the panel did not deliberate extensively on this topic, it recognized the importance of the issue and provided some initial guidance to help focus the thinking of the program. The main advice from the panel was that the objective of inter-regional consistency can probably not be resolved by the reference site selection process itself, but rather must be dealt with through data analysis and interpretation.

Development and application of assessment tools can be based on either regional reference pools or combined statewide reference pools. Regionalized assessment tools provide sensitivity to local environmental gradients and are more likely to pick up sites that deviate from the regional expectation. In contrast, statewide assessment tools would judge all of the state's sites on the same basis, but may reduce responsiveness to locally important gradients. Furthermore, we may have to accept that the performance of statewide analytical tools may vary regionally depending on the quality of the respective regional reference pools.

An example of an analytical solution is a hybrid approach in which both the regional and statewide indices are built and both tools are used to score test sites. Where both tools agree, there is relative certainty in the assessment of that site (i.e., both tools indicate reference-like or both indicate impacted). Where the tools disagree, a greater degree of relative uncertainty exists and additional information may be required to help interpret the status of that site (i.e., other indicators, additional sampling).

Collaborations/Coordination

Consistent with its policy to coordinate with other state and federal water quality monitoring efforts, SWAMP should seek opportunities to build partnerships with other state and federal agencies. Many of these entities have current reference programs (e.g., USFS, EPA, USGS), while others would benefit from joining an established reference program (e.g., Non-point Source Monitoring, State Parks, Irrigated Lands Program, Agricultural Coalitions, National Park Service, etc.). In addition SWAMP should explore ways to combine its bioassessment RCMP with other program components that would benefit from reference condition (e.g., CRAM, wetland monitoring, nutrient and sediment criteria monitoring).

The panel recommended exploration of ways to improve the types and quality of data used in GIS analyses. For example, the program could seek opportunities to coordinate with other state/federal/university efforts to enhance base layers like the NHD+ and stressor layers for quantification of grazing, timber harvest, pesticide application, etc. Further, the RCMP would should explore research efforts designed to improve prediction of specific stressor impacts and efforts to develop models that can be used to assess impact components that are not easily summarized by the ATtILA model. For example a model predicting sediment load (AnnAGNPS sedimentation model, USDA 2000) was applied by the University of Nevada, Reno. Other needs include estimating mining impacts, pesticide impacts and a means for summarizing the intensity of water manipulation within candidate areas.

Involving stakeholders in the process

It is often desirable to select sampling locations that occur on publicly owned land or land with easy access. Since it is important to sample streams from a truly representative set of sites within an area, it is often necessary to sample from reaches running through privately owned land. Reasonable efforts should be taken to obtain permission from landowners before rejecting candidate sites. This stage is very important and the quality of the final data set (and the ability to make inferences about reference conditions in the region of interest) will depend on the ability to obtain a representative set. The degree to which this stage is important varies regionally since some areas have more private ownership than others (e.g., western Sierra Nevada has many more publicly-owned lands than the interior chaparral).

Building effective relationships with local stakeholders (regional boards, watershed groups, landowner group, tribal groups, etc.) is clearly a critical part of making this reference site selection methodology work, especially in regions with a large degree of private ownership. To this end, implementation of this RCMP should include efforts to promote transparency in methods, encourage feedback and participation and explore opportunities to improve access to important privately held reference sites.

CONSIDERATIONS FOR OTHER FLOWING WATERS

The following section is not intended to be an exhaustive review of issues for defining reference conditions for these waterbodies, but a summary of the panel's preliminary guidance regarding issues that are likely to be important in these systems.

Large Rivers/ Non-wadeable streams

Large rivers are likely to require non-standard approaches to defining biological expectations because there are relatively few non-wadeable streams/rivers in the state and most receive the cumulative impacts of all human activities in their watersheds. Furthermore, several panelists suggested that standard chemical and physical habitat screening was unlikely to work in these systems. Screening criteria should include quantification of hydromodification, distance downstream from dams or other stressors.

Several of the alternative strategies could apply to these systems. Another alternative would be to target sampling at points along river just before they experience significant increases in sources of anthropogenic stress (e.g., where rivers in the western Sierra Nevada descend into the Central Valley).

Non-perennial streams

Non-perennial streams tend to have more variable biological assemblages than perennial streams. The standard approach should work for most of these systems statewide, but special attention should be given to classification of non-perennial streams by their degree of "intermittent-ness" in both space and time. The panel suggested that the RCMP should take advantage of current statewide vegetative mapping efforts to explore the potential for classifying non-perennial streams.

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Appendix 6

MEMORANDUM

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DATE: 31 July 2009
TO: Phil Markle
FROM: Jerry Diamond, Ph.D.

SUBJECT: Reference conditions and bioassessments in southern California streams

All bioassessment methods depend on having appropriate reference conditions with which to base an assessment; i.e., bioassessment data for a given site cannot be accurately interpreted by themselves—interpretation or assessment of the site data is done within the context of the biology that can be expected to occur naturally, given the type of habitat present, the type of aquatic system, and the physiographic region (i.e., ecoregion) of the country (Stoddard et al., 2006). Identifying appropriate reference conditions for certain types of aquatic systems, habitats, and ecoregions can be problematic because of wide-scale human land use changes such as hydrological modification (e.g., dams, levees, concrete channelization), urbanization (e.g., increased runoff, removal of riparian vegetation, bank protection structures), and agricultural/ livestock effects (e.g., water removal for irrigation, removal of riparian vegetation).

Southern California (Los Angeles, San Diego and surrounding counties) is an area that has experienced intense land use changes over the past 50 years, particularly in terms of urbanization and its many environmental consequences (e.g., changes in the natural hydrology, changes in stream geomorphology, etc.). In particular, low gradient as well as low elevation streams in this region have been especially prone to land use effects. This situation has resulted in high uncertainty regarding appropriate reference conditions for low gradient and low elevation streams in this region.

This observation was identified in a Technical Report I and others at Tetra Tech prepared for the Los Angeles Regional Water Quality Control Board (Tetra Tech, 2005; 2006). In that report we evaluated stream biological condition with respect to a generalized human disturbance gradient in the region, as part of an EPA-funded project to evaluate the possibility of developing tiered aquatic life uses (TALU) for southern California coastal streams. Relying on SWAMP and other data for the region, we attempted to use the recently developed southern California IBI (SoCal IBI, Ode et al., 2005) to define certain attributes of the Biological Condition Gradient for the region, which could then be used to develop TALU (Davies and Jackson, 2006). We observed that the BCG should be different (i.e., expectations lower) for low versus high elevation streams in that project and that low elevation streams lacked a clear reference condition in this region.

Working with a Technical Advisory Committee (TAC) on this project (consisting of regional experts from California Fish & Game, State Water Resources Control Board, other Regional Boards, EPA Region 9, and universities), we identified a lack of appropriate reference sites for low elevation/low gradient streams as a critical data gap in moving forward with TALU. A fairly extensive search of existing biological data in the region by Tetra Tech and the TAC indicated that suitable reference sites at lower elevations and/or for lower stream gradients were not available with which to benchmark a biological condition gradient.

Subsequent to the above project, I have been working with the Southern California Coastal Water Research Project (SCCWRP) and the LA Regional Board in facilitating two workshops on TALU for the region. In the most recent stakeholder workshop (held June 2008), there was focused discussion on the issue of appropriate reference conditions, in which there was agreement that low gradient (rather than low elevation) was perhaps the most critical factor distinguishing stream biology in the region and that reference condition for low gradient streams (many but not all of which occur at low elevation) is a critical data gap (Schiff and Diamond, 2009). In fact, in the "road map" of projects developed from this workshop, defining reference condition for streams in this region was identified as one of the top priority needs.

Given the difficulty in identifying appropriate reference conditions for low gradient coastal streams in southern California, it is perhaps premature to set regulatory requirements based on biology observed at these types of sites. The TALU framework, as well as the regional stakeholder workshops (e.g., Schiff and Diamond, 2009) recognize that different hydrologic, geomorphic, and other habitat-related factors will dictate the biological characteristics that can be expected in a given stream. The type of aquatic life uses one can reasonably expect from a low gradient or modified stream in southern California, for example, are not the same as from a high gradient or natural stream, as our previous work has demonstrated. What is the expected biological condition for low gradient or modified streams in southern California is a question that needs more attention and, as noted by all stakeholders at the June 2008 workshop, incorporation of information using other assemblages (e.g., algae) in addition to macroinvertebrates.

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Appendix 7

B233

IDENTIFYING BARRIERS TO TIERED AQUATIC LIFE USES (TALU) IN SOUTHERN CALIFORNIA

Ken Schiff
and
Jerry Diamond

SCCWRP
Established 1969

Southern California Coastal Water Research Project

Technical Report 590 - June 2009

6-628

Identifying Barriers to Tiered Aquatic Life Uses (TALU) in Southern California

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Technical Report 590

PREFACE

The goal of this document is to explore the use of a new environmental management tool in southern California known as Tiered Aquatic Life Use or TALU. TALU focuses on the traditionally difficult regulatory problem of maintaining balanced biological communities. The existing California State regulatory framework only lists broad, categorical biological expectations such as warmwater (WARM) or coldwater (COLD) habitat. TALU has the potential to refine the biological expectations within each of these broad categories based on a variety of factors including physical habitat, hydrology, or level of habitat alteration. More detailed expectations tailored to the specific habitat could dramatically improve environmental managers' ability to assess biological impairment and set appropriate benchmarks for improvement.

The goal of this document was to create a workplan for implementing TALU in southern California. We compiled existing information about TALU and, by working with local stakeholders, identified some of the largest technical and potential policy barriers for implementation. This was not an easy task since southern California stakeholder opinions, sensitivities, and personal agendas can dramatically differ. TALU is a powerful tool that can be utilized as a positive step towards conservation and restoration or, alternatively, abused as a means of limiting regulatory oversight. Ultimately, this report lists 13 projects that should be undertaken to help resolve these barriers and develop scientifically defensible tiered aquatic life uses, and integrate these tiered uses into the existing water quality standards program to the betterment of the environment.

This document does not focus on the many non-technical factors that will be fundamental for TALU to be a successful management tool. These factors, which can be political and procedural, are built into the State and Federal regulatory policy development process. Many times, divisive policy issues are a function of perception rather than fact. It is the aim of this document to ensure that the all of the facts are available to evaluate the viability of TALU as a meaningful regulatory tool.

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Participants TALU workshop June 19, 2008, Southern California Coastal Water Research Project, Costa Mesa, CA.

LIST OF ACRONYMS

ACOE	Army Corps of Engineers
BCG	Biological condition gradient
COLD	coldwater habitat
CSUSM	California State University San Marcos
DWR	Department of Water Resources
EMAP	Environmental monitoring and assessment program
EPA	Environmental Protection Agency
EWH	exceptional warmwater habitat
GSG	Generalized stressor gradient
IBI	Index of biological integrity
MWH	modified warmwater habitat
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PSA	Perennial Stream Assessment
SANDAG	San Diego Association of Governments
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SFEI	San Francisco Estuary Institute
SMC	Stormwater Monitoring Coalition
SNARL	Sierra Nevada Research Laboratory
SWAMP	Surface water ambient monitoring program
TALU	Tiered aquatic life use
USFS	United Sates Forest Service
WARM	warmwater habitat (California)
WWH	warmwater habitat (Ohio)

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BACKGROUND

What are Tiered Aquatic Life Uses (TALU)?

All states, including California, have designated uses (known as beneficial uses in state terminology) that protect aquatic life. California has several different beneficial uses relevant to protecting aquatic life including warmwater and coldwater habitat, and protection of different life stages such as fish migration and spawning.[1] Most ecosystem managers recognize that the more specific the designated use definition, the clearer it is to describe attainment goals and ensure maintenance and protection of the designated use. EPA also acknowledged this fact and, in response, developed a framework for states to develop Tiered Aquatic Life Uses (TALU).

TALU recognizes different management goals for waterbodies within a given waterbody class and these goals are defined based on detailed information on biological condition and stressor intensity. An example of TALU would be the three tiers of warmwater use defined by the Ohio EPA (OEPA, 2008): exceptional warmwater habitat (EWH), warmwater habitat (WWH), and modified warmwater habitat (MWH). All of these tiers are part of a designated use for warmwater habitat, but each of these tiers is associated with different biological expectations based on detailed knowledge of these systems. EWH has a higher expectation of biological condition (i.e., the types of flora and fauna that should be present represent higher water quality and higher habitat quality) than WWH, which in turn, has a higher biological expectation than MWH.

It is important to recognize that tiered uses are defined based on fundamental differences in structural or hydrological condition, not the current biological or water quality condition. Instead, biological expectations for each tiered use are based on knowledge of what biota is capable of occurring in a waterbody given the fundamental structural or hydrological template that exists. In this way, environmental managers utilize TALU to achieve effective stewardship of beneficial uses by: (1) identifying high quality waterbodies and preventing the gradual degradation of these waterbodies; and (2) identifying restoration benchmarks for degraded biological condition in waterbodies given their structural and hydrologic condition.

Southern California is a tremendously valuable location for examining the application of TALU because of its wide array of biological habitats, extensive structural and hydrologic modification, and regulatory agencies' desire to regulate on biological as well as chemical condition. Streams, coastal lagoons, and bays support sensitive aquatic species, diverse wildlife, and unique habitats. As a result, southern California needs a more refined way of defining Aquatic Life Uses. For example, coastal perennial streams in southern California can range widely in terms of the degree of urbanization, hydrologic regime, and habitat alteration. The TALU framework could be a powerful tool to refine the WARM designated beneficial use and to better reflect attainable aquatic life goals for different stream conditions.

[1] Categorical aquatic life beneficial uses that are designated for waterbodies in California include: Warm Freshwater Habitat; Cold Freshwater Habitat; Inland Saline Water Habitat; Estuarine Habitat; Wetland Habitat; Marine Habitat; Rare, Threatened, or Endangered Species; Migration of Aquatic Organisms; and Spawning, Reproduction, and/or Early Development.

Initial Steps of the TALU Process in Southern California

There has been some exploration of TALU concepts in southern California. These initial steps have included a pilot study (Tetra Tech, 2005; 2006) and a subsequent public workshop. Between 2005 and 2007, the pilot study gathered a group of experts to discuss the technical underpinnings of a TALU framework for southern California coastal streams. No new data were collected as part of this effort, but relevant available biological data were compiled to conceptualize the two primary components of TALU: (1) the biological condition gradient (BCG); and (2) the generalized stressor gradient (GSG).

The BCG describes how ten general ecological attributes of aquatic ecosystems change in response to increasing levels of stressors. These attributes include several common aspects of community structure (e.g., pollution sensitive species, endemic long-lived species) organism condition, ecosystem function, and biological attributes related to stream connectivity and the larger watershed scale. The gradient can be considered analogous to a field-based dose-response curve where dose (x-axis) = increasing levels of stressors and response (y-axis) = biological condition (Figure 1). The BCG is divided into six levels of biological condition along the stressor-response curve, ranging from observable biological conditions found at no or low levels of stressors (Level 1) to those found at high levels of stressors (Level 6).

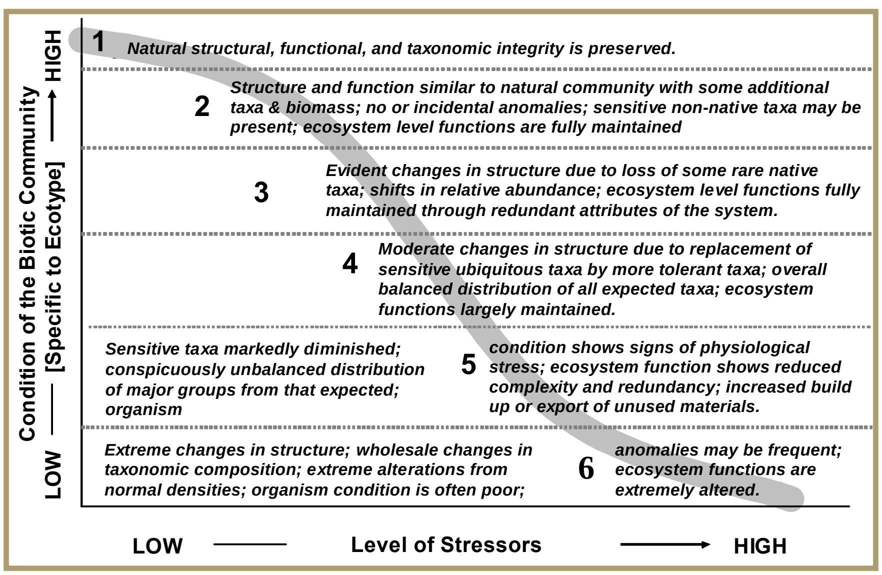

Figure 1. Conceptual model of the Biological Condition Gradient.

The GSG describes the stressor gradient present in the region of interest. Stressors are physical, chemical, or biological factors that adversely affect aquatic biota. Stressors can occur at different scales including instream, within the riparian area and floodplain, or within the watershed. Understanding the linkages between stressors and the response of aquatic biota will help determine existing and potential biological conditions of the aquatic biota. Multiple stressors are usually present and the GSG on the x-axis seeks to represent the cumulative influence of stressors, much as the y-axis generalizes biological condition.

The primary outcome of the pilot study was that TALU could be created in the unique stream environments of southern California. Although much work was left to be accomplished, a BCG and GSG were conceptualized, as well as potential tiered use definitions for perennial streams in the region. The BCG was based largely on the existing Southern California Index of Biological Integrity (IBI; Ode *et al.* 2005) and its associated biological metrics, while the GSG was based primarily on physical habitat measurements and watershed scale disturbance metrics. Relationships were identified between types of coastal perennial streams in southern California, observed aquatic life condition, and preliminary tiered aquatic life uses, along with their corresponding biological expectations.

Several uncertainties were also identified during the pilot study regarding the BCG, GSG, and biological expectations for different tiers. Examples of key uncertainties included defining truly natural conditions in areas where little natural condition remains. Identifying unimpaired sites is vitally important for setting the upper range (i.e. Level 1) of the BCG. Another key uncertainty was the efficacy of additional indicators such as fish or amphibians. One additional uncertainty was optimizing metrics for quantitatively expressing the GSG.

In November, 2007, the Los Angeles Regional Water Quality Control Board sponsored a stakeholder workshop on TALU. The goal of the workshop was two-fold: (1) communicate the findings of the pilot study; and (2) garner input from stakeholders on the viability of TALU as a management tool. Presentations by the US EPA Office of Water and Region IX, the Los Angeles Regional Water Board, and Tetra Tech (US EPA's technical contractor) laid out the rationale, approach, and goals of TALU. The participants were educated about the TALU framework with insight provided by the results of the Southern California pilot study.

The primary outcome of the stakeholder workshop was an earnest interest in TALU. Break-out discussions identified a multitude of issues that were classified into four general areas: (1) determining reference conditions, best attainable conditions, and levels within the BCG; (2) defining stressor gradient metrics; (3) protecting high quality sites and encouraging restoration of degraded sites; and (4) clarifying the regulatory process for developing TALUs.

Identifying Barriers

In June 2008, a second workshop was held to further investigate the specific barriers to implementing TALU in southern California. The workshop was comprised of 12 invited participants representing a cross-section of stakeholders including regulatory, regulated, scientific, and non-governmental sectors (please see Acknowledgements). The group focused on a single goal: design a workplan to overcome the barriers associated with TALU development. Ultimately, the workplan will provide guidance to regulatory and regulated stakeholders that outline the steps necessary to develop TALU in a way that is scientifically defensible and feasible for management. There were three chief considerations asked of participants:

- What are the primary data gaps or information needs?
- How do we combine data gaps into unique project designs?
- What are the factors for prioritizing projects to fill data gaps?

In an effort to constrain the scope of the workplan, the workshop participants immediately decided to limit the scope to perennial wadeable streams in the southern California region.

The workshop ideas and concerns fell into one of three areas including biological, stressor, and implementation related data gaps. The biological-related data gaps included identifying appropriate indicators, adequate representation of reference conditions and range of impact (for defining the BCG scale), capturing natural temporal variation (seasonal/interannual), and specific biological responses to changes in flow (hydromodification).

The stressor related data gaps included improving the understanding and quantification of the human disturbance gradient (to build the GSG), improving the information for quantifying and defining stressor gradients at both the local and watershed scales (e.g., physical habitat and GIS/land use, respectively), and identifying site specific factors that influence stressor impact on aquatic life (e.g., best management practices).

The implementation related issues included identifying appropriate habitat breaks for TALU application, development of appropriate criteria, setting tiers, determining values for nonbiological indicators (i.e. water quality objectives) for the tiers, and integrating TALU with other state or federal regulatory programs.

There were several factors the workshop participants utilized for prioritizing project concepts. These included availability of data/information for compilation as opposed to new data collection, estimated cost, time for completion, and perceived importance in providing defensibility of TALU structure. Ultimately, 14 projects were derived for the workplan based on these criteria.

Table 1. Summary of data gaps or information needs identified at the June 19, 2008 technical meeting regarding the advancement of Tiered Aquatic Life Uses (TALU) in southern California coastal perennial streams and proposed projects that address these gaps.

DATA GAP	PROPOSED PROJECTS
Biology-related	
• The BCG needs to include more than one type of indicator, so that expected responses to human development are accurately evaluated	• Project □1: Develop algal indicators of biological condition for perennial coastal California streams; • Project □2: Develop riparian vegetation and habitat indicators suitable for BCG development
• Natural condition needs to be defined for each stream classifications to determine Level 1 for the BCG	• Project □3: Define minimally impacted (natural) biological condition for coastal perennial streams and determine appropriate stream classification factors
• Temporal variability needs to be captured in the BCG	• Project □4: Determine seasonal and interannual variability for relevant biological indicators and identify appropriate ranges of indicators for BCG development
• Representation of biological sites needs to be broad and complete enough to ensure accurate BCG development	• Project □5: Characterize range of available biological indicator information and identify gaps in BCG
• Biological expectations for hydrologically modified streams need to be defined	• Project □6: Determine appropriate BCG for different degrees of hydrologic modification
Stressor-related	
• Need to evaluate if recent changes in physical habitat sampling methods provide useful information for quantifying the GSG	• Project □7: Evaluate and develop a refined set of physical habitat measures that help develop the GSG
• Better base maps are needed for quantifying stressor information	• Project □8: Develop refined base maps of stressor information
• Need to better define and integrate landscape and reach scale stressors to quantify the human disturbance gradient	• Project □9: Research and evaluate different indices of human disturbance as GSG surrogates
• Need to understand why individual outlier sites have unpredictably good or bad biological condition	• Project □10: Examine BMP effects on biological condition
Implementation-related	
• Need to translate science to policy when setting stream classifications and tiered uses	• Project □11: Determine appropriate implementation criteria for identifying stream classes and tiered uses
• Consider biocriteria as a means to evaluate whether tiered uses are being achieved	• Project □12: Integrate BCG development and TALU with potential biocriteria
• Examine how other water quality objectives should be tiered along with biological uses (e.g., DO, temperature)?	• Project □13: Determine potential tiered water quality objectives
• Need to link TALU with other regulatory programs (TMDL, 401□404, stormwater) • State-wide implementation vs. region-specific approaches need to be evaluated	• Project □14: Link TALU with other regulatory programs

SPECIFIC PROJECTS

Project 1:	**Develop algal indicators of biological condition for perennial coastal California streams**
Issue:	Previous BCG development efforts were based primarily on macroinvertebrate data and assessment tools. However, macroinvertebrate data and assessment tools alone may not be sufficiently sensitive and robust to characterize perennial coastal California streams. Several examples exist including low gradient streams. Therefore, BCG development should include more than one type of indicator so that expected responses to human disturbance are accurately evaluated. Algae often respond differently to stressors, particularly nutrients, than macroinvertebrates. Therefore, inclusion of algal indicators will provide a more comprehensive BCG.
Tasks:	1. Compile existing algal data for southern California. 2. Segregate algal data and related assessment tools into various habitat types, including consideration of elevation, stream gradient, and degree of channelization. 3. Identify whether sufficient algal data is available for reference sites in southern California to develop an algal indicator. If not, identify sites and collect data as needed. 4. Correlate algal data and related assessment tools with physical or chemical stressors, land use, etc. Other stream systems can provide insight into these relationships. 5. Determine if algal data show sufficient sensitivity to stressors in southern California to serve as useful indicators of human impacts. 6. If algal indicators are sufficiently sensitive to act as useful indicators of biological condition in perennial southern California streams, select an indicator, or suite of indicators, to develop the BCG for algae. This process should be reviewed using an expert panel to verify BCG attributes for algae. 7. Set detection, precision, and accuracy estimates for the algal index developed.
Product:	Identification of algal indicators and expected changes with increasing stress. Detailed description of BCG for algal indicators.
Information Available:	Algal bioassessment methods and data collection are currently underway as part of SWAMP program. Some data is available through Western EMAP. A South Coast periphyton IBI is currently under development at SCCWRP. Additional sampling could be conducted to fill in gaps or verify correlations, as needed.
Estimated Cost:	□100,000 to 500,000, depending upon whether sufficient data are available
Schedule:	Two to three years, depending on availability of data
Potential Collaborators:	SCCWRP, EMAP, SWAMP, SNARL, CSUSM

Project 2:	**Develop riparian vegetation and habitat indicators suitable for BCG development**
Issue:	During the BCG Pilot Study for southern California coastal streams, the Technical Advisory Committee clearly recognized that riparian vegetation□habitat is a useful indicator of biological condition. However, use of riparian vegetation□habitat as an indicator of biological condition must be approached cautiously, as lack of vegetation□habitat can also be considered part of the stressor gradient. Preliminary work using the California Rapid Assessment Method (CRAM) was used as a placeholder absent any other standardized riparian quantification method. However, more work is needed to refine the usefulness of riparian vegetation and habitat indicators in TALU development, including identifying reference conditions and determining whether quantifiable metrics can be developed that characterize the condition gradient in response to stressor intensity.
Tasks:	1. Examine current status of CRAM to see if quantitative metrics of disturbance have been assessed. 2. If not, collate existing CRAM information along with metrics of stress or disturbance level. 3. Determine appropriate riparian□waterbody classifications (habitats) for which individual natural conditions will be defined. These could include high elevations streams, low elevation□high gradient streams, and low elevation□low gradient streams. 4. Identify specific changes in riparian indicators with stressor intensity, characterizing natural conditions as well as conditions under various levels of stress. During this process, develop a means to consider lack of vegetation due to hydrologic modification as a stressor. Identify BCG thresholds for riparian condition using CRAM. 5. Assess whether CRAM serves as an appropriate and sufficiently sensitive metric for riparian vegetation□habitat in southern California perennial coastal streams. If CRAM does not appear to be a good metric, assess whether other metrics should be used instead.
Product:	Identification of riparian indicators and expected condition gradient with increasing stress. Detailed BCG for riparian indicators.
Information Available:	Current on-going work on CRAM, including the State□s Wetland Monitoring Program; 404□401 monitoring for restoration□mitigation projects. SWAMP□Perennial Stream Assessment monitoring.
Estimated Cost:	□100,000 to 500,000, depending upon whether sufficient data are available
Schedule:	Two to three years, depending upon availability of data
Potential Collaborators:	SCCWRP, SFEI, CA Coastal Conservancy, US ACOE, Southern CA Wetland Recovery Project

Project 3:	**Define minimally impacted (natural) biological condition for coastal perennial streams and determine appropriate stream classification factors.**
Issue:	BCG development depends on having Level 1 (natural condition) defined, even if it is not represented in the region at present. The Pilot Study suggested that high elevation streams were a different class from low elevation streams, but this may not be the case and the exact elevation cutoff is unknown. The separation of stream classifications is driven largely by ecotonal gradients of physical factors and biological assemblages in the absence of stressors, i.e. a comparison of reference conditions. Identifying different classes of streams is critical because this is what determines ultimate biological expectations (i.e., low elevation or low gradient stream biological assemblages may never look like those of a high elevation or high gradient stream, even with outstanding habitat and water quality).
Tasks:	1. Compile biological indicator data, water quality data, pertinent classification metadata (elevation, gradient, geology, etc.), and stressor data. 2. Identify sites and data that are believed to represent natural conditions (Level 1) using the stressor data. If unstressed sites are unavailable, then alternative approaches can be evaluated including using sites outside of the Southern California Bight, historical information, museum archives, etc. 3. Evaluate the degree to which biological expectations differ between different coastal streams in southern California and determine classes. This is typically accomplished using multivariate statistical techniques. 4. Verify stream class determination and Level 1 attribute conditions using expert opinion.
Product:	Database of macrobenthos, other biological indicators, and pertinent physical and stressor information. Statistical analysis of biological assemblages sufficient to delineate stream classes. List and range of data for biological metrics, physical, and stressor information that characterizes Level 1 of the BCG for different classes of streams in the region.
Information Available:	Macroinvertebrate data are available from a wide range of sources including SWAMP, EMAP, SMC, NPDES monitoring, amongst others. Sufficient data may also be available for other indicators such as algae, riparian condition, and fish. (See projects 1 and 2.) SWAMP is also creating a Reference Condition Management Plan that will directly address this issue in future years.
Estimated Cost:	□150,000 - □250,000
Schedule:	One to two years.
Potential Collaborators:	SWAMP, SMC, USFS, EMAP

Project 4:	**Determine Seasonal and Interannual Variability for Relevant Biological Indicators and Identify Appropriate Ranges of Indicators for BCG Development**
Issue:	A comprehensive and accurate BCG depends, in part, on understanding and incorporating natural variability in the biological condition of the indicators. All biological indicators have some variability between seasons and between years resulting from differences in hydrological or climate regime, or innate differences in population recruitment or mortality rates. To a large extent, this type of variability has not been evaluated, creating an information gap in terms of uncertainty in biological indicator thresholds for different levels of the BCG.
Tasks:	1. Compile biological indicator data for individual sites over time. Preferably, each site will have multiple seasons and□or multiple years of record. 2. Characterize and quantify the variability of biological data, including individual metrics and composite metrics for various indicators. 3. Identify multi-year variability for given index periods and evaluate the need for a single index period in BCG development for a given indicator. Quantify appropriate ranges for individual indicators under natural conditions (Level 1 of the BCG) as well as for various stress levels.
Product:	Time-series data for specific biological indicators and sites, and statistics for seasonal and inter-annual variability based on different classes of streams. Identification of appropriate ranges of indicators to be used in setting Level 1 of the BCG.
Information Available:	Multi-year site data for macrobenthic assemblages are collected largely by NPDES permittees, although the data for reference sites may be limited. EMAP has revisited a subset of sites. The USFS has revisited some sites, but many are not in the southern California region.
Estimated Cost:	□100,000-□200,000 if data are available
Schedule:	One year
Potential Collaborators:	SWAMP, EMAP, USFS, NPDES permittees

Project 5:	**Characterize range of available biological indicator information and identify gaps in biological condition gradient**
Issue:	BCG development depends on having a complete understanding of how various biological indicators change with increasing stressor intensity. While the character of natural conditions and extremely stressed conditions is often known with some precision, changes in biological condition with intermediate levels of stress are not often as well characterized, yet this information is crucial to having a useful BCG for TALU development. Without sufficiently represented gradients of biological condition, inappropriate thresholds for BCG levels may be established. Therefore, it is critical that datasets of appropriate indicators cover the entire range of biological conditions in response to stressors. If gaps are present in the data (i.e., not enough intermediate-stressed sites), additional sampling will be needed.
Tasks:	1. Compile data sets for biological indicators, physical habitat, and stressor data. This may coordinate well with Projects 1-3. 2. Characterize the distribution of data for biological indicators and determine potential breaks or groups that may define thresholds for BCG levels, based on response of the data to stressors. Identify areas of the distribution in which there are relatively few sites represented or parts of the distribution in which there are sharp changes in indicator condition. 3. Determine if locations of missing data represent areas where thresholds will be placed. These areas of the gradient would be the prioritized data gaps for additional sampling.
Product:	Compiled data set of biological, physical habitat, and stressor information. Graphs and tables describing the distributions of each indicator. Prioritized list of data gaps requiring additional sampling.
Information Available:	For a focus on macroinvertebrates, spatially distributed data sets are preferred such as SWAMP, EMAP, PSA, SMC, USFS and others.
Estimated Cost:	□50,000 to □150,000; perhaps □□500,000 if additional sampling is included.
Schedule:	One year for data compilation and analysis
Potential Collaborators:	SWAMP, EMAP, PSA, SMC, USFS and others

Project 6:	**Determine appropriate BCG for different degrees of hydrologic modification**
Issue:	Hydromodification is one of many potential stressors. However, the pervasiveness of hydrologic modification in southern California and the significant degree to which it can impact biota makes it a particularly important stressor. Since hydrologic modification represents a stressor condition that is difficult to reverse in the short- to medium-term, this may be one basis upon which TALU is considered for southern California coastal streams (i.e., for low gradient□low elevation streams, assign tiers based on degree of hydromodification such as full channelization, concrete sides with soft botton, and unchannelized). Therefore, understanding how biological expectations change with hydrologic modification is an essential step towards refining the BCG and developing TALU in the region.
Tasks:	1. Compile biological, physical habitat, stressor condition, and water quality data as well as hydromodification attributes from existing data. This can include various biological indicators (benthic macroinvertebrates, algae, riparian vegetation, fish, amphibians, etc.) and could be done in coordination with Projects 7, 8, and 9. Develop metrics of hydrologic modification that can be scaled from natural (no modification) to extreme modification. 2. Develop a relationship between biological metrics or IBI and hydromodification metrics. 3. Verify relationships and identify a refined and comprehensive BCG that takes these relationships into account, using an expert review panel. The expert panel should help derive decision rules for weighting different data and determining BCG level based on various biological datasets (i.e., macroinvertebrates, algae, riparian vegetation, fish, amphibian, etc.).
Product:	A refined BCG based on level of hydrologic modification. Proposed tiered aquatic life uses based on varying levels of hydrologic modification.
Information Available:	SCCWRP, Counties of Ventura and Los Angeles, and the SMC are currently working on hydrologic modification projects related to erosion. For a focus on macroinvertebrates, spatially distributed data sets are preferred such as SWAMP, EMAP, PSA, SMC, USFS and others
Estimated Cost:	□50,000 to □150,000; perhaps □□500,000 if additional sampling is included.
Schedule:	Two to three years. One and one half years for data compilation and the remainder for developing the BCG
Potential Collaborators:	SWAMP, EMAP, PSA, SMC, USFS and others

Project 7:	**Evaluate and develop a refined set of physical habitat measures that help develop the GSG.**
Issue:	Physical habitat quality should be an important factor in determining biological condition expectations. Until recently, most physical habitat sampling followed protocols that were semi-quantitative and subject to large sampler-to-sampler variance. The Pilot Study showed that these highly variable, semi-quantitative physical habitat measurements were insufficiently robust for developing a predictable GSG. More quantitative, less variable, physical habitat protocols have recently been developed and are now being implemented throughout the region. These new protocols may be more useful in developing the GSG since they are more quantitative, but no one has examined their results critically for this type of TALU application.
Tasks:	1. Compile physical habitat data for sites using the new protocols along with biological data, as available. 2. Characterize the statistical distribution of various physical habitat measures. It may be useful to examine multi-metric indices of physical habitat condition. It may also be useful to differentiate the data by stream classification and degree of hydromodification. 3. Determine relationships between physical habitat metrics and biological measures. Recommend the physical habitat metrics that best predict biological responses. 4. Pilot test recommended metrics at a range of sites to evaluate the utility of the proposed physical habitat metrics.
Product:	Series of correlation plots or matrices of physical habitat metrics and biological responses. Recommend validated physical habitat metrics for use in developing the GSG.
Information Available:	EMAP has the most quantitative physical habitat measurements. SWAMP and the Perennial Stream Assessment have developed new methods for physical habitat that are derived from the EMAP protocols. The SMC will be using the SWAMP protocols in the upcoming years and the data generated could serve as the validation data set.
Estimated Cost:	□200,000 - □500,000, not including additional data collection
Schedule:	Two to three years
Potential Collaborators:	EMAP, SWAMP, PSA, SMC

Project 8:	**Develop refined base maps of stressor information**
Issue:	Development of a reliable GSG is dependent upon having accurate stressor information. Moreover, this information will help define the tiers for TALU implementation. Currently, insufficient stressor information exists with which to draw relationships with existing biological indicators. For example, macroinvertebrate data are available for many sites in the region, but associated stressor information is not complete. This stressor information comes in many varieties, but can be broken into two types: watershed scale and reach scale. Watershed stressors focus on large-scale cumulative impacts such as upstream land use. Reach stressors focus on local impacts such as physical habitat, flow, or water quality.
Tasks:	1. Compile data on watershed scale stressors. This may include, but is not limited to, land use, imperviousness, flow augmentation or diversions as well as associated structures (i.e., dams, reservoirs, etc.), and point source discharges. 2. Compile data on reach scale stressors. This may include, but is not limited to, stream bed material (i.e., fully channelized, concrete-lined with soft bottom, unchannelized), nonpoint source inputs, road crossings and associated structures (i.e., bridges, culverts, Arizona crossings). 3. Place all of this information into a GIS platform for use in future projects. Use the GIS to create maps of the stressor distributions. 4. Evaluate maps to ensure they are using the most up-to-date information and identify sites needing follow-up reconnaissance to ensure desired accuracy.
Product:	GIS layers and base maps of watershed and reach scale stressors.
Information Available:	Much of the watershed scale stressor information is currently available and compiled. Less information has been compiled for reach scale stressors.
Estimated Cost:	□250,000 to □500,000
Schedule:	One to three years, depending on number of stressors and scale.
Potential Collaborators:	DWR, SCAG□SANDAG, most public works and flood control agencies, NOAA.

Project 9:	**Research and evaluate different indices of human disturbance as GSG surrogates**
Issue:	There are myriad of biological stressors, which often have cumulative impacts on southern California streams. Successful TALU delineations depend on having a clear understanding of these stressors and their gradations (i.e., the GSG). Through the process of defining GSG attributes, stakeholders can determine which stressors are controllable (and therefore, not an appropriate aspect of tiered uses) and which are not readily controllable (and might make for good attributes to use in defining tiers). Previously, only landscape scale stressors were evaluated. However, these large-scale stressor evaluations were incomplete and virtually no reach-scale stressors appeared adequate for describing biological response in the biological indices examined to date (i.e., macroinvertebrates). The goal of this project is to improve the GSG for developing TALU.
Tasks:	1. Compile the existing knowledge of stressor indices from the literature, particularly those used in other water programs. 2. Use the existing knowledge from task 1 to create metrics to characterize stressors. This may include multi-metric approaches. 3. Evaluate the biological responses along each stressor metric gradient to identify the best (most predictive) approach. Conduct this process with several types of biological responses to determine the most sensitive biological response to stress. 4. Verify the pros and cons of potential stressor metrics and select preferred approach using an expert review panel. 5. Create a GIS map of stressor metrics for perennial streams region wide.
Information Available:	There are a number of stressor metrics recently developed and published in the literature. Land cover data are readily available, but should be checked for currency and accuracy (see Project 8). Hydrologic as well as physiochemical data are available from several sites and time periods. Where data do not exist, a targeted sampling program may be required.
Product:	Literature review of existing approaches to stressor identification. Series of correlation plots or matrices of stressor metrics and biological responses. Recommended GSG options for use in developing TALU.
Estimated Cost:	□200,000 - □400,000
Schedule:	Two to three years
Potential Collaborators:	SWAMP, NPDES permittees, USGS, DWR

Project 10:	**Examine BMP effects on biological condition**
Issue:	Condition assessments from the Pilot Study indicated that some sites had relatively "good" biological condition considering the level of stressors such as surrounding land use. Similarly, some sites had relatively "poor" biological condition despite an apparent lack of significant stressor sources. The initial assumption has been that unique, site-specific circumstances help dictate the outlier conditions of these sites. To determine whether site-specific circumstances are the cause of the outlier conditions, sites that are uncharacteristically "good" or "bad" should be examined to determine if this is a result of specific practices, such as BMPs or the presence of industrial discharges. This analysis can help determine whether the indicators are appropriate, and potentially identify the key physical and/or hydrologic factors that can help improve degraded sites.
Tasks:	1. Using the compiled data set from Projects 6, 8, and 9, look for anomalous sites that do not fit the BCG/GSG relationship. 2. Conduct site reconnaissance to determine site-specific factors, including BMPs or specific discharges, if any. 3. Based on BMPs or other factors that yielded better than expected biological condition, recommend approaches that may help improve other lower quality sites (e.g., BCG Level 5 or 6). An alternative is to work with agencies that are preparing to install BMPs to test BMP effectiveness. 4. Recommend procedures for handling outlier or anomalous sites within a TALU framework.
Product:	Report with maps showing outlier sites and evaluation of factors causing site-specific condition. Create a list of BMPs that will improve biological condition at these sites. Guidelines for dealing with outlier sites in TALU implementation where site-specific factors need to be accounted for.
Information Available:	SWAMP and the Perennial Stream Assessment have a large number of sites that can contain outliers for investigation. SCCWRP has just completed an assessment of BMPs for habitat restoration.
Estimated Cost:	$100,000 to $200,000, more if sampling or BMP construction is required.
Schedule:	One to two years
Potential Collaborators:	SWAMP, EMAP, PSA

Project 11:	**Determine appropriate implementation criteria for identifying stream classes and tiered uses**
Issue:	BCG and GSG-related projects will determine appropriate classes of perennial streams in Southern California, within which more specific aquatic life uses can be defined. To implement this classification, there needs to be objective science-based criteria for distinguishing classes so that water quality standards can clearly identify to which class a given segment belongs. However, there are policy implications for how stream classifications are attributed. It is this intersection of science and policy that requires thoughtful implementation to ensure equity, effectiveness, and cost efficiency. Several questions need to be answered such as, if classification is based on elevation (or gradient), what is the specific cutoff for high vs. low elevation streams (or high vs. low gradient); are there exceptions to this classification; and how is this classification scheme best applied to ensure efficient implementation of TALU? Similarly, TALU tier thresholds are derived from application of scientific information, but these thresholds need to be re-evaluated once they are applied to actual stream reaches to ensure the biological expectations are appropriate.
Tasks:	1. Compile, summarize, and analyze statistically the database from Projects 3, 4, 6, 8, and 9 will be to identify stream classes that should be considered for separate TALU □regions□. This will be done in a pilot watershed. 2. Conduct GIS analysis and create a map of stream classification assignments and proposed tiered uses in the pilot watershed. 3. Evaluate the stream assignments to confirm appropriate classes and tiered uses within each class using a task force of scientists, regulatory and regulated agency staff, as well as nongovernmental organizations. While the goal is not to agree on every stream reach assignment, this project will help to define a framework for conducting the public process in the remainder of the region.
Product:	Framework document detailing the criteria and process for assigning stream classifications and tiered uses.
Information Available:	Results of Projects 3, 4, 6, 8, and 9
Estimated Cost:	□75,000 □150,000
Schedule:	One year
Potential Collaborators:	Regulatory agencies and regulated stakeholders

Project 12:	Integrate BCG and TALU development with potential biocriteria
Issue:	Formulation of tiered aquatic life uses will be most useful if there are appropriate criteria available to ensure protection of waterbodies within each tier. Currently, no biocriteria have been established as regulatory water quality standards for southern California streams although the Southern California IBI for macroinvertebrates has been suggested. On-going algae work, including that proposed in Project 1, could provide information with which to develop biocriteria for algae, if algae criteria can be developed that serve as good indicators of biological condition. If appropriate biocriteria can be formulated, they could be used as measurement benchmarks with which to evaluate impairments and restoration progress as well as document protection of different aquatic life uses.
Tasks:	1. Establish a task force consisting of regulatory, regulated, and nongovernmental agencies to provide a context for biocriteria interpretation. This group may best be served by using a regulatory agency as the lead. 2. Create a framework that maps the relationship between beneficial uses in basin plans, biocriteria, use attainability analysis, and antidegradation policies. Data compiled and used as part of this workplan should help immensely. 3. Write a consensus-based white paper outlining the regulatory model that can be used as the basis for integrated policy development.
Product:	White paper outlining the regulatory model that can be used as the basis for integrated policy development
Estimated Cost:	□75,000-□150,000
Schedule:	One to two years
Potential Collaborators:	Regulatory agencies and regulated stakeholders

Project 13:	Determine potential tiered water quality objectives
Issue:	In developing tiered aquatic life uses, it may be appropriate to modify water quality objectives to reflect what is necessary to obtain and maintain aquatic life uses for that tier. For example, if a high quality tiered aquatic life use is identified (and supported by both BCG and available biological condition data), it may be critical to have more stringent water quality objectives for certain parameters, such as oxygen, temperature, sediment, and possibly certain chemical pollutants, than are necessary for more standard aquatic life uses. Likewise, if a tiered use is identified for highly modified waterbodies, it may be desirable to modify objectives in cases where a less stringent objective may be adequately protective. Tiered or modified water quality objectives may not be appropriate for certain types of parameters. While there have been some evaluations of this issue at the national level, no guidance has been developed. If and how objectives are modified in concert with TALU will have a direct bearing on how TALU is implemented.
Tasks:	1. Convene a workshop consisting of regulatory agencies, resource agencies, and invited scientists to discuss appropriate actions in tasks 2-3 below. 2. Evaluate what EPA and others have considered, and list the pros and cons of different strategies for dealing with tiered water quality objectives. 3. Identify a preliminary list of parameters for possible tiering, as well as a list of parameters for which tiered objectives would be inappropriate. 4. Identify a pilot study to test the feasibility of tiered water quality objectives. Where possible, actual data for parameters should be examined from segments representing all tiers.
Product:	Topical Workshop. Position paper recommending results of evaluation and parameters potentially subject to tiering, if any. Design for Pilot Study.
Estimated Cost:	□50,000 to □75,000
Schedule:	Six months to one year
Potential Collaborators:	Regulatory and regulated entities.

Project 14:	**Link TALU with other regulatory programs**
Issue:	Local, State, and Federal regulatory programs do not operate in isolation from one another. Water quality standards, biocriteria, total maximum daily loads (TMDLs), NPDES permitting, 401/404 certification for streambed alteration are just a few examples. Optimizing the interplay between regulatory programs and regulatory agencies will help reduce redundancy and increase effectiveness of the regulatory framework. This will be particularly important in determining if TALU should be initiated at the local, regional, or statewide level.
Tasks:	This project will require two tasks. First, a policy committee should be gathered to help evaluate optimal implementation strategies. This policy committee should contain representatives from regulatory, regulated, and environmental advocacy organizations. Regulatory program representation should include RWQCB, SWRCB, and EPA. Second, the committee should draft an implementation workplan to coordinate efforts.
Product:	Implementation strategy workplan.
Information Available:	There are other examples that can serve as a model for this Committee including the State's Sediment Quality Objectives.
Estimated Cost:	$100,000 to $200,000
Schedule:	Two years
Potential Collaborators:	Regulatory and regulated entities

PROJECT INTEGRATION AND SYNTHESIS

The projects outlined in the previous section are designed to address major data gaps in our understanding of biological responses to stressors in southern California perennial streams and how the stressor axis of the BCG should be constructed and applied. These projects are necessary to formulate a scientifically defensible framework upon which tiered aquatic life uses can be developed and implemented. To make the most efficient use of available resources, certain projects should be completed or at least largely completed prior to others. Ideally, regulators and stakeholders would cooperatively lay out the TALU development framework in order to make the process efficient, effective, and transparent. To that end, we see projects being conducted in four phases, understanding that there will be (and should be) some overlap in the timing of different phases so that the process is as efficient as possible.

In the first phase, basic information is needed regarding biological responses to stressors, characterizing the stressor gradient, and the types of data available for BCG analyses. Therefore, Project #3 (natural condition definition and appropriate classification) and Project #5 (characterize range of biological condition data available) should be initial priorities. Unless these projects are addressed, subsequent BCG or GSG-related projects may be flawed or incomplete. Simultaneously, Project #7 (improve physical habitat measures to develop the GSG), Project #8 (improved base maps for stressors), and Project #9 (evaluate indices of human disturbance) should also be first phase projects of high priority. Results of Projects 7, 8, and 9 will be instrumental in developing a sound GSG axis with which subsequent BCG development can occur. The outcome of the first phase of projects will be:

- A better understanding of how natural condition should be described biologically
- Available data or information to characterize Level 1 of the BCG (at least for macroinvertebrates)
- Degree to which the full range of biological condition is represented using available site data for the southern California
- Preferred ways to characterize the stressor gradient and data refinements needed to define and quantify the GSG
- Refinements to physical habitat metrics and results that will feed into the GSG characterization and provide useful information for other programs and applications
- More informative base maps to allow better characterization of the range of stressor intensity represented using current biological sites

A second phase of projects would build on the ones noted above, refining the BCG further using other assemblage data (algae, Project #1, and riparian vegetation, Project #2). The inclusion of algae and riparian vegetation condition attributes is considered key to making the BCG more robust and scientifically defensible. The inclusion of these assemblages, as well as macroinvertebrates (and fish or other vertebrates to the extent possible), will ensure that a broader range of effects of stressors are included in the BCG and properly interpreted. The timing of these projects would also allow completion of current algal and CRAM data collection efforts, which will be instrumental in completing Projects 1 and 2. Results of Phase 2 would be a more comprehensive BCG that can now be refined in Phase 3 using expert consensus and site-specific information.

The third phase of projects would further refine and ultimately complete previous work in the form of more complete, robust BCG characterization (Project #6), and consideration of ways that may be effective in restoring certain tiers of aquatic life uses in some cases (Project #10, evaluate effects of BMPs and other site-specific factors on biological condition). The analysis of more site-specific biological-stressor relationships (Project #10) is neither necessary, nor desirable when formulating the BCG for a region (Phases 1 and 2) but is useful once a regional BCG is developed and the beginnings of implementation are being considered. Site-specific relationships can also be helpful in validating the BCG and determining the types of stream conditions that may be highest priority for restoration efforts.

The fourth and final phase of projects addresses TALU implementation issues (Projects 11, 12, and 13). In order to develop appropriate implementation criteria for stream classification, tiered uses, biocriteria, and appropriateness of tiered water quality objectives, a well-characterized and accepted BCG (including a robust GSG) is critical. The science provided in the first 3 phases will help guide appropriate implementation strategies. While biocriteria can be developed without TALU, implementation of biocriteria in the context of TALU is likely to have greater environmental benefits, be easier for regulatory agencies to implement in the long run, and be more defensible to stakeholders. Phase 4 projects could start as Phase 2 projects are being completed, once better information becomes available to characterize the BCG and GSG. However, Phase 4 implementation projects are not likely to be completed until after BCG development is complete (Phase 3).

While approximate costs are provided in the project descriptions, the estimates are by no means rigorous and there are many opportunities for cost savings by leveraging among projects and outside studies. For example, there are at least eight projects that rely on compiled databases of biological condition, hydrology, physical habitat, and stressor information. Obviously, this needs only to be done once and, even then, portions will be done in individual project development (i.e., stressor specific information, Project 8). Another example would be the formation of expert panels and task force committees. Virtually every project would benefit from the use of independent, multi-sector review as a means for oversight, validation, and transparency. These committees are crucial to success, but a new committee is not needed for every study. One committee could take on the challenge of several projects, especially if the projects are similar in nature such as those described within each of the implementation phases. Finally, the potential collaborators for these projects were repeated over and over again. An integrated approach with multiple agencies attacking these data gaps will increase the cost leveraging necessary to overcome the hurdles to achieving TALU.

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Appendix 8

Revised Analyses of Biological Data to Evaluate Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams

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December 8, 2006

Data Report: Revised Analyses of Biological Data to Evaluate Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams

Introduction

Under a previous work assignment with EPA Region 9 and the Los Angeles Regional Water Quality Control Board, Tetra Tech used available biological and habitat quality data (provided primarily by EMAP), as well as information provided by local and regional experts, to develop a preliminary Biological Condition Gradient (BCG), which is a framework that characterizes changes in biological condition going from undisturbed (reference) to very impaired conditions (Davies and Jackson, 2006). The range of potential impaired conditions encountered in the region constitutes the Generalized Stressor Gradient (GSG), which is a framework that characterizes changes in stressor attributes going from undisturbed to very impaired conditions (Davies and Jackson, 2006). In order to develop a defensible framework for tiered aquatic life uses (TALU), streams in the region need to be categorized with respect to their biological expectations considering the types of classes that either occur naturally or that are distinguishable based on what are major habitat alterations due to anthropogenic factors.

Since the initial work was completed by Tetra Tech, several other sources of macroinvertebrate and habitat data became available, primarily through California's Statewide Assessment and Monitoring Program (SWAMP) as well as other sources. These data provided substantially more information on the low elevation, urbanized streams in the region (e.g., in and around Los Angeles and San Diego), a major data gap identified by Tetra Tech in the previous work. As a result, we were able to more confidently identify the range of biological conditions currently observed in streams affected to varying degrees by anthropogenic alterations. Through these analyses, the revised results presented in this report should provide more confidence in terms of how streams might be classified in the region, and ultimately, potential tiered aquatic life use definitions.

Tetra Tech previously incorporated several suggestions from Technical Advisory Committee (TAC) members in the region regarding the types of attributes that should be considered in developing the BCG and the GSG for the region. As noted previously, certain attributes identified in EPA's national BCG framework were either modified or removed for the southern California region because they are either not relevant to this region or were better incorporated as part of the generalized stressor gradient (GSG). Key biological characteristics that were included in the BCG are: (1) Southern California IBI and component metrics developed by Department of Fish and Game (DFG) for macroinvertebrates; (2) fish assemblage information obtained from Drs. Jonathan Baskin, Thomas Haglund, and Camm Swift; (3) and algae diatom information obtained from EPA's Rapid Bioassessment Protocols and Western EMAP sources.

This revised report updates the macroinvertebrate attribute information for the BCG based on the new data evaluated. Presented here is a conceptual BCG that is intended to serve as a precursor to a final, fully calibrated BCG that could be used in the TALU framework or in Use Attainability Analyses (UAA). Other biological information was not updated in this exercise. We would note that new periphyton information being collected in the region by the Southern California Coastal Water Research Project (SCCWRP) and by Tetra Tech could be very useful in further refining the BCG in the future. We would also note that the TAC felt that the BCG attribute long-lived or regionally endemic species may be especially useful in terms of discriminating biological condition over the stressor gradient in this region. This attribute is characterized mostly in terms of vertebrate species information (number or types of fish, amphibian and reptile species) since these species are relatively long-lived and/or endemic to a particular drainage or watershed in this region. The TAC agreed that better information concerning these types of species would be very beneficial in refining the BCG and perhaps aquatic life uses as well.

Data Sources

Additional macroinvertebrate data used in these analyses were obtained from California Department of Fish and Game (Pete Ode) and from EPA Region 9 (Terry Fleming). Data for approximately 1700 benthic macroinvertebrate samples and physical habitat assessments were compiled, along with geographical coordinates at over 300 sites in southern California between 1998 and 2005. Biological data included data for the seven different metrics, which comprise the Southern California IBI (SoCal IBI), as well as the IBI score for each sample (Table 1). Habitat assessments were based on the Rapid Bioassessment Protocols (Barbour et al. 1999) and included data scores for the 10 different parameters on a 0-20 scale (0 poor, 20 optimal) as well as the total habitat score for each site (Table 1).

Table 1. Biological metrics and physical habitat parameters used in analyses.

Biological Metrics	**Physical Habitat Parameters**
EPT taxa	Epifaunal substrate
Intolerant taxa percent	Sediment deposition
Predator taxa	Embeddedness
Coleoptera taxa	Riffle frequency
Non-insect percent	Channel alteration
Tolerant taxa percent	Channel flow
Collector percent	Bank vegetative protection
	Bank stability
	Velocity/ depth regime
	Riparian zone width
Southern California IBI	**Total Habitat Score**

In addition to instream physical habitat measures, the stressor gradient was characterized by landscape influences on sampling locations. For each location, 5 km radius circles were delineated and land use/land cover (LULC) percentages (MRLC 1992) were calculated within these circles to represent general landscape activities in the vicinity of the sample sites. These LULC percentages were used to calculate a Landscape Development Intensity (LDI) index (Brown and Vivas 2006) that weights each land use type base on the energy that each uses. Potential LDI index scores range from 1 to 10 with 1 representing natural systems and 10 representing the most intense urban land uses. Agricultural land uses have LDI coefficients between 2 (low intensity pasture) and 7 (high intensity feed lots, dairy farms, etc.). Urban land uses have LDI coefficients that range between 7 (low density residential) and 10 (central business district). This LDI index is used as another indicator of the stressor gradient as it serves as a surrogate for chemical and hydrologic impacts, which may not be included in instream physical habitat measures. LDI has been used by Florida in its biological assessment program (Fore 2004) and is particularly useful for distinguishing an urbanized gradient.

Preliminary Stream Classification

Natural variations in streams of this region can be attributed generally to differences in elevation. Through basic knowledge of the study area, as well as inspection of aerial photographs, it was determined that an elevation of 1200 feet appeared to be a relatively reliable threshold for distinguishing between higher and lower gradient stream systems. Using this elevation threshold, four types of site classes were identified with which BCG attributes were evaluated:

1) natural high elevation foothills (>1200 ft),
2) natural low elevation (<1200 ft),
3) low elevation partially altered channel or riparian zone,
4) low elevation concrete-lined channel.

Sites were grouped into one of these categories based on visual inspection of aerial photographs of each site and its surrounding area. These four stream classes cover the range of stressor and biological conditions observed in the Southern California Bight region. In addition, these four classes were clearly distinguishable from each other visually and were thought to be distinct ecologically as well.

Stressor Measures in Relation to Stream Classes

Median habitat scores were related to natural and anthropogenic influences as represented by the four site classes (Figure 1). Habitat scores were also related to LDI index scores, demonstrating a relationship between habitat quality and overall landscape stress (Figure 2).

Macroinvertebrate Data

BCG attributes that were refined based on the updated macroinvertebrate data included attributes 3, 4, and 5. Other BCG attributes remained unchanged from the previous version developed by Tetra Tech because there were no new data or other information that would help further refine other BCG attributes. In conducting these analyses, we compiled relevant macroinvertebrate metric data for each attribute by stream class as defined in previous work and as noted above. One of the key questions examined in this exercise is whether the initial classifications used previously continue to be scientifically defensible given the more extensive biological data made available.

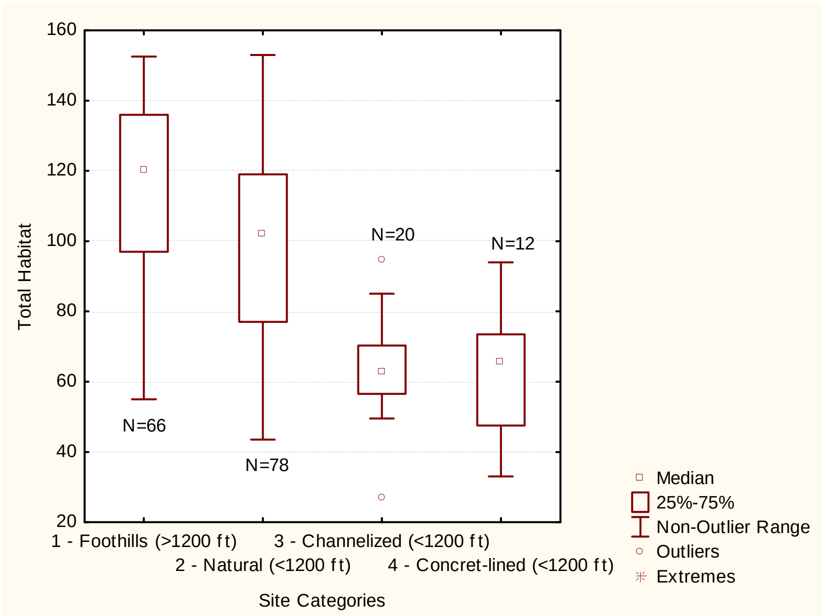

Figure 1. Total habitat scores organized among four site categories

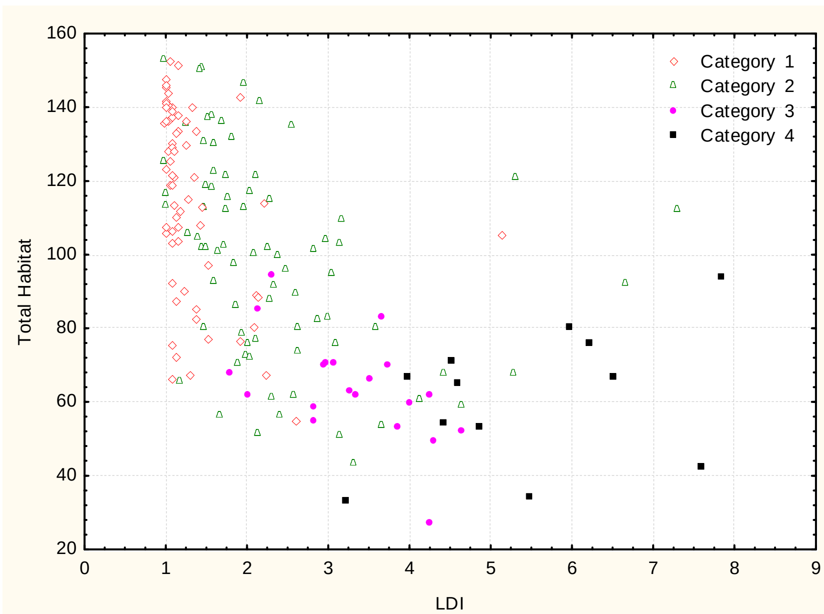

Figure 2. Total habitat scores versus LDI index scores organized among four site categories.

Scatterplots of the SoCal IBI and biological metrics versus habitat assessment score and LDI index score were used to examine relationships between habitat condition and overall landscape stress on macroinvertebrate assemblages. In addition, biological data were categorized according to the four site classes to illustrate variability within site classes in terms of response to stress. Non-parametric Kruskal-Wallis tests (at an alpha = 0.05) were used to statistically evaluate differences in results among the four site categories.

Results

Southern California IBI scores ranged from 0 to approximately 90 and about 60 percent of the sites were impaired according to the classifications developed by Ode et al. (2005) (i.e., IBI scores less than 40) (Figure 3). For the two selected metric distributions (Figure 3), about 8 percent of the sites had no EPT taxa and approximately 40 percent of the sites had percent non-insect less than 10%. Sites located above 1200 ft elevation generally had higher IBI and sensitive metric scores than those found below 1200 ft (Figures 4 and 5). Approximately 30 percent of the sites above 1200 ft were impaired, while 80 percent of the sites below 1200 ft were impaired and half of these were rated as very poor. For the non-insect percent metric, about 50 percent of the sites above 1200 ft had non-insect percents less than 20%, while about 70 percent of the sites below this elevation had values less than 20%. EPT taxa values had relatively similar distributions among the two elevation categories.

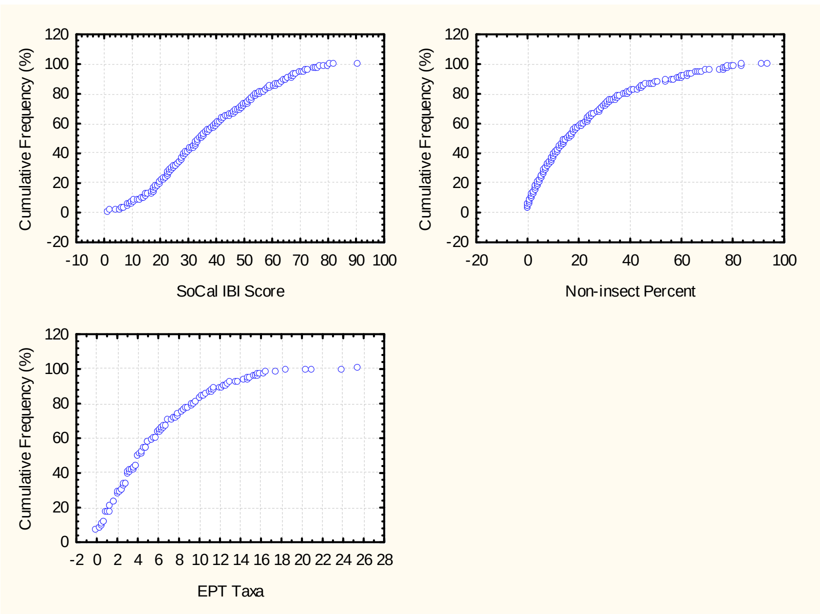

Figure 3. Cumulative frequency distribution plots for the SoCal IBI and two example metrics, intolerant percent and EPT taxa.

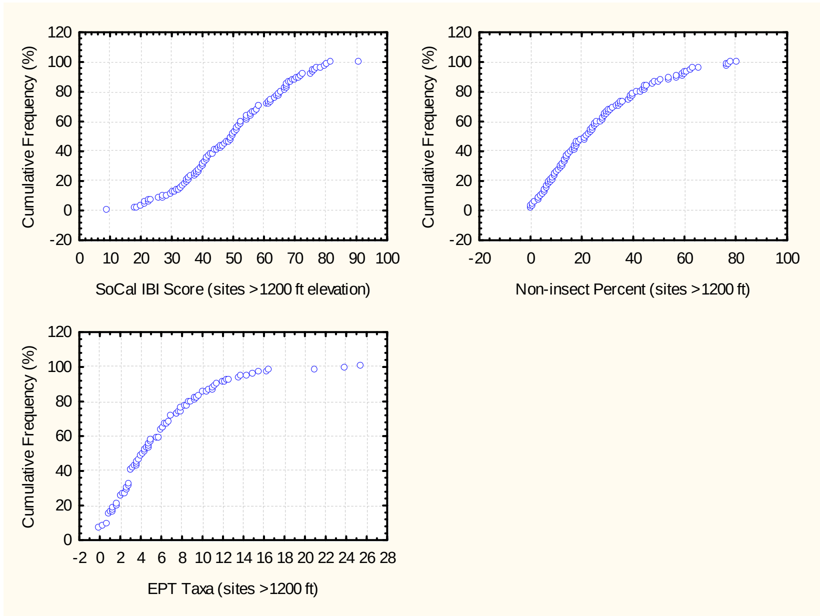

Figure 4. Cumulative frequency distribution plots for the SoCal IBI and two example metrics for sites located at elevations greater than 1200 feet.

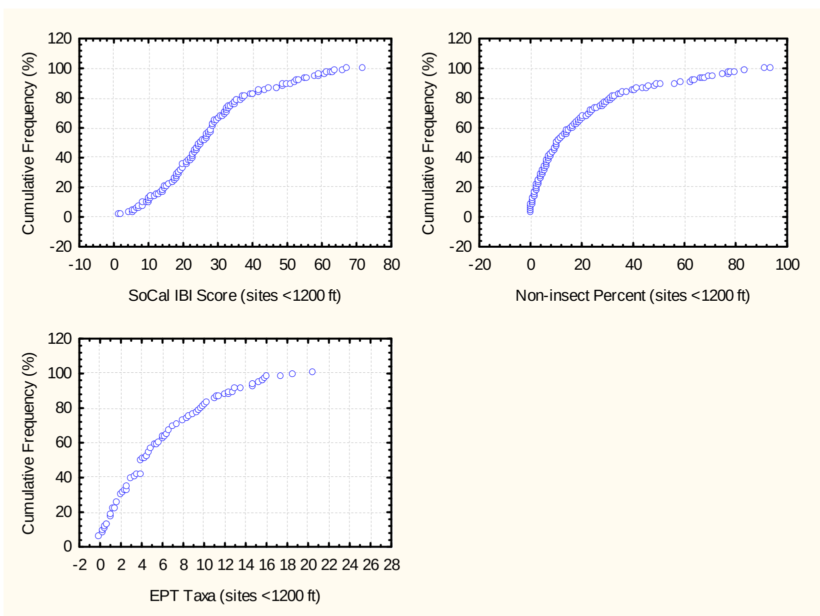

Figure 5. Cumulative frequency distribution plots for the SoCal IBI and two example metrics for sites located at elevations lower than 1200 feet.

Southern California IBI

As shown in Figure 6 the SoCal IBI scores were higher in natural channel sites (both >1200 ft and <1200 ft) than at human-altered sites (both partially altered and concrete lined categories). A non-parametric Kruskal-Wallis test confirmed that the two natural categories (1 and 2) were significantly different ($p<0.05$) from one another and each was significantly different from both of the human-altered site classes (3 and 4). SoCal IBI scores, however, were not significantly different between the two altered site classes. The following summarizes relationships regarding three of the BCG attributes that were subject to change based on the additional data in this analysis, and site classification. The three BCG attributes examined were: (1) sensitive ubiquitous taxa, (2) taxa of intermediate tolerance, and (3) tolerant taxa.

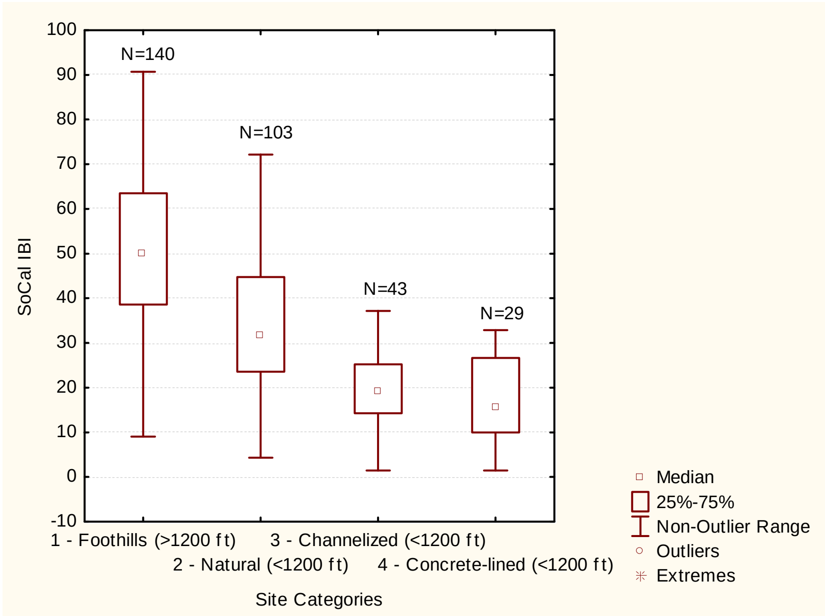

Figure 6. Southern California IBI scores in relation to the four site class categories used in this evaluation.

Attribute 3: Sensitive Ubiquitous Taxa

The Southern California IBI developed by DFG and others (Ode et al. 2005) includes four metrics that represent sensitive ubiquitous macroinvertebrate taxa: intolerant percent, number of EPT taxa, Coleoptera taxa, and number of predator species. All four sensitive ubiquitous taxa metrics showed similar patterns in response to the four site class categories (Figure 7). For intolerant percent, EPT taxa, and Coleoptera taxa, the two impacted classes of sites did not appear to be different from one another. For all four metrics, values for the two classes of natural sites were noticeably different from the two impacted classes. Additionally, the foothills class (i.e., category 1) was substantially different than the other natural site class (<1200 ft). A Kruskal-Wallis test on all the four metrics showed that all groups were significantly different ($p<0.05$) from one another, except the two altered classes which were statistically the same. Although predator taxa values among the two impacted classes (3 and 4) appeared different (Figure 4), the Kruskal-Wallis test indicated that this difference was not significant at an alpha level = 0.05.

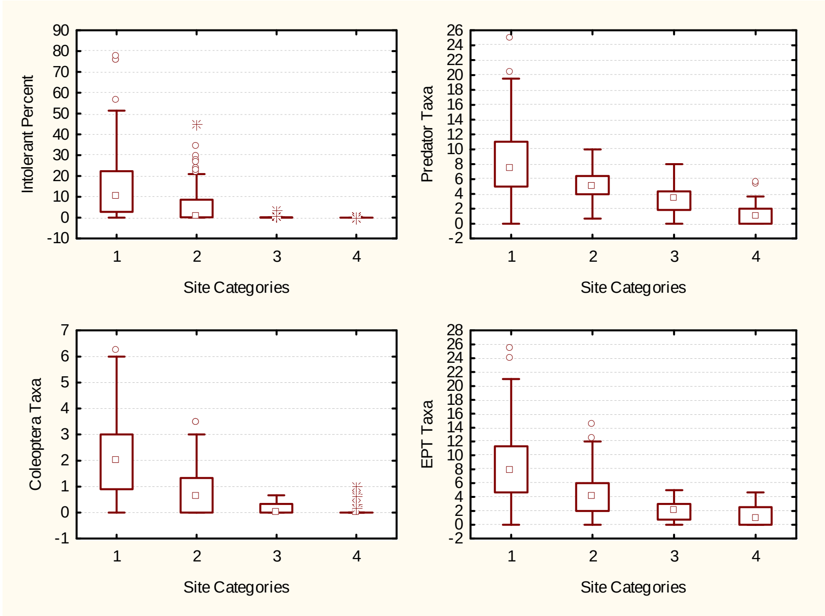

Figure 7. Intolerant percent, predator taxa, Coleoptera taxa, and EPT taxa reported in benthic samples as a function of four site class categories (see text for description of site categories).

Attribute 4: Taxa of Intermediate Tolerance

The SoCal IBI does not have a metric that includes only intermediate tolerant taxa. However the TAC recognized certain taxa that they considered to be representative of this attribute. These taxa included the caddisfly *Hydropsyche*, the mayfly *Baetis*, and elmid beetles. Dominance of these taxa is thought to signify fair – poor biological condition in this region. However, Figures 8 and 9 suggest otherwise – *Baetis* and *Hydropsyche* percent were lowest in site categories 3 and 4 (altered channels) and declined in response to increasing landscape disturbance as represented by LDI scores. Kruskal-Wallis tests confirmed these differences. Percent *Baetis* was significantly different ($p<0.05$) between category 1 and the two altered classes and category 2 was significantly different from category 4. The two natural stream class categories, as well as categories 2 and 3, and 3 and 4, were statistically the same. For percent *Hydropsyche*, the two natural categories were statistically the same, as were the two altered categories; otherwise, all categories were significantly different from one another.

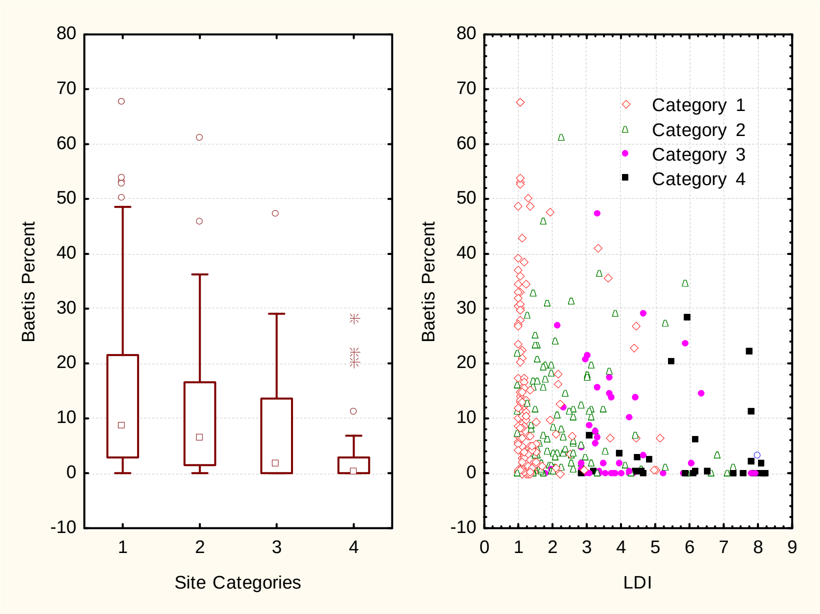

Figure 8. Baetis percent among four site categories and plotted versus LDI scores

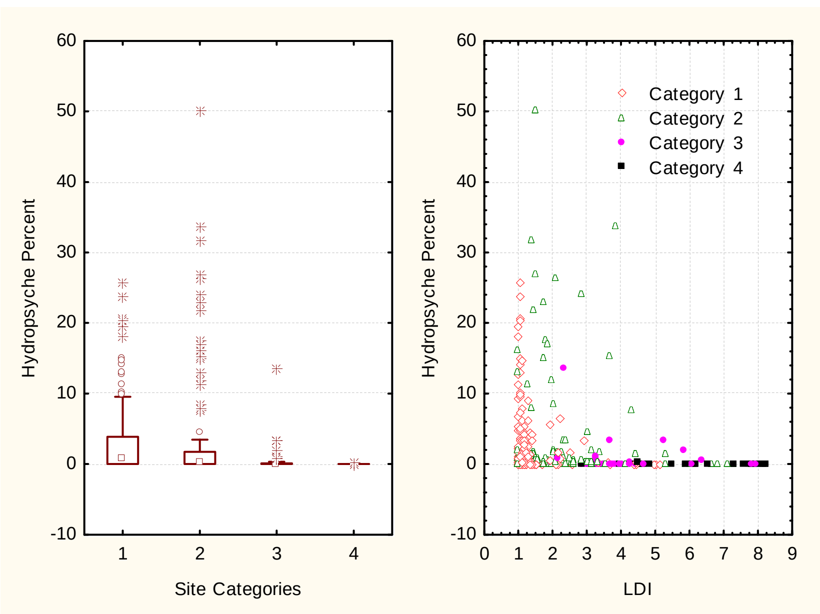

Figure 9. Hydropsyche percent among four site categories and plotted versus LDI scores

Attribute 5: Tolerant Taxa

The SoCal IBI includes three metrics that are indicative of tolerant taxa: percent collectors, number of non-insect taxa, and percent tolerant taxa. The percent collector metric showed a gradual increase from natural foothill (>1200 ft) streams (Category 1) to the concrete lined channels (Category 4) (Figure 10). Non-insect and percent tolerant metric scores were actually higher at the partially-altered sites than at the concrete lined sites. In fact, for these two metrics, concrete-lined channels appeared to be similar to both types of natural stream classes (Categories 1 and 2). A Kruskal-Wallis test on the non-insect taxa metric values indicated that categories 1 and 2 (natural sites) were not significantly different ($p>0.05$) from category 4 (concrete-lined channels); all other categories were significantly different from one another. For the percent tolerant metric, categories two and three were statistically the same as category 4, while category 1 was significantly different from all the other categories. A Kruskal-Wallis test on the percent collector metric indicated that all categories were significantly different from one another except categories 2 and 3 (low elevation natural channel and channelized), which were statistically the same.

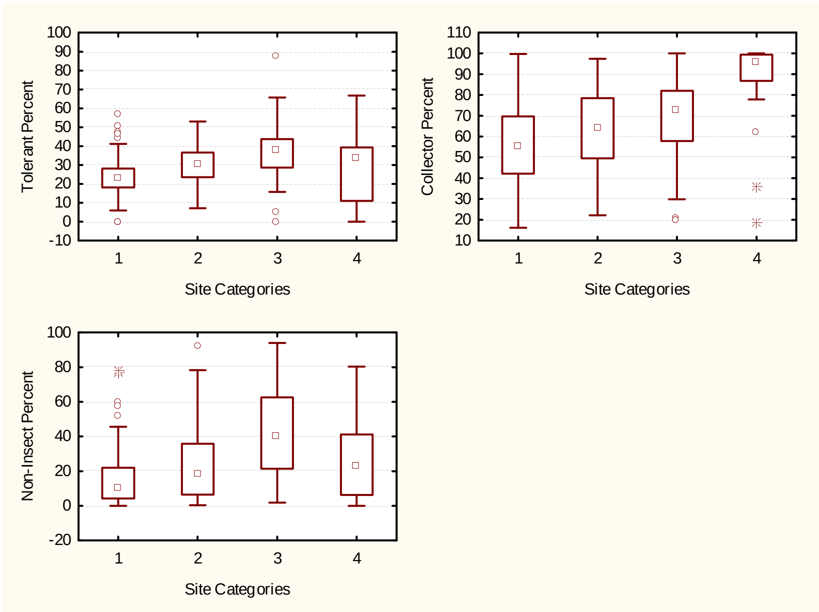

Figure 10. Percent tolerant taxa, percent collector taxa, and percent non-insect taxa reported in benthic samples as a function of four site class categories (see text for description of site categories).

Refinement of the BCG

Based on our method of site classification, we could not distinguish biologically, partially altered channels from concrete-lined channels for the majority of metrics, as well as the SoCal IBI; i.e., the concrete-lined channels can apparently achieve biological condition levels similar to those observed in partially altered low elevation streams. As we observed in the previous work, higher elevation streams have a higher biological expectation than lower elevation streams in the region, independent of the degree of channel alteration. In addition, the types of taxa often observed in the higher elevation cooler streams is different than those observed in the warmer lower elevation streams. This is borne out by the fishery information as well. While the exact elevation threshold to be used to separate low from high elevation stream classes is somewhat flexible (we used 1200 feet elevation), there are scientific data to support distinguishing higher elevation streams from lower elevation streams in terms of biological expectations. Use

Attainability Analyses might be necessary in some cases to clarify whether a borderline stream segment belongs to the lower or higher elevation stream class.

Figures 11 and 12 show relationships between the SoCal IBI, its component metrics, and increasing stress, as measured by either stream habitat quality score or the LDI index. The SoCal IBI and metrics were generally responsive to habitat degradation (Figure 11) and overall landscape alteration (Figure 12). Particular metrics that appeared most related to both habitat and LDI scores are percent tolerant taxa, predator taxa, and EPT taxa.

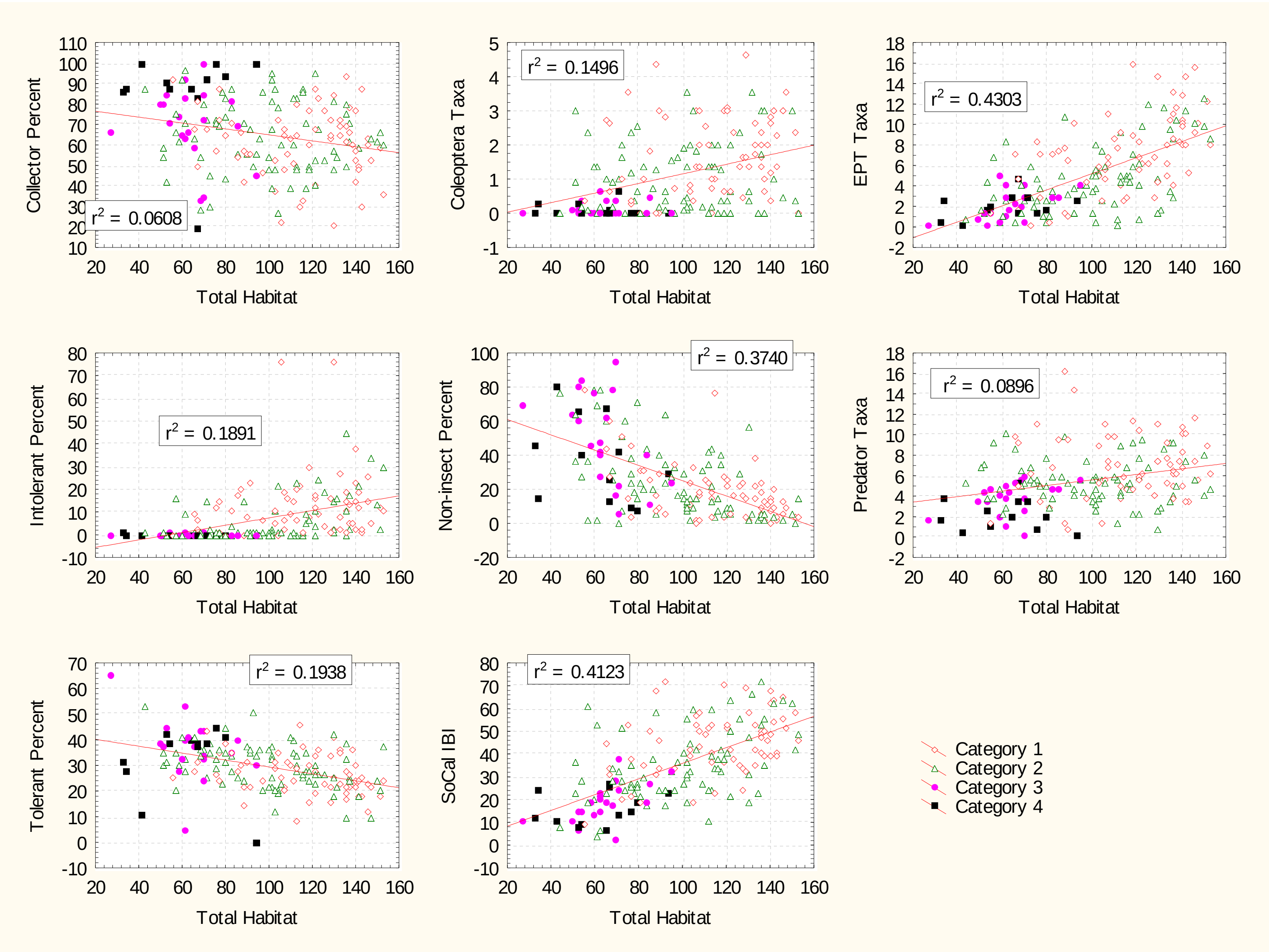

Figure 11. SoCal IBI and associated metrics versus total habitat scores organized among four site categories. All correlations were significant ($p<0.05$).

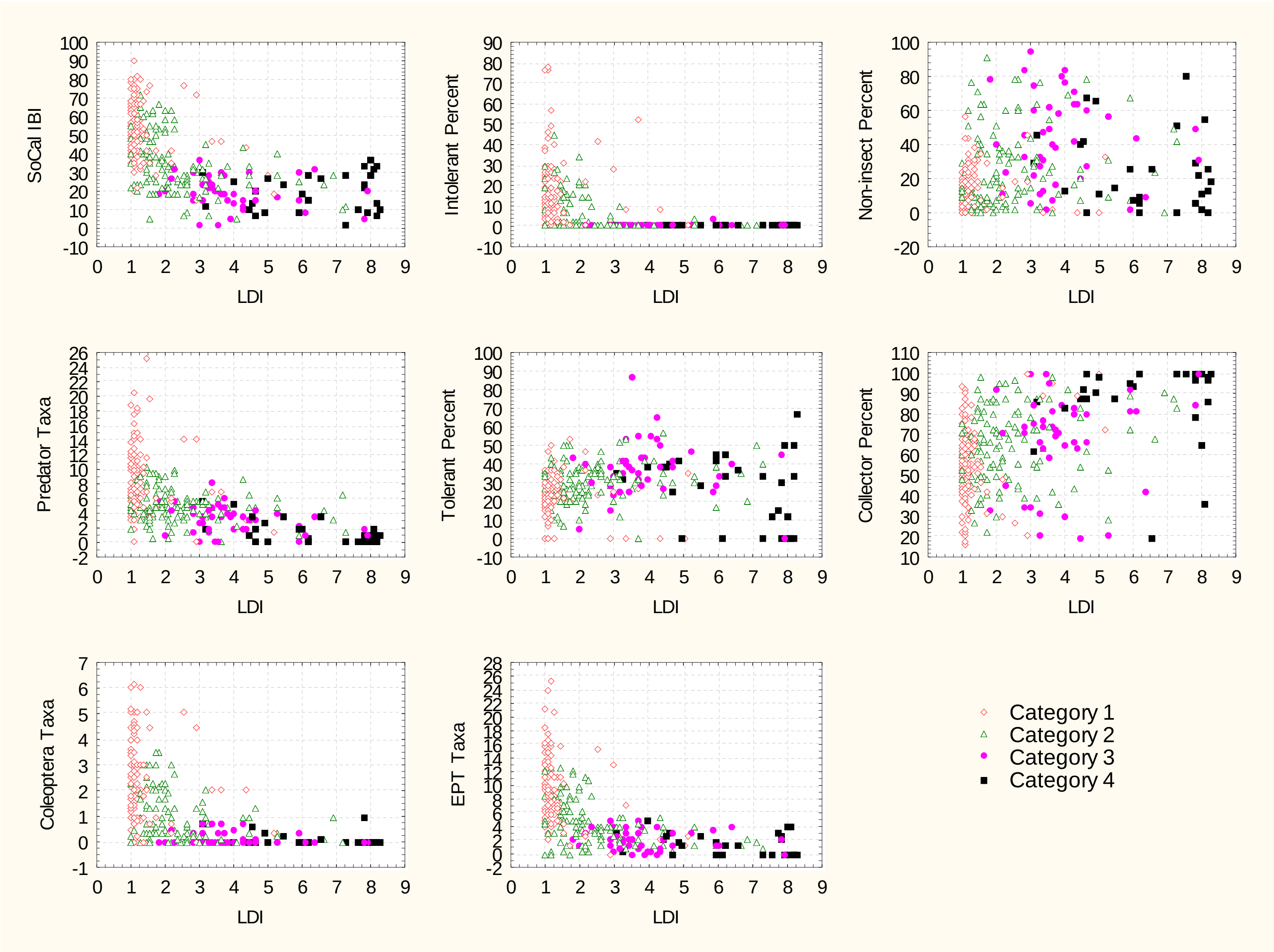

Figure 12. SoCal IBI and associated metrics versus LDI index scores organized among the four site class categories.

Tables 2 and 3 present the revised BCG incorporating the findings observed in the present analyses. In higher elevation streams, some sites appeared to be fairly pristine, as judged by a completely naturally vegetated land cover for many miles around the site. The macroinvertebrate assemblage at these sites showed all the signs of being minimally disturbed (i.e., true reference sites *sensu* Stoddard et al., 2006) and the TAC acknowledged this as well. Therefore, there is the possibility that the natural condition (i.e., BCG level 1) is known and quantifiable for Attributes III and V, and perhaps other attributes, for higher elevation streams in southern California (Table 2). Definitions for Attributes III and V in terms of macroinvertebrate indicators were updated based on the current analyses. Attribute IV (intermediate tolerant taxa) was not updated and it is not clear whether this attribute is relevant to southern California streams. Taxa that are thought to be intermediately tolerant (e.g., *Baetis*, *Hydropsyche*), did not display the expected trend with increasing stress, as measured by either habitat quality or LDI. Other studies have found that taxa of intermediate tolerance are found in roughly similar proportions across BCG tiers 2-5, representing a wide variety of conditions (Gerritsen and Leppo, 2004; Gerritsen and Jessup, 2006). Perhaps other faunal or algal indicators are more discriminating in terms of this attribute.

For lower elevation streams, it is not clear whether truly natural, unimpaired sites still exist in the southern California bight. However, at least a few low elevation sites displayed IBI and metric values approaching the highest scores found anywhere in the region. This may, of course, be a natural outcome of how the IBI was developed. As a placeholder, BCG level 1 (native condition) was defined for Attributes III and V for macroinvertebrates based on a compilation of the best metric scores observed for all low elevation sites combined (total of 175 sites; Table 3). Again, intermediately tolerant taxa (Attribute IV) may not be an informative attribute in terms of macroinvertebrates for this region. Number of Coeloptera (beetle) taxa is thought to be another indicator of sensitive ubiquitous taxa (Figure 7); however, the total number of taxa observed in the dataset (6 taxa) is few, making it difficult to discern fine differences with stressor level. Therefore, this metric was removed from the BCG table pending more information.

Among lower elevation streams, there are currently some differences in biological condition between natural and human-altered streams. However, while available habitat quality data suggests several factors that are different between the two types of streams (e.g., substrate heterogeneity and stability, channel sinuosity and complexity, riparian condition quality), it is unclear what is potentially attainable in the human-altered streams in the region (i.e., a least disturbed condition). When low elevation streams are examined with respect to increasing stress (as measured by either the habitat quality index or the LDI index), we can distinguish two separate classes corresponding to relatively natural channels and those that are altered hydrologically on the basis of certain metrics such as percent collectors. However, there appear to be more similarities than differences in terms of biological expectations between these two classes (Figure 10). Using the BCG framework, the best achievable condition (not necessarily best attainable) for altered low elevation streams in the region corresponds to a BCG level of 4, an LDI index score of approximately 4, and a SoCal IBI score of approximately 37 (Figure 12). The best achievable score for a given site, based on this dataset for the more natural channel low elevation streams appears to correspond to a BCG level of 2, an LDI index score of 2, and a SoCal IBI score of 72. No one site appeared to meet all of the indicator criteria identified under BCG level 1 for low elevation streams.

Table 2. Biological Condition Gradient Matrix: California Bight (High Elevation; >1200 ft)

	Biological Condition Gradient					
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
Ecological Attributes	Native structural, functional and taxonomic integrity is preserved; ecosystem function is preserved within the range of natural variability	**Minimal** changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but Sensitive-ubiquitous taxa are a dominant component; ecosystem functions are fully maintained through redundant attributes of the system;	**Some** changes in structure due to loss of sensitive or rare native taxa; shifts in relative abundance of taxa but Sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained through redundant attributes of the system	**Major** changes in structure due to replacement of some Sensitive-ubiquitous taxa by more tolerant taxa,; overall balanced distribution of all expected major groups; ecosystem functions largely maintained through redundant attributes	Sensitive taxa are nearly absent; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity and redundancy; increased build-up or export of unused materials	Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered
I Historically documented, long-lived or regionally endemic taxa Relies on fish and other vertebrates; May need to break out by basin*	As predicted for natural occurrence except for global extinctions (e.g., unarmored 3-spine stickleback, Pacific Treefrog, California newt, or garter snakes present); steelhead and lampreys in foothills.	As predicted for natural occurrence except for global extinctions; 3-spine stickleback present in lowland;	Some may be absent due to global extinction or local extirpation; 3-spine stickleback rare or extirpated	Some may be absent due to global, regional or local extirpation	Usually absent; stickleback very rare or absent.	Absent

* LA Basin may have historically more endemic fish species than either San Gabriel, Malibu, San Diego drainages. Also need to distinguish upland from lowland sites. Trout more upland; sticklebacks and sculpins lowland. Most long-lived species extinct in region; may be similarity between long-lived or endemics and sensitive-rare species.

Table 2. Biological Condition Gradient Matrix: California Bight (High Elevation; >1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
II Sensitive-rare taxa (currently rare)*	As predicted for natural occurrence, with at most minor changes from natural densities Sculpin (Cottus asper) (Ventura); lamprey adults in upland streams) red-legged frogs present; 3 spine armored stickleback	Virtually all are maintained with some changes in densities	Some loss, with replacement by functionally equivalent Sensitive-ubiquitous taxa	May be markedly diminished	Absent	Absent
III Sensitive-ubiquitous taxa [% intolerant individual EPT]	As predicted for natural occurrence, with at most minor changes from natural densities Partially armored Stickleback common; speckled dace species present in upland streams. Trout present in higher elevation streams. > 40% Intolerant; > 22 EPT taxa; > 20 Predator taxa	Present and abundant; > 16 EPT taxa > 14 predator taxa; > 30% intolerants Diatoms main form of periphyton; Achnanthes oblongella, ventralis; Cymbella amphioxys, gracilis, Amphora inariensis	Common and abundant; ≥10 EPT; ≥ 11 predator; >20% intolerants	Present but some replacement by functionally equivalent taxa of greater tolerance. ≤10 EPT, ≤ 11 predator, < 20% intolerants	Frequently absent or markedly diminished; less sensitive EPT (e.g., Baetidae) may be present but not more sensitive taxa. < 7 EPT; < 6 predator; < 4% intolerants	Absent ≤4 EPT taxa; <2% intolerant; <3 predator taxa

Table 2. Biological Condition Gradient Matrix: California Bight (High Elevation; >1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	
IV Taxa of intermediate tolerance	As predicted for natural occurrence, with at most minor changes from natural densities Native sucker present Western toad Common stickleback	As naturally present with slight increases in abundance	Often evident increases in abundance Diatom species include: Achnanthes biasolettiana, Cymbella sinuata, Denticula tennis, Fragilaria construens, Navicula capitata.	Common and often abundant; relative abundance may be greater than Sensitive-ubiquitous taxa	Often exhibit excessive dominance	May occur in extremely high OR extremely low densities; richness of all taxa is low
V Tolerant taxa [non-insect taxa %tolerant taxa Collectors]	As naturally occur, with at most minor changes from natural densities Arroyo chub present <10% tolerant; <5% Non Insect taxa; >40% Intolerant <30% collectors	As naturally present with slight increases in abundance; <45% collectors; >30% intolerants; <10% non-insects; coleopteran taxa present; <15% tolerant taxa Arroyo chub present	May be increases in abundance of functionally diverse tolerant taxa; <50% collectors; >20% intolerants; <15% non-insects; <25% tolerant Arroyo chub present	May be common but do not exhibit significant dominance; few coleopteran taxa; >15% non-insects; >25% tolerant taxa, >50% collectors; <20% intolerant taxa Diatom indicators include: Nitzchia palea, Navicula atomus, minima, Fragilaria capucina, Cymbella affinis, Stephanodiscus. Attached green algae more prolific – Cladophora, Stigeoclonium, Oedogonium – as well as blue-greens such as Oscillatoria, Ababena Arroyo chub present	Often occur in high densities and are dominant; high percentage of collectors and non-insect taxa; few predator or EPT taxa >60% collectors; >30% tolerant taxa; >20% non-insect taxa; <10% intolerant taxa Arroyo chub less abundant	Comprise ≥ one-third of the assemblage; often extreme departures from normal densities (high or low); no coleoptera, sensitive EPT taxa, and few predator taxa. Mostly collector taxa and often high proportion of non-insect taxa >75% collectors; >40% non-insect taxa; >40% tolerant taxa; <2% intolerant taxa Arroyo chub scarce

Table 2. Biological Condition Gradient Matrix: California Bight (High Elevation; >1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	
VI Non-native or intentionally introduced taxa Include riparian vegetation	Non-native taxa not present	Non-native taxa may be present, but in few numbers and very few species represented	Introduced non-native taxa may be more common in some assemblages (e.g. fish, amphibians, or macrophytes).	Non-native taxa fairly numerous but may not dominate assemblage	Some assemblages (e.g., fish, amphibians, or macrophytes) are dominated by non-native taxa (e.g., brown trout, Cottus asperus in upland)	Often dominant; may be the only representative of some assemblages (e.g., plants, fish, amphibians).
VII Organism Condition (especially of long-lived organisms) More data needed*[*]	Any anomalies are consistent with naturally occurring incidence and characteristics	Any anomalies are consistent with naturally occurring incidence and characteristics	Anomalies are infrequent	Incidence of anomalies may be slightly higher than expected	Biomass may be reduced; anomalies increasingly common	Long-lived taxa may be absent; Biomass reduced; anomalies common and serious; minimal reproduction except for extremely tolerant groups

[*] Percent fish anomalies (DELTS) higher in more stressed systems in the Central Valley (USGS report); should be useful attribute for LA region but unclear whether there are sufficient data available.

Table 2. Biological Condition Gradient Matrix: California Bight (High Elevation; >1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	
VIII Ecosystem Functions	All are maintained within the natural range of variability. Algal as well as plant source of energy.	All are maintained within the natural range of variability	Virtually all are maintained through functionally redundant system attributes; minimal increase in export except at high storm flows	Virtually all are maintained through functionally redundant system attributes though there is evidence of loss of efficiency (e.g., increased export or decreased import)	There is apparent loss of some ecosystem functions manifested as increased export or decreased import of some resources,. Shift to almost entirely algal production: % Collector-filterers dominate the macroinvertebrate assemblage indicative of filamentous algae and DOC as the major energy sources.	Most functions show extensive and persistent disruption
* For southern California streams, may work in opposite direction? Limited connectance naturally, at least in uplands; greater connectance is artificially derived – leads to increase in exotics and decrease in natives.						

Table 3. Biological Condition Gradient Matrix: California Bight (Low Elevation; <1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
Ecological Attributes	Native structural, functional and taxonomic integrity is preserved; ecosystem function is preserved within the range of natural variability	**Minimal** changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but Sensitive-ubiquitous taxa are a dominant component; ecosystem functions are fully maintained through redundant attributes of the system;	**Some** changes in structure due to loss of sensitive or rare native taxa; shifts in relative abundance of taxa but Sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained through redundant attributes of the system	**Major** changes in structure due to replacement of some Sensitive-ubiquitous taxa by more tolerant taxa,; overall balanced distribution of all expected major groups; ecosystem functions largely maintained through redundant attributes	Sensitive taxa are nearly absent; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity and redundancy; increased build-up or export of unused materials	Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered
I Historically documented, long-lived or regionally endemic taxa Relies on fish and other vertebrates; May need to break out by basin*	As predicted for natural occurrence except for global extinctions (e.g., unarmored 3-spine stickleback, Pacific Treefrog, California newt, or garter snakes present); steelhead and goby in coastal reaches, stickleback and sculpin in lowlands	As predicted for natural occurrence except for global extinctions; 3-spine stickleback present in lowland	Some may be absent due to global extinction or local extirpation; 3-spine stickleback rare or extirpated	Some may be absent due to global, regional or local extirpation	Usually absent; stickleback very rare or absent.	Absent

* LA Basin may have historically more endemic fish species than either San Gabriel, Malibu, San Diego drainages.   Also need to distinguish upland from lowland sites. Trout more upland; sticklebacks and sculpins lowland. Most long-lived species extinct in region; may be similarity between long-lived or endemics and sensitive-rare species.

Table 3. Biological Condition Gradient Matrix: California Bight (Low Elevation; <1200 ft)

	Biological Condition Gradient					
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
II Sensitive-rare taxa (currently rare)*	As predicted for natural occurrence, with at most minor changes from natural densities Sculpin (Cottus asper) (Ventura) lamprey ammocoetes in lowland streams; red-legged frogs present; Speckled dace – lowlands; 3 spine armored stickleback	Virtually all are maintained with some changes in densities	Some loss, with replacement by functionally equivalent Sensitive-ubiquitous taxa	May be markedly diminished	Absent	Absent
III Sensitive-ubiquitous taxa [% intolerant, prediator taxa]	As predicted for natural occurrence, with at most minor changes from natural densities Partially armored Stickleback common; speckled dace species present in upland streams. Trout present in higher elevation streams. > 40% Intolerant; > 12 EPT taxa; > 14 Predator taxa	Present and abundant; > 10 EPT taxa, > 10 predator taxa; > 20% intolerants Diatoms main form of periphyton; Achnanthes oblongella, ventralis; Cymbella amphioxys, gracilis, Amphora inariensis	Common and abundant; ≥ 8 EPT; ≥ 6 predator; > 10% intolerants	Present but some replacement by functionally equivalent taxa of greater tolerance. ≤8 EPT, ≤ 6 predator, < 10% intolerants	Frequently absent or markedly diminished; less sensitive EPT (e.g., Baetidae) may be present but not more sensitive taxa. < 3 EPT; < 4 predator; < 5 % intolerants	Absent ≤1 EPT taxa; ≤ 1% intolerant; ≤ 2 predator taxa

Table 3. Biological Condition Gradient Matrix: California Bight (Low Elevation; <1200 ft)

Biological Condition Gradient						
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
IV Taxa of intermediate tolerance	As predicted for natural occurrence, with at most minor changes from natural densities Native sucker present Western toad Common stickleback	As naturally present with slight increases in abundance	Often evident increases in abundance Diatom species include: Achnanthes biasolettiana, Cymbella sinuata, Denticula tennis, Fragilaria construens, Navicula capitata.	Common and often abundant; relative abundance may be greater than Sensitive-ubiquitous taxa	Often exhibit excessive dominance	May occur in extremely high OR extremely low densities; richness of all taxa is low
V ***Tolerant taxa*** [non-insect taxa %tolerant taxa Collectors]	As naturally occur, with at most minor changes from natural densities Arroyo chub present <15% tolerant; <5% Non Insect taxa; <40% collectors	As naturally present with slight increases in abundance; <50% collectors; >30% intolerants; < 8% non-insects; coleopteran taxa present; <20% tolerant taxa Arroyo chub present	May be increases in abundance of functionally diverse tolerant taxa; <60% collectors; <12% non-insects; <25% tolerant Arroyo chub present	May be common but do not exhibit significant dominance; few coleopteran taxa; >12% non-insects; >20% tolerant taxa, >60% collectors Diatom indicators include: Nitzchia palea, Navicula atomus, minima, Fragilaria capucina, Cymbella affinis, Stephanodiscus. Attached green algae more prolific – Cladophora, Stigeoclonium, Oedogonium – as well as blue-greens such as Oscillatoria, Ababena Arroyo chub present	Often occur in high densities and are dominant; high percentage of collectors and non-insect taxa; few predator or EPT taxa >75% collectors; >33% tolerant taxa; >20% non-insect taxa; Arroyo chub less abundant	Comprise ≥ one-third of the assemblage; often extreme departures from normal densities (high or low); no coleoptera, sensitive EPT taxa, and few predator taxa. Mostly collector taxa and often high proportion of non-insect taxa >90% collectors; >45% non-insect taxa; >40% tolerant taxa; Arroyo chub scarce

Table 3. Biological Condition Gradient Matrix: California Bight (Low Elevation; <1200 ft)

	Biological Condition Gradient					
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
VI Non-native or intentionally introduced taxa <u>Include riparian vegetation</u>	Non-native taxa not present	Non-native taxa may be present, but in few numbers and very few species represented	Introduced non-native taxa may be more common in some assemblages (e.g. fish, amphibians, or macrophytes).	Non-native taxa fairly numerous but may not dominate assemblage	Some assemblages (e.g., fish, amphibians, or macrophytes) are dominated by non-native taxa (e.g., bluegill, bass, African clawed frog, carp in lowland streams).	Often dominant; may be the only representative of some assemblages (e.g., plants, fish, amphibians).
VII Organism Condition (especially of long-lived organisms) More data needed*[*]	Any anomalies are consistent with naturally occurring incidence and characteristics	Any anomalies are consistent with naturally occurring incidence and characteristics	Anomalies are infrequent	Incidence of anomalies may be slightly higher than expected	Biomass may be reduced; anomalies increasingly common	Long-lived taxa may be absent; Biomass reduced; anomalies common and serious; minimal reproduction except for extremely tolerant groups

[*] Percent fish anomalies (DELTS) higher in more stressed systems in the Central Valley (USGS report); should be useful attribute for LA region but unclear whether there are sufficient data available.

Table 3. Biological Condition Gradient Matrix: California Bight (Low Elevation; <1200 ft)

	Biological Condition Gradient					
	1 **Natural or native condition** Historical reference condition in many cases	2 **Very Good** Minimal changes in the structure of the biotic community and minimal changes in ecosystem function Least disturbed conditions – current reference condition	3 **Good** Evident changes in structure of the biotic community and minimal changes in ecosystem function	4 **Fair** Serious changes in structure of the biotic community and minimal changes in ecosystem function	5 **Poor** Severe changes in structure of the biotic community and moderate changes in ecosystem function	6 **Very Poor** Radical changes in structure of the biotic community and major loss of ecosystem function
VIII Ecosystem Functions	All are maintained within the natural range of variability. Algal as well as plant source of energy.	All are maintained within the natural range of variability	Virtually all are maintained through functionally redundant system attributes; minimal increase in export except at high storm flows	Virtually all are maintained through functionally redundant system attributes though there is evidence of loss of efficiency (e.g., increased export or decreased import)	There is apparent loss of some ecosystem functions manifested as increased export or decreased import of some resources,. Shift to almost entirely algal production: % Collector-filterers dominate the macroinvertebrate assemblage indicative of filamentous algae and DOC as the major energy sources.	Most functions show extensive and persistent disruption
* For southern California streams, may work in opposite direction? Limited connectance naturally, at least in uplands; greater connectance is artificially derived – leads to increase in exotics and decrease in natives.						

Generalized Stressor Gradient (GSG)

The GSG attributes and characteristics developed for this project were based on qualitative information compiled from various regional references, from TAC members, and from knowledge developed as part of the arid west GSG (see Table 4). Southern California streams differ from most other arid west systems in the degree of natural flashiness in undisturbed reaches, the amount of channel braiding that occurs naturally, and the numbers of exotic species that profoundly affect the distribution of endemic biota. Therefore, departures from "natural" or minimally impaired systems (Level 1) are characterized in terms of the degree of departure from the natural hydrograph, the degree of channel and flood plain alteration, and the degree and types of exotic species present. Similar to results from other regions of the country, it is generally thought that Level 1, or completely natural streams, are unlikely to exist in southern California, except perhaps in remote foothill areas. Furthermore, because the hydrology is naturally variable in this region, it may be difficult to quantitatively characterize Level 1 in any case. The TAC suggested several changes to the national GSG framework to make it more relevant to southern California streams. These include:

- Habitat should be divided into two attributes: instream habitat and riparian habitat. The former includes substrate condition, channel morphology, and the presence of barriers or channel alterations such as culverts. Riparian habitat includes riparian vegetation condition (including native or lack of native species) and lateral connectivity with floodplain. Tetra Tech obtained and included metrics from the California Rapid Assessment Method (CRAM) for wetlands that pertain to riparian condition as well as hydrology.
- Water Quality should be divided into two attributes: conventional and naturally-occurring pollutants and anthropogenic toxics. The TAC agreed that tiered uses will not allow for water quality degradation. However, natural water quality characteristics could be a stressor.

Table 4. Stressor Condition Gradient Matrix: California Bight

	Stressor Condition Levels			
Attribute	**1**	**3**	**4-5**	**6**
Flow	Natural hydrograph; includes periodic seasonal floods and very low flows (dry conditions in some cases); dry season flow from natural sources; rising water has unrestricted access to floodplain; Most of channel characterized by equilibrium conditions.	Moderately changed hydrograph; more consistent flows seasonally through treated wastewater inputs and other sources; some irrigation withdrawals or groundwater removal for other human purposes; noticeable change in flashiness; lateral excursion of rising waters partially restricted by unnatural features; Some aggradation or degradation present but not severe.	Significantly changed hydrograph; both managed and natural flow factors present; stormwater runoff dramatically increases flows temporarily; lateral excursion of rising waters partially restricted by unnatural features; Most of channel actively degrading or aggrading.	Severely changed hydrograph; flow human-controlled; peaking flows, "rafting flows", or water diversions common; stream is all treated wastewater effluent flow;; diversions such that stream is dry periodically; stream flow result of dam releases; rising waters completely contained within artificial banks; Channel has completely artificial hydrogeology and equilibrium.
Instream Habitat	Natural substrate and channel sinuosity; Braided channels common in lowlands; natural cover available for fish and other aquatic life.	Substrate somewhat modified (often tending to be smaller in size); channel morphology may be slightly modified.	Natural bottom but concrete sides or altered bottom. Substrate size typically fine. Culverts or instream structures present – clear effects on channel morphology	Severely changed channel morphology; channelized; concrete sides and bottom; substrate radically altered.
Riparian Habitat	lateral connection between stream and riparian corridor; native riparian vegetation predominates; underwater willow roots or other riparian plants serve as habitat for aquatic life; 75-100% of stream has riparian buffer; average buffer width ≥ 100m; intact soils.	some exotic-invasive riparian vegetation; connection with flood plain/riparian corridor mostly intact; 50-75% of stream has riparian buffer; average buffer width 60-99m intact or moderately disrupted soils.	25-50% of stream has riparian buffer; average buffer width 30-60m; moderate-extensive soil disruption.	exotic vegetation only if any at all; no connection to flood plain; < 25% of stream has riparian buffer; average buffer width < 30m; barren ground or highly compacted soils.
Conventional Water Quality parameters and naturally occurring chemicals	DO generally near saturation in upland streams – generally > 5 mg/L in lowland streams; temperature cool in upland streams – generally < 30 °C in lowland streams in the summer.	DO and temperature may be slightly altered but still satisfactory for native aquatic life.	Altered DO and/or temperature regimes; elevated concentrations of metals or other constituents naturally	DO and/or temperature radically altered – temperature often > 30° C in summer; conductivity, salinity, or dissolved solids generally much higher than typical for supporting aquatic life; metals or other chemicals naturally high and known to be toxic to aquatic life

Table 4. Continued

	Stressor Condition Levels			
Attribute	**1**	**3**	**4-5**	**6**
Anthropogenic Toxics	No anthropogenic toxics	Infrequent pollutant exceedences of standards; generally non-toxic conditions	Occasional exceedences of WQ objective(s); Stormwater runoff may decrease water quality in certain segments or over short time periods.	Toxics exceed water quality objectives; multiple toxic chemicals co-occur or multiple exceedences of a WQ objective
Watershed Condition	All natural land cover; natural longitudinal connectivity and connectivity with ground water; Contiguous natural riparian buffer between segments.	Mostly natural land cover – some human developed areas; longitudinal connectivity mostly in tact – some fragmentation of habitat or barriers	Mostly human land uses, Urban intensity moderate (30-50 out of 100); longitudinal connectivity fragmented, interrupted; agricultural uses may be relatively predominant	Nearly all human land uses; urban intensity > 50/100; connectivity severely altered; agricultural land uses dominant
Invasive Species	Exotics or introduced species absent. Riparian vegetation as naturally occurs.	A few non-invasive exotics may be present (e.g., crayfish, fathead minnow), including riparian plant species; but generally has little effect on native species or riparian habitat.	Some non-invasive exotics combined with one or two aggressive exotic species (e.g., brown trout; Tamerisk; Arrando).	Invasive, predatory, or aggressive exotic species common (e.g., bass, bluegill, African clawed frog, bull frog). Clear evidence of extirpation of native species due to exotic species. Highly altered riparian habitat due to invasive species present.

- Energy source attribute has questionable relevance to southern California streams. The TAC suggested deleting this attribute pending further discussions.
- Watershed condition attribute was added. This includes land uses and longitudinal and vertical connectivity issues. The urban intensity index, which Tetra Tech calculated for several sites in the Region is one descriptor that is useful here. The CRAM connectivity metric is also relevant here.
- Invasive species attribute was added. This includes riparian plants as well as fauna.

Urbanization, Hydrology and SoCal IBI

There also appears to be some separation in the GSG based on flow regimes and hydrology; streams with more constant flows year-round (e.g., effluent dominated streams) appear to have a higher likelihood of harboring exotic species. Highly urbanized areas are often subject to much greater wet weather runoff than normal resulting in much higher peak flows and a very altered hydrograph.

Plotting the SoCal IBI against the LDI, there are sites that appear to be better than most within its class of urban intensity (see labels in Figure 13). One possibility is that while potential urban sources are present (e.g., residential housing is relatively dense, many roads), the actual level of stressors is less because of the way road runoff and other human-derived stressors are routed. Another possibility is that the stream has certain features that help protect it from urban-related stressors (e.g., riparian vegetation). A third possibility is that sites with lower IBI scores for a given LDI are affected by non-urban stressors as well (e.g., agriculture derived stressors) and are therefore, subject to more stressors than those sites with better IBI scores. Future efforts should plan to compile what is known about these sites so that we can identify factors that mitigate urban effects and better define the GSG.

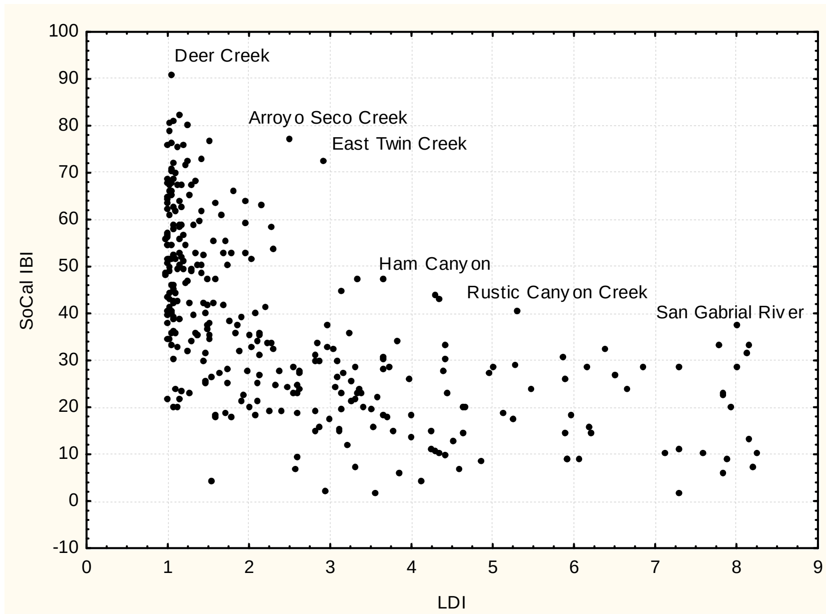

Figure 13. Plot of the southern California macroinvertebrate (SoCal) IBI in relation to the LDI. Higher IBI scores indicate better biological condition. Higher LDI values indicate greater landscape disturbance and probable urban stressors.

The results presented here can be described as a conceptual development of a Southern California BCG based on the existing SoCal IBI and its associated biological metrics. Although the conceptual BCG presented here is a promising step, a fully calibrated BCG is necessary in order for the biological and stressor data to be used in tiered aquatic life uses, as well as for use attainability analyses.

It is recommended that a workshop be organized to initiate development of a calibrated BCG. Individuals involved in the workshop should have extensive knowledge on the type of biological assemblage being investigated and should understand its responses in pristine to severely stressed conditions. Generally, these workshops last two to three days, depending on participants' familiarity with TALU and BCG concepts. The strong relationships of these biological measures with stress (as described by habitat quality and the LDI index), as well as the variation in biology among the two natural and two altered site classes, suggest that generating a calibrated BCG would be possible using the currently available data. To do this, macroinvertebrate data (and to the extent feasible, other types of biological data) need to be explored in more detail to identify specific taxa that are common, as well as sensitive, to the stressors found in the Southern California Bight region. Additionally, the knowledge of local experts must be used in order to reduce uncertainty associated with ambiguous or incomplete data. It may also be necessary to assemble a more comprehensive GSG based on a larger assemblage of data types (i.e., stressors).

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Appendix 9

Bioassessment tools in novel habitats: An evaluation of indices and sampling methods in low-gradient streams in California

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Abstract

Biomonitoring programs are often required to assess streams for which assessment tools have not been developed. For example, low-gradient streams (slope ≤1%) comprise 20 to 30% of all stream miles in California and are of particular interest to watershed managers, yet most sampling methods and bioassessment indices in the State were developed in high-gradient systems. This study evaluated the performance of three sampling methods: targeted riffle composite (TRC), reachwide benthos (RWB), and the margin-center-margin modification of RWB (MCM); and two indices: the Southern California Index of Biotic Integrity (SCIBI) and the ratio of observed to expected taxa (O/E) in low-gradient streams in California for application in this habitat type. Performance was evaluated in terms of efficacy (i.e., ability to collect enough individuals for index calculation), comparability (i.e., similarity of assemblages and index scores), sensitivity (i.e., responsiveness to disturbance), and precision (i.e., ability to detect small differences in index scores). The sampling methods varied in the degree to which they targeted macroinvertebrate-rich microhabitats, such as riffles and vegetated margins, which may be naturally scarce in low-gradient streams. The RWB method failed to collect sufficient individuals (i.e., ≥450) to calculate the SCIBI in 28 of 45 samples, and often collected fewer than 100 individuals, suggesting it is inappropriate for low-gradient streams in California. Failures for the other methods were less common (TRC:16 samples; MCM:11 samples). Within-site precision, measured as the minimum detectable difference (MDD), was poor but similar across methods for the SCIBI (ranging from 19 to 22). RWB had the lowest MDD for O/E scores (0.20 vs. 0.24 and 0.28 for MCM and TRC, respectively). Mantel correlations showed that assemblages were more similar within sites among methods than within methods among sites, suggesting that the sampling methods were collecting similar assemblages of organisms. Statistically significant disagreements among methods were not detected, although O/E scores were higher for RWB samples than TRC. Index scores suggested impairment at all sites in the study. Although index scores did not respond strongly to several measurements of disturbance in the watershed, % agriculture showed a significant, negative relationship with O/E scores.

Introduction

Large-scale biomonitoring programs are often confronted with the need to assess habitat types for which assessment tools have not been developed. This problem is severe in large heterogeneous regions like California (Carter and Resh 2005). Developing and maintaining unique assessment tools for multiple habitat types may be prohibitively expensive and may impede comparison of data from different regions. Therefore, assessing the applicability of tools in diverse habitat types is a critical need for large biomonitoring programs.

In southern California, biomonitoring programs use tools like the SCIBI (Ode *et al*. 2005), which were developed using reference sites that were predominantly in high-gradient (i.e., >1% slope) streams. However, low-gradient streams are a major feature in alluvial plains of this region (Carter and

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Resh 2005). According to the National Hydrography Dataset Plus (NHD+; USEPA and USGS 2005) approximately 20 to 30% of all stream miles in California have slopes below 1%. Because these habitats are subject to numerous impacts and alterations (SMCBWG 2007), several biomonitoring efforts in California specifically target low-gradient streams, even though the applicability of assessment tools created and validated in high-gradient streams has not been tested.

Low-gradient streams differ from high-gradient streams in many respects (Montgomery and Buffington 1997). For example, bed substrate is typically composed of fines and sands, rather than cobbles, boulders, or bedrock. In California and other semiarid climates, low-gradient channels are often complex, with ambiguous and dynamic bank structure. Frequent floods create new channels and cause streams to abandon old ones (Carter and Resh 2005). For bioassessment programs, an important distinction between high- and low-gradient streams is the scarcity of riffles and other microhabitats that are typically targeted by macroinvertebrate sampling protocols (e.g., Harrington 1999).

In this study, application of three sampling methods and two bioassessment indices for use in low-gradient streams in California were evaluated. Sampling methods were assessed for efficacy (i.e., the ability to collect sufficient numbers of benthic macroinvertebrates), comparability (i.e., community similarity and agreement among assessment indices), sensitivity (i.e., responsiveness of the indices to watershed disturbance), and precision of the assessment indices (i.e., power of assessments to detect differences among sites).

Methods

Study Areas

Twenty-one low-gradient sites were sampled in several regions across California (Table 1; Figure 1). Most sites were in heavily altered rivers, although a few were in protected watersheds. Slopes were estimated from the NHD+ (USEPA and USGS 2005), or from digital elevation models (at Jack Slough, Wadsworth Canal, and the Santa Ana River, which lacked associated data in the NHD+). All sites were on reaches defined in the NHD+ as having slopes below 1%.

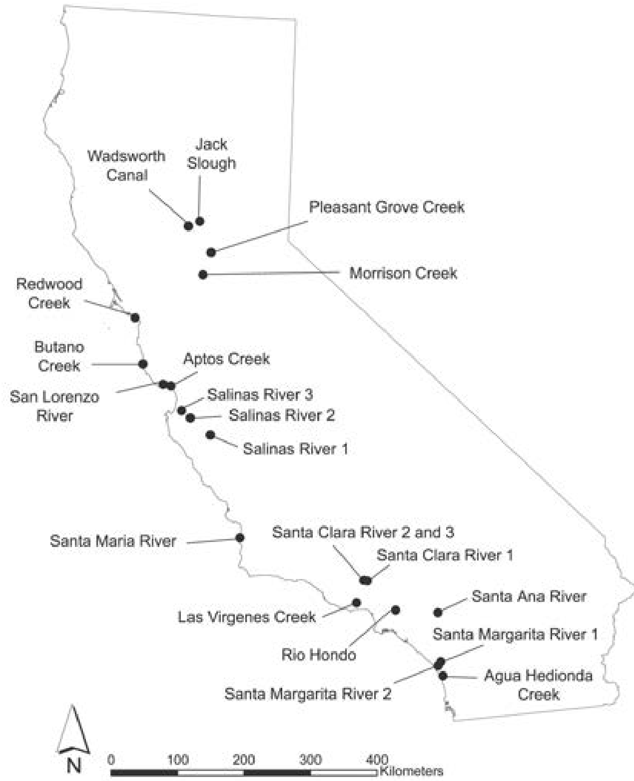


Figure 1. Location of study sites.

Sampling

At each site, TRC, RWB, and MCM sampling methods were used to collect benthic macroinvertebrates. The three sampling methods differ in the degree to which they target the richest microhabitats (e.g., riffles or vegetated margins). TRC and RWB are similar to methods used in the nationwide Environmental Monitoring and Assessment Program (EMAP; Peck *et al*. 2006), and both methods are currently used in California's bioassessment programs (Ode 2007). MCM is intended to capture marginal habitats not sampled by RWB, and has been adopted for use in low-gradient streams in California (Ode and van Buuren 2008). Samples were displaced upstream or downstream by 1 m when necessary to avoid interference among different methods. At 12 sites, triplicate samples were collected for each method (Table 1).

For the TRC method, 11 equidistant transects were established along the 150-m reach, and 3 1-ft^2 areas of streambed were sampled at three randomly selected transects. At each transect, field crews targeted the richest microhabitats and sampled a total of 9 ft^2 of streambed in three riffles. This method is

Table 1. Low-gradient sites included in the study. S = assessed using Southern California Index of Biotic Integrity; X = not assessed using an index of biotic integrity; WS = watershed; Local = within 500 m of sampling point; Ndel = ambiguous watersheds which could not be delineated; Ndet = ambiguous stream network for which stream order could not be determined; and * = triplicate samples collected.

Site	Watershed	County	Watershed Size (km^2)	Stream Order	% Developed		% Agricultural		% Open space	
					WS	Local	WS	Local	WS	Local
Within Central and Southern California										
Central Coast										
S	Aptos Creek*	Santa Cruz	200	3	18	92	0	0	82	8
S	Salinas River 1	Monterey	10940	6	14	71	0	1	86	28
S	Salinas River 2*	Monterey	10666	7	5	28	7	61	88	11
S	Salinas River 3	Monterey	9141	7	5	13	4	27	90	60
S	San Lorenzo River	Santa Cruz	378	4	5	7	6	56	88	37
S	Santa Maria River*	Santa Barbara	1844	6	4	4	6	0	91	96
South Coast										
S	Agua Hedionda Creek*	San Diego	80	3	76	77	0	0	24	23
S	Las Virgenes Creek*	Los Angeles	63	3	19	29	0	0	81	71
S	Rio Hondo*	Los Angeles	325	3	70	83	0	0	30	17
S	Santa Ana River	Riverside	1965	6	25	78	1	0	74	22
S	Santa Clara River 1	Los Angeles	817	4	14	68	0	0	86	32
S	Santa Clara River 2	Los Angeles	1107	5	16	76	0	1	84	23
S	Santa Clara River 3	Los Angeles	1107	5	16	75	0	5	84	20
S	Santa Margarita River 1*	San Diego	1856	6	13	48	3	0	84	52
S	Santa Margarita River 2*	San Diego	1888	6	14	24	3	0	83	76
Outside Central and Southern California										
Bay Area										
X	Butano Creek	San Mateo	234	3	11	34	0	0	89	66
X	Redwood Creek*	Marin	44	2	4	10	2	24	94	67
Central Valley										
X	Jack Slough	Yuba	Ndel	3		7		91		2
X	Morrison Creek*	Sacramento	114	3	40	100	4	0	56	0
X	Pleasant Grove Creek	Placer	40	3	69	34	3	16	28	50
X	Wadsworth Canal	Sutter	Ndel	Ndet		12		87		1

similar to the targeted riffle composite method used by EMAP, which sampled a total of 8 ft^2 of streambed from four to eight riffles (Peck *et al*. 2006). A second difference was the fixed reach length of 150 m, in contrast to EMAP, which had a variable reach length set at 40 times the wetted width.

In contrast to TRC, which allowed the field crew to sample the richest microhabitats within transects, the RWB method used systematically distributed sampling locations. For RWB, eleven equidistant transects were established along the 150-m reach, and one sample was collected with a D-frame kick-n*et al*ong each transect at 25, 50, or 75% of the stream width (with the position changing at each transect). A total of 11 ft^2 of streambed was sampled. This method is similar to the Reach-Wide Benthos method used by EMAP, except that EMAP used variable reach length set to 40 times the wetted width (Peck *et al*. 2006).

The MCM method was identical to RWB with minor modification. Instead of collecting samples at 25, 50 and 75% of stream width, samples were collected at 0, 50, and 100%. Unlike RWB, MCM samples were collected from the margins, which in low-gradient streams often contain the richest, most stable microhabitats (e.g., vegetated margins). As with RWB, 11 ft^2 of streambed were sampled.

Benthic macroinvertebrates were sorted and identified to the Standard Taxonomic Effort Level 1 (i.e., most taxa to genus, with Chironomidae left at family) established by the Southwestern Association of Freshwater Invertebrate Taxonomists (Richards and Rogers 2006). When possible, at least 500 individuals were identified in each sample.

Data Analysis

For each sample, bioassessment metrics and indices were calculated and analyzed to evaluate the efficacy, comparability, sensitivity, and precision of the three sampling methods.

Calculation of indices and metrics

The SCIBI was calculated for 15 sites located on coastal drainages from Santa Cruz to San Diego Counties. No IBIs were calculated for the two sites in the San Francisco Bay Area and the four sites in the Central Valley because IBIs for these regions were not available at the time of the study. Furthermore, small sample sizes in these regions and unknown comparability of IBIs for different regions would limit the utility of including these sites. In order to calculate the SCIBI, benthic macroinvertebrate data were processed according to the index requirements. For example, samples containing more than 500 individuals were randomly subsampled with replacement to obtain 500 individuals per sample.

Calculation of O/E scores

Observed-over-expected scores were calculated for all sites using a predictive model developed for the state of California (Charles P. Hawkins pers. com.; Western Center for Monitoring and Assessment. Accessed online March 30, 2007: http://129.123.10.240/wmcportal/DesktopDefault.aspx). These scores are the ratio of observed to expected taxa, and are based on only those taxa with a probability of occurrence ≥50%. The original identifications were converted to operational taxonomic unit (OTU) names used in the models, and ambiguous taxa (i.e., those that could not be assigned to an OTU and those that could not be adequately identified, such as early instars), as well as all Chironomidae larvae, were eliminated. The resulting sample counts were reduced to 300, if more than 300 individuals remained after removal of ambiguous taxa. Sites were assigned to the appropriate submodel based on climate (i.e., low mean annual precipitation, and high mean monthly temperature), which were used to predict expected taxa occurrence (E) using longitude, percent sedimentary geology in the watershed, and log mean annual precipitation. Climatic data were obtained from the Oregon Climate Center (accessed online March 30, 2007: http://www.ocs.orst.edu/prism), and geologic data were obtained from a generalized geological map of the United States (accessed online March 30, 2007: http://pubs.usgs.gov/atlas/geologic). Details of these predictive models can be found in Ode *et al*. 2008.

The two Central Valley sites were located in streams with ambiguous watersheds, and therefore required that percent sedimentary geology be estimated, rather than calculated by geographic information systems (GIS). For this study, percent sedimentary geology was estimated at 100%. Using different percent sedimentary geology values (i.e., 0, 20, 40, 60, and 80%) had negligible effect on O/E scores; coefficient of variation for scores within each sample at the two Central Valley sites was <2%, (data not shown), perhaps as a result of the low numbers of observed taxa at these sites.

Evaluation of sampling methods and indices

Efficacy

To assess the efficacy of the sampling methods, the percentage of samples was calculated for each method that collected at least 450 individuals (within 10% of the minimum number for calculating the SCIBI) or at least 270 individuals (within 10% of the minimum number for calculating O/E, counting only unambiguous taxa). In bioassessment applications, smaller samples would be rejected and represent wasted resources. In order to minimize the effects of pseudoreplication, the percentage of samples containing an adequate number of individuals was calculated for each site; then, this percentage was averaged across all 21 sites. This rate estimated the likelihood of collecting adequate samples from the population of sites in the study. McNemar's test was used to test differences between methods (paired within sites) for statistical significance (Zar 1999, Stokes *et al*. 2000). Because McNemar's test requires binary data, within-site rates were rounded to 1 or 0 at replicated sites. A Bonferroni correction was used to account for multiple tests across methods (i.e., $\alpha = 0.05/3 = 0.017$).

Comparability

To see if the different sampling methods collected similar types of organisms, community structure between sampling methods was compared using a Mantel test (Mantel 1967). Mantel tests provide a measure of correlation (Mantel's R) between two sampling methods. Sorensen distance was used as a dissimilarity measure. For sites where multiple samples were collected, mean distances were used; that is, matrices comprised mean or observed distances between pairs of sites, not samples. All samples were included in this analysis, regardless of the number of individuals collected. Significance was tested against correlation values for 999 runs with randomized data.

A Bonferroni correction was used to account for multiple tests across methods (i.e., $\alpha = 0.05/3 = 0.017$). PC-ORD [Version 5.12] was used to run Mantel tests (MJM Software Design, Glendeden Beach, OR).

To determine the relative influence of sampling method on assessment indices, a variance components analysis was used to determine how much of the variability was explained by differences among sites, sampling methods, and their interaction. Restricted maximum likelihood (REML) was used to calculate variance components because of the unbalanced design. SAS was used for all calculations (using PROC VARCOMP method=REML, SAS Institute Inc. 2004). Unlike the mean square method of estimating variance components, REML ensures that all components are greater than or equal to zero (Larsen *et al*. 2001). Because sites were a fixed factor and not a random factor, the variance component attributable to site must be considered a finite, or pseudo variance (Courbois and Urquhart 2004). Only sites where all three sampling methods were represented (after excluding samples containing inadequate numbers of organisms) were used in this analysis.

To assess agreement among the sampling methods, mean SCIBI and O/E values were calculated and regressed for each pair of methods. Slopes were tested against 1 and intercepts to 0 ($\alpha = 0.05$); Theil's test for consistency and agreement, which is based on differences between sampling methods, was used as an additional test of comparability (Theil 1958). Pairwise differences between mean SCIBI and O/E scores were regressed against log watershed area and stream order to see if these gradients contributed to the observed disagreements. A Bonferroni correction was not used for either analysis in order to increase the ability to detect disagreements. Bias was not explicitly assessed because none of the methods could be assumed to represent a true value. Only samples with adequate numbers of individuals were used in this analysis.

<u>Sensitivity</u>

The sensitivity of the assessment indices to watershed alteration was assessed by correlating mean SCIBI and O/E scores against land cover metrics, including percent open, developed, and agricultural land within the watershed for all sites with unambiguous watersheds (Table 1). This analysis assumed that the biology of the streams respond to these watershed alterations. Open water was excluded from all calculations. Land cover data was obtained from the National Land Cover Database (USGS 2003). Relationships were assessed by calculating the Spearman rank correlation, which is robust to non-normal distributions and extreme values in land cover metrics (Zar 1999). Only samples with the minimum number of individuals for each index were used in this analysis. Data from each sampling method were analyzed independently. A Bonferonni correction was used to account for multiple comparisons ($\alpha = 0.05/6 = 0.008$) across two indices and three land cover classes within each method.

<u>Precision</u>

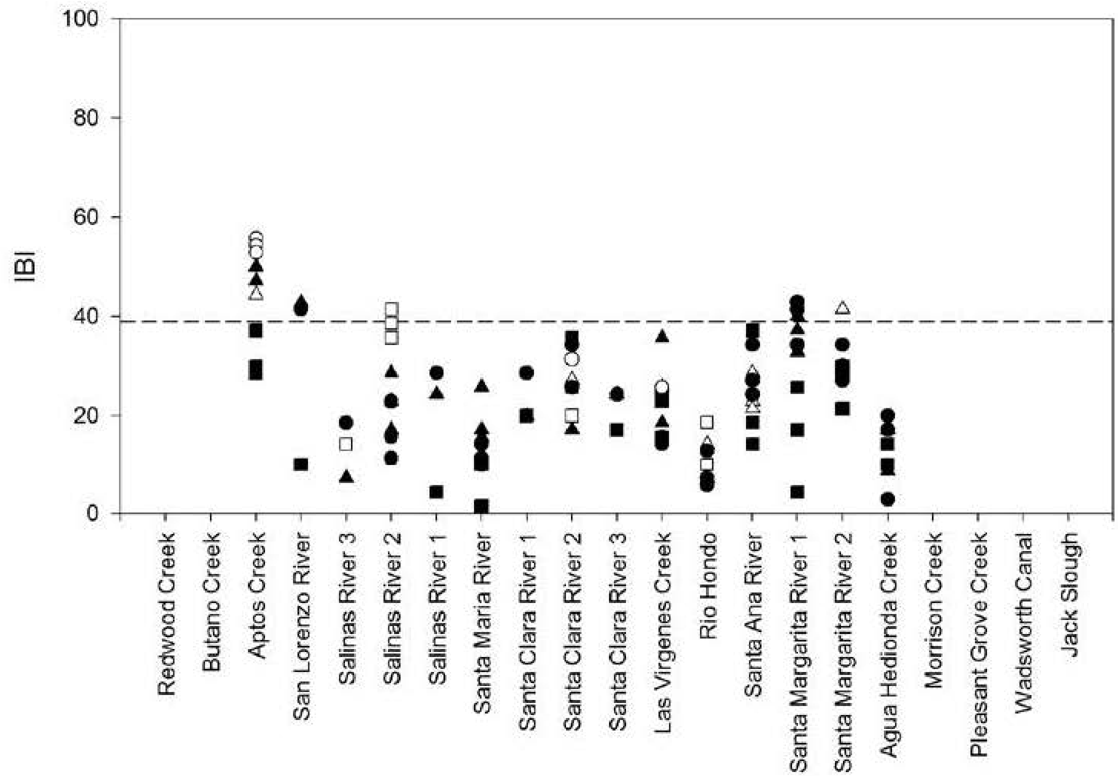
Precision was evaluated by calculating the MDD of each sampling method for SCIBI and O/E scores (Zar 1999, Fore *et al*. 2001). The MDD was calculated using the mean squared error from a nested ANOVA (replicates within site) as an estimate for average within-site variance. Only data from site and method combinations with replication (after exclusion of samples lacking adequate numbers of individuals) were used to estimate variability. These estimated variabilities were applied to a two-sample *t*-test ($\alpha = 0.05$, $\beta = 0.10$) with three replicates in each sample. Additionally, the coefficient of variation (CV) of the indices for each method, averaged across sites, was calculated.

Results

One hundred thirty-five samples were collected at 21 sites throughout the state; 15 of these sites were located along the southern and central California coast. All three methods were used at each site, and 196 taxa were identified. For all sampling methods, SCIBI and O/E scores were low at most sites (Figure 2). For example, mean SCIBI scores were well under 39 (the impairment threshold) at all but one site (Aptos Creek). Observed-over-expected scores indicated impairment in nearly every sample, as scores were below the impairment threshold of 0.66 in all but three samples.

Efficacy

Efficacy was low for all methods, and many samples contained fewer than the required number of individuals. Ideally, each sample should have contained at least 500 individuals. However, only 46 of 135 samples met this target; 34 of the remaining 89 samples had at least 450 individuals, the minimum required for calculation of the SCIBI. For the 55 samples with fewer than 450 individuals, IBIs may a)



b)

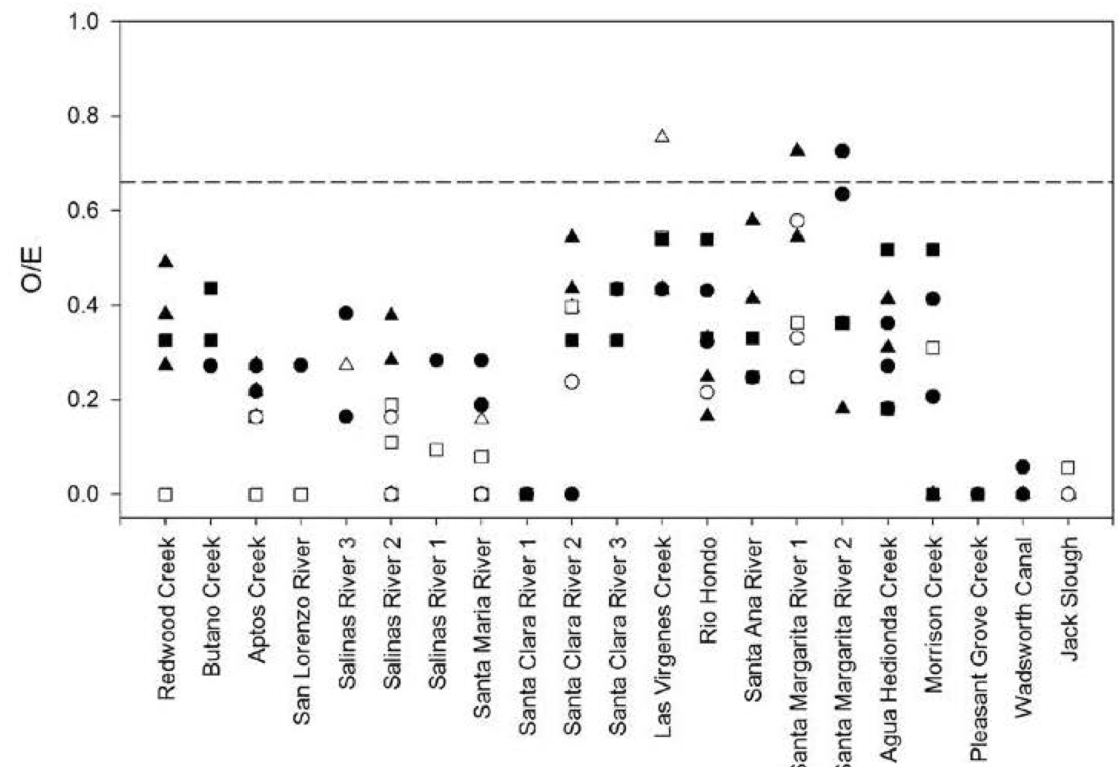


Figure 2. Southern California Index of Biotic Integrity (SCIBI; a) and Observed/Expected (O/E; b) scores by site and method. Each point represents an individual sample. Triangles represent MCM samples. Squares represent RWB samples. Circles represent TRC samples. Black symbols are samples containing sufficient individuals for index calculation, and white symbols are samples containing insufficient individuals for index calculation. Dashed lines represent the threshold for identifying impairment with each index (i.e., 39 for the SCIBI, and 0.66 for the O/E).

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not be valid. Furthermore, 55 samples had fewer than 270 unambiguously identified individuals, meaning that O/E scores may not be valid for these samples.

Several samples had extremely low counts (e.g., four individuals; Table 2). Most of these samples were collected by the RWB sampling method. Nearly half (21 out of 45) of RWB samples had fewer than 450 individuals. In contrast, only 2 MCM samples and 6 TRC samples had fewer than 450 individuals. The adjusted efficacy rate, a site-adjusted estimate of sampling efficacy, for the MCM method (54%) was twice that of RWB (27%). The adjusted efficacy rate for TRC (46%) was nearly as high as that of the MCM method. However, these differences fell short of statistical significance after Bonferroni corrections were applied (i.e., p >0.017). The rates were slightly higher for samples with at least 270 individuals at 67, 32, and 67% for MCM, RWB, and TRC, respectively, and these differences were statistically significant (McNemar's test p = 0.0039).

Comparability

Sampling methods comparability was good in terms of both multivariate community structure and index scores. Mantel's test showed significant correlations among benthic macroinvertebrate communities collected by all three sampling methods (Table 3). However, the RWB method had weaker correlations with both TRC (0.40) and MCM (0.45), compared to the higher correlation observed between TRC and MCM (0.69). In all cases, the correlations were significant (p <0.002).

Variance components analysis showed that the methods were highly comparable and that site accounted for nearly all of the explained variance in both indices. The analysis of SCIBI scores included 7 sites and 26 samples; the analysis of O/E scores included 10 sites and 52 samples. Site accounted for

Table 3. Mantel correlations between sampling methods. Asterisk denotes statistical significance (p <0.017).

Method 1	Method 2	Mantel's R	P
RWB	MCM	0.45	0.001*
RWB	TRC	0.40	0.002*
MCM	TRC	0.69	0.001*

100% of the explained variance in SCIBI scores and 95% in O/E scores. Method and interaction between site and method explained none or negligible components of the variance in these indices (0 to 5%).

Significant disagreements between pairs of sampling methods were not observed for either index (Table 4; Figure 3). Slopes for all three comparisons were not significantly different from 1, and no intercepts were significantly different from 0. Consistency among SCIBI scores was best (i.e., slope closest to 1) between the MCM and TRC methods (slope = 0.96) and worst for the MCM and RWB methods (slope = 0.62). In contrast, consistency among O/E scores was best between the MCM and RWB methods (slope = 0.97) and worst for the RWB and TRC methods (slope = 0.72). Theil's test confirmed the lack of significant disagreements among IBI and O/E scores between pairs of methods. No differences between sampling methods were significantly related to log watershed area or stream order (regression slope and intercept p >0.05).

Sensitivity

Sensitivity of both indices to gradients in land cover was poor, although to some extent the relationships were affected by sampling method, specific cover type, and geographic scale (Table 5; Figure 4). For example, O/E scores were strongly and negatively correlated with agricultural land cover in the

Table 2. Samples, sites, and efficacy by method. Adjusted Rate = site-adjusted estimate of efficacy rate.

Method	Total		≥ 450 Organisms			≥ 270 Organisms		
	Samples	Sites	Samples		Adjusted Rate	Samples		Adjusted Rate
MCM	45	21	34	76%	54%	32	71%	67%
RWB	45	21	17	38%	27%	14	31%	32%
TRC	45	21	29	64%	46%	30	67%	67%

Table 4. Regressions of mean IBI and O/E scores for each method. Slopes were tested against 1 and intercepts were tested against 0. Methods 1 and 2 plotted on x and y axis, respectively, in Figure 3. SE = Standard error.

Index	Method 1 (x)	Method 2 (y)	n	r^2	Slope	SE	p	Intercept	SE	p
SCIBI	MCM	TRC	14	0.77	0.96	0.15	0.803	2.52	3.96	0.537
	MCM	RWB	7	0.45	0.62	0.25	0.194	6.31	5.53	0.305
	MH	TRC	7	0.74	1.18	0.28	0.540	-0.30	5.63	0.959
O/E	MCM	TRC	14	0.78	0.86	0.13	0.284	0.02	0.04	0.633
	MCM	RWB	8	0.90	0.97	0.13	0.816	0.02	0.04	0.653
	RWB	TRC	8	0.71	0.72	0.19	0.185	0.06	0.06	0.401

watershed (Spearman's ρ ranged from -0.46 to -0.89 across sampling methods). However, most relationships between index scores and land cover metrics were not statistically significant (i.e., $p < 0.008$). Only the relationship between O/E scores from RWB samples were significantly correlated with agricultural land use in the watershed ($\rho = -0.89$, $p = 0.003$). Although the direction of correlation often met expectations (e.g., % open space in the watershed vs. SCIBI; Figure 4c), a few showed no clear relationship (e.g., % developed land in the watershed vs. O/E; Figure 4d).

Precision

Sampling method affected the precision of both the SCIBI and O/E scores (Table 6). For example, the RWB sampling method had the largest MDD for the SCIBI: 22 vs. 19 for the other two methods. However, RWB had the lowest MDD when O/E

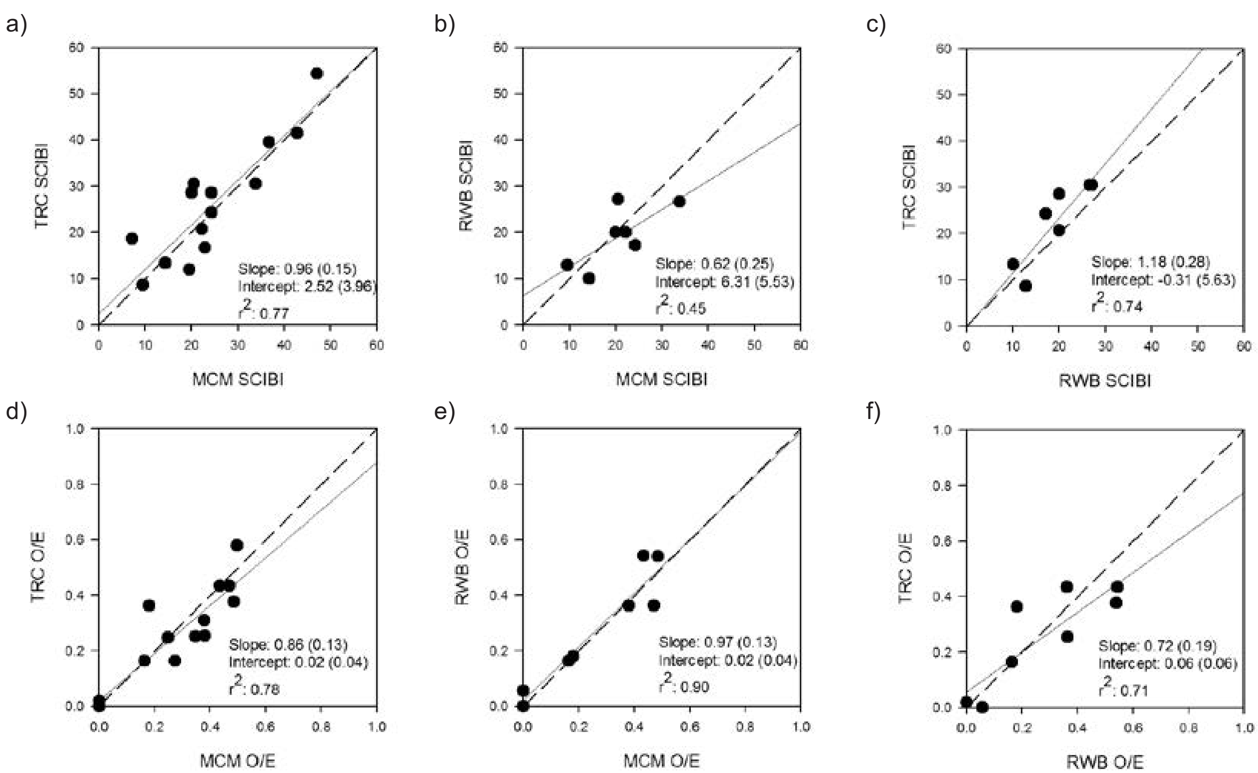

Figure 3. Agreement between the sampling methods for Southern California Index of Biotic Integrity (SCIBI; a – c) and Observed/Expected (O/E; d – f) scores Each point represents the mean index score at a site. Solid lines represent linear regressions, and dashed lines represent perfect 1:1 relationships. Numbers in parentheses are standard errors. Slopes were tested against 1, and intercepts were tested against 0.

Table 5. Spearman rank correlations (ρ) between bioassessment indices and landscape metrics. * = statistical significance (p <0.008).

Index	Land Cover	Method	Watershed			1 km radius		
			n	ρ	p	n	ρ	P
SCIBI	% Developed	MCM	15	-0.08	0.783	15	0.11	0.685
		RWB	7	-0.75	0.054	7	-0.59	0.159
		TRC	14	-0.32	0.914	14	0.20	0.487
	% Open	MCM	15	-0.04	0.892	15	0.09	0.742
		RWB	7	0.62	0.139	7	0.67	0.102
		TRC	14	-0.04	0.890	14	-0.08	0.782
	% Agricultural	MCM	15	0.06	0.842	15	-0.11	0.689
		RWB	7	0.12	0.799	7	0.22	0.628
		TRC	14	0.00	0.991	14	-0.02	0.954
O/E	% Developed	MCM	15	0.14	0.640	15	0.35	0.202
		RWB	8	-0.28	0.509	8	-0.07	0.866
		TRC	17	0.23	0.370	17	0.31	0.222
	% Open	MCM	15	-0.05	0.857	15	0.01	0.980
		RWB	8	0.40	0.333	8	0.17	0.693
		TRC	17	-0.24	0.355	17	0.02	0.948
	% Agricultural	MCM	15	-0.67	0.009	15	-0.24	0.388
		RWB	8	-0.89	0.003*	8	-0.15	0.719
		TRC	17	-0.46	0.064	17	-0.31	0.220

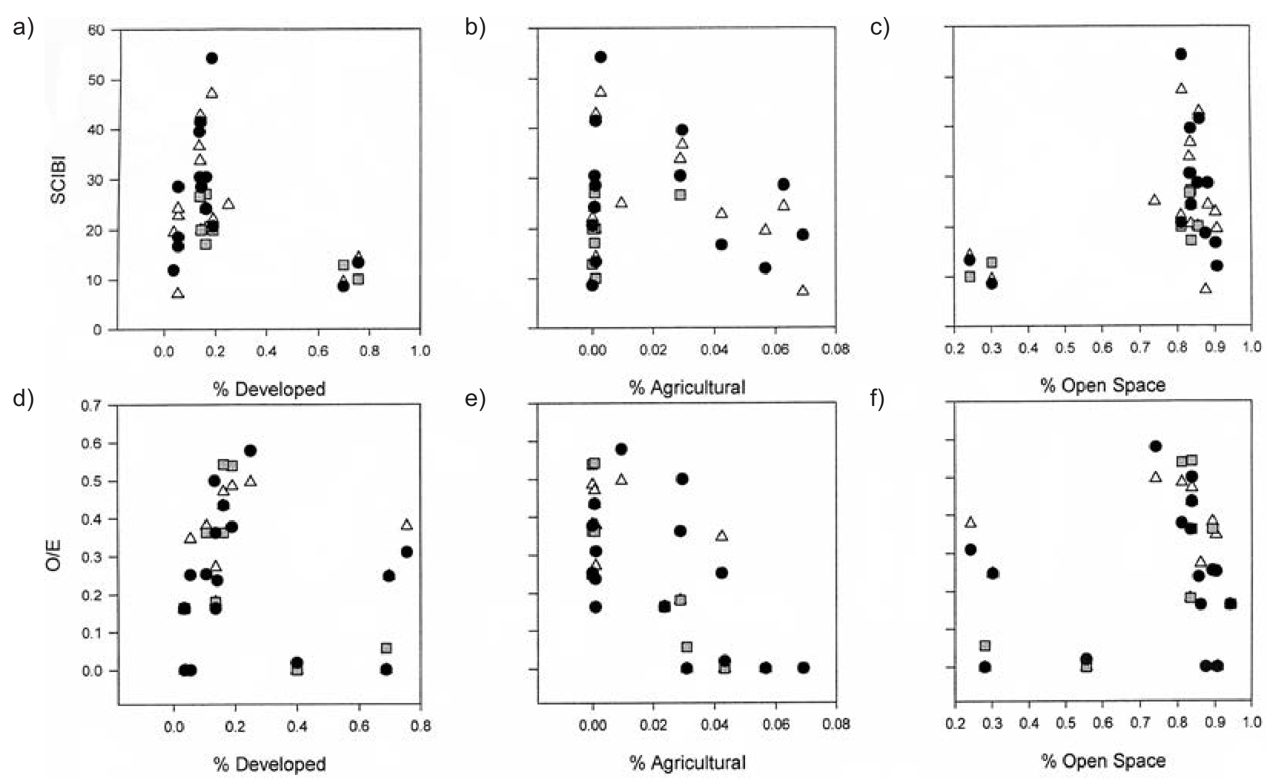

Figure 4. Index scores versus land cover metrics. Each point represents the mean of all samples collected by one method at each site. White triangles represent MCM samples. Gray squares represent RWB samples. Black circles represent TRC samples.

Table 6. Within-site variability (expressed as mean square error, MSE) and minimum detectable difference (from a two-sample, 2-tailed t-test with n = 30, α = 0.05, and β = 0.1) for each of the sampling methods. d.f.: degrees of freedom. SS: sum of squares. MSE: mean square error. MDD: mean detectable difference.

Index	Method		d.f.	SS	MSE	F	p	MDD
SCIBI	TRC	Sites	7	2507	358	12.5	>0.0001	19
		Residuals	15	430	29			
	RWB	Sites	3	403	134	3.7	0.0701	22
		Residuals	7	254	36			
	MCM	Sites	8	1745	218	8.0	0.0002	19
		Residuals	16	437	27			
O/E	TRC	Sites	8	0.625	0.078	12.7	>0.0001	0.28
		Residuals	13	0.074	0.006			
	RWB	Sites	3	0.115	0.038	14.5	0.0037	0 20
		Residuals	6	0.016	0.003			
	MCM	Sites	9	0.860	0.096	20.9	>0.0001	0.24
		Residuals	17	0.078	0.005			

scores were used: 0.20 vs. 0.28 for TRC and 0.24 for MCM. Coefficients of variation showed similar trends in variability among methods when SCIBI scores were used, (ranging from 22 to 27%), and lower CVs for RWB when O/E scores were used: 12 vs. 20% for MCM and 45% for TRC.

The low number of samples containing adequate numbers of individuals meant that estimates of within-site variance were sometimes based on very small samples. For example, only four sites in the region using the SCIBI had multiple samples with sufficient numbers of organisms collected by the RWB method. This problem was less severe for estimates based on O/E scores because fewer individuals per sample are required for index calculation, and because sites in the Central Valley and San Francisco Bay area could be included in the estimates.

Discussion

Low-gradient streams are distinct from other streams in many aspects, such as substrate material, bed morphology, and the distribution of microhabitats (Montgomery and Buffington 1997). As a consequence of these differences, traditional bioassessment approaches in California that were developed in high-gradient streams with diverse microhabitats have limited applications in low-gradient reaches. The sampling methods evaluated in this study differed in the extent to which they targeted the richest microhabitats (such as riffles, or vegetated margins). For example, the TRC method allows field crews to select the richest microhabitats specifically. In contrast, the RWB method may systematically undersample or miss these habitats entirely, as the richest areas in low-gradient streams are typically found at the margins (Montgomery and Buffington 1997). The MCM method, a modification of the RWB method, was designed so that these margins could be targeted.

Caution should be used when applying sampling methods or assessment tools that were calibrated for specific habitat types (e.g., high-gradient streams) to new habitats (e.g., low-gradient streams). The present study's evaluation of assessment tools unveiled a number of shortcomings that weaken application of these tools in low-gradient streams, including the inability to collect adequate numbers of organisms, poor sensitivity of assessments, and low precision of the sampling methods. Significant disagreements among the methods were not detected, although power was low because of the low number of samples. The inability of the RWB sampling method to collect an adequate number of individuals in nearly half of all samples makes it unsuitable for low-gradient streams, even though this method is widely used by bioassessment programs in California (Ode 2007) and across the USA (Peck *et al*. 2006). Although biomonitoring programs must assess a diverse range of habitat types with available tools, the present study indicates that these programs may be well served by evaluating tools in novel habitats where monitoring activities occur.

Variance components analysis of assessment indices showed that differences among sites explained more of the variance in index scores than differences among sampling methods, suggesting that similar types of benthic macroinvertebrates are collected by the different methods. However, analysis of disagreements among the methods indicated that some samples collected by RWB were distinct from those collected by TRC, and samples collected by MCM were intermediate between the other two. For example, samples collected by TRC had lower O/E scores than samples collected by MCM, which in turn were lower than those collected by RWB. However, differences among these methods did not reach statistical significance.

Other studies comparing single, targeted habitat sampling methods (e.g., TRC) to multi-habitat sampling methods (e.g., RWB) have shown similar results. For example, MDDs reported in other studies (or calculated from reported variabilities) were comparable to those reported here, although generally larger (Rehn *et al*. 2007, Blocksom *et al*. 2008). However, these studies found that multi-habitat sampling reduced variability in multimetric indices, whereas the present study found that variability was lower for the single habitat method (i.e., TRC; Table 7). As in Rehn *et al*. (2007), the present study found that TRC samples had higher O/E scores than RWB samples, but that the strength of disagreement was inconsistent in the largest watersheds.

The generally weak response of the indices to land cover metrics suggests that the SCIBI and O/E may not be sensitive to variability in watershed-scale disturbance in low-gradient streams. This conclusion is tempered by small sample sizes that limited power, and sensitivity to reach-scale degradation was not explored in this study for lack of data. Several studies have shown the strong impact of reach-scale factors on benthic macroinvertebrates, which may exceed the influence of watershed-scale stressors (e.g., Hickey and Doran 2004, Sandin and Johnson 2004). Furthermore, most of the watersheds in the study were highly altered, particularly those in the region of the SCIBI, and portions of the disturbance gradient to which these indices are more sensitive may not have been adequately sampled. Several studies have found that biota responds to disturbance gradients ≤10% development in a watershed, but responses above this gradient are muted (e.g., Hatt *et al*. 2004, Walsh *et al*. 2007). Agricultural land cover, which was low in most watersheds (<10%), showed strong responses with the indices, suggesting that the study was able to capture portions of this gradient to which both the SCIBI and O/E were sensitive.

The low numbers of organisms collected from the low-gradient streams in the study may reflect the naturally low population densities of benthic macroinvertebrates in these reaches. The River Continuum Concept hypothesizes that higher order streams with larger watersheds have a lower energy base because of reduced allochthonous input and depressed autochthonous productivity (Vannote *et al*. 1980). This lower energy base would be expected to support reduced biomass. However, observation of the sites in this study suggests that the lack of stable microhabitats (e.g., riffles and vegetated margins) may account for the reduced numbers of macroinvertebrates, as few species are adapted to the shifting sandy substrate found in most low-gradient streams in California. A well known, but extreme, example of the impact of shifting sandy substrates on maintaining low densities of benthic macroinvertebrates are the migrating submerged dunes in the lower

Table 7. Minimum detectable differences in multimetric indices. Southern California Index of Biotic Integrity (SCIBI); Northern California Index of Biotic Integrity (NICIBI); Virginia Stream Condition Index (VSCI); Macroinvertebrate Biotic Integrity Index (MBII); California O/E Index (O/E); and NT = not tested.

Index type	Method	Present study	Rehn *et al*. 2007	Blocksom *et al*. 2008	
Multimetric index	Single-habitat	19.2 (SCIBI)	19.7 (SCIBI + NCIBI)	19.88 (VSCI)	29.79 (MBII)
	Multi-habitat	22.6 (SCIBI)	15.5 (SCIBI + NCIBI)	17.37 (VSCI)	17.91 (MBII)
Predictive model	Single-habitat	0.28 (O/E)	0.22 (O/E)	NT	NT
	Multi-habitat	0.20 (O/E)	0.19 (O/E)	NT	NT

Amazon River (Sioli 1975, Lewis, Jr. *et al*. 2006). Although very high productivity of Chironomidae and other benthic macroinvertebrates has been observed in low-gradient sandy rivers of the southeastern United States, this productivity was attributed to snags and other stable microhabitats, more than to the shifting sandy substrate (Benke 1998). Thus, the vast majority of the macroinvertebrate activity in a large reach of river was found in small areas containing snags (Wallace and Benke 1984). Snag microhabitats are arguably less common in streams of the arid Southwest, which lack dense riparian forests to contribute snag-forming woody debris and may be less likely to be sampled using a systematic sampling method like RWB.

Bioassessment programs are often required to make do with available tools to fulfill regulatory mandates, yet they lack resources to evaluate the tools for applications in all habitats of concern. Although all sampling methods in this study suffered from poor efficiency in collecting organisms, the MCM method greatly improved efficacy and reduced the frequency of rejected samples. Furthermore, the lack of significant disagreements and inconsistencies suggests that the MCM method produced results that were comparable to the other methods already in use in California, which may facilitate integration of historical data sets (Cao *et al*. 2005, Rehn *et al*. 2007). Therefore, the present study supports the use of MCM in low-gradient streams in California as a substitute for the currently preferred RWB method. Overall, bioassessment programs can improve data quality and avoid unnecessary expenses by explicitly evaluating assessment tools when assessing novel habitat types.

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Appendix 10

B309

SWAMP
Surface Water Ambient Monitoring Program

Final Technical Report	2009

Evaluation of the California State Water Resource Control Board's Bioassessment Program

March 15, 2009

California Water Boards

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6-704

Evaluation of the California State Water Resource Control Board's Bioassessment Program

March 15, 2009

Final Report to U.S. EPA-OST and Region IX

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EXECUTIVE SUMMARY

The State of California's bioassessment, monitoring and assessment (M&A), and water quality standards (WQS) programs were reviewed in January 2008 using the U.S. EPA's Critical Technical Elements and Programmatic Review process (Barbour and Yoder 2008; Quasney and Yoder 2008), which evaluates key components of these state programs and existing and planned capacities. The review process results in technical, policy, and management recommendations for building, refining and maintaining functional and effective bioassessment and M&A tools that support the full spectrum of WQS and management programs. This review was conducted by a two person review team with national expertise at evaluating, building, and implementing state and tribal programs.

Bioassessment, the use of resident aquatic biota as direct indicators of the biological integrity of water bodies, is a powerful tool for water resource regulatory programs. The need for state water quality agencies to develop and maintain robust bioassessment programs is underscored by the National Research Council's critical review of state TMDL, M&A, and WQS programs (National Research Council 2001). The NRC's review makes clear that all states need better biological endpoints, adequate M&A, and tiered aquatic life uses (TALU) in order to develop and refine appropriate and effective WQS that result in more accurate and appropriate management outcomes including TMDLs.

While the federal Clean Water Act (CWA) has long required states to protect and restore the chemical, physical, **and** biological integrity of the nation's waters, California has only recently begun to consider the developments that it will need in order to implement modernized WQS that lead to more effective water quality management programs. Because of the prior investment in the development of bioassessment tools since the mid-1990s, California is now positioned to initiate the process of integrating bioassessments into their WQS and monitoring and assessment programs via the development and implementation of narrative and numeric biocriteria.

Key Findings of the Review:

1. California's bioassessment program has made great strides in recent years due primarily to investments made by the Dept. of Fish and Game's Aquatic Bioassessment Laboratory (DFG-ABL) and the Water Board's Surface Water Ambient Monitoring Program (SWAMP). With continued management support, SWAMP is capable of building, maintaining and refining the technical tools that the Water Boards will need to incorporate biological criteria and assessments into their water quality programs.

2. As determined by the U.S. EPA Critical Technical Elements methodology California's bioassessment program is currently at an above average level of rigor (Level 3; 88.3%) and is being used in statewide 305(b) assessments, the 303(d) listing/delisting process, and in support of specific regulatory needs in selected Regions. Continued investment

and active management support will be needed to achieve a fully functional (CE Level 4) program that will provide more comprehensive support for the suite of regulatory needs and in all Regions.

3. California's bioassessment program is currently capable of addressing wadeable perennial streams. Additional investment and technical development will be needed to address other waterbody types including large non-wadeable rivers, non-perennial streams, lakes, and wetlands.

4. SWAMP has invested a significant amount of financial resources to develop the current bioassessment infrastructure. However, full implementation of California's bioassessment program is constrained by the fact that most of the program is conducted by contractors. This review affirms the findings of prior peer reviews that the Water Board needs its own in-house bioassessment coordinator and staff. This will enhance the integration of monitoring and assessment results in al facets of water quality management.

5. While the DFG-ABL, SWAMP, and their contractors are building a solid technical foundation for a robust freshwater bioassessment program, they can only provide the technical tools for developing biological endpoints and Tiered Aquatic Life Uses (TALUs). The State and Regional Water Boards will need additional biologists and planning staff to develop, refine and implement narrative/ numeric biocriteria and TALUs in support of all applicable regulatory programs and at the same spatial scale at which they are being applied.

Management Recommendations:

1. The Water Boards should revise the structure and content of the beneficial uses and criteria related to aquatic life uses to more accurately reflect the natural attributes of the diversity of watersheds through the state. This is consistent with recommendations from the NRC (2001) and the SPARC (2006).

2. The Water Boards should integrate biological assessment tools into their water quality programs (WQS, NPDES, and TMDLs). This represents a fundamental paradigm shift that will require strong management understanding and support.

3. The State Water Board should develop statewide narrative biocriteria which incorporate numeric biological endpoints to interpret the narrative objectives for aquatic life use protection as soon as possible.

4. The Water Boards should require key program units (e.g., WQS, NPDES, TMDL) to incorporate biological assessments into their programs and program evaluation. Adopting biological criteria within a framework of TALUs would enhance its implementation in these programs.

5. The Water Boards should assign staff and provide training to programs incorporating biological assessments. This includes support for statewide efforts and ongoing efforts at the Regional Boards.

6. The State Water Board should create and maintain a specialist position for a state-wide bioassessment policy coordinator. This is consistent with the recommendation made in a prior external peer review of SWAMP's bioassessment program (Barbour and Hill 2003).

Technical Recommendations: [NOTE: the following recommendations are based in part on the Critical Elements evaluation conducted during the January 2008 program review and are based on elevating the technical rigor of the statewide and regional board programs to level 4.]

1. SWAMP should continue to support the technical infrastructure development strategy outlined in its FY06-07 and FY07-08 bioassessment work plans.

2. SWAMP should establish reference conditions for the objective interpretation of biological data and implement the reference condition management plan. This investment will pay dividends to all water quality programs using biological assessments. This would also serve the development of chemical/physical endpoint s and indicators as part of a program of integrated bioassessment.

3. SWAMP should develop additional indicators of ecological condition to supplement the benthic macroinvertebrate indicators currently in use. The consistent addition of a second assemblage in the bioassessment process is needed to elevate the program to level 4. Options for this include an algal assemblage indicator (currently in development by SWAMP), a wetland indicator (CRAM, also in development), and fish assemblage indicators (currently in development by USGS). SWAMP should continue to support efforts to determine which supplemental indicators are best suited to California's needs and for specific waterbody ecotypes (perennial wadeable streams, non-perennial streams, non-wadeable large rivers, wetlands).

4. SWAMP should continue to support development and maintenance of the biological component of the database. This provides the essential framework for statewide integration of biological and physical habitat data. Two priorities are tools to calculate biological metrics for water resource managers and tools to convey results to the public.

5. SWAMP should develop a QA/QC oversight program for the collection of ambient biological data. This would set the standard for SWAMP comparability for other Water Board programs and provide guidance to other agencies wishing to become SWAMP compatible. Adopting biocriteria and TALUs in the WQS would contribute to the compulsory standardization of the use of biological assessment data throughout the state and between the regions.

6. SWAMP should continue to support the statewide perennial stream assessment. This addresses the need to assess the condition of a major class of surface waters in California and provides a solid framework for integrating stream monitoring with other programs in the state.

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INTRODUCTION

U.S. EPA has supported the development of state and tribal bioassessment programs via the production of methods documents, case studies, regional workshops, and evaluations of individual state and tribal programs since 1990. Since 2000, EPA has fostered a more detailed and “hands on” developmental and implementation process for incorporating tiered aquatic life uses (TALUs) and numeric biocriteria in state and tribal water quality programs. The successful development and implementation of biocriteria and TALUs is directly dependent on the rigor, comprehensiveness, and integration of monitoring and assessment (M&A) with state water quality standards (WQS) and water quality management programs. This framework can also provide measures to evaluate the effectiveness of major water quality management programs such as NPDES permitting, TMDLs, nonpoint source management, stormwater management, and watershed planning.

On January 23-24, 2008 the U.S. EPA sponsored an evaluation of the Water Board’s biological assessment program. The purpose was to evaluate both the State’s technical program elements and its regulatory structure in order to make recommendations that will enhance CA’s ability to make informed decisions about the ecological condition and management of California’s rivers and streams. The scope of the review included a range of topics about the surface water monitoring and assessment program, the structure of the existing WQS, the development of bioassessment tools to delineate impaired waters and determine stressor effects, and the use of biological data to support Water Board programs including NPDES permitting, non point source management, stormwater management, and TMDLs.

The evaluation process consisted of direct interactions with state program management and staff to evaluate the status of their bioassessment, M&A, and WQS programs and to describe how each is used to support water quality management. The following include the principal reports and products of the EPA TALU development and implementation process since 1998.

1) *Important Concepts and Elements of a State Watershed Monitoring and Assessment Program (Yoder 1998):* This document was developed as a state oriented document following the Intergovernmental Task Force on Monitoring Water Quality and the U.S. EPA environmental indicators initiatives of the 1990s. It outlines the essential concepts and elements of what is referred to as an “adequate” state monitoring and assessment program. The term adequate was chosen to represent a cost-effective, yet comprehensive approach to monitoring that assures the use and development of chemical, physical, and biological indicators collected and arrayed in a strategic manner that results in supporting water quality management decisions at all relevant scales.

2) *Use of Biological Information to Better define Designated Aquatic Life Uses in State and Tribal Water Quality Standards: Tiered Aquatic Life Uses (August 2005):* This document serves as a detailed presentation of methods for developing and implementing TALUs in state WQS. It consists of detailed descriptions of the baseline elements of TALU – the

Biological Condition Gradient, elements and milestones for the incorporation of TALUs in WQS.

3) *Critical Elements Technical Elements of a Bioassessment Program (November 2007; updated September 2008):* The rigor of a state's program is evaluated in order to determine the capacity to assess ecological condition and diagnose impairment. This evaluation consists of thirteen technical elements associated with design, methods, and interpretation features of a bioassessment program that are rated jointly with the state program management and staff. The cumulative rating of the elements provides a level of rigor (ranging from level 1, the lowest level of rigor, to level 4, the highest and best suited for full program support) of the overall bioassessment program. The capacity to accurately address a suite of management questions and issues is dependent upon the level of rigor. A critical technical elements evaluation of the California bioassessment program was completed using the standardized checklist and scoring methodology (Barbour and Yoder 2007, 2008).

Part 1. Use of Bioassessment in State Water Board Programs

1. Monitoring and Assessment Program

The Surface Water Ambient Monitoring Program (SWAMP) is a statewide effort designed to monitor and assess the conditions of surface waters throughout the state of California. SWAMP was proposed in 2000 (SWRCB 2000) in response to a legislative directive to integrate existing water quality monitoring activities of the State Water Resources Control Board and the nine Regional Water Quality Control Boards (Regional Water Boards), and to coordinate with other monitoring programs. The needs of an emerging TMDL process, inconsistencies between regional boards, and information needs for regulatory decision-making were some of the principal drivers.

SWAMP has fostered the development of biological assessments because they provide a direct and quantitative measure of aquatic life use protection. A major review of the program was conducted in 2003 (Barbour and Hill 2003). In 2005, the SWAMP Scientific Planning and Review Committee (SPARC 2006) recommended "The State Board should adjust water quality management approaches to take advantage of the more direct measures SWAMP is developing of aquatic life condition through bioassessment monitoring".

Tools for assessing biological assemblages in perennial wadeable streams are currently the most well-developed of the biological monitoring tools; this is largely the result of investments made by the Department of Fish and Game's Aquatic Bioassessment Laboratory (DFG-ABL) and SWAMP since the mid 1990s. The State has made significant progress with the use of benthic macroinvertebrates in stream bioassessments, but has recently begun to develop and implement an Algae Plan (SCCWRP 2008), and is also evaluating the utility of the California Rapid Assessment Methodology (CRAM) as a tool for assessing riparian wetland habitat. SWAMP is also considering the utility of fish bioassessments in California. It is also recognized that there are additional freshwater ecotypes and strata that need to be addressed to meet the goal of providing full water quality management program support (Table 1)

Ecotype	Habitat	Algae	Invertebrates	Fish
Ephemeral	Y			
Intermittent	Y	?	?	?
Perennial	pHab CRAM	□ cover Biomass Algal IBI	IBI or O□E	?
Rivers	pHab CRAM	Y	Y	Y
Lakes□Reservoirs	pHab CRAM	Y	Y	Y
Bay□Estuaries	CRAM	Y	BRI	Y
Coast□Ocean		Y	So Cal BRI	So Cal Fish Index

Table 1. Summary of biological indicator development efforts in California by major aquatic ecotypes.

Additional investment will be needed to develop and maintain a program that is capable of addressing other waterbody types (e.g., large non-wadeable rivers, non-perennial streams, lakes, wetlands). Indicator work done on perennial streams may applicable to other waterbody types. For instance studies are underway to investigate the use of macroinvertebrate assemblages and periphyton to assess intermittent and ephemeral streams. The CRAM wetland methodologies can be applied to intermittent and ephemeral streams but also to lakes and estuaries. California has also participated in national and regional bioassessment projects such as U.S. EPA-EMAP and REMAP surveys, the National Wadeable Streams Assessment, the National Lakes Assessment, and the National Rivers and Streams Assessment each of which lends experience with these other waterbody types.

California has begun moving from conducting simple biosurveys (i.e., the collection of limited sets of biological samples) to more spatially robust bioassessments of ecological condition. This has occurred within selected Regional Boards and these can serve as a template for all Water Boards. The next challenge will be the development of biological criteria to better inform and guide water quality management decision-making. While SWAMP and the selected Region Board programs have contributed the technical rigor required by this process, it will require considerations that apply within specific regions of the state. Hence it needs to be a coordinated effort with consistent participation and integration between the state and regional water boards.

2. Role of Bioassessment in Listing Decisions

Waterbody listings are presently based on exceedences of water quality criteria. The State Board's listing policy (SWRCB, 2004) provides detailed guidance on the interpretation of chemical and toxicity data. Listing and de-listing decisions are based on the frequency with which numeric water quality criteria are exceeded as defined in the listing policy and interpreted through the use of a binomial probability distribution. Assessment of physical and biological data is more difficult because there are no numeric criteria. Listings are therefore based on the interpretation of narrative criteria.

A water body may be listed if there is significant degradation in biological populations and/or assemblages as compared to reference site(s), but only if it is associated with a pollutant. The analysis of biological communities must rely on measurements conducted using published protocols from at least two stations and requires that comparisons to reference site conditions shall be made during similar seasonal and/or hydrological periods.

Regional Boards using biological information in the listing process are required to: 1) identify appropriate reference sites and document methods for the selection of reference sites, 2) document the sampling methods, index period and quality assurance/quality control procedures for the habitats being sampled, and 3) compare bioassessment data to conditions at reference sites and evaluate physical and other water quality data to support any assessment conclusions. The listing policy encourages the use of indices of biological integrity (such as the IBIs developed by SWAMP).

A significant number of waterbodies have been listed in the past for sediment, excess algae, hydromodification, and water diversions using best professional judgment to interpret narrative standards in the Basin Plans. The lack of a quantitative biological endpoint or numeric biocriteria for attainment of aquatic life can create challenges for managers.

3. Water Quality Standards

Water quality standards (WQS) provide the objectives for both developing the requirements for and judging the effectiveness of pollution controls and management programs. The California WQS are comprised of beneficial uses, numeric and narrative criteria (objectives) to protect those beneficial uses, and an antidegradation policy.

<u>Beneficial Uses</u>. At present there are 6 defined "beneficial uses" that apply to the protection of aquatic life use in fresh water across the state. These are cold fresh water habitat (COLD), warm fresh water habitat (WARM), spawning (SPAWN) and migration (MIGR) of aquatic species, habitat for wildlife in general (WILD) and for rare, threatened, and endangered species (RARE), and the preservation of biological habitats of special significance (BIOL). These uses are applied to specific watersheds through Regional Water Quality Control Plans (Basin Plans) that

are developed, administrated and enforced by the Regional Water Boards. Two Regional Boards have wetland habitat (WET) as a defined beneficial use and the State Board is considering application of the wetland use as part of a hydromodification policy.

These aquatic life use designations define the general types of organisms, assemblages and habitats that are being protected. For instance, COLD use designation protects “uses of water that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates”. Aquatic life use support assessment is challenging in California because expectations for the aquatic life use support will naturally vary across the state. The current generic aquatic life use designations simply do not account for the natural variability in rivers and streams across the broad biogeographic regions of the state.

The SPARC recommended that the Water Boards use the National Research Council (2001) recommended framework to revise and refine the designated uses, the supporting protective criteria, and the attainment assessment procedures to more fully reflect the diversity of watersheds and their respective/desired attainable human and aquatic life uses. U.S. EPA (2005) largely followed the NRC (2001) recommendations in their methodological guidance for developing and implementing a TALU approach to WQS and monitoring and assessment. That framework and the technical developments to date are the basis for this review.

Numeric and Narrative Objectives. There are relatively few numeric objectives for the protection of aquatic life. The California Toxics Rule contains numeric water quality objectives for 22 chemicals. The Basin Plans have limited objectives for additional toxics. Narrative objectives in the Basin Plans related to the protection of aquatic life use are generally expressed in the form of “no toxics in toxic amounts”, “no significant degradation”, or “no significant deviation from reference”. State and Regional Board staff engaged in assessments have little guidance on how to interpret these narrative objectives. A TALU framework and numeric biocriteria would greatly clarify these endpoints.

The biological information being generated through SWAMP can be used to establish biological expectations for different waterbodies across the state. This is a first step in the establishment of biological criteria. Such information and data may also be used to support the development or refinement of other water quality objectives (e.g. temperature, dissolved oxygen or nutrient criteria) or program applications (e.g., 401 certifications) across the state. The SWAMP Reference Condition Management Plan (Ode and Schiff, 2008) lays out a strategy for establishing biological expectations.

Antidegradation. The state’s antidegradation policy is incorporated in the Basin Plans by reference. Biological information is not typically used in antidegradation analyses, but it has the potential to enhance their application. Biological assessment could be used as a direct measure of instream aquatic life use and to provide a trigger for antidegradation analyses when such assessments indicate that there is degradation of water quality. The biological assessment tools developed already provide a method to measure condition incrementally thus enhancing its utility for detecting incremental changes that may not reflect a violation of standards. This capacity will enhance its usefulness in new antidegradation applications.

4. Use of Bioassessment in other Board Programs

Monitoring and assessment activities should be designed to provide information and tools to support multiple programmatic activities with the same data and information. As biological assessments provide a direct measure of aquatic life use they can help program managers prioritize management actions to protect and restore beneficial uses. They can also be used as outcome measures to evaluate the effectiveness of various programs (e.g., NPS, NPDES, and TMDLs) to protect and restore beneficial uses.

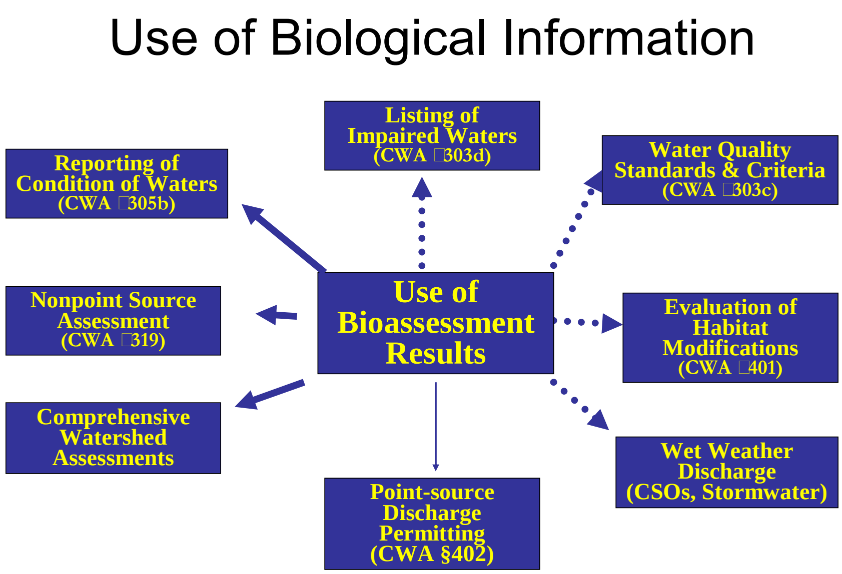

Figure 1. Efforts to develop strong monitoring and assessment programs lead to support for multiple water quality management programs.

<u>NPDES</u>. The use of biological data in NPDES permits and WDRs in California dates back to the early 1990's. Bioassessments have been used mostly in "upstream-downstream" designs to assess the impact of point source dischargers such as POTWs, but are also increasingly being used in stormwater permits. In Southern California alone, 323 bioassessment samples are collected by stormwater agencies each year as part of their MS4 permit requirements. The State Board's SWAMP program is developing draft permit language to assist Water Board staff that wish to incorporate freshwater bioassessment into permit requirements and/or other Water Board programs or projects. The boilerplate language will include guidance on field and lab methods, index periods for sampling, and the required QA and data submittal procedures. Interpretation of bioassessment results have largely been relative to reference site or locally derived IBIs, where available.

<u>NPS</u>. Bioassessments have been used in a number of nonpoint source projects to assess the effectiveness of actions on water quality (instream biota). The State Board's nonpoint source

program has helped fund monitoring of perennial streams to identify the extent of the states streams that are impacted by nonpoint source pollution and to identify the stressors that are impacting streams (Ode, 2007). Funds have also been used to support development of stressor identification tools (Rehn, 2006) and improve understanding of associations between biological assemblages and key stressors associated with NPS activities (e.g., agricultural and urban land uses).

TMDLs. Bioassessments have been used primarily as targets for TMDL monitoring in California rather than as direct biological endpoints. The endpoints in most TMDLs are primarily water quality endpoints rather than biological endpoints. However, the translation of bioassessment results to relevant TMDL endpoints is a next step in increasing the programmatic uses of bioassessment information in California. It will also enhance the comprehensiveness, relevancy, and applicability of TMDLs by focusing on the most limiting factors beyond the expected impact of individual pollutants by also highlighting their associated interactions and co-occurring stressors such as habitat and land use.

Part 2. Critical Elements Evaluation

The critical technical elements of bioassessment programs are described and divided into four general levels of rigor supported by a sliding scale of resolution and development (Barbour and Yoder 2007, 2008). A level 4 program is the most rigorous and the most capable of fully addressing the myriad of management issues regarding aquatic resources that are commonly faced by states and tribes. The remaining three levels of bioassessment rigor may be appropriate for some, but not all of the water quality management program support needs of state programs. Delineating the extent and severity of aquatic life impairments and diagnosing categorical and parameter-specific stressors are the primary tasks for a TALU based approach to monitoring and assessment that is intended to support multiple water quality management programs (Yoder and Barbour 2009).

A critical elements (CE) evaluation was conducted by proceeding through the CE checklist in accordance with the methodology in Barbour and Yoder (2007). The statewide program yielded a raw score of 53 out of the maximum possible score of 60 which equates to a mid-level 3 program; the two Regional board programs that were also evaluated were borderline level 3. The results for each element are discussed below (See Appendix 2 for checklist):

1. Index Period. *An index period is a consistent seasonal time frame for sampling the assemblage that is a cost-effective alternative to sampling on a year-round basis to account for seasonal variations. Ideally, the optimal index period corresponds to recruitment cycles of the organisms (based on reproduction, emergence, growth, and migration patterns). Sampling during an index period minimizes between-year variability*.

The statewide program adheres to a standardized index period (April to October) that slides from north to south to reflect differences in temperature. In southern California the index period is from April to October for the multimetric index (April to June for the O/E models); in northern California the index period is generally from August to September. Most Regional Boards adhere to this but there is some accommodation to support program needs. A CE score of 4.0 out of 4.5 was given to the California program.

2. Spatial Coverage. *Available resources and the desired outcome of the sampling design are key determinants in achieving adequate coverage.*

The "universe" of monitoring and assessment needs in California is spatially extensive and diverse. The nine regional boards incorporate a wide diversity of hydrological, landscape, and natural regional strata. No single design can meet all the State of California's monitoring objectives.

SWAMP is using a probabilistic sampling design to obtain unbiased estimates of the biological conditions of perennial streams across the state and to track trends in biological conditions over time. The design of the SWAMP Perennial Stream Assessment (PSA) survey is cost effective because the entire resource need not be sampled – only a representative sample of streams. Another advantage of the probability-based design is that it allows the coordination/integration of other probability-based designs. In California the perennial stream survey is being coordinated with national stream assessments, regional watershed assessments being performed by Regional Boards Southern California (i.e., RB4, RB8 and RB9) and includes significant contributions from the regulated community including the Stormwater Monitoring Coalition in southern California and the Regional Monitoring Program in the San Francisco Bay area. The principal spatial designs include a statewide probabilistic network consisting of approximately 100 sampling sites per year, stratified by 6 ecological regions.

Many Regional Boards use targeted monitoring designs. These might involve watershed scale designs that include a resolution at an 8-11 digit HUC spatial scale to meet their specific needs. The designs vary from upstream/downstream sampling to bottom-of-watershed monitoring designs to more distributed networks. Some Regional Boards are using a rotating watershed approach, with a goal of sampling all watersheds in a region within a fixed time period (5 years is a common goal). The actual numbers of targeted sites are dependent on regional funding levels and annual monitoring priorities. Measurements include core chemical, physical, and biological parameters per the statewide SWAMP methodology with supplemental parameters added based on region-specific needs. The results from the statewide SWAMP perennial stream surveys provide context for local sampling.

The combined score of 4.0 reflects the practical integration of the statewide (which includes a combination of probability and targeted sites) and partial integration of Regional Board programs into the overall State Board effort.

3. Natural Classification. *In developing a bioassessment program, USEPA recommends classifying waterbodies more specifically than simply by waterbody type (e.g., river, lake, etc.), because it is highly unlikely that the biological condition of any given waterbody type is uniform throughout any anthropogenically-defined boundary. The classification of waterbodies is useful* *in partitioning natural variability and distinguishing it from variability resulting from human-induced changes. Classification of waterbodies can be based on a combination of characteristics, i.e., watershed drainage size, ecological regions, elevation, temperature, and other physical features of the landscape and/or waterbody for each waterbody type (e.g., large rivers, wadeable streams, headwater streams). The number of sites sampled and the availability of candidate reference sites within each class may limit the number of classifications*.

The challenge for the SWAMP program is to develop a program accounts for biological variation caused by natural environmental gradient and balances statewide consistency with the flexibility to adapt to California's diverse regional settings. In the present scheme, California will be divided into different geographic regions based on coarse biogeographic similarities in order to partition some of the natural variability among regions. These boundaries are consistent with those being used in the SWAMP perennial stream survey. Within the biogeographic classification, additional factors such as watershed size, elevation, and precipitation may be used to define biological expectations.

The CE score of 3.5 will be elevated to 5.0 with the developments that are already underway.

4. Criteria for Reference Sites. *A reference site should be natural or minimally disturbed while maintaining essential attributes. When reference sites are used to establish reference conditions, the State needs to document how it selects reference sites (by what criteria) and how it uses them to define regional reference conditions. Factors to be considered in selecting reference sites include human population density and distribution, road density, and the proportion of mining, logging, agriculture, urbanization, grazing, or other land uses. Candidate reference sites are evaluated for these factors to determine the degree of human modification that has occurred. Sites are eliminated if they have undergone direct human modification.*

The SWAMP strategy for selecting and sampling reference sites is documented in its Reference Condition Management Plan (RCMP, Ode and Schiff, 2008 In Prep)". The SWAMP RCMP program has proposed a general strategy for identifying reference sites. California will be classified into broad biogeographic regions. A pool of reference sites will be assembled within each region through a sequential process of identification and screening of candidate sites. This pool of reference sites will be managed through an iterative review of data to refine regional boundaries, ensure continued stability of sites and ensure adequate representation of natural gradients. Finally a monitoring design will be created for sampling this pool of reference sites to document the range of biological and physical condition at reference sites, and to monitor changes to this condition over time.

Screening of candidate sites will be done primarily through a combination of evaluation of existing data, GIS techniques, expert knowledge and site visits. It is recognized that high quality reference sites may not exist in certain areas of the state such as the agriculturally dominated Central Valley or the intensely urbanized southern California coastal plain. An alternate model for site selection will be used in these cases.

The score of 5.0 for the statewide program reflects the high degree of development of reference site selection criteria and procedures. These criteria and procedures are likely to be refined as the RCMP is implemented.

5. Reference Conditions. *The issue of reference conditions is critical to the interpretation of biological data. Generally, USEPA recommends the use of a regional reference condition based on an aggregate of sites that allows for broader application in State water resource programs than site-specific conditions. There must be a sufficient number of reference sites to capture regional stratification and the range of natural variations in biological assemblages due to geology, climate, and other natural physicochemical differences. Ideally, reference conditions represent the highest biological conditions found in waterbodies undisturbed by anthropogenic stressors. Recognizing that pristine habitats are rare or non-existent, resource managers must decide on an acceptable level of disturbance to represent an attainable or existing reference condition. Reference condition can be derived from reference sites, an empirical model of expectations that may include knowledge of historical conditions, or a model extrapolated from ecological principles. Usually, data from sites that represent best attainable conditions (i.e., least disturbed) of a waterbody are used.*

The SWAMP plan for development of reference conditions is embodied in the RCMP (Ode and Schiff 2008). Currently, reference condition is being determined from a still growing network of 300+ “least impacted” reference sites (1998-present). The reference site plan envisages sampling at 50-75 sites/year. The design includes ecoregional stratification and representation of the full range of regionally important natural gradients (e.g., elevation, precipitation, etc.). Development of regional reference condition is in progress – not yet completed for all regions. The goal is to have 50 sites per region.

The CE score of 3.5 should improve to 4.0 with the addition of regional reference sites that are being established as part of the ongoing improvements above.

6. Taxonomic Resolution. *An assemblage is defined as an association of interacting populations of organisms in a given waterbody. Although a single assemblage may be sufficient to make an attainment determination, USEPA recommends the use of at least two to enhance confidence in the assessment findings (USEPA 1996) because each assemblage serves a different function in the aquatic community and may be susceptible to stress in varying manners and degrees. Taxonomic identification of each assemblage to genus or species level provides reliable information about sensitivity, tolerance, and ecological/environmental relationships. Genus/species identifications improve assessments using richness values or metrics as key endpoints. Identification to family level requires less expertise to perform and usually speeds up the assessment process.*

For macroinvertebrate taxonomic identifications, the SWAMP program has recommended resolution to genus/species for development datasets; scoring tools are usually calibrated to work with genus level identifications.   To ensure consistency and rigor in taxonomic data, SWAMP provides primary support for the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT), which establishes and maintains taxonomic standards.

SWAMP should also support the activities of an algal taxonomic workgroup, similar to SAFIT, to develop a standard algal taxonomic effort as recommended by Fetscher and McLaughlin (2008). SWAMP is currently leveraging the efforts and expertise of its partners to develop algal indices in southern California and the central coast. In both these efforts, soft algae and diatoms are currently analyzed to the lowest practicable taxonomy (usually genus/species), but recommendations for level of taxonomy for general assessment purposes are pending the results of the index development process.

The CE score of 4.5 reflects the full development of the macroinvertebrate assemblage and the in progress development of a periphyton indicator. Reaching the CE score of 5.0 is contingent on the full development and use of a second assemblage.

7. Sample Collection. *Standardization of field methods is necessary to establish the validity and reliability of biological data used in an assessment. Thorough training of investigators, coupled with rigorous certification processes, enhances the ability to provide a consistent unit of effort. Strong oversight of activities and leadership of apprentice professionals are critical. Standardization is especially important when information will be used in later trend analysis. The development of standard operating procedures (SOPs) for field and laboratory methods must include an effective quality assurance (QA) program with QC checks.*

The SWAMP program has developed a statewide protocol for macroinvertebrate sampling and physical habitat characterization that is derived from the EPA's national EMAP protocols (Ode 2007b). The SWAMP bioassessment group will work closely with the SWAMP QA Officer to develop comprehensive Quality Assurance Oversight Plan for quality assurance and quality control of bioassessment data. This guidance will cover personnel qualifications, training and field audit procedures, procedures for documenting sources of field and lab (including taxonomic data) error, procedures for chain of custody documentation, requirements for measurement precision, health and safety warnings, cautions (actions that would result in instrument damage or compromised samples), and interferences (consequences of not following the standard operating procedure). As most of the SWAMP sampling is performed by the California Department of Fish and Game, the procedures for quality assurance and quality control are currently addressed in the Quality Assurance Project Plan.

The SWAMP program is currently sampling periphyton using procedures developed for the EMAP program. However methods for field and laboratory protocols for algal sampling, identification and quantification used by various agencies have not been standardized across the state. The recently drafted SWAMP Algae Plan (Fetscher and McLaughlin, 2008) details key considerations for algae-based bioassessments, including the need to standardize sample collection and taxonomic methods across the state.

The CE score of 5.0 reflects the full development of the macroinvertebrate and partial development of the periphyton assemblage methodologies for the statewide and regional programs.

8. Sample Processing. *A systematic treatment of samples is needed to ensure the greatest extent of accuracy and precision. A strong QA/QC program is desired to ensure that (1) sample sorting procedures are being followed and no organisms are missed in the sample, and (2) the taxonomy is consistent and accurate.*

The CE score of 5.0 out of 5.0 for the statewide program reflects the full development of sample processing procedures for macroinvertebrates (Ode, 2008). The State also has a plan to develop standard statewide sample processing methods for periphyton (Fetscher and McLaughlin, 2008).

9. Data Management. *A reliable, efficient and quality assured database management system is fundamental to a program's ability to use monitoring information effectively to solve environmental problems. A proper system for aggregating data and performing the necessary quality control checks is essential. Furthermore, integration of assessment information from multiple assemblages (fish, macroinvertebrate, algae, etc) can contribute important diagnostic information. Data management includes not only proper stewardship of raw data elements but also proper computation of biological metrics and biocriteria threshold information. A strong geographic information system (GIS) linked to a well-designed relational database moves programs toward a more comprehensive watershed perspective in interpreting monitoring data and improves the ability of biological data to meet the increasing information demands of State and federal programs, responsible parties, and the public.*

The SWAMP 2.5 database is a relational database that encompasses all SWAMP monitoring data and links to a large distributed network of state and federal monitoring data (CEDEN). New bioassessment modules for entering, storing and reporting bioassessment data are nearly complete. Future work includes the development of tools to facilitate QA/QC procedures, summarize physical habitat data, and calculate bioassessment metric and IBI calculations. The CE score of 4.5 for the statewide program can be improved to 5.0 once the current data management system includes all reporting fields and calculation routines.

10. Ecological Attributes. *Ecological attributes are those aspects of an aquatic assemblage or community that correspond to the structure and function of that assemblage or community for a given condition. EPA has suggested 10 primary ecological attributes that form a continuum of responses to human disturbance (USEPA 2005). Ten primary ecological attributes have been identified as the basis for evaluating the BCG (USEPA 2005; Davies and Jackson 2006). The first six attributes relate to taxonomic identity, composition, and tolerances. They are 1) historically documented, sensitive, long-lived, or regionally endemic taxa, 2) sensitive rare taxa, 3) sensitive ubiquitous taxa, 4) taxa of intermediate tolerance, 5) tolerant taxa, and 6) non-native taxa that tend to displace endemic taxa. The seventh attribute is organism condition, which provides* *information on individual health. The remaining three attributes are functional integrity, ecosystem connectance, and spatial and temporal extent of stressors.*

The SWAMP program has developed several regional macroinvertebrate MMIs that use ecological attribute metrics in their calibration. SWAMP will continue to refine ecological attribute characterizations as it completes/ revises future MMIs. The State is also in the early stages of developing periphyton indices for coastal stream and has developed a plan for the use of periphyton in stream assessments (Fetscher and McLaughlin 2008).

The CE score of 4.0 out of 4.5 should increase with the development of the macroinvertebrate MMI and O/E model for all bioregions and the addition of a second assemblage.

11. Biological Endpoints & Thresholds. *State bioassessment programs should implement index development and threshold selection. Numerous methods are available for analyzing biological indicator data to assess attainment status, including both univariate and multivariate analysis techniques. Thresholds are the benchmarks from which the biological condition needed to support designated uses are described Selecting this threshold is perhaps the most critical aspect in reporting and documenting attainment status.*

Multimetric indices for macroinvertebrate data have been developed for perennial streams in the North Coast (Rehn and Ode, 2005), for perennial streams in Southern California (Ode et al., 2005) and for perennial streams in the Sierra Nevada (Herbst and Silldorff 2008, Rehn 2007). The State is also using a set of three predictive models based on the River Invertebrate Prediction and Classification System (RIVPACs), which compares the list of taxa observed at a site (O) to the list of taxa expected (E) to occur at a given site in the absence of human disturbance. The statewide California RIVPACs models (C. Hawkins unpublished) incorporates geographic coordinates (latitude and longitude), watershed area, average precipitation, average temperature and percent sedimentary geology into its predictions.

The SWAMP program uses statistical criteria to generate impairment thresholds. In the case of the northern and southern coastal IBIs, thresholds separating impaired from non-impaired were set at 2 standard deviations below a mean reference score. For the RIVPACS scores categorization to into "Good", "Poor" and "Very Poor used thresholds of 1.5 and 3 standard deviations below an O/E score of 1.0 (the score expected under no impairment).

The State Board is funding projects in Southern California and the Central Coast to develop periphyton indices. The products from these two studies are expected in 2009. The State is currently testing the use of the California Rapid Assessment Methodology (CRAM) for assessment of riparian habitat. As with the macroinvertebrate scores, it is likely that threshold values for these indices will be derived statistically from reference populations.

The CE score of 3.5 out of 4 will improve with the full development of the macroinvertebrate MMI and O/E models, a second assemblage, and the derivation of appropriately detailed numeric biocriteria

12. Diagnostic Capability. *The diagnostic capacity of bioassessment data and results is dependent on the development of patterns and response signatures from a database that includes a variety of stressors and the full gradient of human disturbance and biological response. This increases the value of biological data beyond the determination of status (attainment/non-attainment) to include inferences and decisions about causal associations and elimination of candidate causes in a stressor identification process. The development and use of a diagnostic capability is only possible within programs that have specifically developed methods and for which precision and accuracy issues have been addressed.*

The SWAMP and the NPS program have made some tentative steps in this direction. With funding from the NPS program the perennial stream survey (formerly known as CMAP) was modified to investigate associations between bioassessment scores and land use using associative techniques such as relative risk assessment. The NPS program also funded research to associate benthic invertebrate assemblages with land use (e.g., agricultural, forested and urban land uses). SWAMP has also funded the development of stressor specific tolerance values for benthic macroinvertebrates. The SWAMP bioassessment program receives a score of 2.5 out of a possible 4.0. For perspective, this score is similar to that of other states that have been reviewed.

13. Professional Review and Documentation. *Subjecting documented methods and assessment reports to a rigorous peer review is ultimately the best way to ensure an agency's credible data and scientific underpinnings. Inherent in a review is that it is conducted in an objective and independent manner (outside the agency and with no vested interest in the outcome) by technical and policy experts able to provide valid critique and suggestions, and recommendations for improvement and refinement are taken in good faith. Validation of standard operating procedures for all aspects of the assessment and monitoring program by outside experts is an initial step in establishing confidence in the resulting data. Programs that do not address and implement critical recommendations fail to benefit from an independent endorsement of their procedures and assessments.*

The SWAMP has a solid peer-review process for evaluating individual technical studies and reports. The overall SWAMP program underwent a technical review in 2005 (SPARC, 2006). There was a review of the bioassessment program in 2003 (Barbour and Hill, 2003) and this critical elements review also serves as peer review. The program receives a CE score of 4.5 out of 4.5.

Summary

The SWAMP bioassessment program is presently operating a high quality program at the state level and in selected regions. The information that we gathered and reviewed shows that the program operates at level 3 and is appropriate for 305(b) assessments and to support 303(d) listings. Ongoing development activities will eventually result in a level 4 program capable of being used more rigorously in regulatory decisions in perhaps 4-5 years.

Improvements that are planned or already underway will directly affect 9 elements and increase the CE score by 5-7 points resulting in a level 4 program for both the statewide and regional programs. Achieving a L4 program is contingent on the (1) full development and use of a second assemblage, (2) developing more detailed diagnostic capabilities, (3) improving data management and (4) developing the capacity of the other regional boards and linking regional monitoring to statewide efforts. This will take time to accomplish, perhaps 4-5 years depending on the rate of progress, resources devoted to the developmental effort, etc. Making these improvements should lead to an improved delineation of condition along the BCG and an improved diagnostic capability via an increased capacity to detect biological responses to specific types of stressors, provided that adequate and concurrent data about relevant stressors are also collected and analyzed.

The consistent addition of a second assemblage in the bioassessment process is needed to elevate the program to level 4. Three commonly used bioassessment assemblages (benthic macroinvertebrates, algae and fish) all provide unique perspective on the biological condition of a stream and its watershed. To be clear we advocate the use of *a minimum* of two assemblages in a given stream or river, but recommend that all three be available to choose from as each is applicable. The decision about which assemblage(s) to use in a particular situation should be made from all perspectives in addition to the obvious logistical and resource related perspectives. SWAMP has made strong progress toward developing algal indicators as a second indicator, but options for a third indicator are still under consideration. The use of fish indicators in CA is complicated by the State's limited fish fauna and may be not be a cost-effective indicator, but this should be explored further because fish can provide information about larger scale ecological condition (e.g., watershed connectivity, loss of spawning and other habitats, impacts of introduced species, etc.) that other assemblages cannot. Alternately, riverine wetland tools (e.g., CRAM) currently being explored by SWAMP may provide a means of partially filling the need for larger scale context.

We recommend that a follow-up CE review be conducted when these decisions are being made and upon the implementation of the improvements that are more immediately attainable. We would recommend in this case that new assemblages be developed and applied alongside macroinvertebrates based on the resource and management issues at hand.

The integration of the bioassessment results with chemical/physical data and other stressor information that is already included in the SWAMP will lead to a better understanding how human disturbance influences measurable biological response and lead to better support for all water quality management programs. Case examples of how this can be accomplished are available in the EPA TALU document (U.S. EPA 2005). Finally, these improvements will enable California to more fully develop a TALU (Tiered Aquatic Life Use) framework that will improve its current WQS and enhance the utility of aquatic life designated use classes for regulatory and other management applications.

Part 3. Moving from Bioassessment to Biocriteria

California's bioassessment program has made great strides in recent years due primarily to investments made by the Dept. of Fish and Game's Aquatic Bioassessment Laboratory (DFG-ABL) and the State Water Board's Surface Water Ambient Monitoring Program (SWAMP). California's bioassessment program is currently at a fairly high level (Level 3) and is being used within the recommended scope of that level to support 305(b) assessments and 303(d) listing. Continued investment and active management support will be needed to achieve a fully functional (Level 4) program that will support other regulatory needs and at relevant spatial scales of implementation.

It is clear from the extensive and well organized documentation that was provided before and during the review that California's scientists have a solid conceptual understanding of the steps required to reach the end goal of numerical biological criteria in the state's WQS in order to provide support for all relevant water quality management programs. It is equally clear that there is inadequate management support and commitment to achieve timely implementation of biocriteria in California.

While the DFG-ABL, SWAMP and their contractors are building a solid technical foundation for a robust freshwater bioassessment program, they can only provide the technical tools for developing biological endpoints and Tiered Aquatic Life Uses (TALUs). The State and Regional Water Boards need additional biologists and planning staff to develop, refine and implement TALUs as envisioned by the USEPA. This review affirms the findings of past peer reviews that the State Water Board needs its own in-house bioassessment coordinator and staff.

Managers at the State Water Board should be aware that the SWAMP program is, with continued management support, capable of building, maintaining and refining the technical tools that the Water Boards will need to incorporate biology into their water quality programs. Implementation of these tools including the development of TALUs, biocriteria and biological endpoints for TMDLs will be a fundamental paradigm shift that will require the detailed involvement of qualified biologists and planning staff. The Water Board's SWAMP program cannot be expected to fulfill those planning and implementation roles. Following U.S. EPA directives and the examples set by many other states, managers at the Water Boards should seek to provide the resources that are necessary to implement the technical bioassessment tools being developed by SWAMP.

As a first step, and consistent with the prior external peer review of SWAMP's bioassessment program (*see* Barbour and Hill 2003), the State Water Board should strive to create and maintain a specialist position for a state-wide bioassessment policy coordinator. The State Water Board needs a high-level in-house bioassessment policy coordinator to shepherd the implementation of the technical tools currently being developed by SWAMP into regulatory framework that is biocriteria and TALU. As the program develops, the State Board should create a team of staff that will work with the coordinator to integrate bioassessment/ biocriteria into the State's water regulatory programs.

Bioassessment toBiocriteria

SWAMP

Standardized biological protocols

Classify water bodies into similar groups or classes

Identify reference sites in each class

Conduct bioassessments at reference sites in each class

Develop Assessment Tool

STANDARDS

Develop Biocriteria for each Aquatic Life Use

Apply Biocriteria to all Water Bodies

Figure 2. Schematic framework for moving from bioassessment to biocriteria n California.

1. Refine Beneficial Uses. Use refinement is a broad term that encompasses any activity undertaken by a state to review and revise the designated uses applied to its waters. A state may refine its designated uses by revising the language defining what it intends to protect with this particular designated use or by revising a designated use by adopting more refined or specific designated uses in its place.

As recommended by the NRC (2001) and the SPARC (2006), the Water Board should consider refining beneficial uses relating to aquatic life use support. Generic beneficial use designations such as cold water habitat (COLD) simply do not account for the natural variability in rivers and streams across broad biogeographic regions. Cold water habitat in the North Coast is clearly different than cold water habitat in southern California. The State Board should develop a structure for examining the existing structure of designated uses to determine what parts, if any, will need to be changed or refined. This should be consistent with the principles and structure of the Biological Condition Gradient (BCG; U.S. EPA 2005; Davies and Jackson 2006).

The State Board should consider subclassifications of waterbodies in their use refinement process. Subclassifications based on similarities in the natural conditions of the waters could be established from major flowing water classes (such as large rivers, perennial stream, intermittent streams and ephemeral streams) or ecoregions (areas of biogeographic similarity) or a combination of these.

The State Board should support regional efforts to develop tiers of aquatic life uses and expand these efforts statewide. Tiers are subdivisions within subclasses of water based on similarities in the history of anthropogenic disturbance, the resulting biological condition, and the recovery potential within a tier (Figure x). Tiering of uses based on potential for recovery would also provide a framework for use attainability analyses. We advocate that UAAs be developed carefully and from the perspective of achieving the highest potential for each waterbody. It is tempting to plunge into a UAA process prematurely as a way to resolve impaired waters listings in the short-term, but we recommend that this be reserved for a time when the biocriteria and TALUs are sufficiently developed.

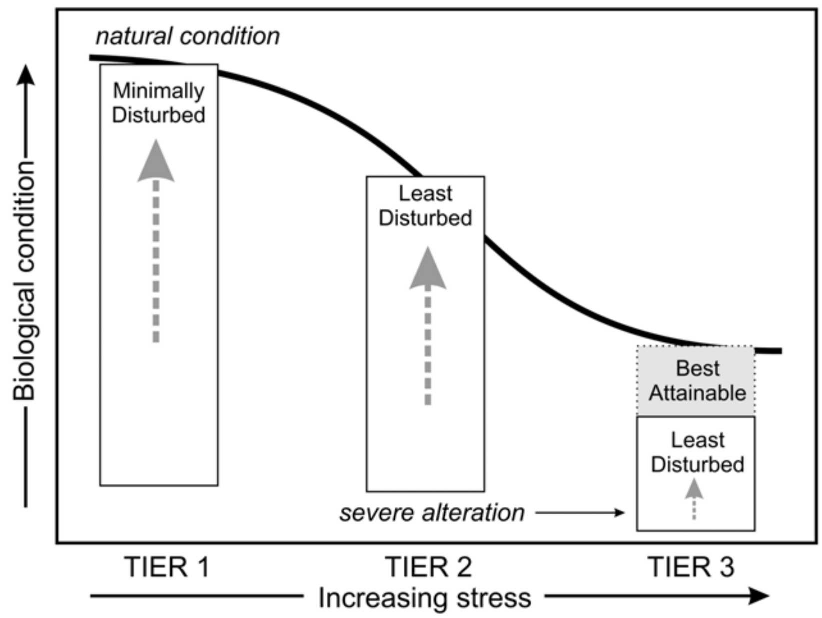

Figure 3. The biological condition gradient (BCG) used to define stream condition tiers in the TALU framework. Boxes indicate the expected range of biological condition scores at sites within each tier. Figure modified from Stoddard et al. 2006.

2. Develop Biological Objectives. The Water Board should develop statewide narrative biological objectives (biocriteria) to protect beneficial uses in Basin Plans that are associated with aquatic life use support. This should not preclude efforts by Regional Water Boards to develop biocriteria. However, many Regional Water Boards lack tools for interpreting existing narrative objectives in their Basin Plans. Currently, bioassessment data are used by Regional Water Boards in an “informal” manner where the assessments are used to support attainment decisions, but they lack any formal linkage to a designated aquatic life use. This lack of formal regulatory linkage to beneficial uses will limit the fuller use and true potential of bioassessment as a regulatory tool.

Biocriteria should be developed at both the State Board and Regional Board levels. However, development of numeric biocriteria will need to proceed in a series of phases. A key first step is the development of a statewide narrative objective that would set a common framework for the development and application of bioassessment tools to beneficial use protection. The interim step of developing statewide narrative biocriteria following the model set forth by Oregon Department of Environmental Quality (ODEQ) is likely to be an effective first step in California.

Numeric biological criteria could then be achieved with the addition of defining language that pertains to the subclassification of different types of streams and rivers, ecotype specificity, biogeographical regions, and the level of protection afforded by tiered uses. It may be possible to use the predicted taxa list generated by the RIVPACs model to help identify highest attainable use for perennial streams across the state.

ODEQ's Statewide Narrative Criterion

Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.

Without detrimental changes in the resident biological communities means no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region.

Ecological integrity means the summation of chemical, physical, and biological integrity capable of supporting and maintaining a balanced, integrated adaptive community of organisms having a species composition, diversity, and functional organization

3. Develop Implementation Plan for Narrative Criteria: Biological criteria may appear to be more complicated to implement than traditional water quality criteria, but mostly because they achieve a congruence with natural factors that chemical criteria can not. A plan should be written which describes the technical components of the biocriteria (i.e., how to interpret biological data) as well as the policy components of the biocriteria (i.e., how they are to be used in programs. Technical tools and training will be necessary for staff, permittees and the general public. Policies will need to be developed regarding use of biocriteria in 305(b) assessments, 303(d) listings, NPDES monitoring, compliance and enforcement and in TMDLs. The State Water Board needs a high-level in-house bioassessment policy coordinator in order to shepherd the implementation of the technical tools currently being developed by SWAMP.

Part 4. Summary Conclusions

The State Board monitoring and assessment program is presently operating a high quality bioassessment program at the state level and in selected regions. The information that we gathered and reviewed shows that the statewide program operates at level 3 (the two regional board programs are borderline L3), and that the ongoing development activities will eventually result in a level 4 program in perhaps 4 - 5 years. These developmental tasks are one and the same as those that are necessary for developing biocriteria within a TALU framework. Hence this developmental process should deliver the technical capacity to support full TALU implementation.

SWAMP has and is making very effective use of their current resources to develop bioassessment tools which will support water quality programs (Figure 1). This means that SWAMP is positioned to provide data and information for more than general status assessments as required by Sections 303d and 305b, but to all Water Board programs including NPDES, NPS and TMDLs. These programs rely on monitoring and assessment information to provide an accurate and complete delineation of waterbody impairments and their associated causes. SWAMP data can also provide measures of the overall environmental outcomes produced by Water Board programs.

It is clear from examples in other States (Rankin 2003; U.S. EPA 2005) that a TALU based program will be a direct benefit to the California WQS, TMDL, NPDES permitting, and other water quality management programs (Figure 4). A TALU based approach would result in more refined aquatic life use designations that are appropriate to various water body types throughout the state. It would also lead to more specific biological objectives that are tailored to protect aquatic life in these waterbodies.

These biological objectives could be used to support listing and delisting decisions made by the Regional Boards. The tiered objectives can be used by Water Board programs to establish incremental goals for improvement for impaired waters. The objectives can also be used by the Water Boards to identify the high quality waters in the state and serve as backstops to ensure that these high quality waters are not degraded

The SWAMP program is developing a white paper to outline the technical infrastructure elements and identify current and future research needs to support bioassessments in California. A second white paper is being developed to identify the programmatic and policy issues that are necessary to move from bioassessments to biocriteria and TALU. These would provide the framework for developing TALU in California. Both Maine and Ohio provide case histories that describe the evolution of each program's WQS and monitoring and assessment program to the attainment of level 4. These case studies are included in the EPA TALU document (U.S. EPA 2005; Appendices A and B). In addition, states that are involved in detailed developmental projects (e.g., Minnesota) can also provide a measure of comparability via their experiences.

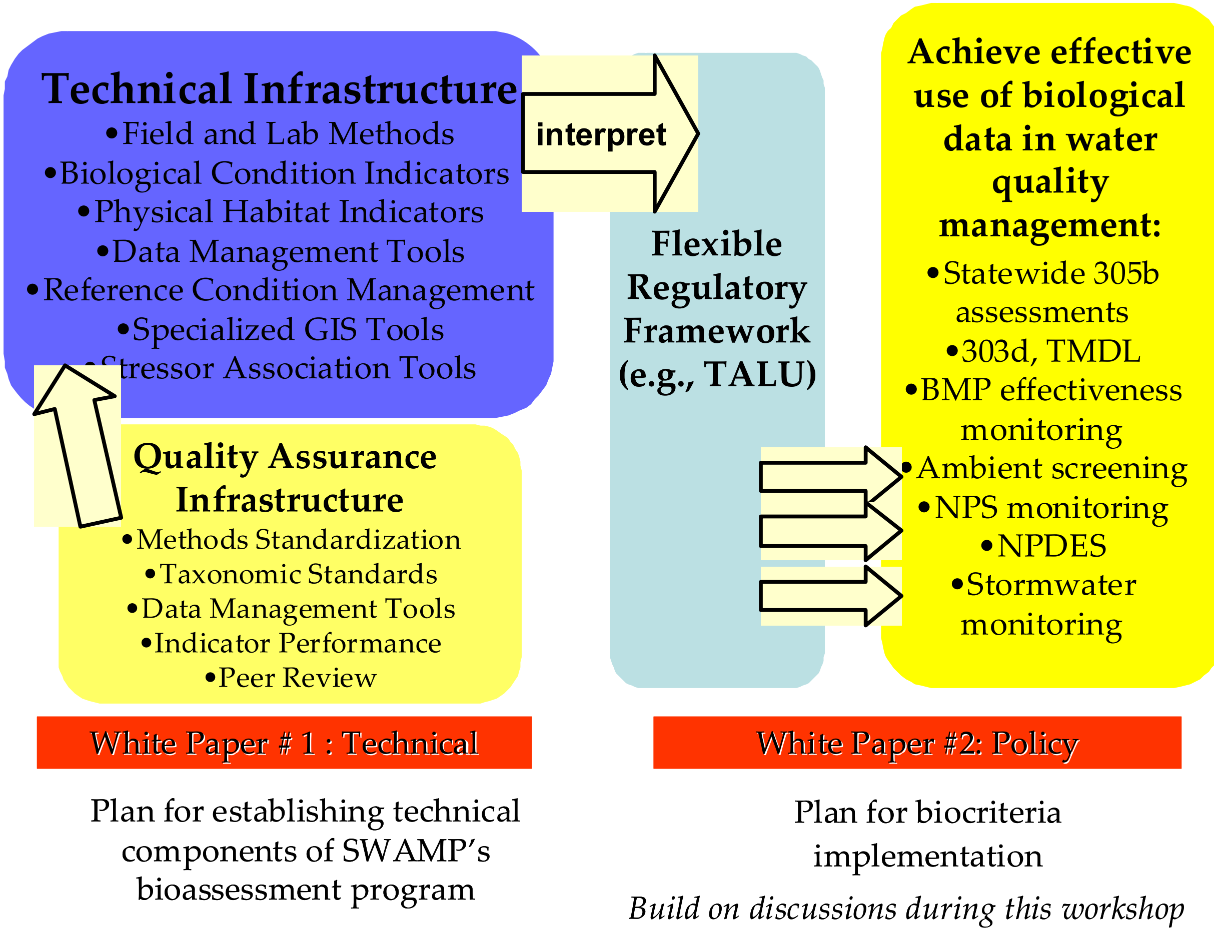

Figure 4. Process being used by the State Water Board to develop the technical infrastructure needed to use biological assessments and biocriteria within a TALU framework to provide full water quality management program support.

It is recognized here that this evaluation is a first step towards identifying the specific actions and needs of the California program to attain a level 4 program and achieve the support role for all management programs that is envisioned by the TALU process (U.S. EPA 2005; Barbour and Yoder 2007). Chapter 5 of the EPA TALU document describes the general milestones that a state program can use to gauge their own progress. This is now amplified in the 2008 update of the Critical Elements document using an active state development process as a working example (Barbour and Yoder 2008). The State Board should consider using the framework outlined in Figure 5 below to determine their existing position. This would accomplish an "inventory" of the existing program and determine what components are "TALU ready" and which areas are in need of further development and in which priority. Once this is done, a specific plan and timeline can be developed. At this time, we would estimate at least 5+ years to accomplish the tasks associated with full TALU development, but some aspects could be done more quickly if given a higher priority.

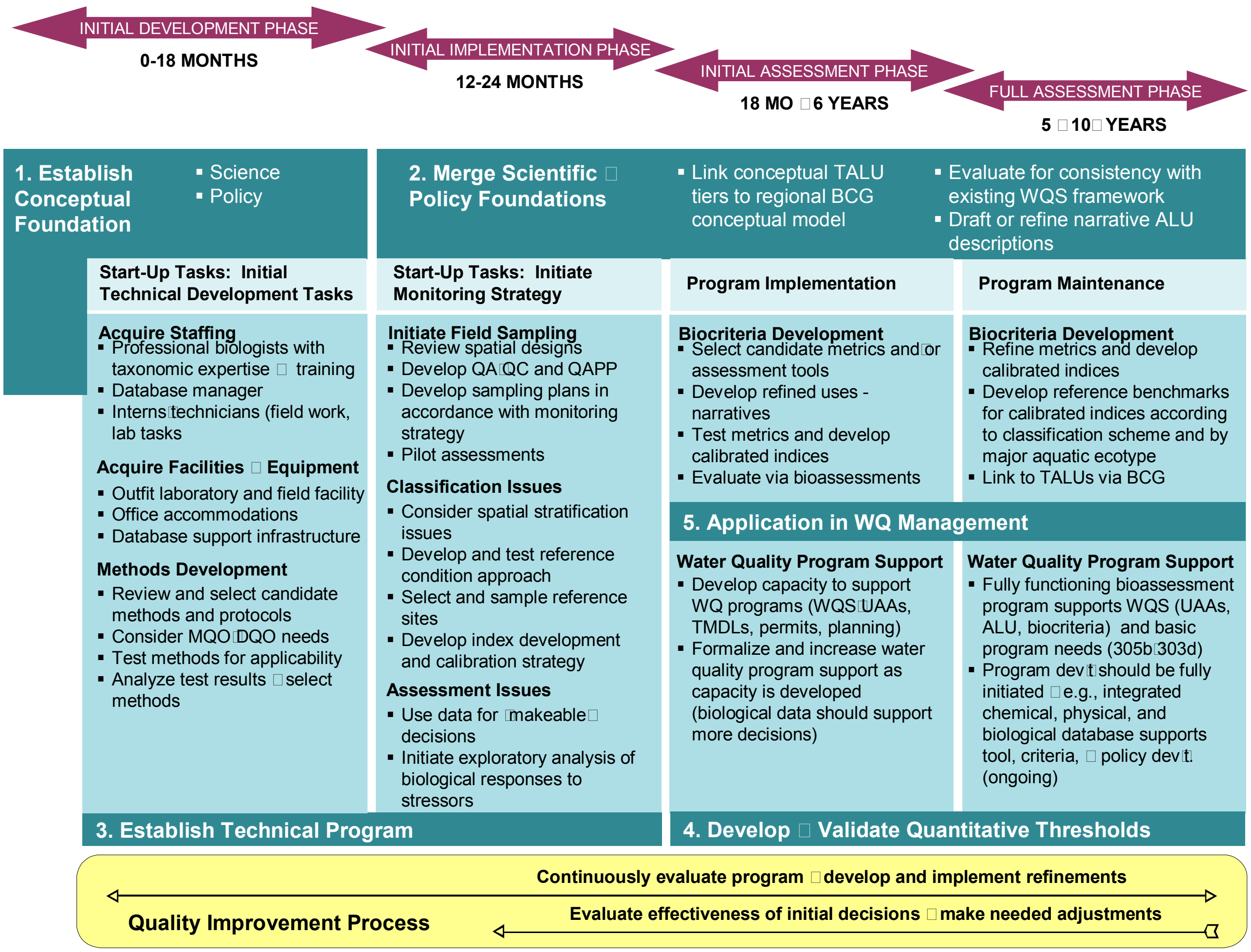

Figure 5. Hypothetical timeline for moving from bioassessment to biocriteria (U.S. EPA 2005).

The review of the California WRCB monitoring and assessment and WQS programs and the Critical Technical Elements results can be used to identify the specific technical and programmatic aspects that are in need of further development, refinement, and/or additional resources to accomplish full TALU program development. This review process is an essential component of the implementation process as generalized in *"Use of Biological Information to Better define Designated Aquatic Life Uses in State and Tribal Water Quality Standards: Tiered Aquatic Life Uses (August 2005)"* (U.S. EPA 2005). This includes general guidance and case examples for developing and implementing a TALU-based approach to monitoring and assessment and water quality standards (WQS) by States and Tribes. It contains a hypothetical timeline (Figure 5) that describes a sequence of steps including the development of a baseline bioassessment program (already in place via SWAMP), initial support for baseline management programs (partially in place and in selected Water Boards), development of narrative and numeric biocriteria (concept in place), increasingly sophisticated support for all relevant water quality management programs (yet to be accomplished), and long term maintenance of the program (the result of full TALU program development and implementation). The ultimate goal is the adoption of numeric biocriteria and Tiered Aquatic Life Uses (TALU) in the California WQS.

This template provides a framework within which the State can first determine where their program is along the timeline in Figure 5.

We expect that California will be positioned “somewhere” along the TALU timeline once a detailed exercise is undertaken to inventory the existing program. The “position” along the timeline is determined by first conducting a baseline review of the state programs and its technical elements, which is represented by this memorandum. The development of a full TALU program could take several years if a State or Tribe is starting from “scratch”. However, it is likely that States and Tribes already operate at least a basic program (i.e., Level 2; Yoder and Barbour 2009) and will likely determine that the time for implementing a more refined program consistent with Level 4 is considerably less than the 10 years depicted in Figure 5. Based on the information garnered by this baseline review we expect that the development of the bioassessment program via SWAMP and select Region Boards will show California to be further along this timeline than most states given the Level 3 status of the current program. We do recommend that this be done considering the unique roles of the statewide SWAMP program and the Regional Board programs in TALU implementation.

We recommend that the next step for California is to use this process to determine “where” the program currently stands and what tasks are yet to be accomplished to reach the above stated program goals. This process is a prerequisite to producing a detailed plan for the eventual development and adoption of TALU based narrative and numeric biocriteria in the California WQS, supported by a Level 4 program. The example in the latest draft of the Critical Technical Elements (Barbour and Yoder 2008) represents a working example of how California can use the results of the baseline program review and CE process to develop a “blueprint” for making orderly improvements and attaining full TALU status. This will include a mix of technical and policy development tasks.

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Appendix Table 1. List of Participants

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Appendix Table 2. A checklist for evaluating the degree of development for each technical element of a bioassessment program and associated comments on the elements for the California WRCB bioassessment program (both SWAMP and applicable Regional Boards). The point scale for each element ranges from lowest to highest resolution (na – not applicable).

Element 1	**(Lowest) 1.5**	**2.0 2.5**	**3.0 3.5**	**4.0 4.5 (Highest)**	**Comments**
Index Period	Collection times are variable throughout the year, and sampling is performed without regard to seasonal influences.	An index period is conceptually recognized, but sampling may take place outside of this period for convenience or to match existing programs; sampling outside of the index is not adjusted for seasonal influences.	A well-documented seasonal index period(s) is calibrated with data for reference conditions, but sampling may take place outside of this period for convenience or to match existing programs; sampling outside of the index is adjusted for seasonal influences. Index periods are selected based on known ecology to minimize natural variability, maximize gear efficiency, and maximize the information gained about the assemblage.	Same as Level 3, but administrative needs and index periods fully reconciled. Scientific basis of temporal sampling influences management decision framework.	April-October seasonal index period that "slides" from south to north: SoCal – April to early June; NoCal – August to September; most regional boards adhere to this, but some do not to accommodate program support needs. **Points** **Statewide: 4.5** **Regional: 4.0**

Element 2	**(Lowest) 1.5**	**2.0 2.5**	**3.0 3.5**	**4.0 4.5 (Highest)**	**Comments**
Spatial Coverage	An individual site is used for assessment of watershed condition; simple upstream/ downstream and fixed station designs prevail; assessments at local scale.	Multiple sites are used for watershed assessment; spatial coverage only for questions of general status or locally specific problem areas; synoptic (non-random) design at coarse scale (e.g., 8-digit HUC common); spatial extrapolation is based on "rules of thumb"; may be supplemented by simple upstream/downstream assessments.	Spatial network suitable for status assessments; statewide spatial design using rotating basins with single purpose design at coarse scale (e.g., 8 digit HUC); may be supplemented by occasional intensive surveys.	Comprehensive spatial network suitable for reliable watershed assessments in support of multiple water quality management programs at more detailed scale (e.g., 11-14 digit HUC); statewide rotating basin approach or similar scheme to complete statewide monitoring in a specified period of time; multiple spatial designs appropriate for multiple issues.	Statewide probability design (WEMAP) and "pour point" integrator sites at 8 digit HUC scale; Regional boards employ watershed scale intensive survey designs at HUC 11 scale (currently in 4 of 9 regions). **Points** **Statewide: 3.5** **Regional: 4.0** **Combined: 4.0**

Appendix Table 2. (continued)

Element 3	(Lowest) 2.0	2.5 3.0	3.5 4.0	4.5 5.0 (Highest)	Comments
Natural Classification	No partitioning of natural variability in aquatic ecosystems. Minimal classification limited to individual watersheds or basins with generalized stratification on a regional basis; does not incorporate differences in stream characteristics such as size, gradient.	Classification recognizes one stratum, usually a geographical or other similar organization such as fishery based cold or warmwater, and is applied statewide; lacks other intra-regional strata such as watershed size, gradient, elevation, temperature, etc.	Classification is based on a combination of landscape features and physical habitat structure (inter-regional); achieves highest level of classification possible by considering all relevant intra-regional strata and subcategories of specific stream types.	Fully partitioned and stratified classification scheme based on a true regional approach that transcends jurisdictional (i.e., State) boundaries to strengthen inter-regional classification and recognizes zoogeographical aspects of assemblages.	Classification includes intra-regional factors such as watershed size, elevation, and other stratifying factors; not yet developed for all bioregions. **Points** **Statewide: 3.5** **Regional: na**

Element 4	(Lowest) 2.0	2.5 3.0	3.5 4.0	4.5 5.0 (Highest)	Comments
Criteria for Reference Sites	No criteria, except informal BPJ selection of control sites. May be little documentation and supporting rationale.	Based on "best biology", i.e., BPJ on what the best biology is in the best waterbody; minimal non-biological data used.	Non-biological criteria supported by narrative descriptors only; combine BPJ with narrative description of land use and site characteristics; may use chemical and physical data thresholds as primary filters.	Quantitative descriptors used to support non-biological criteria; characteristics of sites are such that the best biological organization expected to be supported; chemical and physical characteristics of sites used only as secondary and tertiary filters to avoid circularity in other criteria.	A quantitative procedure for screening reference sites is used; **Points** **Statewide: 5.0** **Regional: na**

Appendix Table 2. (continued)

Element 5	(Lowest) 1.0 / 1.5	2.0 / 2.5	3.0 / 3.5	4.0 (Highest)	Comments
Reference Conditions	No reference condition; presence and absence of key taxa or best professional judgment. rather than established reference conditions may constitute the basis for assessment.	Reference condition based on biology of a 'best' site or waterbody; a site-specific control or paired watershed approach may be used for assessment; regional reference sites lacking.	Reference conditions based on site-specific data, but are used in watershed scale assessments; regional reference sites are conceptually recognized, but are too few in number and/or spatial density to support the deviation of biocriteria.	Applicable regional reference conditions are established within the applicable waterbody ecotypes and aquatic resource classes; consist of multiple sites that either represent reference or are along the BCG in such a manner to allow extrapolation of expected conditions for assessing and monitoring within waterbody ecotype. Re-sampling of reference sites done systematically over a period of years.	Development of regional reference condition is in progress – not yet completed for all regions. **Points** **Statewide: 3.5** **Regional: na**

Element 6	(Lowest) 2.0 / 2.5	3.0 / 3.5	4.0 / 4.5	5.0 (Highest)	Comments
Taxonomic Resolution	Gross observation of biota; single assemblage only; very low taxonomic resolution (e.g., order/family level for macro-invertebrates.; family for fish by non-biologists).	Single assemblage (usually macroinvertebrates); low taxonomic resolution (e.g., family level) by experienced biologists.	Single assemblage with high taxonomic resolution (e.g., "lowest practical" i.e., genus/species); if multiple assemblages, others are lower resolution or infrequently used.	Two or more assemblages with high taxonomic resolution (e.g., "lowest practical" i.e., genus/species); capacity to use each assemblage concurrently is maintained; practitioners are certified in accordance with available offerings (e.g., NABS, state credible data provisions).	Statewide program employs lowest practicable taxonomy (usually genus/species); SoCal employs genus level; second assemblage (periphyton) is under development; fish may be used regionally. **Points** **Statewide: 4.5** **Regional: 4.5**

Appendix Table 2. (continued)

Element 7	(Lowest) 2.0	2.5	3.0	3.5	4.0	4.5	5.0 (Highest)	Comments
Sample Collection	Approach is cursory and relies on operator skill and BPJ, producing highly variable and less comparable results; Training limited to that which is conducted annually for non-biologists who compose the majority of the sampling crew. Documentation of methods more as an overview.		Textbook methods are used rather than in-house development of detail of SOPs to specify methods; a QA/QC document may have been prepared; training consists of short courses (1-2 days) and is provided for new staff and periodically for all staff.		Methods are evaluated and refined (if needed) for State purposes; detailed and well documented; SOPs are updated periodically and supported by in-house testing and development; a formal QA/QC program is in place with field replication taken; rigorous training is for all professional staff, regardless of skill mix to raise skill levels and enhance interaction and consistency.		Same as Level 3, but methods cover multiple assemblages.	Sample collection methods are fully developed for two assemblages (macroinvertebrates, periphyton); fish methods also exist in other agencies. **Points** **Statewide: 5.0** **Regional: 5.0**

Element 8	(Lowest) 2.0	2.5	3.0	3.5	4.0	4.5	5.0 (Highest)	Comments
Sample Processing	Biological samples are processed in the field using visual guides; sorting and identification are dependent on operator skill and effort.		Organisms are identified and enumerated primarily in the field prohibiting ample QC but done by trained staff; for fish cursory examination of presence and absence only; no in-house development of SOPs.		Laboratory processing of all samples (except for fish); A formal QA/QC program is in place; rigorous training is provided; vouchering of organisms done for ID verification.		Same as Level 3, but is applicable to multiple assemblages; subsampling level tested. Notations made on fish as to diseased, erosion, lesion, tumors.	Sample processing fully developed for statewide program and for two assemblages; some regional programs are not as well developed. **Points** **Statewide: 5.0** **Regional: 4.0**

Appendix Table 2. (continued)

Element 9	(Lowest) 2.0	2.5 / 3.0	3.5 / 4.0	4.5 / 5.0 (Highest)	Comments
Data Management	Sampling event data organized in a series of spreadsheets e.g., (by year, by data-type, etc); QC cursory and mostly for transcription errors.	Separate quasi-databases for physical-chemical and biological data (Excel, Access, dBase, etc) with separate GIS shape files of monitoring stations; data-handling methods manuals available; QC for data entry, value ranges, and site locations.	True relational database containing biological and sampled site info (Oracle, etc); fully documented and implemented data QAPP.	Relational database of bioassessment data (including indices and biocriteria) with real-time connection to spatial data coverage showing monitored sites in relation to other relevant spatial data layers (population density; impervious surfaces; vegetation coverage, low-flight photos, nutrient concentrations, ecoregion, etc); fully documented and implemented data QAPP; data available from multiple assemblages to enable integrated analysis.	**Points** **Statewide: 4.5** **Regional: 3.0**

Element 10	(Lowest) 1.5	2.0 / 2.5	3.0 / 3.5	4.0 / 4.5 (Highest)	Comments
Ecological Attributes	Linkage to the BCG or adherence to the basic ecological attributes as a foundation is lacking; simple measures of presence/absence.	Only inferences can be made for a few of the comparatively simple ecological attributes, e.g., sensitive/tolerant taxa of a ubiquitous nature; single dimension measures used.	Ecological attributes used as a foundation for bioassessment, but may not be fully developed, or may be lacking. BCG incorporated into conceptual underpinnings.	The ecological attributes of the BCG form the conceptual foundation; level of rigor represents or extends to all underpinnings of the ecological attributes.	Statewide O/E model and 3 regional MMIs have been developed; periphyton index under development. **Points** **Statewide: 4.0** **Regional: na**

Appendix Table 2. (continued)

Element 11	(Lowest) 1.0	1.5	2.0	2.5	3.0	3.5	4.0 (Highest)	Comments
Biological Endpoints and Thresholds	Assessment may be based only on presence or absence of targeted or key species; (Some citizen monitoring groups use this level); attainment thresholds not specified; this approach may be sufficient for Coarse problem identification. Coarse method (low signal) and detects only high and low values.		A biological index or endpoint is established for specific water bodies, but is likely not calibrated to waterbody classes or statewide application; index is probably relevant only to a single assemblage; presence/absence based on all taxa; BPJ thresholds based on single dimension attributes. Limited to pass/fail determinations of attainment status that does not reflect incremental measurement along the BCG.		A biological index, or model, has been developed and calibrated for use throughout the State or region for the various classes of a given waterbody type; the index is relevant to a single assemblage; attainment thresholds are based on discriminant model or distribution of candidate reference sites, or some means of quantifying reference condition. Can distinguish 3-4 increments along the BCG; supports narrative evaluations based on multimetric or multivariate analysis that are relevant to the BCG.		Biological index(es), or model(s) for multiple assemblages is (are) developed and calibrated for use throughout the State or region and corresponds to the BCG; integrated assessments using the multiple assemblages are possible, thus improving both the assessment and diagnostic aspects of the process; multiple parameters for evaluation, based on integrated data calibrated to regional reference condition. Able to detect status (integrated signal) on a continuous scale along the BCG; power to detect at least 5-6 categories of condition.	O/E model is statewide; MMI developed for selected regions; periphyton in development. **Points** **Statewide: 3.5** **Regional: na**

Element 12	(Lowest) 1.0	1.5	2.0	2.5	3.0	3.5	4.0 (Highest)	Comments
Diagnostic Capability	Diagnostic capability lacking.		Coarse indications of response via assemblage attributes at gross level, i.e., general indicator groups (e.g., EPT taxa); Supporting analysis across spatial and temporal scales limited.		More detailed development of indicator guilds and other aggregations to distinguish and support causal associations; usually involves refined taxonomy (at least genus level); supported by analysis of larger datasets and/or extensive case studies; patterns repeatable across different sources; developed for a single assemblage only.		Response patterns are most fully developed and supported by organized and extensive research and case studies across spatial and temporal scales; results are actively used in biological assessment and in assigning associated causes and sources for program support purposes; involves refined taxonomy; accomplished for two assemblage groups.	Baseline research to support diagnosis has not been completed; baseline database is being developed – need to assure full range of stress:response in statewide and regional datasets. **Points** **Statewide: 2.5** **Regional: na**

Appendix Table 2. (continued)

Element 13	(Lowest) 1.5	2.0 2.5	3.0 3.5 4.0	4.5 (Highest)	Comments
Professional Review and Documentation	Review limited to editorial aspects.	Internal scientific review only, Outside review for objectivity left for higher levels.	Outside review of documentation and reports conducted. However, selection of peer review can be subjective.	Formal process for technical review to include multiple reference and documented system for reconciliation of comments and issues. Process results in methods and reporting improvements. Can include peer-reviewed journal publications.	A formal process is in place and is used; methods and protocols are in the process of being published in journals. **Points** **Statewide: 4.5** **Regional: na**

Statewide CE Score = 53 (Regional = 50.5)
Statewide CE % = 88.3% (Regional = 84.2%)
Statewide Level = L3 [85-95%] (Regional Level = L2 [70-85%])

Appendix Table 3. Summary of the critical technical elements evaluation for the California WRCB statewide bioassessment program conducted January 23-25, 2008.

Element	Comment
Element 1: Index Period Maximum score = 4.5 Statewide = 4.5 Regional = 4.0	The statewide program adheres to a standardized index period that slides from north to south. The regional board score will improve to 4.5 once the standard permit boilerplate language developed by the Lahontan Region is standardized statewide.
Element 2: Spatial Coverage Maximum score = 4.5 Statewide = 3.5 Regional = 4.0 Combined = 4.0	The current score of 3.5 for the statewide program reflects the statewide probabilistic design and "pour point" design for integrator sites. Regional boards apply watershed scale designs that include a resolution at an 8-11 digit HUC spatial scale and other designs such as upstream/downstream sampling. The regional board score of 4.0 reflects the watershed design and rotating subbasin approach applied by some, but not all boards. The combined score of 4.0 reflects the practical integration of the statewide and regional board programs as a reflection of the overall WRCB effort. Attaining a score of 4.5 will be realized when the watershed design is applied by all of the regional boards.
Element 3: Natural Classification Maximum score = 5.0 Statewide = 3.5 Regional = na	The CE score of 3.5 will be elevated to 5.0 with the developments that are already underway including the inclusion of other bioregions (the na score for the regional boards reflects the relevancy of this element to a statewide setting).
Element 4: Criteria for Reference Sites Maximum score = 5.0 Statewide = 5.0 Regional = na	The score of 5.0 for the statewide program reflects the high degree of development of reference site selection criteria and procedures (the na score for the regional boards reflects the relevancy of this element to a statewide setting).
Element 5: Reference Conditions Maximum score = 4.0 Statewide = 3.5 Regional = na	The CE score of 3.5 should improve to 4.0 with the addition of regional reference sites that are being established as part of the ongoing improvements described for elements 3 and 4 (the na score for the regional boards reflects the relevancy of this element to a statewide setting).

Appendix Table 3. (continued).

Element	Comment
Element 6: Taxonomic Resolution Maximum score = 5.0 Statewide = 4.5 Regional = 4.5	The CE score of 4.5 reflects the full development of the macroinvertebrate assemblage and the in progress development of a periphyton indicator. Fish may be applicable in certain regions pending developments by USGS. Reaching the CE score of 5.0 is contingent on the full development and use of a second assemblage.
Element 7: Sample Collection Maximum score = 5.0 Statewide = 5.0 Regional = 5.0	The CE score of 5.0 reflects the full development of the macroinvertebrate and periphyton assemblage methodologies for the statewide and regional programs. Fish methods also exist n other agencies.
Element 8: Sample Processing Maximum score = 5.0 Statewide = 5.0 Regional = 4.0	The CE score of 5.0 for the statewide program reflects the full development of the macroinvertebrate and periphyton assemblage sample processing methods. The regional boards have the capacity to apply the macroinvertebrate assemblage. Reaching the CE score of 5.0 is contingent on the full use of a second assemblage by the regional boards.
Element 9: Data Management Maximum score = 5.0 Statewide = 4.5 Regional = 3.0	The CE score of 4.5 for the statewide program can be improved to 5.0 once the current data management system includes all reporting fields and calculation routines. The regional board score should likewise improve when their data is routinely uploaded to the statewide data management system.
Element 10: Ecological Attributes Maximum score = 4.5 Statewide = 4.0 Regional = na	The CE score of 4.0 should increase with the development of the macroinvertebrate MMI and O/E model for all bioregions and the addition of a second assemblage (the na score for the regional boards reflects the relevancy of this element to a statewide setting).
Element 11: Biological Endpoints & Thresholds Maximum score = 4.0 Statewide = 3.5 Regional = na	The CE score of 3.5 will improve with the full development of the macroinvertebrate MMI and O/E models, a second assemblage, and the derivation of appropriately detailed numeric biocriteria (the na score for the regional boards reflects the relevancy of this element to a statewide setting).

Appendix Table 3. (continued).

Element	Comment
Element 12: Diagnostic Capability Maximum score = 4.0 Statewide = 2.5 Regional = na	The comparatively low CE score of 2.5 is a common characteristic of bioassessment programs that are in development and/or which have singularly been focused on status assessments. Improving the score for this element will occur as a result of addressing preceding elements 2, 3, 6, 10, and 11 and gaining a familiarity with how diagnostic capacity is developed; a familiarity with the concepts involved is encouraging. This will require some dedication to exploratory analyses in which the response of the biological assemblages is evaluated along the stressor axis of the BCG.
Element 13: Professional Review Maximum score = 4.5 Statewide = 4.5 Regional = na	The CE score of 4.5 reflects a thorough and complete peer review process. Statewide methods and procedures are in the process of being published in refereed journals.

Appendix 11

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2015 Report on the SMC Regional Stream Survey

Special study on engineered channels

Program update

Preliminary results from new indicators

Applications of SMC data

Southern California Stormwater Monitoring Coalition
Regional Watershed Monitoring Program

6-749

Contents

Cover photo: Los Angeles River at the confluence of Calabasas and Bell Creek.

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Southern California Stormwater Monitoring Coalition. 2017. 2015 Report on the Stormwater Monitoring Coalition Regional Stream Survey. SCCWRP Technical Report 963. Southern California Coastal Water Research Project. Costa Mesa, CA.

Program update

Overview of a redesigned survey

In 2015, the SMC initiated the first year of its redesigned stream bioassessment survey, sampling 102 sites and implementing several major changes to address information gaps identified in the initial five-year survey, including:

- Inclusion of nonperennial streams in the survey. Whereas nonperennial streams were previously excluded from sampling, we now attempt to include them among the 55 “condition” sites (i.e., sites selected in a probabilistic way to represent the typical condition of streams in the region) where bioassessment occurs. By shifting the sampling period earlier in the season (starting as early as March), intermittent streams that dry up before May are more likely to be represented in the survey.
- Improved trend detection through site revisits. A total of 47 “trend” sites that were sampled in the first cycle of the survey were revisited in 2015. With a sufficient number of revisits, the survey will be able to determine the extent of stream-miles that are improving or degrading over time, and identify factors that are associated with these trends.
- A change in analytes and indicators measured at each site. In order to focus on new priorities and concerns, SMC participants sampled a number of new indicators (highlighted elsewhere in this report), such as hydromodification impact potential, aquatic invasive vertebrate occurrences, hydrologic state, cellular bioassays, and non-target analysis of chemicals of emerging concern. Assessment of sediment contamination, although part of the updated survey workplan, was deferred so that a pilot study in limited areas could be completed in 2016.

What is the Stormwater Monitoring Coalition (SMC)?

The SMC is a coalition of multiple state, federal, and local agencies that works collaboratively to improve the management of stormwater in Southern California. SMC members include regulatory agencies, flood control districts, and research agencies: County of Los Angeles Department of Public Works, County of Orange Public Works, County of San Diego Department of Public Works, Riverside County Flood Control and Water Conservation District, San Bernardino County Flood Control District, Ventura County Watershed Protection District, City of Long Beach Public Works Department, City of Los Angeles Department of Public Works, California Regional Water Quality Control Board—Santa Ana Region, Los Angeles Region, and San Diego Region, State Water Resources Control Boards, California Department of Transportation, Southern California Coastal Water Research Project (SCCWRP). In addition, the SMC collaborates with the U.S. Environmental Protection Agency Office of Research and Development. For more information, visit the SMC webpage at www.socalsmc.org.

The SMC has conducted a probabilistic survey of streams in the South Coast region since 2009. The goals of this survey are to provide the technical foundation for scientifically sound management of stormwater by answering three questions:

1. What is the biological condition of streams in the South Coast region?
2. What stressors are associated with streams in poor condition?
3. Are the conditions of streams changing over time?

The first five-year cycle of survey took place between 2009 and 2013. The results of the first cycle are summarized in a report available on SCCWRP’s website. The survey continues with a new cycle that spans from 2015 to 2019, evolving to address new questions. This report summarizes the current status of the survey and describes major developments and accomplishments that occurred in 2015. A comprehensive report will be released after completion of the fifth year of the current cycle.

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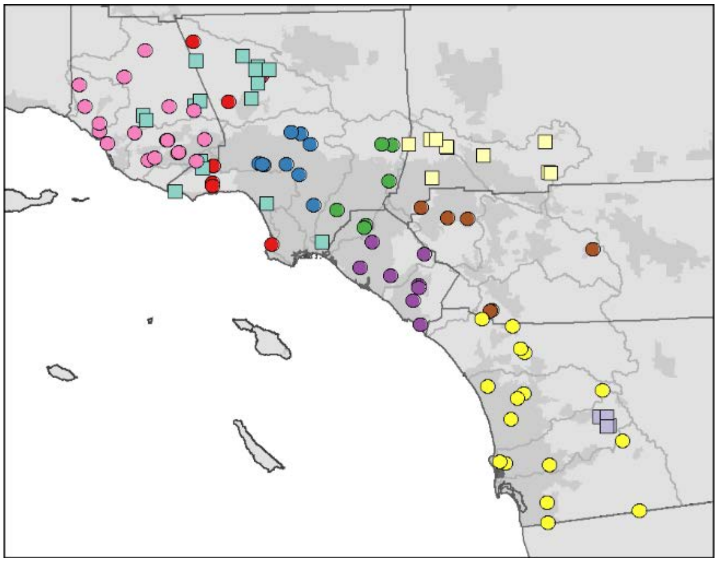
Changes in cost from the first cycle were minimized, as certain indicators (i.e., toxicity, metals, and pyrethroids in the water column) were dropped based on recommendations by the SMC workgroup. Priority indicators that were retained, such as benthic macroinvertebrates, algae, riparian wetlands (i.e., CRAM), physical habitat, nutrients, and major ions, were sampled at every site.



Sampling effort in 2015 by agency.

Stormwater agencies	**Condition (□ sites)**	**Trend (□ sites)**	**Total (□ sites)**
Ventura County	10	8	18
Los Angeles County	5	2	7
Los Angeles WMP	3	6	9
San Gabriel RMP	2	4	6
Orange County	5	3	8
Riverside County	3	3	6
San Diego WMAs	12	4	16
Water boards			
RB4	9	7	16
RB8	4	6	10
RB9	2	4	6
Total	55	47	102

San Diego Watershed Management Areas (black text) nested within SMC watersheds (brown text). Local jurisdictions take the lead in monitoring each WMA and setting management priorities, contributing to and making use of the SMC's regional survey.

New watershed-based permits enhance interactions with multiple agencies in San Diego County

Marking a major transition in the implementation of the SMC survey in San Diego County, smaller municipalities (including the cities of Oceanside, Encinitas, San Diego, and Imperial Beach) are now working directly alongside SMC member agencies to collect data for the survey, as opposed to working indirectly through San Diego County Public Works as a lead agency. This transition is intended to increase interaction between stormwater co-permittees and the San Diego Regional Water Quality Control Board, while also making the survey more useful to local managers. These municipalities contribute to the survey through coalitions focused within Watershed Management Areas (WMAs). The WMAs have the effect of spreading responsibility among the individual municipalities to fulfill the permit obligations. As a result, more municipalities are engaged with the regional monitoring program in supporting their management and regulatory needs.

The formation of WMAs began when the San Diego Regional Water Board consolidated municipal stormwater permits into a single regional stormwater permit. Whereas previously, all monitoring in San Diego County was coordinated through a single agency (i.e., the County of San Diego), each WMA coalition is now tasked with collecting data and identifying management priorities for its own WMAs. Survey data are used to develop a Water Quality Improvement Plan, or WQIP (see article on the San Juan WQIP below) for each WMA, with stakeholders responsible for identifying priority issues and associated stressors that each coalition should address. For watersheds that cross county borders (e.g., Santa Margarita), the WMAs facilitate cooperation among municipalities in the different jurisdictions.

Not only do the WMAs help the partners outside the SMC with the survey, but they also carry forward the SMC's vision of collaborative monitoring to the local level. Through minor adjustments to the SMC's sampling plan (e.g., allocating trend sites by watershed rather than by land use), combined with enhanced dialogue between permittees and the Regional Board, the new partners were able to acquire data for their own needs, as well as contribute to the regional assessment goals of the SMC survey.

What are the biological conditions in engineered channels?

The SMC survey helps managers evaluate biological conditions in engineered channels and understand the potential policy implications.

Key Points

- Engineered channels surveyed to date are, generally speaking, in worse ecological health than natural channels based on biological indicators based on benthic macroinvertebrate and algae assemblages. These preliminary results suggest that tradeoffs between ecological health and flood protection may be unavoidable.
- While engineered channels invariably have poor scores for the California Stream Condition Index (CSCI) based on benthic macroinvertebrates, algal indices occasionally indicated better biological conditions—sometimes similar to reference condition. This wide range in index scores suggest that some engineered channels support more ecosystem functions than others.
- Within engineered channels, design and construction characteristics (e.g., armoring material or presence of low-flow features) did not influence index scores or other measures of ecological condition
- Within engineered channels, algal indices may reflect water quality conditions better than the macroinvertebrate index. For example, lower specific conductivity was associated with higher diatom index scores, but not CSCI scores. However, both types of indices have some capacity to respond to stressor gradients in these systems.
- Targeted sampling (particularly from hardened channels with good water quality, or engineered channels with high bioassessment index scores) and experimental studies may clarify the factors that support better ecological conditions.
- Survey data can provide a context for evaluating the biological condition of streams in engineered channels, thereby helping managers recognize factors, such as water quality or stream temperature, that may lead to better conditions.

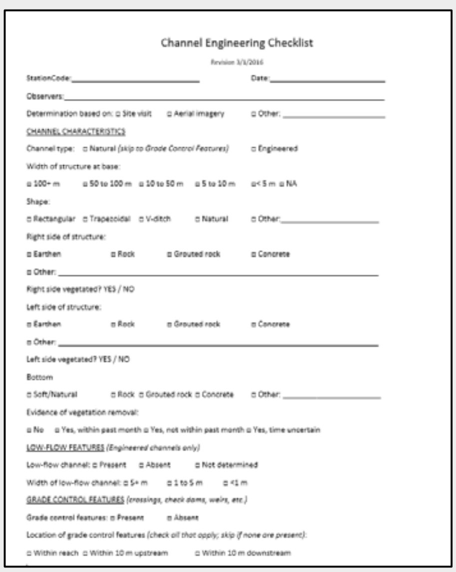
Engineered channels are common features in urban stormwater systems, protecting surrounding neighborhoods from floods that could damage property or endanger lives. However, this service often comes at a cost, as engineered channels do not provide the same quality habitat that natural stream channels provide. Additionally, engineered channels may reduce groundwater recharge, or degrade water quality through alterations of biochemical processes. Consequently, engineered channels often fail to support designated beneficial uses related to ecosystem health, such as those related to aquatic life or wildlife. Faced with these tradeoffs between competing uses, stormwater agencies and regulators encounter questions from stakeholders, such as what range of ecological conditions are possible in engineered channels? And what factors can be managed to support better conditions? The SMC stream survey provides a rich source of data to answer these questions. By developing methods to characterize engineered channels, analyzing bioassessment scores in different channel types, and exploring responses to water chemistry gradients, the SMC stream survey offers preliminary answers to these questions.

Bioassessment indices, such as the California Stream Condition Index (CSCI, based on benthic macroinvertebrate communities) and the Southern California algal Indices of Biotic Integrity (IBIs), are the key indicators used by the State and Regional Water Boards to assess attainment of aquatic life beneficial uses in streams. These indices will have a central role in the implementation of the State's bio-integrity policies; it is therefore necessary that stormwater managers understand how these indices work in engineered channels. Aquatic organisms have diverse life history traits with sensitivities to a wide range of stressors. As a result, bioassessment indices provide a holistic measure of the combined impacts of poor water quality, habitat alteration, hydrologic modification, and other disturbances. This integration allows assessment of cumulative and diverse impacts on ecosystem health. Three indices are sampled in the SMC program: the CSCI, a diatom index, and a soft algal index; each of these three indices provide an independent measure of a stream's ability to support aquatic life.

To assess the range of biological conditions in engineered channels, the SMC took advantage of the extensive bioassessment data collected by the survey since its inception in 2009. In prior years, the SMC collected benthic macroinvertebrates and algae samples at hundreds of sampling reaches across Southern California, many of which were in engineered channels. In order to make the use of these data, the SMC bioassessment workgroup developed a simple procedure for characterizing and classifying the different types of channels found in the region (Sidebar 1). The protocol was designed for rapid application in the field or in the office (if aerial imagery or other data are available). This ease of use meant that the SMC could generate a large data set from recent and older data that would support robust analyses on the features of engineered channels associated with variability in bioassessment scores. Elements of this protocol have been adopted by the Surface Water Ambient Monitoring Program (SWAMP), and resource managers throughout the state are looking to the SMC to provide guidance on how to evaluate engineered channels in their regions. These data will also be used in mapping and modeling efforts to determine locations of engineered channels in the landscape.

Characterizing engineered channels

Modification of stream channels takes many forms, exhibiting a variety of designs and constructions. To characterize the diversity of engineered channels, the SMC developed simple forms to record key features, like shape, material, size, and presence of low-flow channels. These forms were filled out during site visits for the 2015 sampling season, as well as for sites visited in earlier years (relying on aerial imagery, photographs, data from earlier field visits, and other sources of information). Elements of the SMC's approach for characterizing engineered channels have been incorporated into SWAMP's standard bioassessment protocols.



Channel Engineering Checklist

Revision 3/1/2016

StationCode:______________ Date:______________

Observers:______________

Determination based on: □ Site visit □ Aerial imagery □ Other: ______________

CHANNEL CHARACTERISTICS

Channel type: □ Natural *(skip to Grade Control Features)* □ Engineered

Width of structure at base:

□ 100+ m □ 50 to 100 m □ 10 to 50 m □ 5 to 10 m □< 5 m □ NA

Shape:

□ Rectangular □ Trapezoidal □ V-ditch □ Natural □ Other:______________

Right side of structure:

□ Earthen □ Rock □ Grouted rock □ Concrete

□ Other: ______________

Right side vegetated? YES / NO

Left side of structure:

□ Earthen □ Rock □ Grouted rock □ Concrete

□ Other: ______________

Left side vegetated? YES / NO

Bottom

□ Soft/Natural □ Rock □ Grouted rock □ Concrete □ Other: ______________

Evidence of vegetation removal:

□ No □ Yes, within past month □ Yes, not within past month □ Yes, time uncertain

LOW-FLOW FEATURES *(Engineered channels only)*

Low-flow channel: □ Present □ Absent □ Not determined

Width of low-flow channel: □ 5+ m □ 1 to 5 m □ <1 m

GRADE CONTROL FEATURES *(crossings, check dams, weirs, etc.)*

Grade control features: □ Present □ Absent

Location of grade control features *(check all that apply; skip if none are present)*:

□ Within reach □ Within 10 m upstream □ Within 10 m downstream

Forms developed by the SMC to characterize engineered channels are simple enough to complete within minutes during field visits, or from the office if aerial imagery and other data are available.

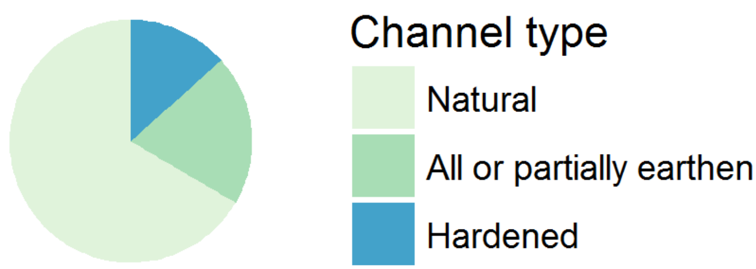


Figure 1. Proportion of stream types observed in the study

Armed with this protocol, the SMC bioassessment workgroup evaluated 724 unique bioassessment sites, with about 20% of these evaluations being made in the field. About two-thirds of the sites were natural, lacking any evident armoring, artificial structures (apart from road or bridge crossings), or straightening (Figure 1). Ninety-seven sites were entirely hardened, with concrete or grouted rock banks and a hardened bottom. The remaining 145 sites retained some earthen elements—typically a natural bottom, with earthen or partially armored banks. Because CSCI and algae IBI scores had already been calculated for these sites from the previous survey cycle, and because water chemistry and habitat quality measurements were also available, the data set was a good starting point for analyzing biological conditions in engineered channels.

Engineered channels are largely in poor condition, but some are in better condition than others

Nearly all engineered channels were in poor health, as measured by both the CSCI and the algal IBIs (Figure 2). Although a wide range of invertebrate CSCI scores was evident in engineered channels (inter-quartile range: 0.44 to 0.66), they rarely exceeded 0.79 (the threshold used in previous SMC reports to identify healthy streams similar to reference conditions). None of the entirely hardened channels met this benchmark, and only 14% of the earthen or partially hardened engineered channels did so. In contrast, 63% of the natural channels in the analysis met the healthy stream benchmark. Aquatic insect communities appear to be strongly affected by partial or complete channel hardening (see Sidebar 2).

Algal indices, however, provided different insights into stream condition. While the diatom and soft algae IBIs, like the CSCI, showed that engineered channels were generally in worse condition than natural channels, high algal IBI scores indicative of healthy (i.e., similar to reference) conditions were not uncommon. In fact, 43% of hardened channels had diatom IBI scores above the reference threshold, and 20% had high soft algae IBI scores. Whereas the CSCI indicated almost exclusively poor conditions in engineered channels, algal indicators suggest that engineered channels can support healthy streams under conducive conditions (such as good water quality).

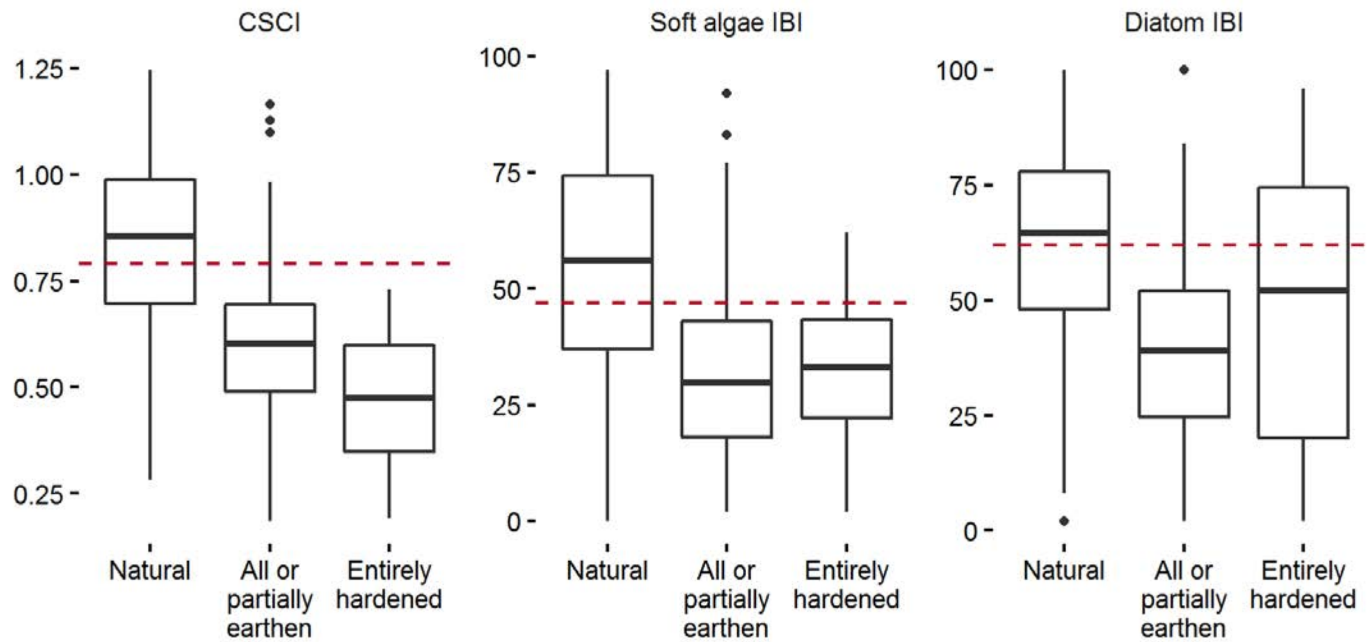


Figure 2. Bioassessment scores were typically higher in natural channels than in engineered channels. However, high scores for the algal indices were sometimes observed in engineered channels, occasionally exceeding the threshold for identifying sites in reference condition (red dashed line).

What kind of organisms are found in engineered channels?

Despite the poor in-stream ecological condition noted in this study, engineered channels do, in fact, support aquatic life, as well as terrestrial wildlife that depend on streams and rivers. Because of their accessibility and proximity to populated areas, engineered channels are frequently enjoyed for their wildlife-viewing opportunities, particularly for waterfowl and wading birds that forage in shallow areas. Although fish and amphibians are sometimes observed as well, these are almost exclusively non-native species, such as carp (*Cyprinus carpio*), tilapia (Cichlidae), bullhead (*Ameiurus*), and mosquito fish (*Gambusia affinis*).

Great blue herons and black-necked stilts forage on the concrete banks of the San Gabriel River.

Photo courtesy of Kerry Matz

***Dasyhelea*, a fly in the family of biting midges (*Ceratopogonidae*), are particularly common in hardened channels.**

The benthic macroinvertebrates found in engineered channels are only a small subset of the diversity of species found in the natural channels, typically with life history adaptations that provide resilience to disturbance (for example, rapid life-cycles with multiple generations per year, or tolerance to temperature extremes). A few invertebrate species show a particular affinity for engineered channels: Biting midges (*Dasyhelea*), soldier flies (*Euparyphus*), minnow mayflies (*Fallceon*), snails (*Physa*), worms (Oligochaeta), flatworms (Turbellaria), and seed shrimp (Ostracoda) were all more common than expected within hardened channels. Species that require complex substrates, such as those that burrow in the substrate (e.g., midges in the subfamily Tanypodinae) were less common than might be expected in a natural channel. Most sensitive and moderately tolerant species (e.g., net-spinning caddisflies, like *Hydropsyche*) were entirely eliminated. The abundance of tolerant species, and rarity of sensitive species, is reflected in the lower CSCI scores observed in engineered channels.

As with macroinvertebrates, algal assemblages within engineered channels contained subsets of species found in natural channels. Many planktonic diatoms, such as species in the *Scenedesmus* genus, were common, as well as the green filamentous algae *Cladophera glomerata*, found at nearly all concrete channels. These species are sometimes a concern. For example, *C. glomerata* form large, unsightly mats that trap debris, smother streambeds, and create odor problems.

The green alga *Cladophora glomerata* often proliferates in engineered channels, particularly if nutrient inputs are high and shading has been reduced.

What factors support higher bioassessment scores in engineered channels?

Why do some engineered channels score better than others? And why are high scores more common for algal IBIs than for the invertebrate CSCI? Design features (such as construction material or presence of a low-flow channel) had no discernible impact on either CSCI or algal IBI scores, so perhaps water quality or other habitat features were more important. That is, relatively high scores in engineered channels may indicate better water or habitat quality than lower scores.

Analyses of the data provide some support for this hypothesis. The diatom index responded to a range of water quality conditions, even within concrete channels (Figure 3, Table 1). For example, the diatom IBI declined with increasing specific conductivity in all channel types, whereas scores for the soft algae index and the CSCI exhibited responses within natural or partially earthen channels. The hypothesis that the constraints within engineered channels overwhelm the ability of bioassessment indicators to respond to stress is not well supported for diatoms.

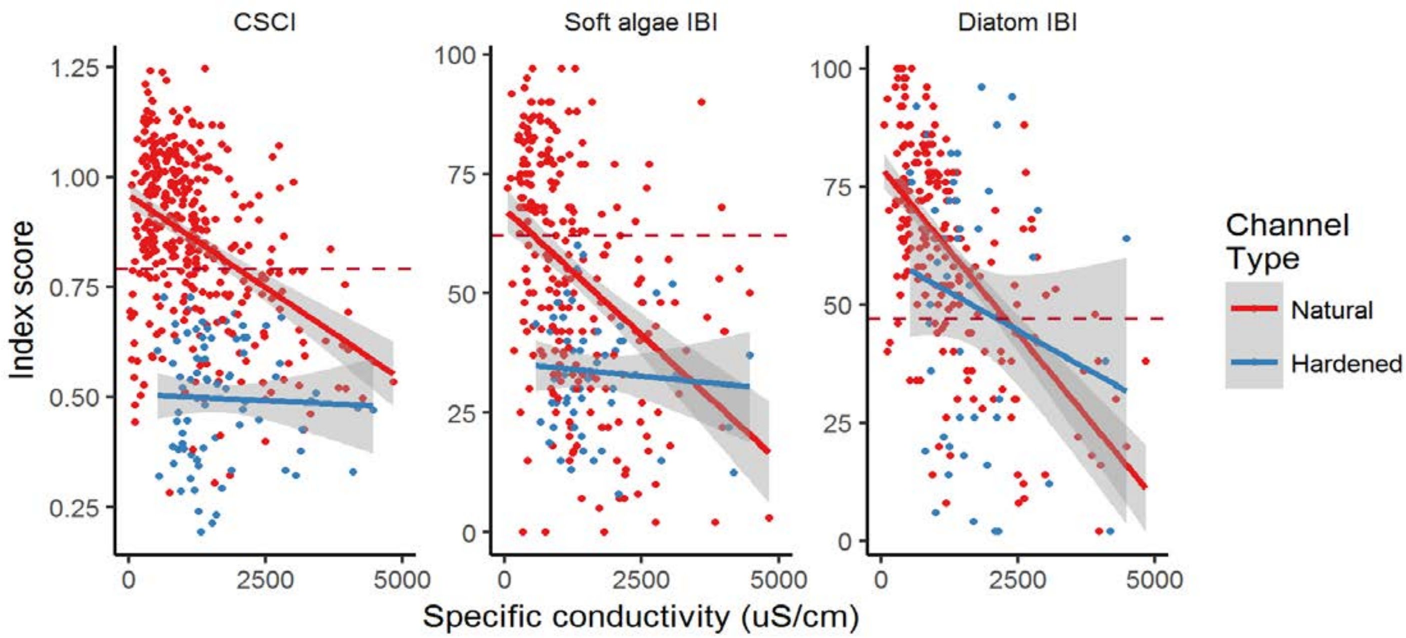


Figure 3. Specific conductivity versus bioassessment index scores in hardened and natural channels. The red dashed line is the threshold for sites in reference condition. For clarity, earthen and partially hardened channels are excluded from this plot.

Factors related to habitat showed a similar pattern of responses. For example, high levels of sands and fines in the streambed were associated with lower scores for all indices, but the relationships within hardened channels were strongest for the diatom index (Figure 4). Although the CSCI did not respond to many water chemistry and physical habitat gradients within hardened channels, shading and temperature appears to be important for this index, with higher scores observed in hardened channels where shading was high (Figure 5). Stream-side vegetation, which is often removed for flood control purposes, may provide the conditions that improve CSCI scores. However, shading had the opposite relationship with diatom IBI scores, and no relationship with soft algae IBI scores.

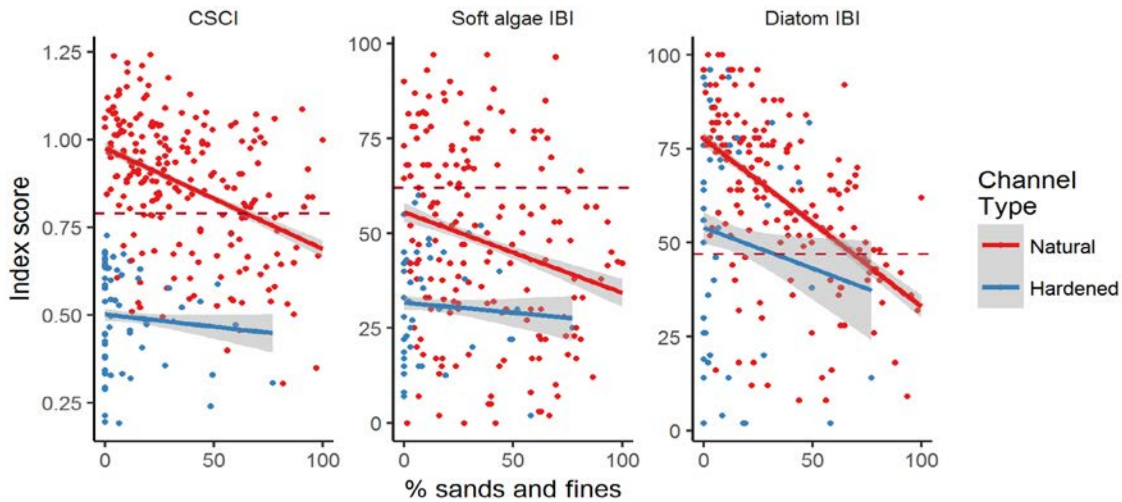


Figure 4. Percent sands and fines in the streambed versus bioassessment index scores in hardened and natural channels. The red dashed line is the threshold for sites in reference condition. For clarity, earthen and partially hardened channels are excluded from this plot.

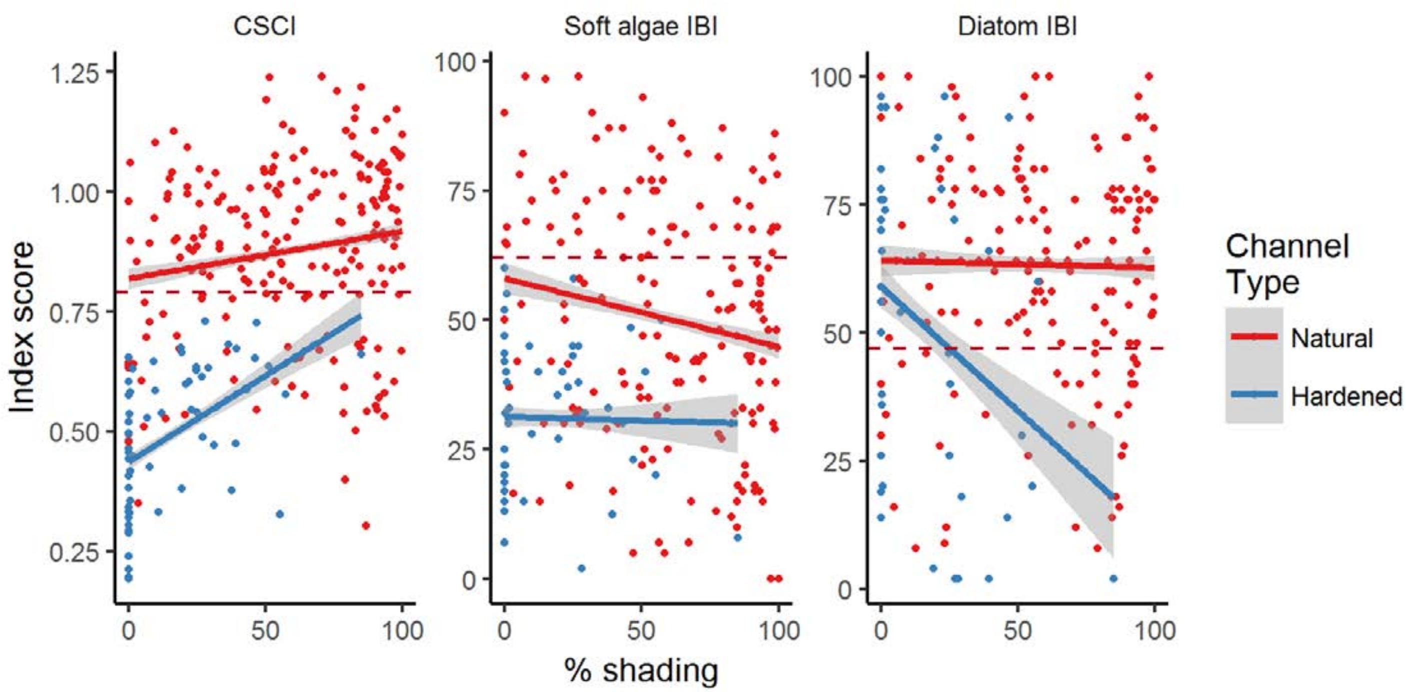


Figure 5. Shading versus index scores in natural and hardened channels. The red dashed line is the threshold for sites in reference condition. For clarity, earthen and partially hardened channels are excluded from this plot.

Table 1. Correlations between water quality and habitat variables and index scores in different channel types. ρ: Spearman rank correlation coefficient. Coefficients indicating stronger relationships (ρ > 0.3) are highlighted in blue. □: p-value □ 0.05.

	CSCI						Diatom IBI						Soft Algae IBI					
	Natural		Partial		Hardened		Natural		Partial		Hardened		Natural		Partial		Hardened	
	ρ		ρ		ρ		ρ		ρ		ρ		ρ		ρ		ρ	
Water quality																		
Alkalinity	-0.30	□	0.02		0.21		-0.49	□	0.18		-0.39		-0.31	□	-0.16		-0.16	
Chloride	-0.66	□	-0.52	□	-0.05		-0.73	□	-0.19		-0.30		-0.44	□	-0.34		-0.10	
Total Nitrogen	-0.44	□	-0.38	□	-0.42		-0.52	□	-0.42	□	0.23		-0.51	□	-0.43	□	-0.38	
pH	0.25	□	-0.16		0.08		0.15		-0.36	□	0.04		-0.05		-0.20		0.22	
Temperature	-0.36	□	-0.21		-0.30		-0.42	□	-0.23		-0.13		-0.11		-0.38	□	0.11	
Specific conductivity	-0.58	□	-0.51	□	-0.05		-0.66	□	-0.16		-0.25		-0.46	□	-0.29		-0.11	
Physical habitat																		
□ fast-water	0.45	□	0.31		0.24		0.53	□	-0.11		-0.44	□	0.09		-0.18		-0.37	
□ thick algae cover	-0.31	□	-0.35		-0.16		-0.45	□	0.01		0.55	□	-0.03		-0.60	□	0.09	
□ sands and fines	-0.51	□	-0.64	□	-0.23		-0.64	□	-0.36	□	0.15		-0.19		-0.56	□	0.17	
Flow diversity	0.29	□	0.36	□	0.43	□	0.31	□	-0.06		-0.27		0.15		0.23		0.01	
Habitat diversity	-0.01		0.14		0.18		-0.28	□	0.14		0.40	□	-0.07		0.24		0.34	
Substrate diversity	0.09		0.30		-0.18		0.09		0.25		0.20		0.23	□	0.45	□	0.20	
Riparian disturbance	-0.36	□	-0.23		-0.25		-0.22	□	-0.31		0.22		-0.33	□	-0.38	□	0.24	
Shading	0.13		0.43	□	0.63	□	-0.03		0.23		-0.10		-0.13		0.41	□	0.40	□
Riparian vegetation	-0.17		0.21		0.47	□	-0.20		0.20		-0.06		0.03		0.14		0.28	

Little Dalton Wash: An example of a high-scoring engineered channel

Figure 6. Little Dalton Wash.

Perhaps the most valuable insight provided by the SMC's study of engineered channels is that it helps managers identify examples of high-scoring sites, providing a target for managing streams in poorer condition. One such site is Little Dalton Wash, part of the San Gabriel River watershed in Azusa (Figure 6). Although the CSCI score of 0.73 was somewhat lower than the threshold of 0.79 for identifying sites in reference condition, it was higher than nearly all other hardened channels in the data set. Moreover, the diatom IBI score of 92 was well above the threshold of 62, although the soft algae IBI score was low (23). When compared to other hardened channels in the SMC survey, the unusually high scores at Little Dalton Wash are evident (Table 2).

Index	Score	Percentile of reference	Percentile of hardened channels
CSCI	0.73	3	92
Diatom IBI	92	84	92
Soft algae IBI	23	0	15

Table 2. Index scores at Little Dalton Wash compared to reference sites and to other hardened channels. Percentiles calculated through a normal approximation.

The field conditions at Little Dalton Wash are not different from other hardened channels in any obvious way. The sampled reach is in a rectangular concrete box that lacks low-flow features. Located in the midst of a heavily developed area, it receives drainage from a 27-km^2 watershed that is more than one-third urbanized. However, comparison with survey data from other hardened channels suggest a few possibilities. Several water quality analytes, as well as physical habitat metrics, were better at Little Dalton Wash than at lower-scoring hardened channels, including chloride, total nitrogen, temperature, and specific conductivity (Figure 7). The diversity of flow microhabitats (e.g., riffles and glides) was high as well. These factors may explain the higher scores observed at this site.

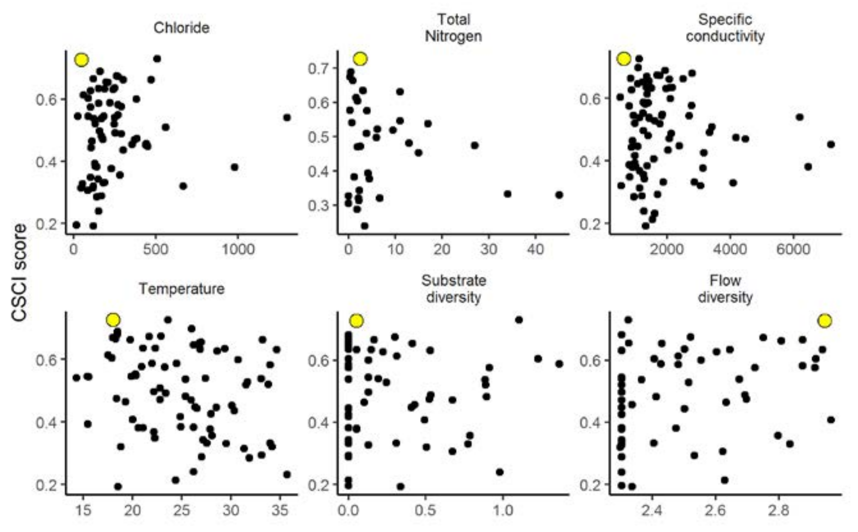


Figure 7. CSCI scores versus water quality and habitat metrics in hardened channels. The large yellow symbol represents Little Dalton Wash.

Conclusions

These preliminary results suggest that, although ecological health is clearly degraded in hardened channels, higher bioassessment index scores could be supported in certain reaches if water quality and in-stream habitat conditions are good. The ranges of observed index scores provide a starting point for managers, regulators, and stakeholders to discuss which types of actions are needed to achieve the desired level of health in modified channels, or in downstream receiving waters.

The SMC survey has cleared up a few major questions about engineered channels. It demonstrated that, although conditions in engineered channels are generally poor, some channels support better conditions than others. Additionally, this analysis underscores the value of a multi-indicator approach to ecological health assessment, as each assemblage adds to a more well-rounded view of the condition of engineered channels. Additional data may help further identify the factors that lead to better ecosystem health in engineered channels, including targeted sampling of concrete channels with good water quality, monitoring after the removal of concrete features from a channel (see Sidebar 3), and tracking water quality improvements following the implementation of best management practices that remove pollutants. Although this opportunistic analysis of available SMC survey data suggests that an engineered channel may not be able to support aquatic life as well as natural streams can, and tradeoffs between flood protection and ecological condition may be unavoidable, it shows that a range of conditions is possible, and that better conditions may be possible through management of water quality and habitat.

Restoration of engineered channels

Restoring natural features in engineered channels is sometimes proposed as a way to improve ecological conditions, as well as create amenities like improved flood control and enhanced recreational opportunities. In the County of San Diego, concrete walls and bank armoring were removed from a 1.2-mile segment of Forester Creek in 2006 at a cost of $36 million, returning the channel to a more naturalistic, vegetated form. Some water quality impairments improved following restoration (e.g., pH), while others did not (e.g., total dissolved solids). Bioassessment scores (measured with the Southern California IBI, which preceded the CSCI) increased from 25 to 40 points, although too few samples have been collected to see if this difference is statistically significant.

Left: Forester Creek upstream of the restoration site. Right: The restored portion of Forester Creek.

The Los Angeles River provides a much larger-scale example. The revitalization master plan for the Los Angeles River calls for the removal of concrete walls from up to 32 miles of the river, wherever it is safe and feasible to do so. This project may be one of the largest urban river restoration efforts undertaken in the country. With a cost that will exceed $1 billion, the impact on the river's ability to support aquatic life are not clear. Fortunately, the SMC stream survey provides abundant data, both from the Los Angeles River itself, as well as from comparable hardened and restored rivers, to provide benchmarks that enable the success of this effort to be evaluated.

Updates on new indicators

Cell bioassays evaluate the potential for harm from chemicals of emerging concern

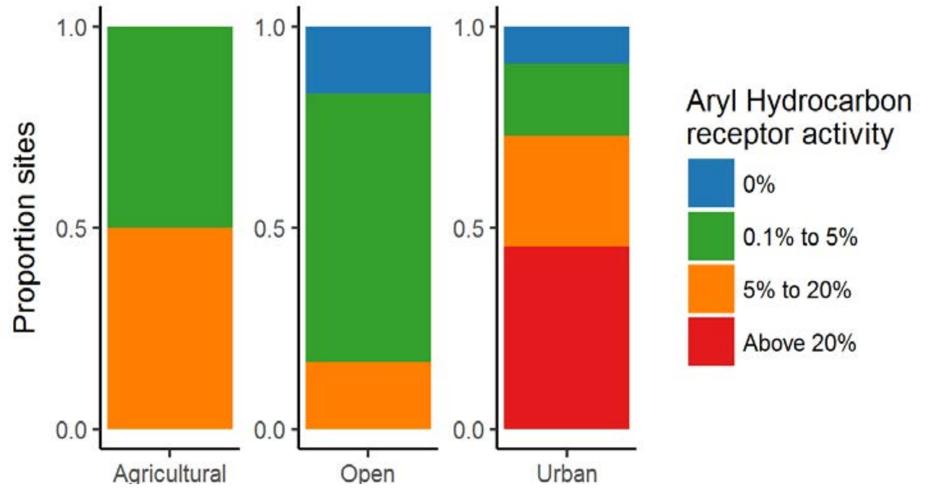


Figure 1. Aryl hydrocarbon receptor (AhR) responses were measured at sites representing different land uses within the SMC stream survey area.

Chemicals of emerging concern (CECs) have the potential to degrade ecological condition and harm human health through endocrine disruption and other physiological pathways. Comprising over 10,000 distinct chemical compounds, CECs come from pharmaceuticals, personal care products, and other sources. Many of them are biologically active, with the potential to disrupt hormonal pathways of organisms. With hundreds of new compounds being added to commercial markets every year, most without disclosure of their composition, measuring the extent and impact of CECs in the environment through traditional (i.e., single-compound) approaches is unrealistic.

The SMC survey tested an alternative approach that promises to be more effective and less expensive than traditional methods. First, samples are used in bioassays to detect cellular-level responses, followed by a non-target (i.e., multiple-compound) analysis to identify the compounds that could cause the observed response. This screening approach provides new information about potential risks of contaminant exposure to humans, aquatic life, and wildlife. For example, estrogen receptor (ER) assays can help detect the presence of hormone-mimicking chemicals that affect growth, development, and reproduction. The SMC screened 31 samples collected in 2015—one of the first applications of this new technology to a stream biomonitoring program.

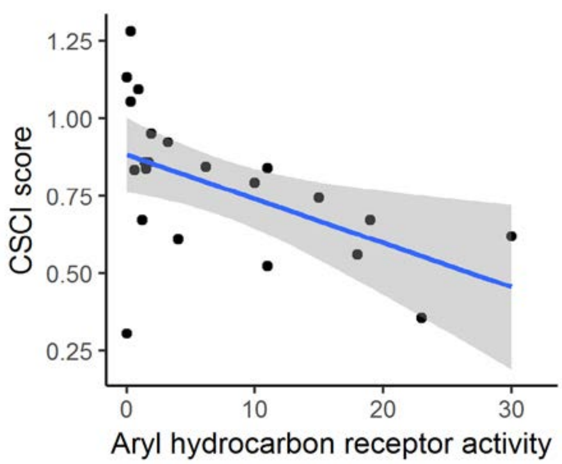


Figure 2. Aryl hydrocarbon receptor response versus CSCI scores

Responses for receptors of steroid hormones, such as glucocorticoid and estrogen, were rare, affecting only 2 and 8 sites respectively. In contrast, aryl hydrocarbon receptor (AhR) responses were widespread, affecting 28 of the 31 sites; furthermore, AhR responses were stronger at urban sites than at undeveloped sites (Figure 1). The AhR receptor is thought to play a role in mediating environmental toxicity and immune response, as well as supporting normal vascular development. Dioxins and other pollutants are known to provoke AhR responses.

Bioassay responses may explain why some sites are in poor biological condition. For example, AhR activity was negatively correlated with CSCI scores (r = -0.84, Figure 2), suggesting that contaminants known to cause AhR responses (e.g., polycyclic aromatic hydrocarbons, commonly associated with runoff from asphalt or combustion) may alter benthic macroinvertebrate assemblages (Figure 2). Follow-up targeted chemical analyses found sunscreen ingredients at sites with ER activity and flame retardants at sites with AhR activity, although concentrations were generally too low to explain the observed responses, meaning that other, unmeasured compounds are responsible. Field blanks were clean, meaning that contamination of the samples was not a likely cause of the response. Non-targeted analyses to identify these unknown chemicals are underway.

Assessing the ability of streams in southern California to support aquatic vertebrates

Figure 1. California tree frog (*Pseudacris cadaverina*), one of the more common native species of vertebrate found in Southern California streams.

Although the initial SMC stream survey provided a great quantity of data about stream condition based on benthic macroinvertebrates and algae, a lingering question remained about what our findings meant for higher trophic levels, such as fish, amphibians, and other vertebrates (Figure 1). Although a thorough investigation of this question is beyond the scope of the current regional monitoring program, the SMC found a way to get some answers, and at remarkably low costs.

In 2015, SMC field crews received training in identifying common aquatic vertebrates in the region, and began reporting observations of species they encountered during normal bioassessment sampling (that is, no additional time was spent trying to observe vertebrates). This effort began as a collaborative venture initiated by the SMC, the US Geological Survey (USGS), the US Fish and Wildlife Service (USFWS), and SWAMP, all of whom were hoping to improve their understanding of the spatial distributions of both native and non-native vertebrates in the region. The survey provided a concrete example of how the core regional monitoring program can be used to opportunistically collect data to answer important management questions. The resources necessary to successfully complete the survey were relatively trivial for several reasons: the SMC field teams were already visiting the sites; the teams already included biologists easily trained to identify stream vertebrates; and the sampling design was based on a time-saving casual observation approach, instead of a more traditional rigorous search at each site.

Despite the low costs, this survey provided a great deal of new and valuable data on vertebrates in the region’s streams, with observations attempted at a total of 95 sites (Figure 2). Vertebrates were seen at 46% of the sites, and surprisingly, the distributions of native frogs were fairly widespread across urban, agricultural and open land use types. These native amphibians were unexpectedly tolerant to the presence of non-native fish, frogs or crayfish. In contrast, native fish species were only observed at five mountainous sites. Mosquito fish (*Gambusia affinis*) were observed at 21 sites and were the most common non-native fish species, likely as a result of deliberate introduction as a vector-control measure.

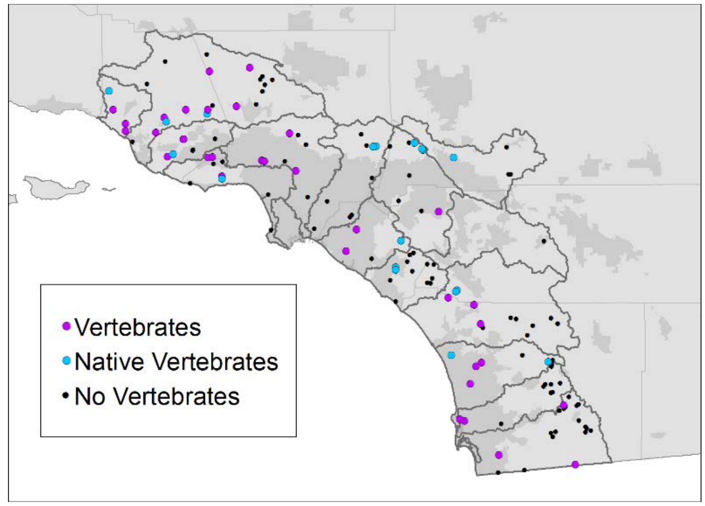


Figure 2. Location of vertebrate observations conducted in 2015.

Of the sites located on agricultural land, 68% supported vertebrates, although the many of these were non-natives (47%). In contrast, 49% of open land sites supported vertebrates, but only 17% of these were non-natives. It is important to note that these numbers likely underestimate the actual distribution of vertebrates because the field crews did not conduct exhaustive surveys of each site.

The addition of vertebrate observations to the survey yielded detailed information regarding the distributions of vertebrates throughout the southern California region, despite the limited amount of resources and training required to successfully implement it. Although more intensive efforts may have detected more species (especially nocturnal or cryptic species), opportunistic sampling was sufficient to improve our understanding of the ability of Southern California streams to support wildlife. Future work for this program might focus on the environmental and habitat factors that contribute to the presence or absence of vertebrates on agricultural, urban and open land use types; investigation of the relationships among vertebrates and other biological condition indicators including the CSCI, CRAM and Southern California algal IBIs; and improving our understanding of the spatial distribution of these important taxa by combining the SMC vertebrate dataset with those from iNaturalist, regional fish surveys, the USFWS, the USGS, and the California Department of Fish and Wildlife.

Applications of survey data

A water-quality improvement plan supported by survey data

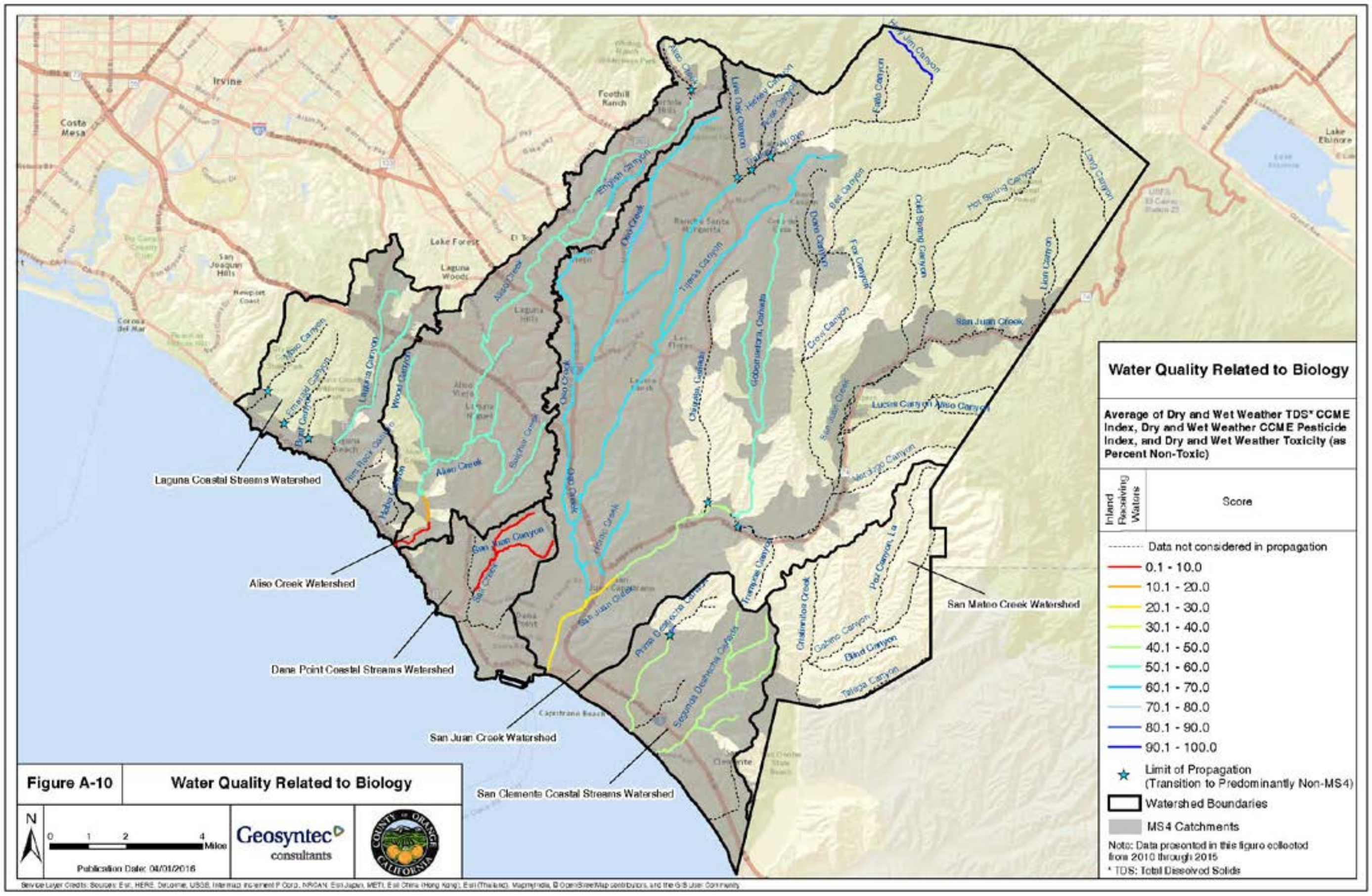


Figure 1. Excerpt from the San Juan Water Quality Improvement Plan shows how the County of Orange used SMC bioassessment and water quality data to prioritize problem areas in the watershed. Red, orange, and yellow stream segments have low-scoring bioassessment sites, in conjunction with measures of poor water quality. A separate analysis identifies stream reaches where low-scoring bioassessment occur in conjunction with geomorphic alteration.

A key objective of the SMC stream survey is to provide participants with data that helps them manage watersheds. One recent notable example is Orange County's Water Quality Improvement Plan (WQIP) for the San Juan Hydrologic Unit, which prioritizes problems in the watershed based on SMC data, emphasizing biological indicators like benthic macroinvertebrates and algae. The goal of the WQIP is to 1) determine high-priority water-quality problems; 2) identify goals, strategies, and schedules to address them; and 3) propose an approach to monitor and assess progress. In all three elements, the SMC survey provides the foundation and the framework for implementing these goals.

The WQIP identified three priority problems, and two of them were determined through bioassessment data: geomorphic alteration, and unnatural flow regimes. These problems were identified by the association of stressors related to these problems (e.g., hydromodification and habitat degradation), and their relationships with poor bioassessment index scores (Figure 1). Best management practices to mitigate these stressors will be identified, and their success will be partly determined in terms of improvements in biological condition. The monitoring and assessment component of the WQIP is currently under preparation, and it is expected that biological monitoring through the SMC stream survey will play a crucial role in this component.

Regional flow targets to support biological integrity

The SMC stream survey data provides a strong foundation to explore the problems affecting streams in the region, such as hydrologic alteration, which previous surveys suggested is a major factor affecting biological condition. Hydrologic alteration results from water diversions, inter-basin transfers, and increased imperviousness that alter the natural flow regime in a stream. Taking advantage of a new ensemble-modeling approach to estimate current and historic flows at ungauged streams, hydrologic alteration was estimated at 572 bioassessment sites, most of which are part of the SMC stream survey. The ensemble was built by calibrating simple rainfall-runoff models at 26 stream gauges in Southern California, then assigning one model to ungauged sites with similar catchment properties. Biological responses (e.g., California Stream Condition Index [CSCI] scores) were modeled against metrics reflecting hydrologic alteration, thresholds of biological response were established for multiple flow metrics, and metrics were combined into an overall index of hydrologic alteration with scores ranging from 0 (no alteration) to 14 (all metrics severely altered).

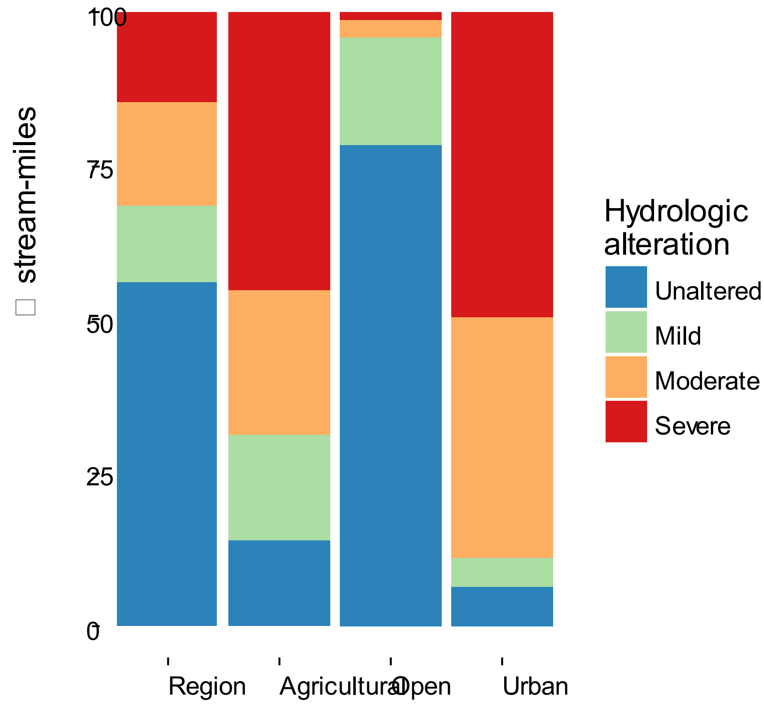


Figure 1. Extent of hydrologically altered streams in the region, as well as within three land-use classes.

Because this index was applied to survey data, it allowed the first-ever estimate of the extent of hydrologic alteration in the region. Approximately 34% of stream-miles in Southern California were estimated to be moderately or severely hydrologically altered, and alteration was more pervasive in urban (91% stream-miles altered) and agricultural (80%) than undeveloped (11%) streams (Figure 1).

The index also allowed rapid setting of management priorities and causal assessment screenings (Table 1, Figure 2). Among the biologically healthy sites (i.e., CSCI scores > 0.79), hydrologically unaltered sites (52% of total stream-miles) were prioritized for protection, and hydrologically altered sites (4%) were prioritized for monitoring. Among the biologically degraded sites, 30% were hydrologically altered, and prioritized for evaluation of flow management (such as increased stormwater detention or groundwater infiltration). Evaluation of other stressors was prioritized at the remaining 14% of stream-miles.

Table 1: Management action priorities based on measures of biological condition and hydrologic alteration.

	Unhealthy biology	Healthy biology
Altered hydrology	Evaluate flow management: 30	Monitor: 4
Unaltered hydrology	Evaluate other stressors: 14	Protect: 52

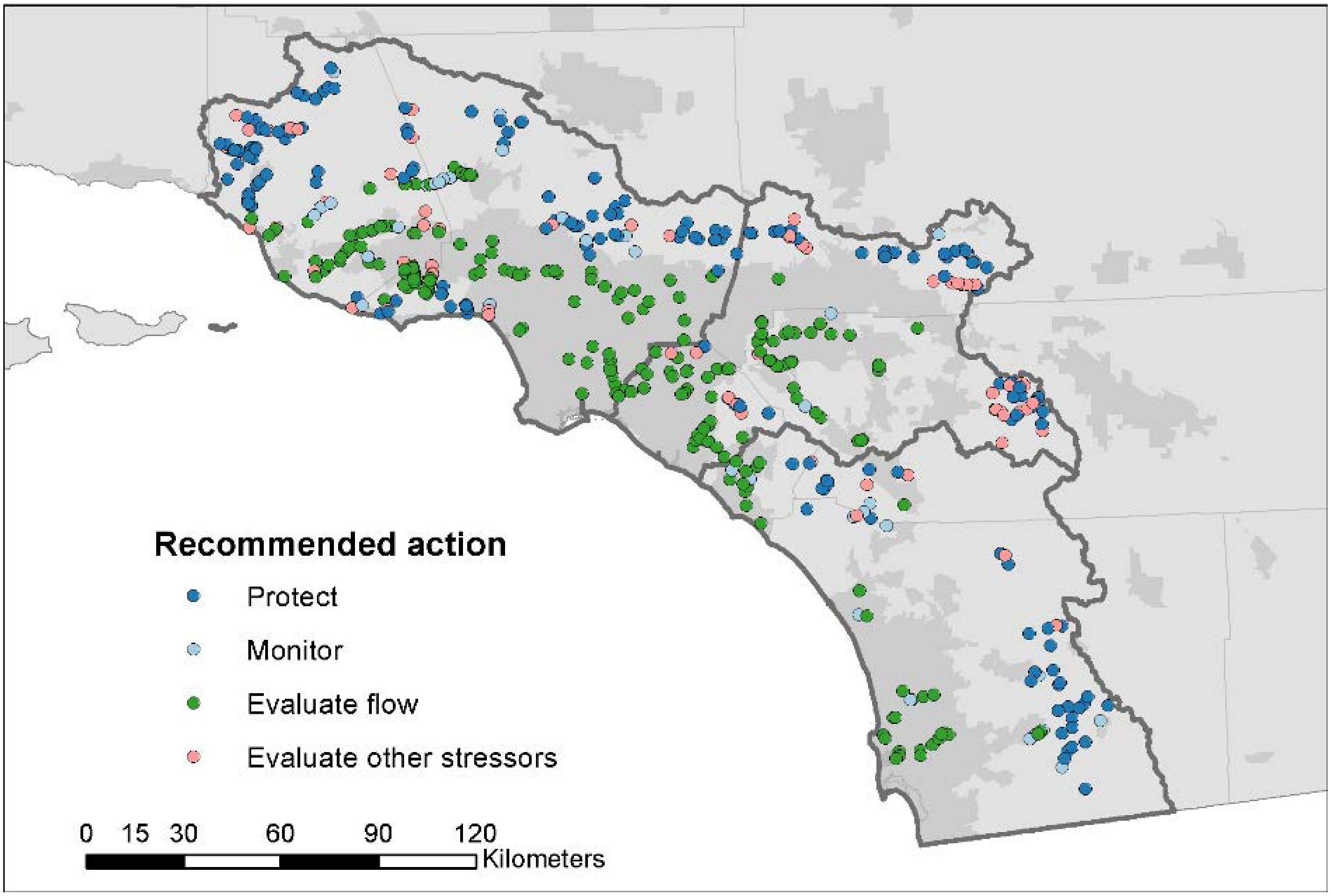


Figure 2. Management priorities for streams in the SMC region, based on estimates of hydrologic alteration and biological condition.

Regionally derived, biologically based targets for flow allow watershed managers to rapidly prioritize activities and conduct screenings for causal assessments at many sites across large spatial scales. Furthermore, regional tools pave the way for incorporation of hydrologic management in policies and watershed planning designed to support or enhance biological integrity in streams. Development of regional tools should be a priority in regions where hydrologic alteration is pervasive or expected to increase in response to climate change.

Appendix 12

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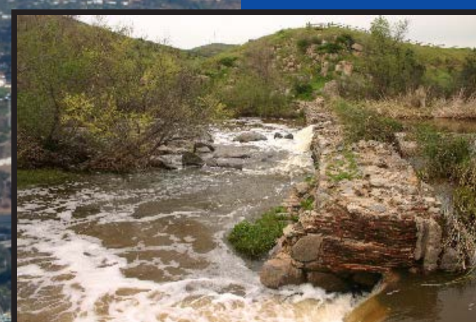
Application of Regional Flow-ecology to Inform Management Decision in the San Diego River Watershed



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SCCWRP Technical Report 948

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EXECUTIVE SUMMARY

Changes to instream flow are known to be one of the major factors that affect the health of biological communities. Regulatory, monitoring, and management programs are increasingly using biological community composition, particularly benthic invertebrates, as one measure of instream conditions, stormwater project performance, or regulatory compliance. Understanding the relationship between changes in flow and changes in benthic invertebrate communities is, therefore, critical to informing decisions about ecosystem vulnerability, causes of stream and watershed degradation, and priorities for future watershed management.

Taking advantage of large, robust regional monitoring data sets and recently completed regional watershed models, the Southern California Coastal Water Research Project (SCCWRP) has developed a set of "flow–ecology" relationships for southern California that relate changes in specific flow metrics to changes in benthic invertebrate indices that have been shown to be indicative of stream health. These relationships are based on the Ecological Limits of Hydrologic Alteration (ELOHA) framework, which uses a variety of hydrologic and biologic tools to determine and implement environmental flows at the regional scale. Results of the ELOHA analysis can inform management decisions, such as release rates from dams, reservoirs or basins; diversion volumes for irrigation or water re-use, or flows associated with stream restoration.

The goal of this project is to demonstrate how regionally derived flow–ecology relationships can be implemented at a watershed scale to inform management decisions. Regional relationships allow us to describe general patterns of response in biological communities to changes in hydrology. Local case studies are critical to determine how these relationships can be applied to site-specific decisions, and to identify areas where the regional relationships may need to be refined to better support local application.

Our case study focused on the San Diego River Watershed in southern California, where the potential effects of urban growth and water/runoff management on stream flow and biological condition are currently being considered. We worked with a group of local watershed stakeholders to identify three questions that that would both inform local management decisions (along with other planning considerations) and demonstrate the utility of the regional flow–ecology relationships. Close coordination with the stakeholder group enhanced the relevancy of the analysis and helps to determine how the technical approach to establishing targets may be applied in other areas. The case study focused on the following management questions:

1. How will future land use changes affect flow conditions and impact biological endpoints in the San Diego River watershed? This involves a comparison of the current hydrologic conditions to modeled conditions based on San Diego County's 2050 land use projection. Future scenarios did not include any assumptions about best management practices, low impact development or hydromodification, which would be expected to reduce potential effects of future hydrologic alteration.

2. How can we use our understanding of current and expected future hydrologic conditions along with the regional flow–ecology relationships to prioritize regions of the watershed where flow management may be most critical to maintain or improve future stream health?

3. What are the biological implications of two future management decisions that will affect in-stream flow conditions:

4. What would be the effects of reduced discharge from Santee Lakes Reservoir due to increased capture and storage to meet demand for reclaimed water?

5. What would be the effect of disconnecting imperviousness and implementing stormwater capture strategies in a currently developed portion of the watershed?

These local management questions were addressed using regional flow-ecology relationships that relate changes in stream health to changes in hydrology. Stream health was assessed using the California Stream Condition Index (CSCI), a statewide index of benthic macroinvertebrates community composition. Hydrologic alteration was assessed based on the following hydrologic metrics, which were shown to have strong statistical and ecological relationships with the CSCI (Table ES-1; See Mazor et al. in review). Metrics were also selected to ensure representation of different components of the flow regime (e.g. duration, magnitude, etc.) and different climate conditions (e.g. wet vs. dry vs. average years).

Table ES-1. Priority hydrologic metrics used in the regional flow-ecology relationships. Metrics are grouped by the hydrograph component they represent. Metric effects on biology were typically strongest during either average, wet, or dry rainfall years, or all years combined (overall).

Hydrograph Component	Metric	Metric Definition	Critical precipitation condition
Duration	NoDisturb (days)	median annual longest number of consecutive days that flow is between the low and high flow threshold	Average
	HighDur (days/event)	median annual longest number of consecutive days that flow was greater than the high flow threshold	Wet
Magnitude	MaxMonthQ (m3/s)	Maximum mean monthly streamflow	Wet
	Q99 (m3/s)	streamflow exceeded 99% of the time	Wet
Variability	RBI (unitless)	Richards-Baker index of stream flashiness	Dry
	QmaxIDR (m3/s)	interdecile range of flow	Overall
Frequency	HighNum (events/year)	median annual number of events that flow was greater than high flow threshold	Dry

Effect of future land use change

Under current land use conditions, 44% of the catchments in the watershed were considered hydrologically altered based on the metrics shown in Table ES-1. There is a broad spatial gradient of hydrologic degradation in the watershed, with the most hydrologically intact areas in the upper watershed, moderately altered catchments in the middle watershed, and the most hydrologically altered catchments in the lower watershed (Figure ES-1). Hydrologic alteration is largely correlated with total impervious cover, with hydrologic alteration generally becoming measurable as the impervious cover reaches and exceeds 5%. Given this pattern, hydrologic conditions are expected to degrade under San Diego County's projected 2050 land use for the watershed (Figure ES-1). The majority of new impacts are expected to occur in the upper watershed where current open space may convert to low-density residential land use and exceed the 5% impervious cover level. Based on the regional flow-ecology relationships, we expect that future hydrologic changes will also manifest as declines in benthic invertebrate communities, reflecting an overall impairment of biological conditions. Efforts to reduce *effective impervious cover* through low impact development or hydromodification control (which act to disconnect total imperviousness from streams) would be expected to reduce future impacts.

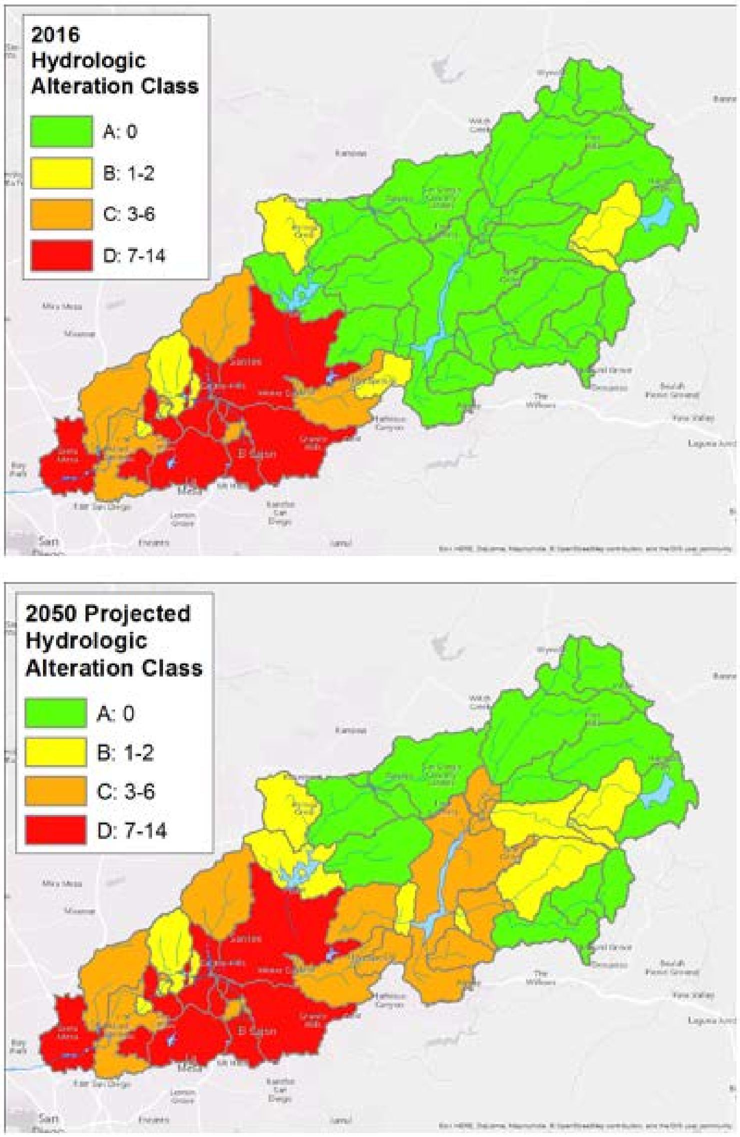

Figure ES-1. Hydrologic alteration under current (top) and 2050 projected (bottom) land use.

Prioritization of areas for various management actions

We prioritized areas of the watershed for various management actions using a combination of hydrologic alteration (see Figure ES-1) and biological condition based on existing bioassessment data (using the CSCI). The majority of upper watershed sites were considered intact and thus a high priority for preservation or protection (Figure ES-2). Two sites in the middle watershed had altered hydrology, but healthy biological communities. This suggests that the communities are either resilient or have not yet responded to the hydrologic alteration. Therefore, these sites should be monitored for potential future degradation. The lower watershed largely expressed both poor biological condition and altered hydrology. For sites in the lower watershed where both hydrology and biology were in altered, we examined available data on water quality and channel condition to better understand the relative contribution of flow alteration vs. other stressors to reduced biological health. This analysis allowed us to provide preliminary management recommendations that can be prioritized for each location (Figure ES-2). We estimate that flow alteration alone is the principle factor affecting biology at only 3 of the 13 biologically degraded sites in the lower watershed. At all other sites, flow management should be coupled with habitat or water quality remediation in order to improve biological conditions.

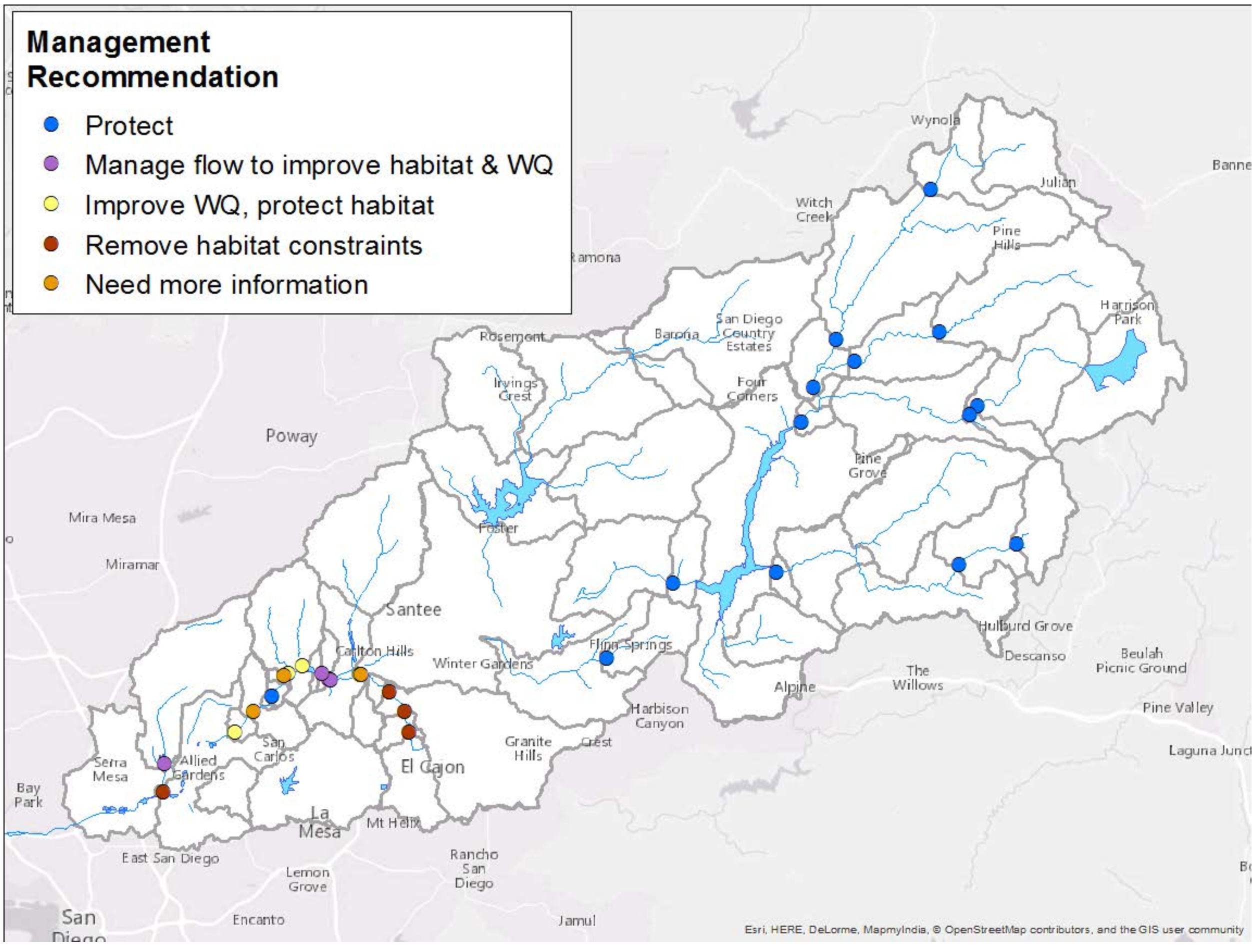

Figure ES-2. Recommended management actions for all sites based on a combination of hydrologic and biological condition. Recommendations are based on both flow-ecology information and available data on habitat and water quality obtained through the local regional monitoring program. Only sites with existing bioassessment data are included.

Evaluation of management scenarios

We demonstrated application of the flow–ecology tools to evaluate both a reservoir management scenario and an urban runoff management scenario. The reservoir management scenario involves eliminating discharge of treated wastewater into the Santee Lakes Reservoir and redirecting it for reuse to help meet increased demands for recycled water. This would reduce reservoir outflow and change hydrology of the downstream Sycamore Creek. Our analysis showed that modifying reservoir management would reduce several flow metrics closer to reference conditions; however, they will probably not fully return to reference condition due to the ongoing contribution of urban runoff. Overall, certain components of the hydrograph (usually under high flow conditions) in Sycamore Creek will improve, but is likely to remain in degraded hydrologic and biological condition, even if discharges from Santee Lakes Reservoir are eliminated following the proposed management scenario.

We modeled two urban runoff management scenarios: 1) disconnecting impervious areas from discharging to streams (i.e. reducing impervious cover), and 2) implementing stormwater retention facilities that can capture 85th percentile of a 24-hour rain event. Disconnecting imperviousness decreases the extent of hydrologic alteration in the downstream reaches. However, flow metrics do not return to levels associated with healthy biological communities until the total imperviousness is at or below 5%. Analysis shows that for most metrics, there is a 66% likelihood of meeting flow targets at 5% total impervious cover and an 80% likelihood of meeting flow targets at 2% total impervious cover (i.e. with stormwater control measures installed). The sensitivity of the creek to relatively low levels of impervious cover is consistent with past studies from southern California. In contrast, retention of the 85% storm event (as is currently required through the local stormwater permit) resulted in flow metrics that met all target values.

Utility of the ELOHA approach for establishing flow-ecology relationships

A major objective of this case study was to evaluate the ability to apply the flow–ecology relationships derived from the regional ELOHA analysis to inform local watershed-scale decisions. Our results illustrate that several of the stated advantages of the ELOHA approach do aid in such watershed-scale application. The ability to apply regionally derived flow targets to inform local decisions is a major advantage of the ELOHA approach. This eliminates the need to develop local flow–ecology relationships for every stream of interest, as is the case in more traditional instream flow methods. The tools developed through the regional analysis provided readily transferable tools for local stakeholders to produce measures of hydrologic change for any location of interest and to explore how those values would change under different land-use or management scenarios. This had the dual benefit of allowing for robust analysis and providing a vehicle for stakeholder engagement in setting management priorities related to instream flow. A potential downside of the ELOHA approach is that the regionally established flow targets may not fully address all concerns or considerations at a specific project location in the same manner as a site-specific analysis would. Ultimate policy decisions about how streams are managed must balance many competing needs. This case study shows how regional flow-ecology relationships can help inform these decisions.

Lessons learned for future implementation of regional flow-ecology relationships

Future efforts can build on the experiences from this case study and continue to refine an iterative process of developing flow targets that are scientifically defensible, practical (i.e., can lead to management actions), and consistent with local stakeholder needs. Key lessons learned from this effort include:

1. Include a broad set of engaged stakeholders, including regulatory agencies, municipalities, water agencies, non-governmental organizations, and researchers. This ensures a broad perspective in the deliberations and increases the likelihood of developing balanced recommendations.

2. Invest in educating the stakeholders early in the process on the underlying science and the rationale behind how regional flow targets were developed. This promotes engagement and fosters creative solutions to the complex challenges of flow management.

3. Invest the time to compile high quality local data sources and show how local data can be used in the evaluation process. Identify the areas were future data collection can most improve outputs of

the flow–ecology analysis (e.g., local rainfall data, more refined land use, water quality data). This can inform future monitoring.

4. Develop documentation that clearly illustrates how the products of the flow–ecology analysis can be used in the context of existing regulatory or management programs.

The San Diego River implementation case study also produced several technical recommendations that can improve our ability to apply flow-ecology relationships to manage southern California streams:

1. Several flow metrics, particularly those associated with flow duration, may require modification for use in streams where the natural condition is intermittent or ephemeral. Application of regionally derived flow thresholds to specific streams that may have been naturally intermittent can lead to erroneous results.

2. Metrics associated with flow durations should be calculated on a single threshold value based on reference conditions. Estimating hydrologic change based on a moving threshold estimated separately for current and reference conditions may produce erroneous results.

3. Need to improve the representation of the drainage system to provide a more accurate hydrologic foundation for analysis. This would ultimately include improved mapping of discharges, diversions, stormwater control facilities, low impact development (LID), etc. for incorporation into modeling scenarios and effects.

4. Consider expanding the analysis to include additional elements in future case studies
    a. Include other stream or water body types
    b. Include other indicators (e.g. algae)
    c. Explore how consistent/transferable findings are from one watershed to another
    d. Explore application in watersheds that cross jurisdictional boundaries

INTRODUCTION

Flow regime has been shown to affect a broad suite of ecological processes and biological communities (Bunn and Arthington 2002, Naiman et al. 2002, Poff et al. 1997, Poff and Zimmerman 2010, Novak et al. 2015). Many studies have demonstrated that alterations of flow regime can be associated with changes in macroinvertebrate assemblages, which are used as key bioindicators for many regulatory and management programs globally (Pringle et al. 2000, Miller et al. 2007, DeGasperi et al. 2009, Poff & Zimmerman 2010). Although a basic understanding of the relationship between flow alteration and ecological response exists (Poff et al. 2010), few studies have demonstrated how to develop regulatory or management objectives (or targets) based on these relationships. Establishing quantitative and predictive relationships between change in flow and change in biological community composition is a critical step in using bioassessment indicators to establish measures of project performance or regulatory compliance.

Various approaches have been used to develop relationships between flow characteristics and biological response. Examples include use of habitat suitability models that relate flow change to requisite habitats for target taxa (e.g., MesoHABSIM, Parasiewicz 2009; and PHABSIM, Beecher et al. 2010); establishment of functional flow regimes to support species of management concern (McClain et al. 2014, Yarnell et al. 2015); and use of statistical ranges of sustainability based on unaltered hydrographs (Richter et al. 2011). Concepts from several of these approaches have been organized into the Ecological Limits of Hydrologic Alteration (ELOHA) framework (Poff et al. 2010). The ELOHA framework uses a variety of hydrologic and biologic tools to determine and implement environmental flows at the regional scale. Results of the ELOHA analysis can inform management decisions, such as release rates from dams, reservoirs or basins, diversion volumes for irrigation or water re-use, or flows associated with stream restoration. Because the ELOHA framework provides a way to assess the effect of flow alteration on the condition of biological communities (vs. individual taxa) on a regional basis, it is a useful approach for setting targets across a wide range of geographies and stream types where comprehensive detailed site-specific investigations are not practical. The ELOHA framework includes elements of stream classification, estimation of flow alternation (termed "delta H") and development of flow ecology relationships based on the relationship between delta H and changes in the biological community ("delta B").

There have been several recent applications of the ELOHA framework to develop flow targets for benthic invertebrates, fish, mussels, amphibians, and aquatic and riparian vegetation. Buchanan et al. (2013) completed the ELOHA approach in the mid-Atlantic region of the U.S. and was able to show clear relationships between changes in a subset of six flow metrics and six benthic invertebrate endpoints. This allowed the authors to recommend specific metrics that could be used for monitoring and assessment. McManamay et al (2013) applied ELOHA through a case study in North Carolina to assess the effect of a stream restoration on fish and riparian communities. Although the ELOHA framework worked well at documenting effects of the restoration projects, confounding factors (e.g., associations between delta H and water chemistry alteration) produced equivocal relationships between flow alteration and response of the fish community. The Nature Conservancy has developed ecosystem flow recommendations for the Susquehanna River Basin (DePhilip and Moberg 2010) and the upper Ohio River Basin (DePhilip and Moberg 2013) that provide seasonally differentiated targets for different stream classes and multiple biological endpoints (e.g., fish, mussels, amphibians, vegetation). Solans and Jalon (2016) used a series of flow alteration-ecological response curves to develop environmental flow standards for the Ebro River Basin in the Iberian Peninsula. Most recently, Mazor et al. (in review) capitalized on extensive regional biomonitoring data and a set of regional hydrologic models developed by Sengupta et al. (in review) to develop flow-ecology relationships for southern California based on benthic macroinvertebrate communities as a measure of stream health.

Previous studies have demonstrated the utility of the ELOHA framework for establishing flow targets and thresholds using relationships between changes in flow and changes in biological condition. Broad scale application of ecologically derived flow targets (or thresholds) can be informed by case studies that demonstrate how flow-ecology relationships can be used to inform actual management decisions. In addition to the study by McManamay et al (2013), the main place where flow-targets have been implemented to inform management actions is in the Juanita Creek Watershed in Washington State, USA (King County 2012). The Juanita Creek study evaluated the effectiveness of seven potential stormwater mitigation scenarios at achieving biologically relevant flow targets using a calibrated Hydrological Simulation Program-Fortran (HSPF) model; a single scenario was identified which would accomplish the stated watershed goals. To our knowledge, none of the previous cases studies attempted to apply regionally-derived flow-ecology relationships (such as those developed for southern California) to inform decisions at the watershed scale. Additional case studies that demonstrate this application can provide a template for future applications of flow-ecology based targets, and allow for consideration of lessons learned to refine these future applications. Such case studies are also important because they provide an opportunity to work with local watershed stakeholders to identify management needs and apply ecohydrology analyses to inform decisions in a way that balances consideration of ecological endpoints with other needs (e.g., water supply management, new infrastructure and development, flood control).

The goal of this project is to demonstrate how the regionally derived flow–ecology relationships developed by Mazor et al. (in review) can be implemented at a watershed scale to guide management targets/decisions. Regional relationships allow us to describe general patterns of response in biological communities to changes in hydrology. Local case studies are critical to determine how these relationships can be applied to site-specific decisions, and to identify areas where the regional relationships may need to be refined to better support local application.

METHODS

Study area

We conducted the demonstration in the San Diego River watershed, in San Diego County, California, where the potential effects of urban growth and water/runoff management on stream flow and biological condition are currently being considered (Figure 1). At 440 square miles (1,140 square km), it is among the largest watersheds in San Diego County and also has the highest population (~475,000), containing portions of five cities and several unincorporated communities. Important hydrologic resources in the watershed include five water storage reservoirs, a large groundwater aquifer, extensive riparian habitat, and coastal wetlands. Approximately 58% of the San Diego River watershed is currently undeveloped. The majority of this undeveloped land is in the upper, eastern portion of the watershed, while the lower reaches are more highly urbanized. The San Diego River watershed is a valuable case study because it includes a range of stream types, including reference (as defined by Ode et al. 2016) and highly impacted reaches; it is affected by several types of hydrologic alteration, including urban runoff, flood control, and reservoir management; it is relatively data-rich, benefiting from years of ambient and targeted monitoring programs (e.g., Mazor 2015); and there is an active and engaged watershed workgroup that is willing to participate in the demonstration project.

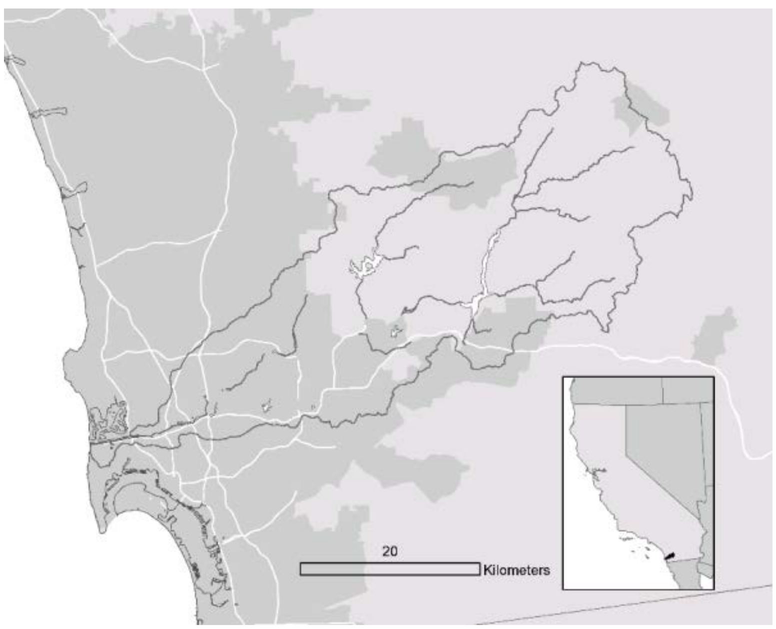

Figure 1. San Diego River Watershed

Stakeholder Process

Active stakeholder participation is integral to a successful demonstration case study because the stakeholders must identify the issues and interpret the utility of the recommendations resulting from the analysis. Stakeholders for the San Diego River case study included local municipalities, water districts, a land conservancy, a non-governmental organization, water quality regulatory agencies, the U.S. Forest Service as the upper watershed landowner and a local consulting firm (Table 1).

The stakeholder workgroup met monthly over an eight-month period and was facilitated by technical staff from the Southern California Coastal Water Research Project (SCCWRP), who had recently completed a regional ELOHA analysis (Mazor et al. in review). The workgroup was engaged in all aspects of the project including detailed scoping, assisting in modeling and analysis, and interpretation and refinement of findings. This intimate participation was key to developing products that would be acceptable for incorporation into future management decisions. A list of workgroup participants and topics for each workgroup meeting are provided in Appendix B.

Table 1. Stakeholders who participated in the San Diego River case study

- City of San Diego
- U.S. Forest Service
- Helix Water District
- Padre Dam Municipal Water District
- San Diego County
- Southern California Coastal Water Research Project
- San Diego River Conservancy
- The San Diego River Park Foundation
- San Diego Regional Water Quality Control Board
- San Diego State University
- AMEC Environmental

The stakeholder workgroup identified three questions that would both demonstrate the utility of the regional flow–ecology relationships and inform local management decisions.

1. How will future land use changes affect flow conditions and impact biological endpoints in the San Diego River watershed? This involves a comparison of the current hydrologic conditions to those that would be expected under a 2050 land use scenario.

2. How can flow–ecology relationships be used to prioritize regions of the watershed into various flow management classes that can inform future planning decisions?

3. What are the biological implications of two future management decisions that will affect in-stream flow conditions?
    a. reduced discharge from Santee Lakes Reservoir due to increased capture and storage to meet demand for reclaimed water
    b. disconnecting imperviousness, and implementing stormwater capture strategies in a currently developed portion of the watershed

Regional ELOHA (flow-ecology) analysis

The local management questions were addressed using regional flow-ecology relationships conducted for southern California that relates changes in stream health to changes in hydrology. Stream health was assessed using the California Stream Condition Index (CSCI), a statewide index of benthic macroinvertebrates community composition. Hydrologic alteration was assessed based on a series of hydrologic metrics, which were shown to have strong statistical and ecological relationships with the CSCI (Mazor et al. in review). Metrics were also selected to ensure representation of different components of the flow regime (e.g. duration, magnitude, etc.) and different climate conditions (e.g. wet vs. dry vs. average years). Because we lack measured flow data for both current and historic conditions at most bioassessment sites, both were estimated using watershed models.

Regional benthic macroinvertebrate data were obtained from the southern California regional bioassessment program (Figure 2, Mazor 2015). A total of 799 wadeable stream sites were sampled between 2008 and 2014 using a probabilistic sample design. Sites were randomly distributed across the entire stream network using a spatially balanced generalized random-tessellation design that ensured representation across all natural and anthropogenic gradients in the region (Stevens and Olsen 2004).

Benthic macroinvertebrates were collected using protocols described by Ode (2007). At each transect established for physical habitat sampling, a sample was collected using a D-frame kicknet at 25, 50, or 75% of the stream width. A total of 11 ft2 (~1.0 m2) of streambed was sampled. This method was identical to the Reach-Wide Benthos method used by EMAP (Peck et al. 2006). However, in low-gradient streams (i.e., gradient <1%), sampling locations were adjusted to 0, 50, and 100% of the stream width, because traditional sampling methods fail to capture sufficient organisms for bioassessment indices in these types of streams (Mazor et al. 2010). Benthic macroinvertebrates were collected and preserved in 70% ethanol, and sent to one of five labs for identification. At all labs, a target number of at least 600 organisms were removed from each sample and identified to the highest taxonomic resolution that could be consistently achieved (i.e., SAFIT Level 2 in Richards and Rogers 2006); in general, most taxa were identified to species and Chironomidae were identified to genus.

Figure 2. Locations of bioassessment sites used to support the regional flow-ecology analysis

Benthic macroinvertebrate data was used to calculate the California Stream Condition Index (CSCI; Mazor et al. 2016). The CSCI is a predictive index that compares observed taxa and metrics to values expected under reference conditions based on site-specific landscape-scale environmental variables, such as watershed area, geology, and climate. It includes two components: a ratio of observed-to-expected taxa (O/E) and a predictive multi-metric index (MMI) made up of 6 metrics related to ecological structure and function of the benthic macroinvertebrate assemblage. Because the CSCI and all of its components are based on site-specific reference expectations, scores are minimally influenced by major natural gradients. Therefore, CSCI scores, by definition, compare existing to reference conditions and can be used as a measure of biological alteration (delta B) under anthropogenic stress. CSCI scores and all components were classified as indicating "intact" or "altered" condition, using the normal approximation of the 10^{th} percentile of CSCI reference calibration scores as a threshold (Mazor et al. 2016). For the CSCI, this equates to a score of 0.79 (where 1 is the reference expectation) as the threshold between biologically intact and altered.

Hydrologic alteration was modeled at 584 of the 799 bioassessment sites using HEC-HMS (ACOE 2000). The remaining 215 bioassessment sites were dropped from the analysis because the rainfall data at those locations was insufficient or did not meet quality control criteria for use in model development. Past studies have assessed hydrologic alteration based on empirical observations, often using a space for time substitution (i.e. comparing distinct hydrologically intact vs. altered locations instead of comparing hydrologic change over time). Modeling provides a mechanism to estimate hydrologic alteration at any location where biological data is available, thereby allowing larger data sets to be included in flow-ecology analysis (DeGasperi et al. 2009). Given the size of the southern California data set (584 sites), there was a need to balance the desire to model hydrologic alteration with the practical considerations of needing a tool that could be readily applied to a high number of sites (Sengupta et al. in review). HEC-HMS provides the ability to produce a continuous time series of estimated flow through parameterization of relatively small number of variables in the model (HEC-HMS manual version 4.1, Xuefeng and Steinman 2009).

A set of 26 HEC-HMS models was developed as part of the regional flow-ecology analysis to represent the range of watershed conditions present in the region. Therefore, one of the 26 models can be applied to produce a daily flow time series for every bioassessment site based on basin properties draining to that site. This obviates the need to develop a unique model for every site. Inputs used to develop and parameterize the models are grouped in three categories (Table 2): 1) watershed-specific data (e.g., area, and imperviousness), 2) site-specific data (e.g., observed flow, precipitation) and 3) model-specific parameters (e.g., initial loss, number of reservoirs).

Table 2. Parameters used to develop HEC-HMS models for application to the regional bioassessment sampling sites. Parameters in bold were adjusted during simulation of natural conditions at each site.

	HEC-HMS Method	Parameters
Watershed Specific		Area **Imperviousness** **Time of concentration**
Site Specific		Observed flow Observed precipitation
Model Specific	Simple Canopy	Maximum Storage (in) Initial Storage (□)
	Simple Surface	Maximum Storage (in) Initial Storage (□)
	Deficit and Constant (Loss)	Initial Deficit (in) Maximum Deficit (in) Constant Rate (in□hr)
	Clark Unit Hydrograph (Transform)	**Time of Concentration (hr)** **Storage Coefficient (hr)**
	Linear Reservoir (Baseflow)	Ground Water (GW) 1 Initial Discharge (cfs) GW 1 Storage Coefficient (hr) □ of GW 1 Reservoirs GW 2 Initial Discharge (cfs) GW 2 Storage Coefficient (in) □ of GW 2 Reservoirs

Each model was sequentially calibrated for four criteria: visual hydrograph match, Nash-Sutcliffe efficiency (NSE), percent low flow days, and Richard-Baker Index of flashiness. These calibration endpoints were selected based on relevance for supporting the instream biological communities (Konrad and Booth 2005, Morley and Karr 2002). Calibrating to all four measures produced models tuned to simulate flow conditions relevant for supporting in-stream biological communities. Models were calibrated for a 3-year period and were then validated for temporal and spatial performance. For temporal validation, the calibrated models were run for years outside of the calibration period and matched with the observed flow data. In all cases, model performance (as measured by NSE) during the validation period was within 15% of performance during the calibration period.

To evaluate spatial performance, we applied statistical 'jackknifing' to all calibrated gages. In this analysis, each modeled gage is treated as an 'ungaged' site, and the remaining 25 models are used to predict flows at that site. The models were fitted to the 'ungaged' site by inputting watershed-specific data and model-specific parameters, but without changes to the model-specific parameters. These simulations were run for the 3-year calibration period. Approximately 75% of the sites had an acceptable NSE value higher than 0.5 (Moriasi et al. 2007). A final validation was performed by comparing modeled output to measured flow at 16 bioassessment sites with nearby flow gages (but not included in the model development). At 11 of the sites, the R^2 values averaged 0.61; the range varied from 0.20 to 0.95. Further details on the model validation for accuracy and bias are found in Sengupta et al. (in review).

One of the 26 validated models was assigned to each of 584 bioassessment sites with adequate rainfall data in the southern California region based on similarity of watershed characteristics that were associated with observed hydrology. The assignment was done with a model-selection tool built by 1) classifying the models into 8 clusters based on observed flow metrics; 2) creating a random forest model to predict cluster membership based on watershed characteristics (i.e., elevation maximum and range, mean annual temperature, watershed area, mean catchment-wide summer precipitation, and soil erodibility factor); and 3) calculating proximity values (i.e., the frequency that a site and a model are predicted to be in the same cluster) between novel sites and each of the 26 models. For each bioassessment site, the model with the highest proximity value was selected for further analysis. Details about the development of the model-selection tool, and its performance, are provided in Sengupta et al. (in review).

The watershed models were used to produce an hourly time series of flow for a period of 23 years (1990 - 2013) for the 584 bioassessment sites. A subset of 6 years was selected for each site to calculate specific flow metrics. The six years were chosen to include two wet, two dry, and two average rainfall years based on long-term climate records. The six years were also selected based on the availability of high quality, complete rainfall records (i.e. no missing values or apparent anomalies). A challenge of the ELOHA approach is the need to compare current hydrologic conditions to reference in order to estimate hydrologic change (delta H). Because we seldom have data on historical flows, we rely on modeling to estimate reference conditions. Hourly hydrographs were estimated for both current and reference conditions at each site following Sengupta et al. (in review). Hourly hydrographs were aggregated to daily discharge, and a suite of flow metrics that represent different aspects of flow were calculated for both current and reference conditions (Table 3) Metrics were calculated for wet, dry, and average precipitation conditions, as well as for all 6 years combined. Metric-precipitation combinations that validated poorly (i.e., $r^2 < 0.25$) with observed flow were excluded from further analysis. This resulted in a total of 116 metric–precipitation combinations for analysis. For each metric–precipitation combination, hydrologic alteration (delta H) was characterized as differences between simulated current and reference conditions. "Reference condition" was estimated by adjusting model parameters to reflect undeveloped watershed conditions. Delta H for magnitude metrics was normalized by reference condition or 0.0283 cms (whichever was larger) to account for the effect of catchment size on discharge magnitude. Details on the hydrological analysis and modeling approach can be found in Appendix A.

Table 3. Flow metrics sorted by metric type and period of evaluation. O=overall, W=wet years, A=average years, D=dry years. Unless otherwise noted, metrics are from Konrad et al. (2008), Konrad, personal communication, Colwell (1974), or Bledsoe (personal communication).

Metric			Description	O	W	A	D
Duration							
	LowDur	days/event	Median annual longest number of consecutive days that flow was less than or equal to the low flow threshold	•		•	•
	HighDur	days/event	Median annual longest number of consecutive days that flow was greater than the high flow threshold		•		•
	NoDisturb	days/year	Median annual longest number of consecutive days that flow between the low and high flow threshold	•	•	•	•
	Hydroperiod	proportion	Fraction of period of analysis with flows	•		•	•
	Per□LowFlow	proportion	Percent of time with flow below 0.0283 cms	•	•	•	•
Frequency							
	HighNum	events/year	Median annual number of events that flow was greater than high flow threshold, an event is a continuous period when daily flow exceeds the threshold	•	•	•	•
	FracYearsNoFlow	proportion	Fraction of years with at least one no-flow day	•			
	MedianNoFlowDays	days/year	Median annual number of no-flow days	•	•	•	•
Magnitude							
	MaxMonthQ	cms	Maximum mean monthly streamflow	•	•	•	•
	MinMonthQ	cms	Minimum mean monthly streamflow	•	•	•	•
	Q01	cms	1st percentile of daily streamflow	•	•	•	•
	Q05	cms	5th percentile of daily streamflow	•	•	•	•
	Q10	cms	10th percentile of daily streamflow	•	•	•	•
	Q25	cms	25th precentile of daily streamflow	•	•	•	•
	Q50	cms	50th percentile of daily streamflow	•	•	•	•
	Q75	cms	75th precentile of daily streamflow	•	•	•	•
	Q90	cms	90th precentile of daily streamflow	•	•	•	•
	Q95	cms	95th precentile of daily streamflow	•	•	•	•
	Q99	cms	99th precentile of daily streamflow	•	•	•	•
	Qmax	cms	Median annual maximum daily streamflow	•	•	•	•
	Qmean	cms	Mean streamflow for the period of analysis	•	•	•	•
	QmeanMEDIAN	cms	Median annual mean streamflow	•	•	•	•
	Qmed	cms	Median daily streamflow	•	•	•	•
	Qmin	cms	Median annual minimum daily streamflow	•	•	•	•
Timing							
	C□C	ratio	Colwell's constancy (C) a measure of flow uniformity.	•	•	•	•
	C□CP	ratio	Colwell's maximized constancy (C/P). Likelihood that flow is constant through the year	•	•	•	•

Metric			Duration					
	C□M	ratio	Colwell's contingency (M). Repeatability of seasonal patterns.		•	•	•	•
	C□MP	ratio	Colwell's maximized contingency (M□P). Likelihood that the pattern of high and low flow events is repeated across years.		•	•	•	•
	C□P	ratio	Colwell's predictability (P□C□M). Likelihood of being able to predict high and low flow events		•	•	•	•
	MinMonth	month	Month of minimum mean monthly streamflow				•	•
	MaxMonth	month	Month of maximum mean monthly streamflow			•		
Variability								
	RBI	Unitless	Richard Baker Index (flashiness)		•	•		•
	SFR	proportion	90th percentile of percent daily change in streamflow on days when streamflow is receding (storm-flow recession)				•	
	QminIDR	cms	Interdecile range of annual minima		•			
	QmeanIDR	cms	Interdecile range of annual means		•			
	QmaxIDR	cms	Interdecile range of annual maxima		•			

Hydrologic thresholds that result in biological response were evaluated for each flow metric-precipitation condition combination, based on nine biological response variables (i.e. the CSCI and its component metrics). Hydrologic metrics were evaluated for overall climatic conditions, as well as for wet, dry, or average precipitation years. The 116 metric-precipitation condition combinations were used to predict each of the nine biological response variables in boosted regression tree models using the gbm package in R (Ridgeway 2015, R Core Team 2016), and the importance of each predictor was ranked (Friedman 2001). Ranks were averaged across all models, and the best ranked precipitation condition within each metric was selected for further analysis. Ecologically derived targets were then established for each flow metric. Further detail about modeling biological responses to hydrologic alteration can be found in Mazor et al. (in review).

In order to set targets for hydrologic metrics based on biological response, we developed logistic regression models of the probability of healthy biological condition as a function of different levels of hydrologic alteration. Targets were set at the level of hydrologic alteration where the probability of healthy biological condition was 50% of the probability at hydrologically unaltered sites. It is important to note that these targets do not represent reference conditions. Increasing and decreasing gradients of hydrologic alteration were analyzed independently against each biological response variable. Across all biological response variables, the most conservative target was selected for further analysis. Logistic regression models were created using the glm function in R with a binomial error distribution and a logit link function (R Core Team, 2016). Metrics were scored 0 if they met targets, 1 if they failed targets, and 2 if they failed targets by more than twice the target value (Figure 3).

Metric	100% above UT	Upper Threshold (UT)	Within Threshold	Lower Threshold (LT)	100% below LT
Flow (Q min cfs)	0.04	0.02		-0.02	-0.04
Value	1.2	0.03	0.01	-0.025	-0.6
Score	**2**	**1**	**0**	**-1**	**-2**

Figure 3. Example scale for assigning hydrologic alteration scores

An objective of the regional flow-ecology analysis was to identify a subset of priority flow metrics that can be used to inform management actions. Metrics were prioritized based on the following criteria (Mazor et al. in review):

- Differentiate hydrologic condition at reference sites vs. altered sites
- Have the strongest relationship to biological condition based on boosted regression tree analysis and can produce a hypothesized ecological response
- Can be modeled under both current and reference conditions with a high level of confidence
- Are amenable to management actions and are expected to respond in predictable ways to deliberate changes in flow conditions
- Have minimal redundancy with other metrics; the goal is to select metrics that represent different components of the hydrograph (e.g. magnitude vs. duration)

Based on these criteria and the logistic regression analysis described above, Mazor et al. (in review) identified seven priority flow metrics and associated thresholds of biological response (Table 4). The importance of the seven priority flow metrics varied by climatic condition, with some metrics only being important during certain precipitation conditions (Table 4). Using a subset of metrics has the advantage of allowing management actions to focus on controlling a reasonable set of flow properties that will have the greatest biological effects, as opposed to trying to manage for all 116 metric-precipitation combinations.

Table 4. Priority hydrologic metrics and associated thresholds used in the regional flow-ecology relationships. Metrics are grouped by the hydrograph component they represent. Thresholds are expressed as the change in metric value (delta H) associated with poor biological condition (CSCI <0.79). Metric effects on biology were typically strongest during either average, wet, or dry rainfall years, or all years combined (overall). NT = no threshold established.

Hydrograph Component	Metric	Metric Definition	Critical precipitation condition	Decreasing Threshold	Increasing Threshold
Duration	NoDisturb (days)	median annual longest number of consecutive days that flow is between the low and high flow threshold	Average	-64	NT
	HighDur (days/event)	median annual longest number of consecutive days that flow was greater than the high flow threshold	Wet	-3	24
Magnitude	MaxMonthQ (m3/s)	Maximum mean monthly streamflow	Wet	NT	1.5
	Q99 (m3/s)	streamflow exceeded 99% of the time	Wet	-0.01	32
Variability	RBI (unitless)	Richards-Baker index of stream flashiness	Dry	NT	0.25
	QmaxIDR (m3/s)	Interdecile range of flow	Overall	-5	2.5
Frequency	HighNum (events/year)	median annual number of events that flow was greater than high flow threshold	Dry	NT	3

Application of regional flow-ecology (ELOHA) relationships to guide watershed management actions

Current and future watershed hydrologic condition was evaluated for 52 distinct catchments defined by major stream nodes (Figure 4). For each catchment, we simulated current and reference hydrology using the most appropriate of the regional HEC-HMS models. Hydrologic alteration (delta H) was calculated for the seven priority flow metrics shown in Table 4, and each metric was scored based on its distance above or below the established threshold (Figure 3). To provide an easy way to convey general hydrologic condition, an overall composite hydrologic condition score was developed by adding the absolute values of the score for each individual metric. The hydrologic condition score ranged from 0-14 because each of the metrics can receive a score between zero and two depending on how far the score is from the threshold (see Table 3). This approach assumes that each metric is of equal importance and that positive or negative changes in metric values have comparable effects. Scores were binned into four categories as shown in Table 5 and each of the 52 catchments was assigned an A – D designation, representing its overall hydrologic condition.

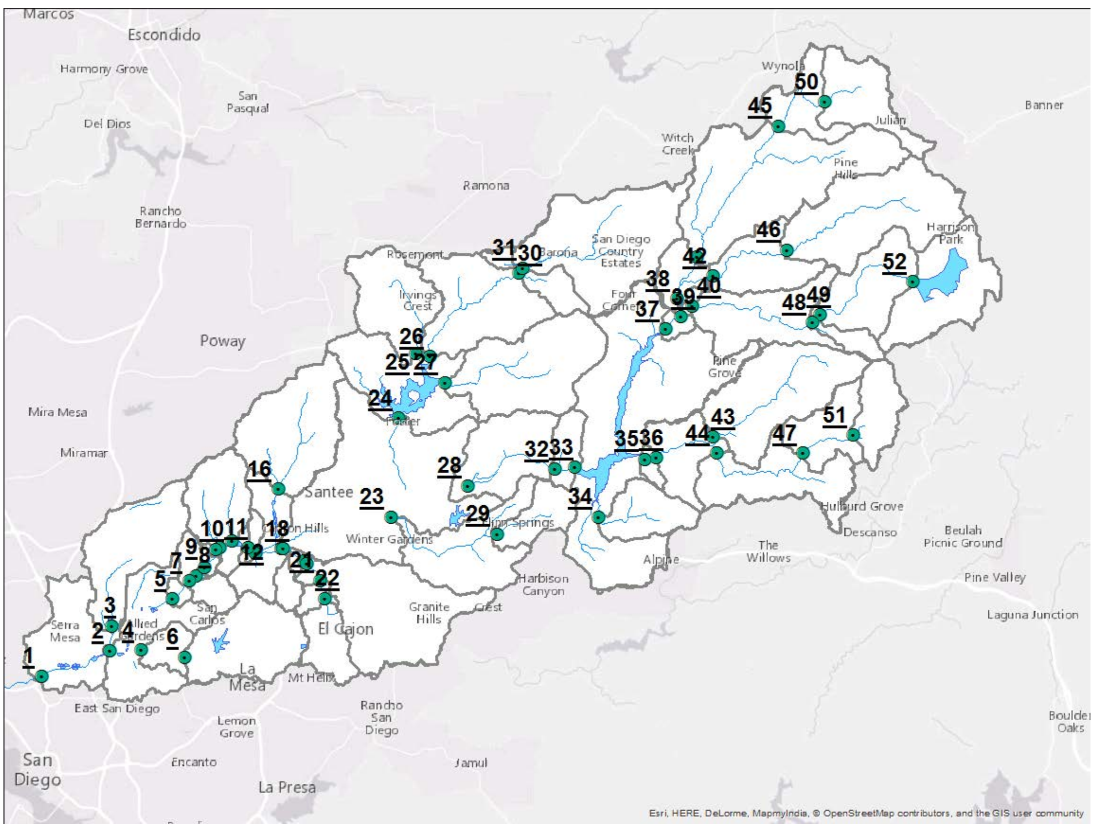

Figure 4. Individual catchments used for watershed analysis

Table 5. Definition of hydrologic condition score (0-14) based on how far each of the priority metrics is from its threshold value. See Figure 3 for explanation of scoring.

Overall Hydrologic Condition Score	Ranges of Metrics Above or Below Threshold
A	0
B	1-2
C	3-6
D	7-14

Flow management classes were assigned to each of the 29 locations where previous bioassessments had been completed. Sites were assigned to one of four classes based on their biological and hydrological status. Biological status was inferred using CSCI scores: Sites with scores greater than 0.79 were designated as biologically intact, and sites with lower scores were designated as biologically altered (Mazor et al. 2016). Hydrological status was assigned using the composite hydrologic condition score described above. Classes A and B were considered hydrologically unaltered when assigning sites to different management classes.

Hydrologically unaltered and biologically unaltered sites were put into a “protection” class; the good conditions at these sites should be protected from further designations. Hydrologically altered and biologically unaltered sites were put into a “monitoring” class; these sites may be resilient to stressors related to hydrologic alteration, but factors related to this apparent resiliency should be monitored to ensure that they continue to support biological health. Hydrologically altered and biologically altered sites were put into a “flow management” class; these sites should undergo a causal assessment to determine if flow management is likely to improve biological condition or if other constraints (e.g., channelization) may limit the ability of a stream to respond to improved flows. Hydrologically unaltered and biologically altered sites were put into an “other management” class; these sites should also undergo causal assessments, but other management options should be prioritized over flow management, such as habitat or water quality improvements (Table 6). Potential additional causes of biological alteration were evaluated for all locations where the CSCI was less than 0.79 based on additional stressor data such as water chemistry and physical habitat assessments that are routinely collected as part of the regional ambient monitoring programs (Mazor 2015).

Table 6. Management categories defined based on combination of hydrologic and biologic alteration

	Poor hydrologic condition	Good hydrologic condition
Poor biology (CSCI □0.79)	***Flow Management***: Evaluate hydrologic alteration among other stressors. Determine relative importance of flow management for improving biological condition, relative to other stressors.	***Other Management/Causal Assessment***: Evaluate other stressors to determine cause of poor biology. Evaluation of flow management not recommended.
Good biology (CSCI □0.79)	***Monitor***: Communities may be resilient to flow alteration. Continue to monitor for factors that may reduce resilience.	***Protect****:* Intact area. Target for preservation. Explore factors that may contribute to resilience or vulnerability.

Following the watershed mapping, the stakeholders prioritized management questions and scenarios for setting flow targets aimed at protecting (or recovering) instream biological health (as measured by CSCI). The scenarios retained for detailed analysis were selected based on consensus of the workgroup and represented a range of different management situations (e.g. reservoir operation, effluent recycling, and stormwater management). The most appropriate model was selected for each priority scenario using the model selection tool (described above) and was used to simulate both current hydrology and future hydrology based on the proposed management action. Future conditions largely consisted of changes in reservoir discharge, runoff capture, or reduction in impervious cover (i.e. low impact development). The subset of seven priority flow metrics based on the regional flow ecology analysis was calculated for each scenario (see Table 4). The projected delta H for each scenario (and each alternative within a scenario) was evaluated relative to the flow–ecology relationships and thresholds developed by the regional analysis. To aid in management interpretation of the results of the scenario analysis, the regional thresholds, which are expressed as *change in the metric value* were converted to the actual target values specific for the situation of the case study. The results of this analysis were used to develop flow management recommendations for each scenario. Ultimately, these flow recommendations should be considered in concert with other management needs for the watershed.

RESULTS AND DISCUSSION

Effect of future land-use change on hydrologic condition

To address the question, "***how will future land-use changes affect flow conditions and impact biological endpoints in the San Diego River watershed?"*** we compared the current overall hydrologic condition to the expected future condition based on 2050 SanGIS land-use projections, assuming no installation of stormwater control device or low impact development features.

Under current conditions, 17 of the 52 catchments (33%) scored in the worst two categories of hydrologic alteration, while 35 of 52 (67%) scored in the least hydrologically altered category (Table 7). There appears to be a spatial gradient of hydrologic condition in the watershed, with the most hydrologically intact areas are in the upper watershed, where much of the land is in public ownership and/or there is currently little urban development. Catchments in the poorest hydrologic condition are concentrated in the lower watershed where most of the current development exists. These areas are also downstream of all the reservoirs in the watershed (Figure 5).

Table 7. Distribution of hydrologic alteration scores under current conditions (□A□is least altered, □D□is most altered).

Category	□of catchments	Proportion of catchments
A	25	48□
B	10	19□
C	6	12□
D	11	21□

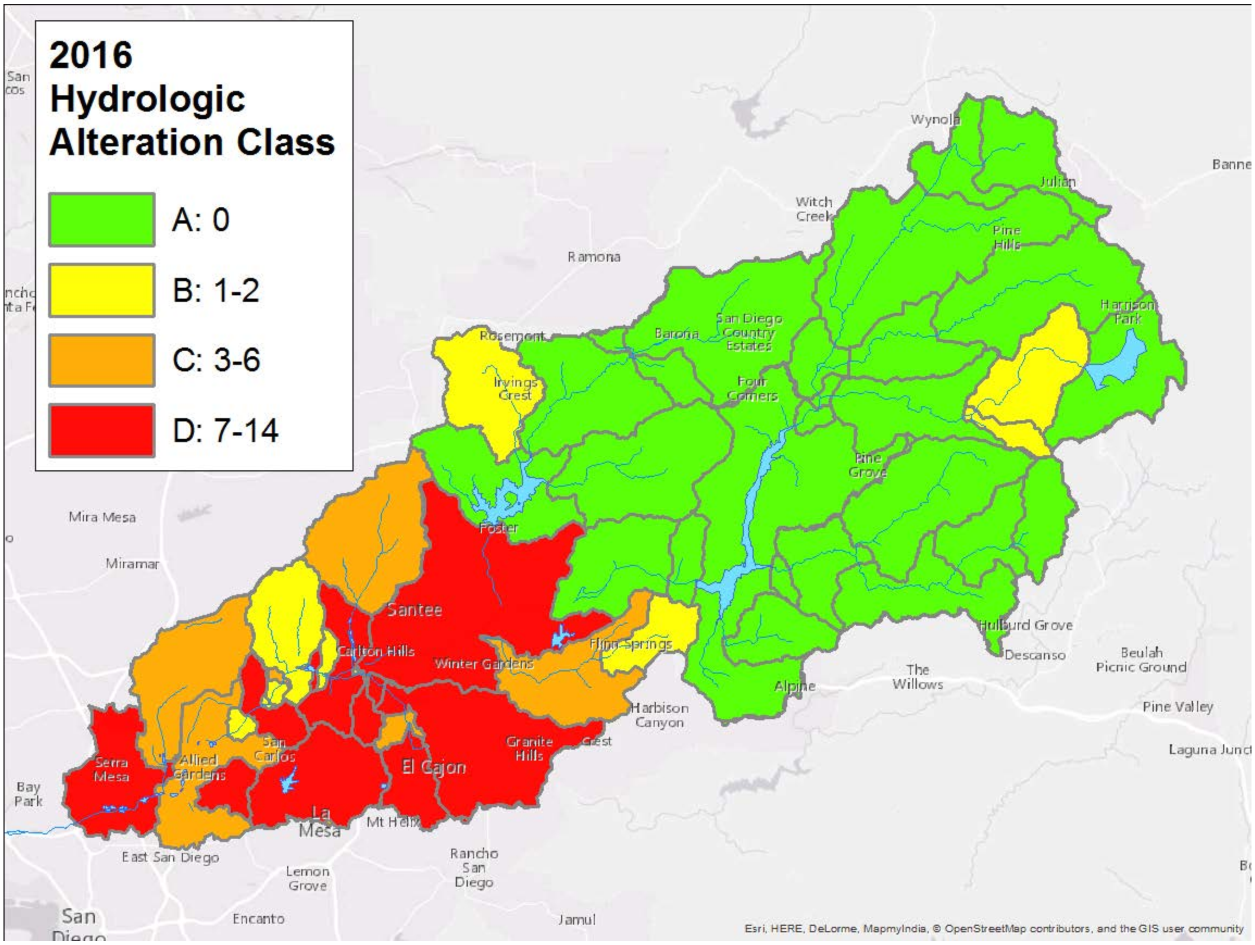

Figure 5. Hydrologic condition of each of the 52 catchments in the watershed. Numbers indicate the number of metrics that failed to meet the designated threshold.

We evaluated all 35 flow metrics in order to provide additional information about the type of hydrologic alteration occurring in each catchment (Figure 6). Catchments that are hydrologically unaltered (Classes A and B in Figure 6) generally "failed" less than 10% of the overall set of 35 metrics. This suggests that the targeted set of metrics used in Figure 5 (based on our screening filters described above) is representative of overall hydrologic condition. The most commonly exceeded metrics range across nearly all categories: duration metrics (e.g. high duration), magnitude metrics (e.g. Q95), frequency metrics (e.g. HighNum), and variability metrics (e.g. RBI). This suggests that when hydrologic alteration occurs, it tends to affect most aspects of runoff hydrographs rather than preferentially influencing certain hydrologic elements.

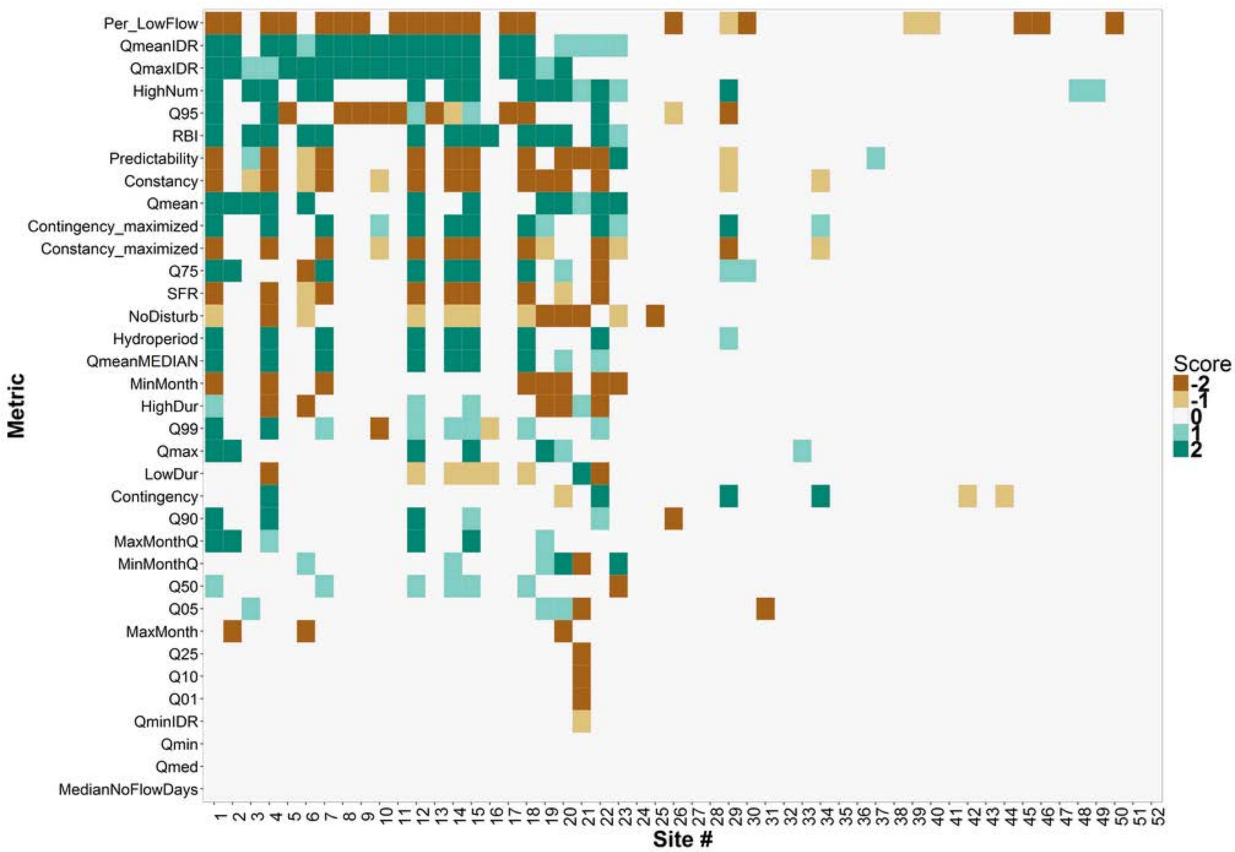

Figure 6. Heatmap showing hydrologic metric scores for all catchments and all metrics. Catchment numbers positions on the x-axis are based on the catchment positions shown in Figure 4.

Hydrologic condition was generally related to catchment imperviousness (Figure 7). In most cases, severe hydrologic alteration was associated with total impervious cover greater than 5%. In all cases, hydrologically unaltered catchments (Classes A and B) had less than 5% total impervious cover, often only 1-2%. This is consistent with past studies that have shown hydrologic and geomorphic responses associated with modest increases in total impervious cover (Hawley and Bledsoe 2011, Vietz et al. 2016).

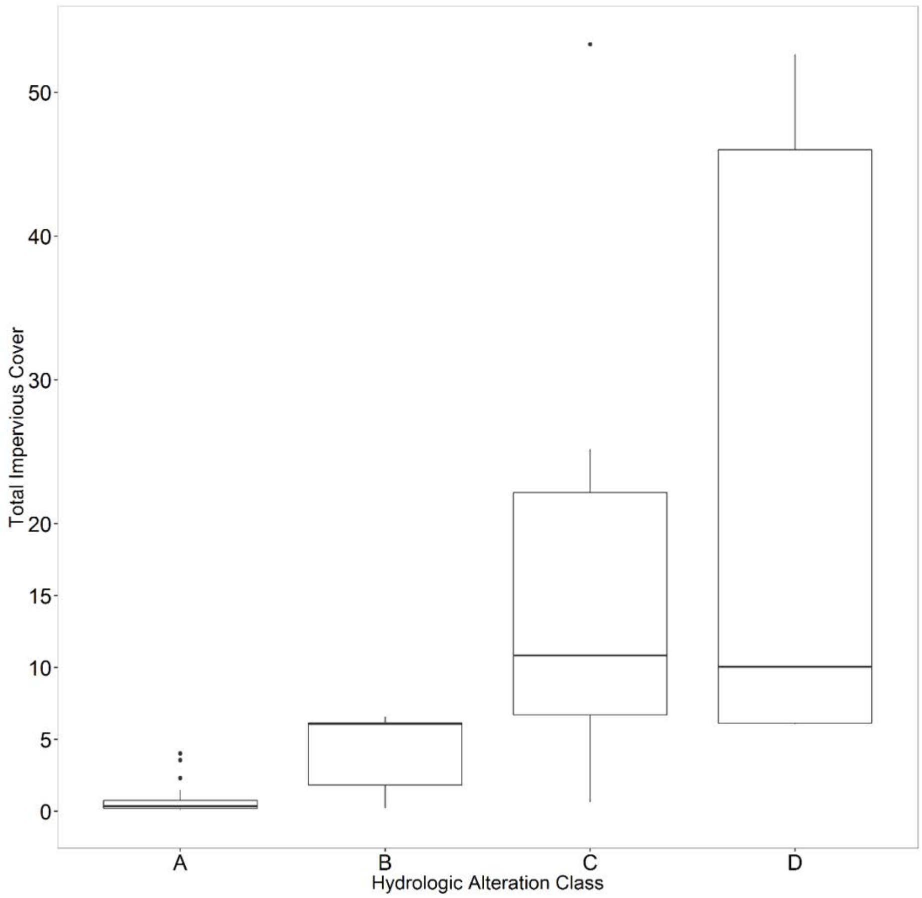

Figure 7. Relationship of hydrologic condition class and percent total impervious cover in the contributing catchment.

Under 2050 land use projections, hydrologic conditions of the watershed are expected to degrade, mainly in the middle portion of the watershed (Figure 8). Mid watershed catchments, around existing reservoirs, are expected to degrade the most in association with future land use changes, with several catchments going from Class A to Class C. Little change is expected in the upper watershed since many of the catchments in the upper watershed are hydrologically unaltered, in public ownership and hydrologic conditions are expected to remain unaltered into the future. Most of the lower watershed is already in poor hydrologic condition and is expected to remain that way in 2050, unless substantial hydrological management and/or remediation measures are implemented. It is important to note that future conditions were modeled using the same precipitation values as the current and historical scenarios since reliable downscaled future precipitation values are not available. Furthermore, the future conditions assumed no stormwater control devices, low impact development or hydromodification management, since we have no information on where/how these will be installed in the future. Therefore, the results of the 2050 analysis should be considered a worst-case scenario.

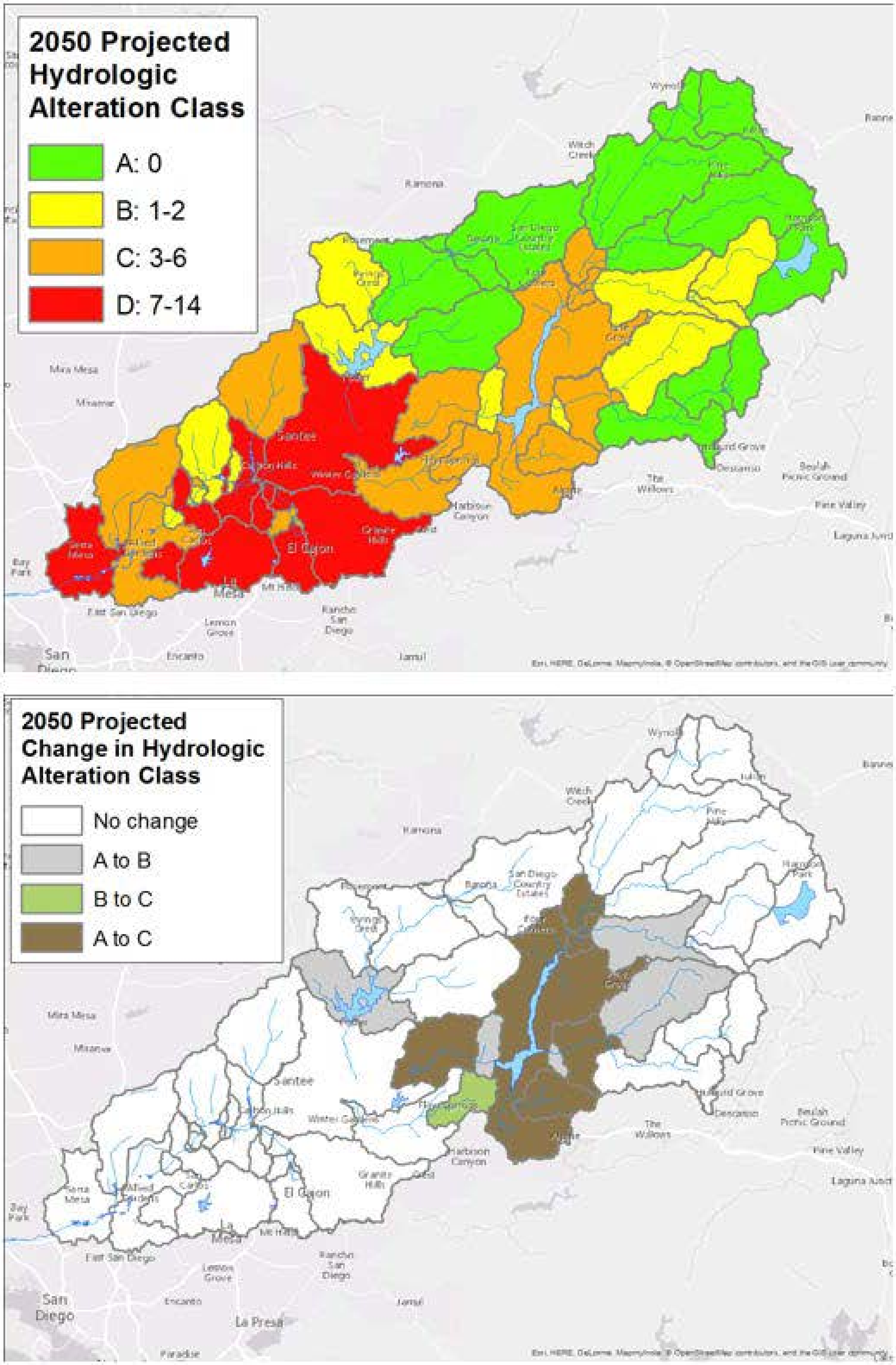

Figure 8. Overall hydrologic condition under 2050 projected land use (top) and change in hydrological condition between 2015 and 2050 (bottom). Categories are defined as in Figure 5.

Future land use changes were associated with sufficient hydrologic alteration to affect all seven metrics that contribute to the overall hydrologic rating. Of the seven metrics, QmaxIDR (a measure of flow variability), Q99 (a measure of high flow magnitude), and HighNum (a measure of the frequency of high flow events) were affected in the greatest number of catchments, and therefore most responsible for the predicted changes in overall hydrologic condition. Changes in these hydrologic metrics are associated with changes in biological condition; this suggests that future hydrologic changes are likely to result in declines in the condition of instream biological communities.

Prioritization of areas for various management actions

To address the question, "***How can flow–ecology relationships be used to prioritize regions of the watershed into various flow management classes that can inform future planning decisions***?" we compared the overall hydrologic condition scores to the CSCI scores at the 29 locations in the watershed where bioassessment has previously occurred.

The majority of upper watershed sites were considered intact, with unaltered hydrology, and therefore a high priority for protection (Figure 9). Candidate areas for flow management were focused in the lower portion of the watershed where both hydrology and biological condition were altered.

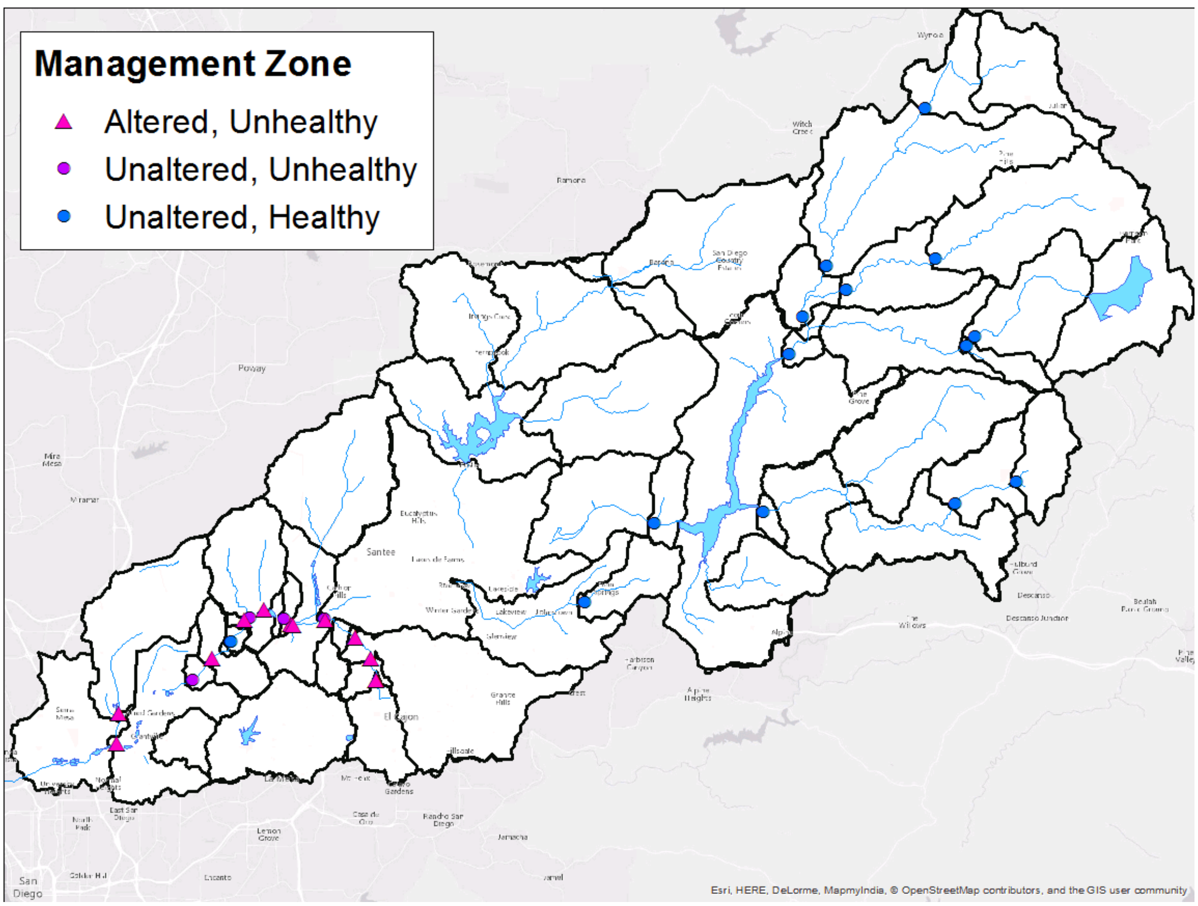

Figure 9. Management categories for bioassessment sites based on combinations of hydrologic and biologic alteration. Only three of the four possible management categories were present in the San Diego River watershed. There were no sites with altered hydrology and healthy biological communities.

Considering both the flow management zones and information available on water quality, habitat, and channel condition from ambient survey data allows us to provide specific management recommendations that can be prioritized for each location (Figure 10). We estimate that flow alteration is the primary factor affecting biology at only 3 of the 13 biologically degraded sites in the lower watershed. At all other sites, flow management should be coupled with habitat or water quality remediation in order to improve biological conditions. The lower watershed was largely in poor biological condition with altered hydrology, making flow management a good option to consider for improving watershed health. However, many of the sites in this category had highly developed floodplains or concrete-lined channels, and all lower watershed sites had poor water quality, as indicated by low scores on the diatom (D18) or soft algae (S2) indices of biotic integrity (Table 8). Therefore, flow management should always be considered in conjunction with other forms of management that address water-quality impacts and alterations to physical habitat. Flow management alone is most likely to improve biological health at sites where habitat is in poor condition, but the channel is unlined and the immediate floodplain is undeveloped. At such sites, the stream form has good capacity to respond to changes in flow, creating the microhabitat structure that supports diverse benthic macroinvertebrate assemblages. In contrast, flow management alone is unlikely to improve sites with armored banks, or where floodplain development limits the capacity of the stream form to respond. In these cases, flow management should be considered in conjunction with habitat restoration efforts that remove these constraints. At lower watershed sites with relatively good condition habitat, other stressors, such as poor water quality, may be responsible for poor biological condition; at these sites, flow management may improve water quality, but care should be taken to maintain good habitat that can support healthy instream biological communities. Finally, in one instance, two sites in close proximity were assigned to different management classes based on different models used to estimate hydrologic alternation. In this instance, we assumed the two sites were in similar condition and assigned the more conservative management class.

Table 8. Relationship of biologically unhealthy sites to water quality and physical habitat stressors.

Recommendation	Sites	Habitat quality	Bank armoring	Response capacity
Manage flows to improve habitat and water quality	3	Poor	Earthen	Moderate or good. Limited development in floodplain.
	13 and 14	Poor	None	Moderate or good. Limited development in floodplain.
Improve water quality	5, 11, 12, and 15	Good	None	Moderate or good. Limited development in floodplain. No channel armoring.
Remove habitat constraints	20, 21, 22	Poor	Concrete	Limited. Stream cut off from floodplain.
	2	Poor	Earthen	Limited. Stream cut off from floodplain.

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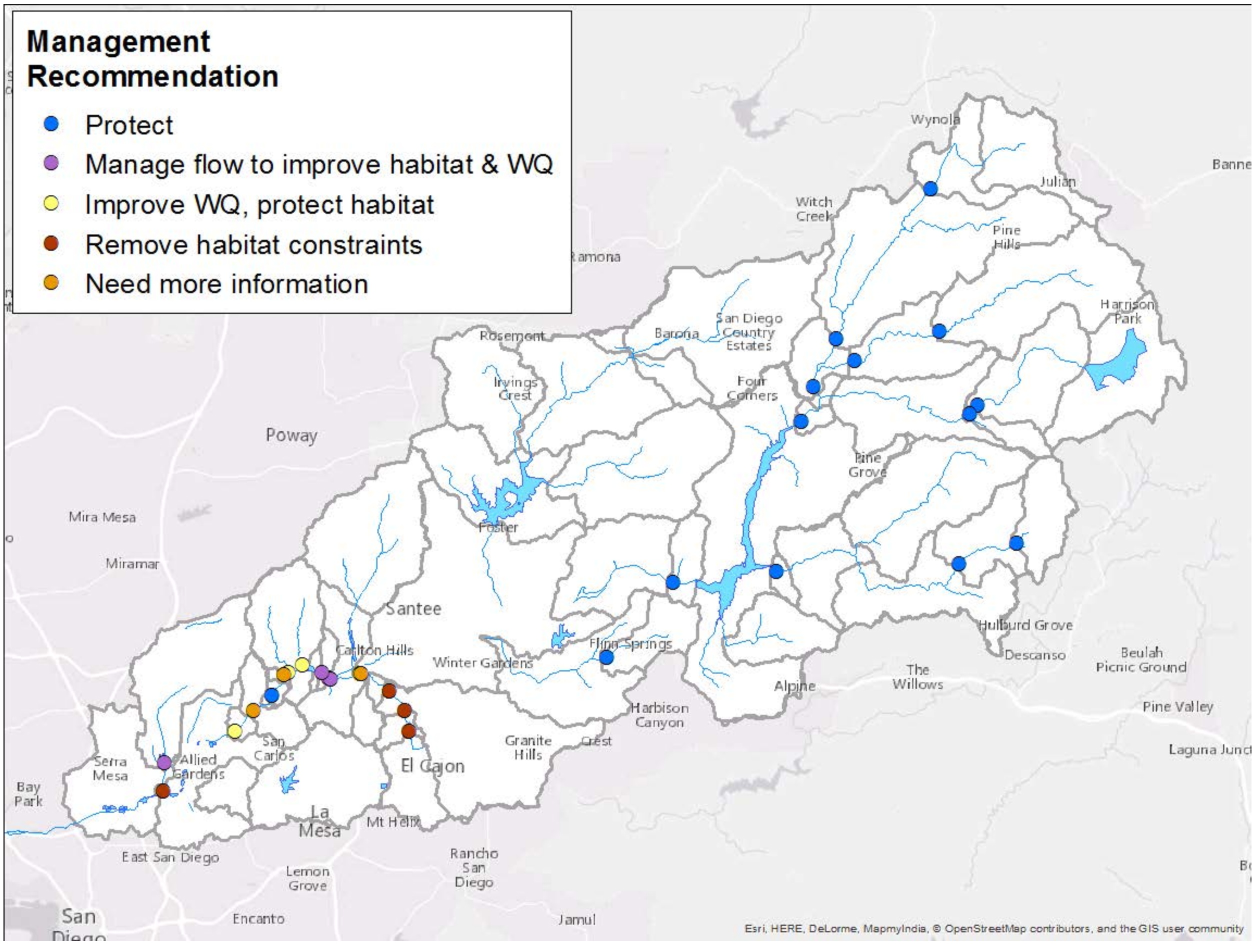

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Figure 10. Recommended management actions for all sites where bioassessment has occurred. Recommendations are based on both flow-ecology information and available data on habitat and water quality obtained through the local regional monitoring program.

Evaluation of management scenarios

The stakeholder workgroup prioritized two future management scenarios for evaluation. Each of them represents potential actions that will affect in-stream flow conditions, and in turn may affect biological condition.

1. lower discharge from Santee Lakes Reservoir due to increased capture and storage to meet demand for reclaimed water
2. disconnecting imperviousness, and implementing stormwater capture strategies in a currently developed portion of the watershed

Results from each of the scenarios are described below:

Scenario 1. Lower discharge from Santee Lakes Reservoir

The Santee Lakes Reservoir receives treated wastewater from Padre Dam Municipal Water District's Ray Stoyer Water Recycling Facility (WRF). The lake releases the treated effluent to Sycamore Creek (which also receives water from a small rain-fed discharge from the lake). Future management scenario involves eliminating discharge of treated wastewater into the lakes and diverting it for reuse to help meet increased demands for recycled water. This will be associated with a proportional decrease in discharge from Santee Lakes Reservoir to Sycamore Creek (because there is less need to create capacity in the lakes); the rain-fed discharge will continue to be released to the creek (Table 9).

Table 9. Inflow into Santee Lakes Reservoir due to wastewater effluent and rainfall runoff. Values are total monthly discharge into the reservoir.

	Average Effluent Flow (Mgal)	Rain-Fed Discharge (Mgal)
January	43.00	2.30
February	33.08	2.73
March	37.60	1.76
April	22.65	1.56
May	12.88	1.31
June	4.91	0.00
July	3.13	2.27
August	2.88	0.00
September	11.25	1.51
October	17.09	0.71
November	28.92	2.79
December	42.24	4.17

Simulations of future scenarios using HEC-HMS indicate that the flow regime will continue to have natural variability, with lower magnitude of flows under the future management scenario relative to current conditions (Figure 11).

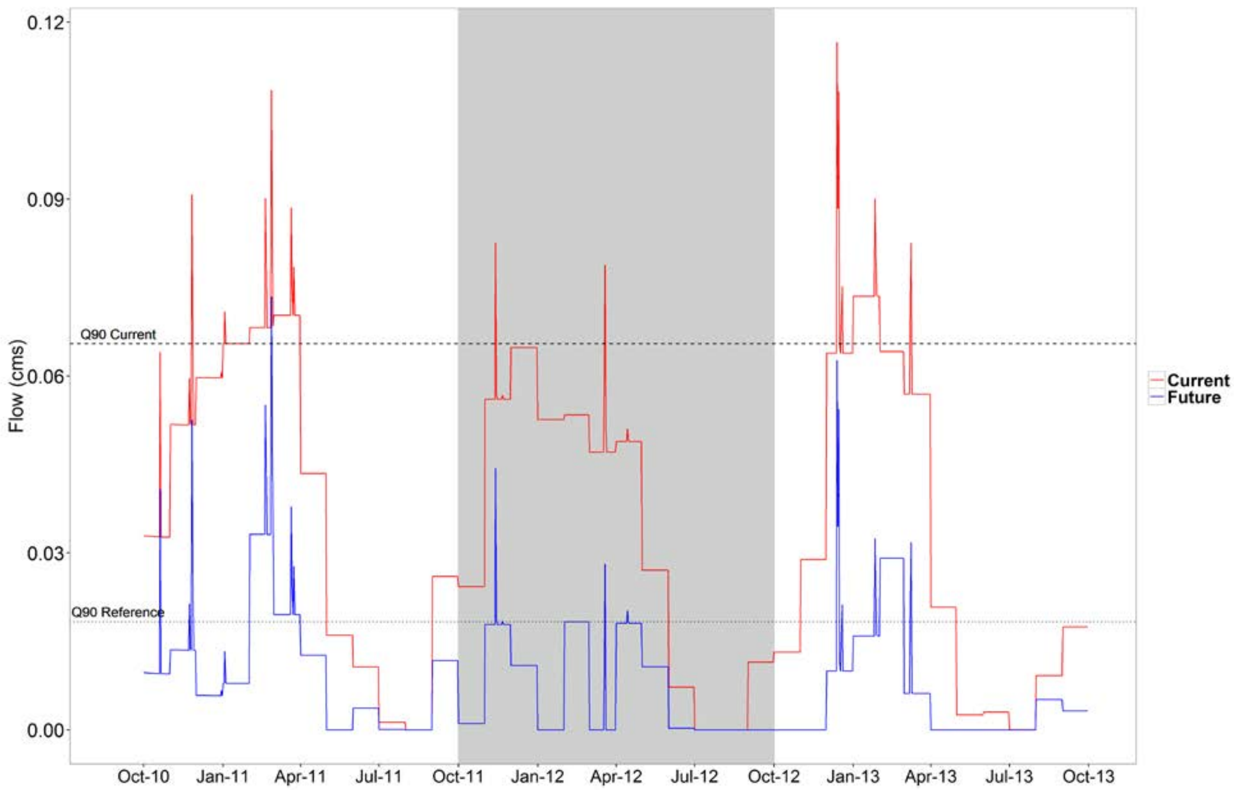

Figure 11: Modeled daily discharge under current and future scenarios at Sycamore Creek. The blue line represents the current scenario (which includes effluent discharge), and the orange line represents a future scenario where effluent is reused and not discharged into the creek.

Current conditions at Sycamore Creek are altered mainly in terms of the duration of high flow conditions (e.g. HighDur and NoDisturb). This reflects discharge from Santee Reservoir that elevates downstream high flow conditions. The balance of the priority flow metrics are currently meeting targets (Table 10). Under future scenarios, many high flow metrics are expected to improve in response to the removal of discharges from the reservoir. In contrast, the remaining metrics will remain at or slightly below the targets associated with healthy biological conditions. Failure to achieve these targets under future conditions likely reflects the effects of ongoing urban runoff, which will not be affected by changes in the reservoir operation. Overall the hydrologic condition in Sycamore Creek will improve under high flow conditions, but is likely to remain in degraded hydrologic and biological condition, even if discharges from Santee Lakes are eliminated following the proposed management scenario.

Providing clear objectives can aid in future desires to manage runoff and reservoir discharge in a manner that promotes healthy downstream biological communities. To assist in future management decisions, we developed the following specific management statements for the Santee Reservoir/Sycamore Creek scenario:

- NoDisturb = Maintain an average low flow between 0 and 0.02 cms (0.7 cfs) for a minimum of 119 days during the dry season

- HighDur = Maintain flow greater than 0.02 cms (0.7 cfs) for between 25 and 52 days per year
- MaxMonthQ = Maintain mean monthly flows below 0.1 cms (3.5 cfs).
- Q99 = Storm flows (or high flow events) should be between 0.03 cms (1 cfs) and 1.1 cms (39 cfs)
- HighNum = Ensure less than 4 high flow events per year with a flow greater than 0.02 cms (0.7 cfs)

Variability metrics do not lend themselves to directed management actions; therefore, we have not provided objectives for RBI or QmaxIDR. Instead these flow metrics should be used to evaluate the effectiveness of actions taken in response to the other metrics.

Table 10. Current and expected future hydrologic metric values in Sycamore Creek (SC) downstream of Santee Reservoir. The table presents site-specific targets that have been calculated based on the regional threshold values. Green cells represent conditions where flow targets would be met; yellow cells represent conditions where flow would be the same as the target value. NT no target assigned.

Metric	Unit	Value		Target	
		Current	Future	Lower	Higher
NoDisturb	days	31	122	119	NT
HighDur	days event	212	28	25.1	52.2
MaxMonthQ	cms	0.1	0.0	NT	0.1
Q99	cms	0.1	0.0	0.0	1.1
HighNum	events year	1	4	NT	4
RBI	unitless	0.0	0.9	NT	0.3

Scenario 2. Impact of disconnecting imperviousness and implementing stormwater retention facilities in an urbanized catchment

Alvarado Creek catchment is located in the downstream portion of the San Diego River watershed. At an area of 14 sq. mi., and 50% total imperviousness cover, it is a heavily urbanized and hydrologically altered reach. We tested **two** scenarios in this sub-catchment: 1) effect of disconnecting imperviousness (modeled as a decrease in total imperviousness in the catchment), and 2) implementing stormwater retention facilities that can capture 85th percentile of a 24-hour rain event.

Disconnecting imperviousness decreases the extent of hydrologic alteration in the creek. However, flow metrics do not drop below levels associated with healthy biological communities until the total imperviousness is at or below 5% (Table 12). Analysis shows that for most metrics, there is a 50%

likelihood of meeting flow targets at 10% impervious cover, 66% likelihood at 5% impervious cover and finally an 80% likelihood of meeting flow targets at 2% impervious cover. Above 10% impervious cover, the likelihood of achieving flow targets declines by 15%. This is consistent with previous results that 5% impervious cover appears to be an important level or maintaining biologically protective levels of flow.

For the 85th percentile of a 24-hour storm event, based on a precipitation isohyetal developed for San Diego River watershed, any storm event with less than or equal to 0.75 inches (1.9 cm) is assumed to be 100 percent captured by the retention structures, resulting in no runoff (Table 11).

Providing clear objectives can aid in future desires to manage runoff and reservoir discharge in a manner that promotes healthy downstream biological communities. To assist in future management decisions, we developed the following specific management statements for the Alvarado Creek scenario.

- NoDisturb = Maintain an average low flow between 0 cms and 0.01 cms (0.4 cfs) for a minimum of 119 days during the dry season
- HighDur = Maintain flow greater than 0.01 cms (0.4 cfs) for between 27 and 56 days per year
- MaxMonthQ = Maintain mean monthly flows below 0.66 cms.(23 cfs)
- Q99 = Storm flows (or high flow events) should be between 0.2 (7 cfs) and 0.66 cms (23 cfs)
- HighNum = Ensure less than 4 high flow events per year with a flow greater than 0.01 cms (4 cfs)

As stated above, variability metrics do not lend themselves to directed management actions. Instead they should be used to evaluate the effectiveness of actions informed by the other metrics.

Table 11. Response of key metrics to changes in total impervious cover and 85□ runoff capture. The table presents site-specific targets that have been calculated based on the regional threshold values. Green cells represent conditions where flow targets would be met. NT □no target assigned

Metric	Unit	Imperviousness					Capture	Target	
		2□	5□	10□	25□	50□	85th □ storm	Lower	Higher
NoDisturb	days	32	32	32	32	31.5	32	119	NT
HighDur	days□event	35.5	34	32.5	24	9	8	27	56
MaxMonthQ	cms	0.31	0.35	0.41	0.59	0.88	0.53	NT	0.66
Q99	cms	0.19	0.45	0.89	2.04	4.04	2.64	0.2	0.67
HighNum	events□year	23.5	22.5	23.5	24	24	24	NT	4
RBI	unitless	0.22	0.47	0.75	1.15	1.4	1.39	NT	0.23

IMPLICATIONS AND RECOMMENDATIONS

The goal of this project was to demonstrate how regional flow-ecology relationships can be used to inform instream environmental flow properties necessary to meet ecological benchmarks as defined by measures of benthic macroinvertebrate community composition and structure. These target flows can be used to help establish goals for use in hydromodification management, nutrient numeric endpoints, and freshwater bioobjectives. They can also be used to develop performance targets for management actions, BMPs, etc. This case study allowed us to develop a framework for implementing regionally derived flow–ecology relationships to inform local management decisions. The stakeholder-focused process allowed us to identify technical and practical benefits and challenges associated with the approach that can inform future implementation efforts.

Utility of the regional flow-ecology approach based on the ELOHA framework

A major objective of this case study was to evaluate the ability to apply the flow–ecology relationships derived from the regional analysis to inform local watershed-scale decisions. Our results illustrate that several of the stated advantages of the ELOHA approach aid in such watershed-scale application. The ability to apply regionally derived flow thresholds to inform local decisions is a major advantage of the ELOHA approach. This eliminates the need to develop local flow–ecology relationships for every stream of interest, as is the case in more traditional instream flow methods (Beecher et al. 2010, McClain et al. 2014). The tools developed through the regional analysis provided readily transferable tools for local stakeholders to produce measures of hydrologic change (i.e., delta H) for any location of interest and to explore how those values would change under different land use or management scenarios. This had the dual benefit of allowing for robust analysis and providing a vehicle for stakeholder engagement in setting management priorities related to instream flow, an important cornerstone of the ELOHA approach.

Use of the predictive CSCI index in our regional flow-ecology analysis took advantage of the available bioassessment data and provided an easy way to provide measures of biological change (delta B), which has been a challenge for past ELOHA applications (e.g., McManamay et al. 2013). Developing the regional flow–ecology relationships and applying them at the local scale would not have been possible without the regional bioassessment data and the existence of the predictive scoring tool (Mazor et al. 2016). Large regional data sets provide sufficient sample size to develop statistically meaningful flow-ecology relationships in spite of the inherent "noise" in the data associated with other co-occurring factors that interact with flow to affect biological community condition (Solans and Jalon 2016). The predictive scoring tool is a measure of biological condition relative to expected reference conditions and thus provides a readily available measure of biological change (delta B) at every site. The availability of similar data and tools should be a major consideration for other efforts interested in developing similar regional approaches.

Other important elements of the ELOHA approach are the inclusion of a broad suite of hydrologic metrics that relate to ecologically relevant biological metrics through hypothesized flow–ecology relationships. Our seven priority flow metrics included two measures of magnitude, two of duration, two measures of variability, and one of frequency. This combination ensures that all elements of the hydrograph will be addressed through flow management. The selected metrics have hypothesized relationships that affect macroinvertebrate communities, allowing us to communicate their ecological relevance to managers and local stakeholders (Table 12). They are also amenable to management and minimize redundancy between metrics (Table 13). Interestingly, our metrics are similar to those identified by DeGasperi et al. (2009) who found that decreases in macroinvertebrate indices in urbanizing watersheds in the Puget Sound area of Washington were associated with changes to the number and duration of high and low flow events, and flow flashiness. It is important to note, however, that hypothesized relationships for both this study and other similar studies were derived through statistical analysis of regional bioassessment data sets. Additional mechanistic studies will be important to validate these relationships and confirm their ecological relevancy. As such studies are completed, they can be used to refine flow management targets based on improved understanding of the flow–ecology relationships.

Table 12. Hypothetical biological responses to alterations in six selected flow metrics

NoDisturb:

- Decrease: Times between spates and droughts are too short to support the expected abundance and diversity of long-lived taxa (e.g., semivoltine insects). Flood-dependent reproducers (e.g., cottonwoods) have fewer opportunities to establish. Good recolonists (drifters, strong fliers, exiters) will flourish.
- Increase: Long-lived taxa are able to out-compete taxa that reproduce quickly or recolonize.

HighDur:

- Decrease: Reduced time with floodplain access, reducing floodplain subsidies to fish and inverts, and diminishing time for riparian seedlings to establish.
- Increase: Desiccation resistance is less useful. More opportunities for aerial colonization (good fliers)

HighNum:

- Decrease: Fewer flushing flows. Allows more clogging of substrate and encroachment of macrophytes. Reduction of spawning gravels for fish. Deposition will fill pools. Greater accumulation of algae may lead to increased grazing.
- Increase: More scouring flows. More incision and bank erosion, leading to mortality of riparian vegetation. Direct mortality of long-lived organisms may eliminate semivoltine taxa.

Q99 and MaxMonthQ:

- Decrease: Reduces size of flushing flows, allowing more clogging of substrate and encroachment of macrophytes. Reduction of spawning gravels for fish. Deposition will fill pools. Greater accumulation of algae may lead to increased grazing. More desiccation-resistant taxa. More predation, and more predation-resistant (armored, or quick reproducers) taxa.
- Increase: Greater scour, leading to incision and bank erosion. Riparian vegetation mortality will increase, both through bank failure and lowering of the water table. Greater flushing of leaf litter will lead to a decline in shredders.

QmaxIDR:

- Decrease: Greater similarity between high and low flows will result in more stable channel morphology, with less bank erosion, leading to a reduction of large woody debris entering the stream. Access to the floodplain will be reduced, limiting growth of fish and amphibians that take advantage of this resource.
- Increase: Increased differences between high and low flows may destabilize channels, leading to greater bank erosion or incision, affecting the growth or survival of riparian vegetation. The consequent loss of riparian vegetation may decrease shading and leaf-litter input to the stream, shifting the trophic structure from an allochthonous system to an autochthonous one.

RBI

- Decrease: Reduced flashiness decreases the frequency of mortality events, allowing the proliferation of long-lived semivoltine taxa.
- Increase: Increased flashiness favors short-lived, multi-voltine taxa and good dispersers that can recover quickly after frequent flooding events.

Table 13. Description and management implications of priority flow metrics

- NoDisturb (days), is the median annual longest number of consecutive days that flow is between the low (Q10) and the high flow (Q90) threshold. Disturbance changes the bed shear stress and effects sediment transport. While an increase in the number of no-disturbance days does not have a high negative impact on the stream health, a decrease in the number of days is significant. Under urbanization scenarios we usually see a decrease in the number of no-disturbance days.

- HighDur, is the median annual longest number of days the flows were greater than upper threshold (Q90). This metric only has a lower threshold and a corresponding lower target. In terms of management, as long as the metric value is higher than the lower target, the stream is not failing the metric. Both the duration metrics require several years of data.

- MaxMonthQ (cms) is the maximum mean of the monthly flows. The MaxMonthQ has an upper threshold and associated target but no lower target. The management goal is to ensure that the metric values are below the upper target value. In cases of urbanization, we see a rapid increase in the MaxMonthQ.

- Q99 (cms) is a high flow threshold, or the top 1□ of the flow and has upper and lower bound targets in cms. The management goal is to maintain the metric values within this range. In cases of urbanization, we see a rapid increase in the Q99 values.

- RBI describes the oscillation in flows (or discharge) relative to the total flows (Baker et al 2004). This flashiness metric usually increases with urbanization which impacts the runoff patterns. However, the flashiness might decrease in case there are dams or steady controlled releases from reservoirs which dampen the natural flashiness of the hydrograph. The metric has an upper target, which implies that an extreme flashy stream is unhealthy for the biological communities, and the management goals should focus on keeping the RBI scores below the upper target value.

- Qmax IDR measures variability as the difference between the high flow threshold (Q90) and low flow threshold (Q10) divided by the 50th percentile flow (Q50). A higher value implies increasing variability, which is typically the case in streams without hydrologic regulation.

- HighNum is the frequency metric which estimates the number of events where the flow is higher than Q90 threshold. This metric has an upper target which implies that the management should focus on maintaining high flow events to a number less than the upper target.

We did not stratify streams in the San Diego case study, as is suggested for the general ELOHA approach. The San Diego watershed includes three stream classes from the statewide classification (Pyne et al. in press), with 60% of the streams being in one class and the remaining 40% being equally divided between two other classes. However, our analysis did not result in substantial differences in the local flow–ecology relationships as result of stream class. Instead climate (wet, dry, average rainfall) was a more important predictor. Therefore, we classified relationships by climatic period vs. stream type.

Challenges of the ELOHA approach

The main challenges associated with local implementation of the regional flow-ecology relationships relate to availability of high-quality input data, applicability of some metrics to site-specific simulation of reference conditions, and limitations on the interpretation of the output relative to other considerations and potentially confounding factors. Quality of rainfall data was one of the most critical factors affecting confidence in the regional flow–ecology relationships (Sengupta et al. in review). Similarly, in the San Diego River watershed the uneven availability of high-quality hourly rainfall data that encompassed all climatic conditions affected our ability to apply the hydrologic models equally across the entire watershed. In some cases, we had to drop data from the nearest gages due to gaps or obvious errors and substitute with less proximate gages, but that provided better or more complete rainfall data. This spatial offset introduced some additional uncertainty that must be accounted for in interpreting the model output.

Application of the regional flow-ecology relationships to local management scenarios revealed several complications associated with the formulations of certain metrics commonly used in applications of the ELOHA framework (e.g., Solans and Jalon 2016). The first complication involves many duration metrics that are calculated based on frequency or duration of flows above or below a benchmark derived from a long-term flow record. For example, the HighNum metric is calculated as the number of flow events over the 90th percentile of daily flow. This formulation may not be suitable for evaluating hydrologic change, because the benchmark may shift along with other parts of the hydrograph, thereby obscuring hydrologic impacts. Figure 12 shows the current and reference hydrographs of a site that has experienced dramatically increased flows. If the current flows are compared to a benchmark derived from the historic hydrograph, it is clear that the site experiences one very extended high flow event every year; in contrast, the historic flows experienced several, short-duration high-flow events each year. However, if the current flows are compared to a benchmark derived from the current hydrograph (as is commonly done), the site appears to experience only a few short high-flow events each year. Thus, the hydrologic alterations from historic conditions are obscured when shifting benchmarks are used to calculate certain metrics. This problem is not easily apparent in regional analyses due to the large sample size, and is most clear when applied to a specific site, as in the present study. We recommend that future analysis use a constant, unshifting benchmark based on historical conditions when estimating thresholds for duration metrics based on thresholds of high- or low-flow events.

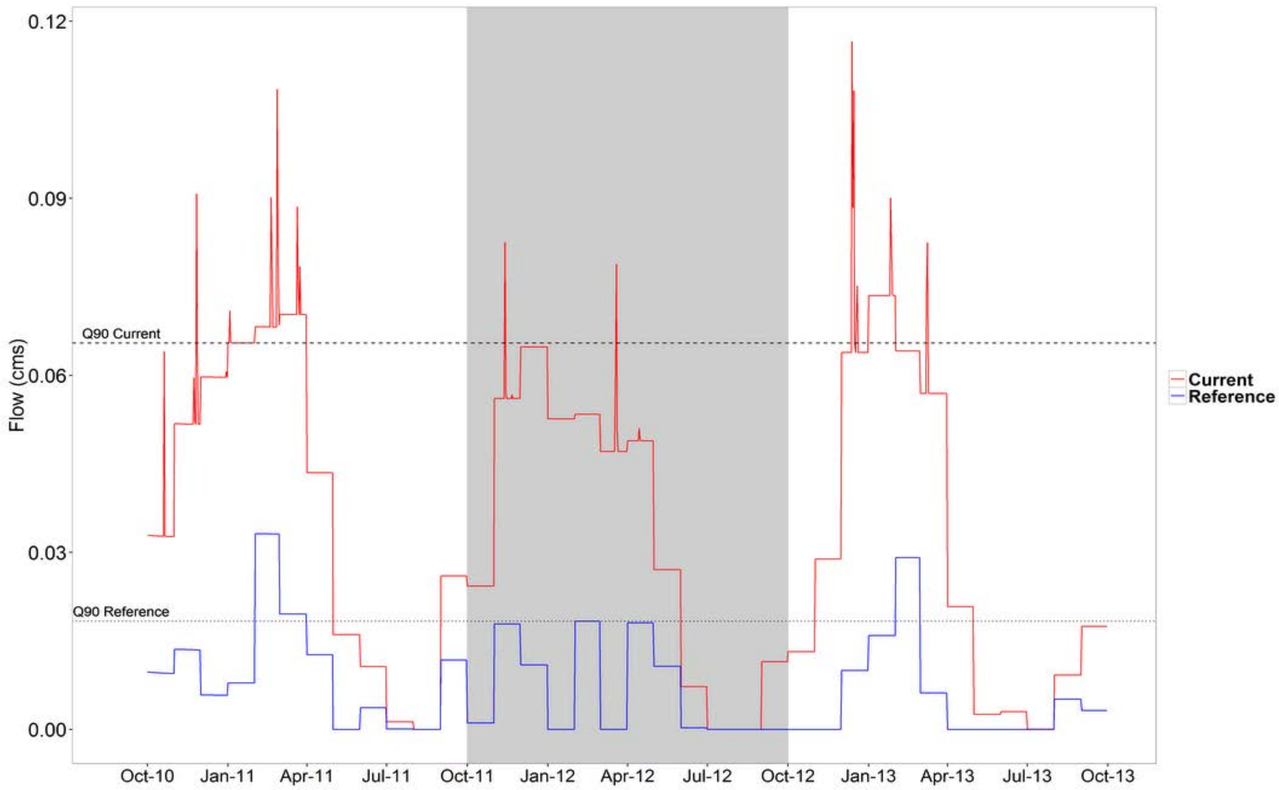

Figure 12. Comparison of current and reference flow for a sample bioassessment site showing the effect of the use of different thresholds. Conclusions about changes in duration of high flow events would vary dramatically if only a single threshold based on reference is issued vs. different thresholds were used for current and reference conditions.

The second issue associated with metric calculation relates to anomalous results that may occur when reference conditions are expected to represent intermittent streams with long periods of zero-flow days. This may result in reference flows for many of the magnitude metrics being extremely low (or zero), making it virtually impossible for management scenarios to achieve targets for certain metrics. This computational issue is confounded by the real challenge that it may not be possible to reduce runoff back to natural conditions, even with full implementation of stormwater runoff controls (DeGasperi et al. 2009). New or modified metrics may need to be developed to accommodate establishing flow management targets appropriate for naturally intermittent or ephemeral streams.

The use of HEC-HMS to produce the delta H values was a tradeoff between ease of use and model precision. HEC-HMS is arguably not optimal for evaluating BMP and other non-point source runoff management measures. We chose this model to develop the regional flow-ecology relationships because of its simplicity, availability, ability to perform long term continuous simulations of streamflow. Its status as an industry standard model developed by the US Army Corps of Engineers makes it practical for application to the hundreds of catchments evaluated during the regional analysis. Similarly, its familiarity and accessibility make it ideal for involving local stakeholders in the analysis and decision-making process. However, other lumped parameter hydrologic models that are also widely used to perform continuous simulations, such as HSPF or SWMM, may be more appropriate. SWMM is more robust in terms of modeling storm sewers and various stormwater control measures including low impact development practices. At the expense of more complexity and model parameters, HSPF includes additional details on soil moisture and subsurface processes that can enhance modeling of baseflow and groundwater behavior. These features would likely provide more precise estimates of how future management interventions could affect runoff and, consequently, stream flow metrics. We did not investigate whether/how use of an alternative or more sophisticated model would affect the output of our scenario analyses, but this should be investigated in the future.

Our reliance on developing flow targets based on the response of a single community assumes that the macroinvertebrate community reflects overall ecological condition. Although this is not a totally unreasonable assumption, we recognize that different components of the stream ecosystem may be affected differently by changes in various components of the hydrograph. Other ELOHA efforts have attempted to address this issue by developing flow–ecology relationships for multiple communities (e.g. fish, vegetation, mussels) and recommending targets around protection of each (DePhilip and Moberg 2013). This approach is more robust, but complicates development of management measures that can address all biological endpoints. Ultimately, such an approach is likely less parsimonious for regulatory applications.

Spatial and temporal factors must also be considered when applying flow–ecology relationships. Our analysis focused on catchment-scale responses. However, benthic invertebrates may also respond to local scale factors such as duration of wetting of bars and localized velocity zones (Kath et al. 2016, Kennedy et al. 2016). Hydrologic change at the local (small) scale may be ecologically important but is likely not affected by managing for the flow metrics we identified, and may be difficult to address through any regionally derived flow management framework. Although our regional flow criteria were developed in consideration of wet, dry and average climatic cycles, they likely do not account for longer term climate patterns and extreme episodic events that may be important for establishing and maintaining resilient instream habitats. This deficiency was highlighted by McManamay et al. (2013), who found that results of ELOHA analysis cannot necessarily be used in a predictive manner because biological communities may respond to other factors not included in the flow–ecology analysis, such as changes in substrate associated with infrequent events, such as catastrophic floods or fires. Moreover, they note that temporal resolution of most case studies does not coincide with the temporal period of data underlying ELOHA relationships. For example, streams may respond to episodic events and patterns operating on decadal time scales. We currently lack flow metrics that capture these interannual and longer term hydrologic patterns. Finally, as we noted in our analysis confounding factors such as changes in water chemistry typically co-occur with hydrologic changes and may contribute to biological community health in ways not captured by flow management.

These issues reinforce the concept that flow-ecology relationships should be used as one line of evidence in coordination with other factors/considerations when establishing stream management prescriptions and targets. In particular, many watersheds are subject to complex regulatory and management systems that involve combinations of new and retrofit facilities aimed at reducing runoff and retaining flows for infiltration and reuse. The regional flow targets established by Mazor et al. (in review) and applied in this case study can be an important consideration in designing and implementing integrated watershed management plans aimed at meeting both short and lon objectives.

Framework for development of local flow targets

We found the case study process to be productive because it provided a framework for considering hydrologic management in the context of watershed planning. It also provided the first opportunity in the region to develop quantitative flow targets that could be used to inform actionable management decisions. The regional flow–ecology relationships provided flexibility in establishing targets based on desired levels of confidence that those targets would be associated with healthy biological communities. Regionally derived targets took advantage of the robust regional monitoring data set and a broad set of hydrologic conditions. This improved relevance to local conditions was an important consideration for the watershed stakeholders. Given the utility of the process, we used the case study to develop a stepwise process that can serve as a framework for future implementation in other watersheds. This stepwise process is based on an adaptation of the ELOHA framework (Figure 13).

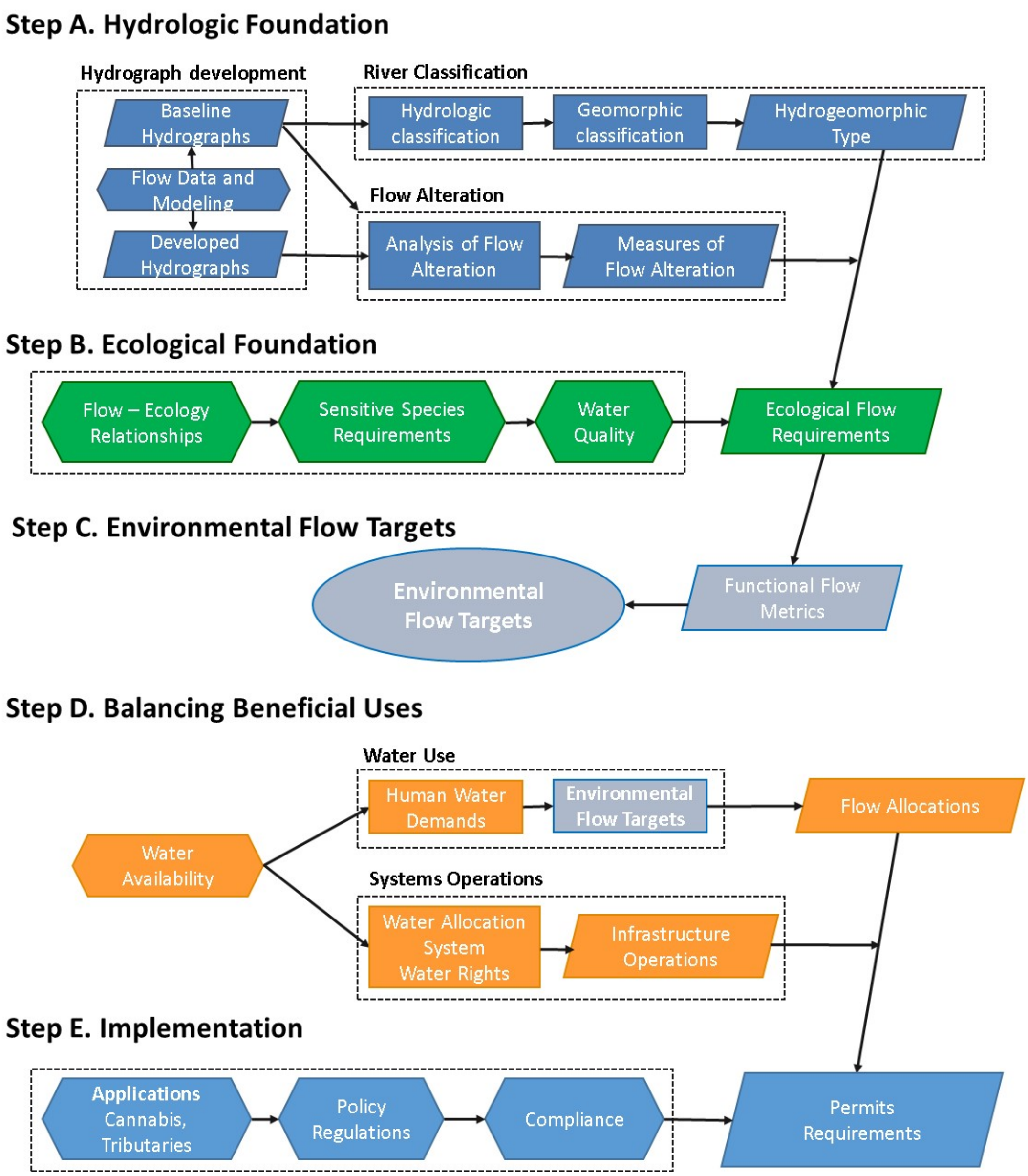

Figure 13. Process for development and implementation of instream flow targets, modified from the ELOHA framework (Poff et al. 2010).

Based on the framework in Figure 13, we identified the following steps that can be followed if other groups wish to pursue similar efforts to develop flow management recommendations:

Step 1: Determine what hydrologic class the stream of interest is in

Step 2: Identify management needs, regulatory objectives, or other targets

Step 3: Compile local data

- Contemporary and proposed future land use
- Information on contemporary and proposed water capture, storage, diversion, discharge, and other water management
- Local rainfall data at hourly time intervals (data must be checked to ensure sufficient quality and duration, at least ten years that encompass wet, dry, average rainfall conditions)

Step 4: Divide watershed in subbasins for analysis based on hydrology and management needs

Step 5: Select appropriate model(s) for catchments of interest using regional model selection tool

Step 6: Model both contemporary and natural hydrology for each catchment

Step 7: Calculate delta H metrics for each reach/node

Step 8: Select priority metrics and targets based on the following:

- Recommendations from the regional ELOHA analysis
- Relevance to local management needs
- Ability to influence through management measures

Step 9: Determine temporal factors associated with the targets

- Seasonality
- Persistence/duration
- Frequency (e.g. always, every X years)

Step 10: Evaluate various management scenarios relative to targets identified in Step 8

Step 11: Explore potential related or confounding factors (e.g. water quality, substrate)

Step 12: Develop recommended actions to achieve flow targets

- Relate actions to specific hydrologic modifications, e.g. diversion rates

Step 13: Relate flow metrics and targets to monitoring design, locations, and indicators

Step 14: Determine adaptive management actions that will be triggered if targets are not met

Informing management decisions

Stakeholder participation was critical in identifying scenarios and interpreting how the results of the analysis can be used to inform management action. Stakeholders identified the following desired applications for flow targets, which helped define our analysis:

- Identify priority management sites based on biological and hydrologic condition
- Use results to inform BMP/LID selection
- Identify areas were flow management has potential to improve CSCI scores
- Explore implication of future management of reservoirs for multiple benefits, e.g. water quality and water supply

These desired uses shaped our ultimate products. For example, we developed the overall composite index of hydrologic alteration in direct response to stakeholder desire to holistically assess the watershed for areas most vulnerable to future hydrologic alteration. Not surprisingly, the degree of hydrologic modification was correlated with impervious cover. We found that hydrologic alteration generally occurred in catchments with greater than 5% total impervious cover, which is similar to other studies that have shown that channel degradation to due to hydromodification occurs at relatively low levels of imperviousness (Hawley et al. 2012, Vietz et al. 2016). Similarly, the map of hydrologic management categories was identified as one of the most useful products for planning purposes because it allows stakeholders to prioritize areas for protection and for flow management.

We were able to demonstrate the utility of applying the flow-ecology relationships to inform management for both point source and non-point source management scenarios. For both the reservoir management scenario and the urban runoff management scenario, we were able to determine a range at which hydrologic management may facilitate recovery of impacted biological communities.

Lessons learned for future implementation

Future efforts can built on the experiences from this case study and continue to refine an iterative process of developing flow targets that are scientifically defensible, practical (i.e., can lead to management actions), and consistent with local stakeholder needs. Key lessons learned from this effort include:

1. Include a broad set of engaged stakeholders, including regulatory agencies, municipalities, water agencies, non-governmental organizations, and researchers. This ensures a broad perspective in the deliberations and increases the likelihood of developing balanced recommendations.
2. Invest in educating the stakeholders early in the process on the underlying science and the rationale behind how regional flow targets were developed. This promotes engagement and fosters creative solutions to the complex challenges of flow management.
3. Invest the time to compile high quality local data sources and show how local data can be used in the evaluation process. Identify the areas were future data collection can most improve outputs of the flow–ecology analysis (e.g., local rainfall data, more refined land use, water quality data). This can inform future monitoring.
4. Develop documentation that clearly illustrates how the products of the flow–ecology analysis can be used in the context of existing regulatory or management programs.

The San Diego River implementation case study also produced several technical recommendations that can improve our ability to apply flow-ecology relationships to manage southern California streams:

1. Several flow metrics, particularly those associated with flow duration, may require modification for use in streams where the natural condition is intermittent or ephemeral.

Natural intermittency poses fewer issues when developing regional flow-ecology relationships based on hundreds of sites. However, application of the resultant thresholds to specific streams that may have been naturally intermittent can lead to erroneous results.

2. Metrics associated with flow durations should be calculated on a single threshold value based on reference conditions. Estimating change in flow durations based on a moving threshold estimated separately for current and reference conditions may produce erroneous results.

3. Need to improve the representation of the drainage system to provide a more accurate hydrologic foundation for analysis. This would ultimately include improved mapping of discharges, diversions, stormwater control facilities, LID, etc. for incorporation into modeling scenarios and effects.

4. Consider expanding the analysis to include additional elements in future case studies

    - Include other stream or water body types
    - Include other indicators (e.g. algae)
    - Explore how consistent/transferable findings are from one watershed to another
    - Explore application in watersheds that cross jurisdictional boundaries

The original authors of the ELOHA framework promote the idea that flow targets derived by statistical analysis are a starting point. Targets should be iteratively refined using additional monitoring data, professional judgement and consideration of all complementary and competing factors necessary to develop flow standards that can address often divergent interests. The San Diego River case study provides an illustration of how watershed stakeholders are critical partners in the process. Resultant flow standards provide a starting point for developing agreed upon, adaptive flow management programs that can protect intact waterbodies and restore those that are currently impacted.

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APPENDIX A DETAILED PROCEDURES FOR HYDROLOGIC ANALYSIS

Directions to run HEC-HMS Modeling packages developed for flow ecology analysis

To be able to run these modules

- Basic idea of catchments, watersheds, and delineated areas

- Moderate skills in R programming (scripts provided)

- Basic understanding of watershed modeling

Software needed:

- Streamstats (online, no download necessary)

  http://streamstatsags.cr.usgs.gov/v3_beta/

- R and Rstudio (installation needed for both, install R before installing R studio)

  https://cran.cnr.berkeley.edu/

  https://www.rstudio.com/products/rstudio2/

- HEC-HMS (install)

  http://www.hec.usace.army.mil/software/hec-hms/downloads.asp

Notes for running R scripts:

- setwd("../Desktop/") sets up each script to automatically read files in the folder Modeling Workshop, as long it is located on your desktop

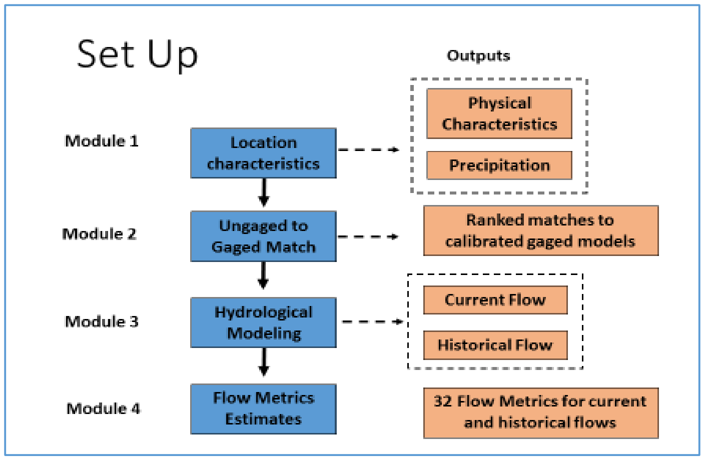
- Mac users will need to change the ".." in "../Desktop/" to "~" (tilde)

- Each script must be opened from within R-Studio in order to correctly use setwd("../Desktop/")

- If you get an error that says you cannot change the working directory, then close the script in R-Studio, close R-Studio, re-open R-Studio, then open the script from within R-Studio

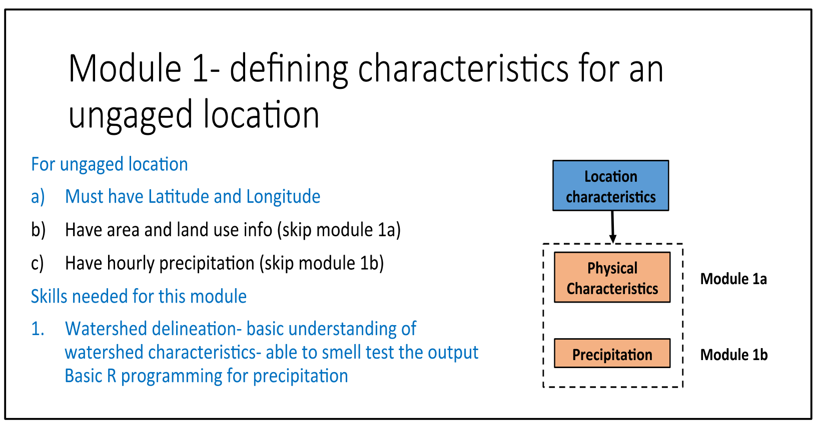
Introduction

The modeling tool has four modules. The modules should be run sequentially to get the flow metrics. Described below are four modules and their outputs.



Module 1.

Module 1 allows the users to delineate the watershed area for an ungaged site, and estimate hourly precipitation (1990-2013).



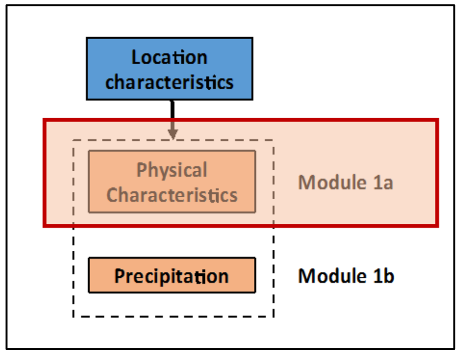
Limitations:

1. For some locations, the Streamstats outputs a square delineated catchment area. Always check the visual output, in case it looks incorrect, move the location slightly to obtain the watershed characteristics.

2. The precipitation raw data from the gages is limited to 1990-2013. The script is enabled for any period, to produce output for periods outside of 1990-2013, hourly gaged precipitation data is required.

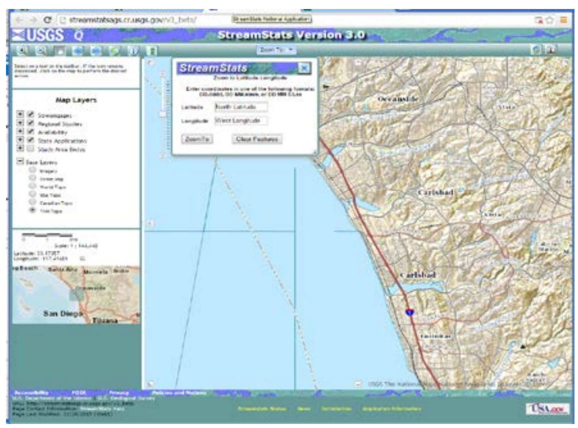
Instructions to run the modules

Delineate the subcatchment/watershed area for ungaged location

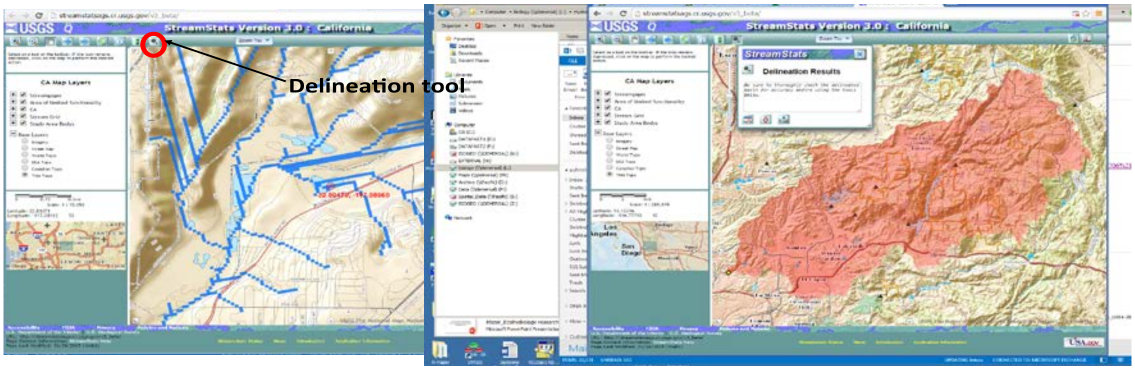


We will use Streamstats to delineate area and land use. URL provided below.

1. http://streamstatsags.cr.usgs.gov/v3_beta/
2. Press the 'zoom to' button highlighted in figure 4, and enter the latitude and longitude.

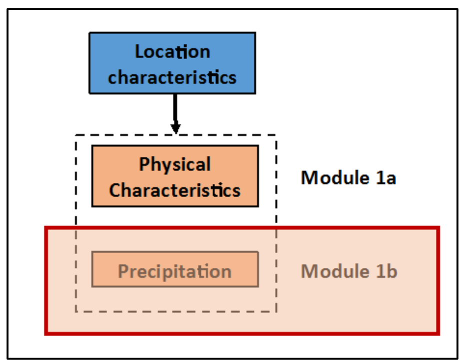


3. Zoom till you see the delineation tool (highlighted below). Select first tab in the pop out window (in figure 5b).



4. Select area and imperviousness, and compute

Module 1b. Estimating hourly precipitation



Input files: Modeling Workshop\Inverse Distance\Data*Precip_(YEAR).csv*, *AssessmentSiteCoord.csv*, *PrecipStationCoord.csv*

Output file: Modeling Workshop\Inverse Distance\Data*Assess_(YEAR).csv*

1. We use R Studio to estimate hourly precipitation.
2. To predict flows at the gages, we need hourly precipitation data
3. Daily data is available on PRISM website
4. For better flow predictions, we estimated hourly flow using precipitation data from >200 sites
5. You can use the script for 1990-2013 (and will require raw precipitation data outside this range)
6. Open the file *AssessmentSiteCoord.csv*, delete the current data in the spreadsheet and enter the data for your site ID, latitude and longitude in the appropriate columns

7. From within RStudio, open Modeling Workshop\Inverse Distance*InvDist_calc_02_SelectYears.R*
8. Run the line install.packages(…), then add a # at the beginning of the line
9. Specify year range on line 23 (default is 1990:2013)
10. Run script by clicking “Source” button at the top right of the script window
11. Look at *Assess_(YEAR).csv* in your working directory for output

Module 2: Matching ungaged sites to gaged sites

Calculates the proximity of the ungaged site to the calibration gages (models).

Input file: Modeling Workshop\Site Assignment*test.csv*

Output file: Modeling Workshop\Site Assignment*top.model.csv*

How to assign an ungauged site to a flow model:

1. Delineate watersheds, and 5-km watershed clips
2. Calculate predictors:

Variable name (CASE SENSITIVE!)	Description	Source file to use
StationCode	Unique site identifier	User
New□Lat	Latitude in decimal-degrees North. Not required for predictions, but useful for plotting.	User
New□Long	Longitude in decimal-degrees West (should be negative). Not required for predictions, but useful for plotting.	User
Imperv□percent	Mean □ imperviousness in the catchment (0-100).	[StreamStats]
URBAN□2000□WS	NLCD urban land use in the catchment (0-100). For NLCD 2000, these codes count towards urban:	NLCD2000 or NLCD2006
KFCT□AVE	Mean soil erodibility in the catchment.	[RAFI]
Ag□2000□WS	NLCD agricultural land use in the catchment (0-100). For NLCD 2000, these codes count towards urban:	NLCD2000 or NLCD2006
CODE□21□2000□WS	NLCDE Code 21 (highly managed vegetation) in the catchment (0-100). For NLCD 2000, only code 21 counts.	NLCD2000 or NLCD2006
Ag□2000□5k	NLCD agricultural land use in the 5-km clip of the catchment (0-100). For NLCD 2000, these codes count towards urban:	NLCD2000 or NLCD2006
RoadDens□5K	Road density (km□km2) in the 5-km clip of the catchment. Dirt roads do not count.	[Rafi]

1. From within R Studio, open Modeling Workshop\Site Assignment*assigning_testsites_020116.R*
2. Currently *test.csv* has dummy site information; use this as a template for your site info
3. Please see handout for GIS information required for this module
4. *top.model.csv* is the output file with top matched gage info

Note: Within a year or two automated tools from the State (SWAMP) will calculate the variables, but for now, use GIS to estimate them.

Module 3: Running hydrological model (HEC-HMS) to predict hourly flow

We run the model for current and reference or historical conditions

Output files: Modeling Workshop\Hourly To Daily Flow Conversion\Hourly Flow*SDR_AssessmentSites_Hourly_Current.csv* and *SDR_AssessmentSites_Hourly_Reference.csv*

First we will estimate current flows

1. Navigate to Modeling Workshop\HEC HMS Models\Current Conditions
2. Copy the model folder that is the top matched to your site
3. Save a copy in a new folder
4. Click on HEC-HMS icon on your desktop
5. Click on open folder tab, navigate to your new folder
6. Open file with the .hms extension
7. We need to change 5 parameters- area, imperviousness, time of concentration, storage coefficient and precipitation
8. From the “Compute” tab, right click on “Run 1” then click “Compute”
9. From the “Results” tab, double click “Run 1”, double click “Subbasin-1” then click on “Time-Series Table”
10. A window will appear shortly, from which you will copy all the data in the “Total Flow” column
11. Open the file Modeling Workshop\Hourly To Daily Flow Conversion\Hourly Flow*SDR_AssessmentSites_Hourly_Current.csv*, paste the “Total Flow” data in a new column on the right, starting on row 2
12. Put the site name in the first row of this column
13. Remove all the other columns, EXCEPT for your new column, the “Date_Time” column and one additional column of flow data (the metric calculation requires data from at least 2 sites)

Historical flows

1. Navigate to Modeling Workshop\HEC HMS Models\Reference Conditions

2. Copy the model folder that is the top matched to your site
3. Save a copy in a new folder
4. Click on HEC-HMS icon on your desktop
5. Click on open folder tab, navigate to your new folder
6. Open file with the .hms extension
7. We need to change 4 parameters- area, time of concentration, storage coefficient and precipitation
8. From the “Compute” tab, right click on “Run 1” then click “Compute”
9. From the “Results” tab, double click “Run 1”, double click “Subbasin-1” then click on “Time-Series Table”
10. A window will appear shortly, from which you will copy all the data in the “Total Flow” column
11. Open the file Modeling Workshop\Hourly To Daily Flow Conversion\Hourly Flow*SDR_AssessmentSites_Hourly_Reference.csv*, paste the “Total Flow” data in a new column on the right, starting on row 2
12. Put the site name in the first row of this new column
13. Remove all the other columns, EXCEPT for your new column, the “Date_Time” column and one additional column of flow data (the metric calculation requires data from at least 2 sites)

Module 4. Flow metrics are estimated on daily flow

Convert hourly flow output from HEC-HMS to daily flow

Input files: Modeling Workshop\Hourly To Daily Flow Conversion\Hourly Flow*SDR_AssessmentSites_Hourly_Current.csv* and *SDR_AssessmentSites_Hourly_Reference.csv*

Output files: Modeling Workshop\Hourly To Daily Flow Conversion\Daily Flow*SDR_Assessment_Daily_Current.csv* and *SDR_Assessment_Daily_Reference.csv*

1. From within R Studio, open Metric Workshop\Hourly To Daily Flow Conversion*HourlytoDailyFlow_Current.R*
2. Run install.packages(…) line, then add # to the beginning of the line
3. Run script by clicking “Source” button on the top right of the script window
4. Converted daily flow data will be in Modeling Workshop\Hourly To Daily Flow Conversion\Daily Flow*SDR_Assessment_Daily_Current.csv*
5. Repeat using Metric Workshop\Hourly To Daily Flow Conversion*HourlytoDailyFlow_Reference.R* to produce daily flow data for reference condition hourly flow data

Calculate Metrics for Daily Flow Data

Input files: Modeling Workshop\Hourly To Daily Flow Conversion\Daily Flow*SDR_AssessmentSites_Daily_Current.csv* and *SDR_AssessmentSites_Daily_Reference.csv*

Output files: Modeling Workshop\Metric Calculation \Results\ *Sdr_Current_Metrics.csv* and *Sdr_Reference_Metrics.csv*

1. From within R Studio, open Modeling Workshop\Metric Calculation*KonradMetrics_Current.R*
2. Click "Source" button in upper right corner of script window
3. Metric results will be in Modeling Workshop\Metric Calculation\Results*Sdr_Current_Metrics.csv*
4. Repeat using Modeling Workshop\Metric Calculation*KonradMetrics_Reference.R* to get metric results for reference condition flow data

Description of Metrics in QSUM (typically Median Annual Values)

Qmean [M3/S] - mean streamflow for the period of analysis

QmeanMEDIAN [M3/S] - median annual mean streamflow

QmeanIDR - (90th percentile of annual mean streamflow - 10th percentile of annual mean streamflow)/50th percentile of median annual mean streamflow

Qmed [M3/S] - median daily streamflow

Qmax [M3/S] - median annual maximum daily streamflow

QmaxIDR - (90th percentile of annual maximum streamflow - 10th percentile of annual maximum streamflow)/50th percentile of annual maximum streamflow

HighNum [events/year] - median annual number of events that flow was greater than high flow threshold, an event is a continuous period when daily flow exceeds the threshold

HighDur [days/event] - median annual longest number of consecutive days that flow was greater than the high flow threshold

Qmin [M3/S] - median annual minimum daily streamflow

QminIDR - (90th percentile of annual maximum streamflow - 10th percentile of annual maximum streamflow)/50th percentile of annual maximum streamflow

LowNum [events/year] - median annual number of events that flow was less than or equal to the low flow threshold, an event is a continuous period when daily flow was less than or equal to the threshold

LowDur [days/event]- median annual longest number of consecutive days that flow was less than or equal to the low flow threshold

NoDisturb [days] - median annual longest number of consecutive days that flow between the low and high flow threshold

Hydroperiod [0.01 = 1% of period of analysis] - fraction of period of analysis with flows

FracYearsNoFlow [0.01 = 1% of years] - - fraction of years with at least one no-flow day

MedianNoFlowDays [days/year]- median annual number of no-flow days

PDC50 [0.01=1% change in streamflow] - the median percent daily change in streamflow, no flow days are not included (0.01 = 1%)

SFR [-0.01=-1% change in streamflow]- the 90th percentile of percent daily change in streamflow on days when streamflow is receding (a measure of storm-flow recession)

BFR [-0.01=-1% change in streamflow] - the 50th percentile of percent daily change in streamflow on days when streamflow is receding (a measure of base-flow recession)

MaxMonth [1- Jan, 12-Dec] - month of maximum mean monthly streamflow

MaxMonthQ [M3/S] - maximum mean monthly streamflow

MinMonth [1- Jan, 12-Dec] - month of minimum mean monthly streamflow

MinMonthQ [M3/S] - minimum mean monthly streamflow

Q01, Q05, Q10, ...,Q99 [M3/S] - streamflow exceeded 1%, 5%, 10%, ..., 99% of the time

BugID	ModelMatch	Area	Imperviousness	Lat	Long
907S00577	SantaMaria_11028500	11.64	0.48	33.07609	-116.676
SMC04426	SanMateo_11046300	17.80	0.24	33.00697	-116.67
907S03210	Jamul_11014000	38.43	0.37	33.00313	-116.729
907S01418	SanMateo_11046300	24.87	0.19	32.99246	-116.719
SMC04682	SantaYsabel_11025500	21.04	0.27	32.97115	-116.648
907S46499	SanMateo_11046300	101.73	0.26	32.96269	-116.749
907S03786	SantaYsabel_11025500	11.29	0.26	32.89422	-116.658
SMC32718	Jamul_11014000	190.98	0.59	32.88455	-116.822
SMC11430	Mission_11119750	4.48	6.56	32.84835	-116.86
SMC02006	Poway_11023340	23.29	43.62	32.83115	-116.985
SMC09174	LosAngeles_11092450	346.73	6.08	32.83967	-117.002
SMC08150	Poway_11023340	367.06	6.13	32.83731	-117.02
SMC04134	Jamul_11014000	377.26	6.09	32.82874	-117.052
907P2PBxx	SanLuisRey_11042000	428.14	10.04	32.7675	-117.159
907S05514	SanMateo_11046300	66.73	0.29	32.97974	-116.742
907S01610	SanMateo_11046300	23.07	0.25	32.96676	-116.653
907S01434	SantaYsabel_11025500	5.26	0.10	32.90428	-116.626
907S02774	Poway_11023340	4.45	52.96	32.81182	-116.973
SMC10198	LosAngeles_11092450	5.60	53.24	32.82182	-116.976
907SDFRC2	LosAngeles_11092450	346.67	6.07	32.83945	-117.001
SMC04054	SanLuisRey_11042000	367.06	6.13	32.83697	-117.019
SMC19552	SanLuisRey_11042000	367.90	6.17	32.83965	-117.024
SMC07126	Mission_11119750	368.31	6.18	32.84359	-117.035
SMC12246	Mission_11119750	376.56	6.10	32.83982	-117.043
907SDSDR9	Mission_11119750	376.80	6.09	32.83894	-117.045
907SSDR11	Mission_11119750	380.87	6.12	32.82119	-117.063
SMC03110	Mission_11119750	381.67	6.17	32.81106	-117.073
SMC01990	Poway_11023340	12.19	25.15	32.79577	-117.113
SMC09286	Poway_11023340	405.87	8.53	32.78188	-117.114

APPENDIX B STAKEHOLDER WORKGROUP AND SCHEDULE OF WORKGROUP MEETINGS

The demonstration project workgroup met six times between November 2015 and June 2016 (Table B1). All meetings were held in the San Diego River Watershed

Table B1. Workgroup participants

NAME	ORGANIZATION
Daron Pedroja	State Water Board
Gary Strawn	San Diego Water Board
Shannon Quiquley	San Diego River Park Foundation
Dustin Harrison	San Diego River Conservancy
Tracy Cline	San Diego County
Joanna Wisniewska	San Diego County
Eric Stein	SCCWRP
Raphael Mazor	SCCWRP
Ashmita Sengupta	SCCWRP
Alicia Kinoshita	San Diego State University
Trent Biggs	San Diego State University
Natalie Mladenov	San Diego State University
Charles Morloch	San Diego County
Rob Northcote	Padre Dam Municipal Water District
Arne Sandvik	Padre Dam Municipal Water District
Brian Olney	Helix Water District
Emily Blunt	U.S. Forest Service
Goldy Herbon	City of San Diego
Jeff Pasek	City of San Diego
Vicki Kalkirtz	City of San Diego
Andre Sonsken	City of San Diego
Jim Harry	City of San Diego
Anita Eng	City of San Diego
Doug Thomson	City of San Diego
James Dodd	City of San Diego
Maris Guerro	Army Corps of Engineers
John Rudolph	AMEC Environmental

The dates and goals of each meeting are listed below:

Meeting #1: November 18th, 2015
Meeting Goals:

- Provide an overview of the watershed demonstration project
- Discuss and agree upon portion of the watershed to focus on
- Agree on general roles and contributions of partners
- Develop general schedule for next set of meetings

Meeting #2: January 20th, 2016
Meeting Goals:

- Discuss work plan for priority actions/products from first meeting
- Agree on schedule for obtaining necessary data for analysis
- Compile list of primary contacts for participation in analysis

Meeting #3: February 17th, 2016
Meeting Goals:

- Technology transfer- using models to predict flows, and flow metrics at ungaged locations
- Discuss the process, and usability
- Discussion on final products

Meeting # 4: March 16th, 2016
Meeting Goals:

- Address outstanding issues on the hydrologic modeling tools
- Agree on management scenarios being evaluated

Meeting #5: April 20th, 2016
Meeting Goals:

- Review products and outline for final demo project report

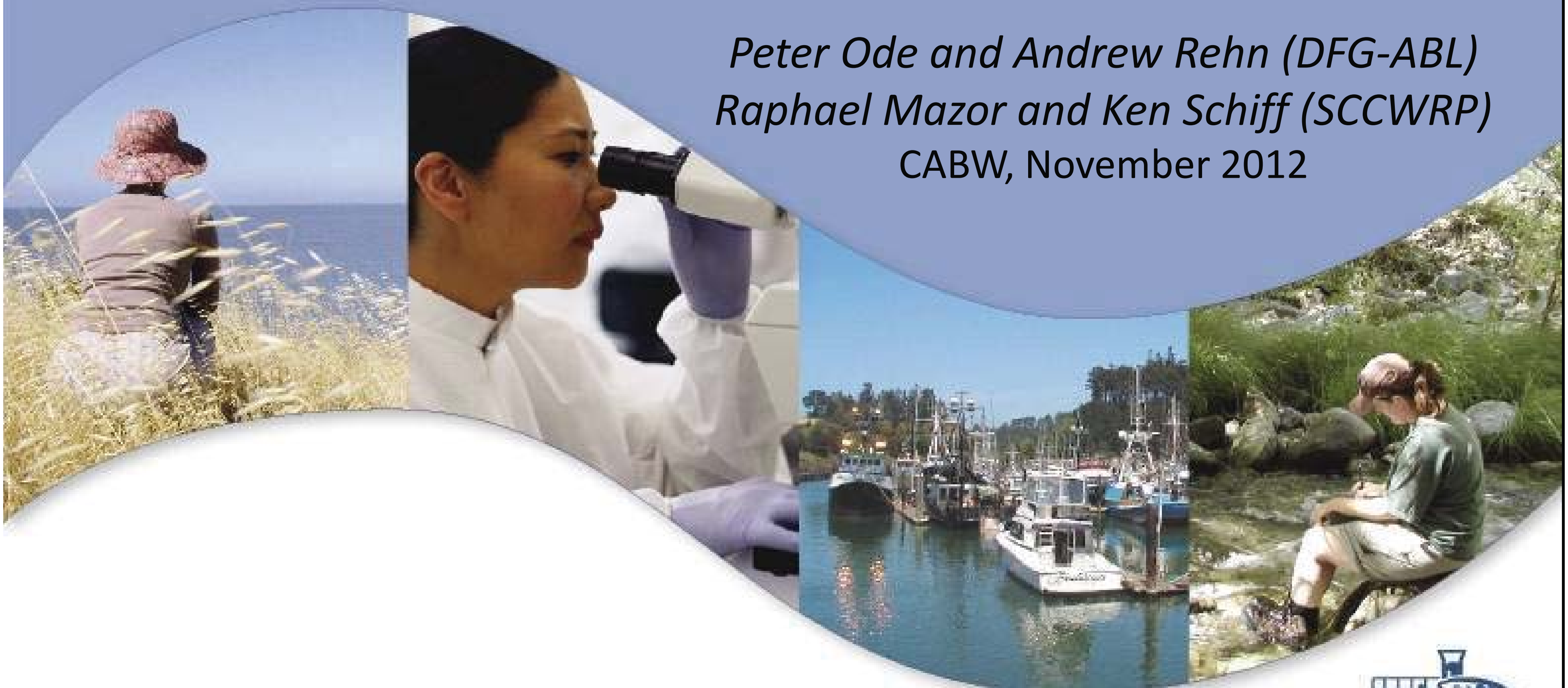
Meeting #6: June 15th, 2016
Meeting Goals:

- Review draft demo project report

Appendix 13

Building the Technical Foundation for Biological Objectives

Peter Ode and Andrew Rehn (DFG-ABL)
Raphael Mazor and Ken Schiff (SCCWRP)
CABW, November 2012



CALIFORNIA DEPARTMENT OF FISH&GAME
Aquatic Bioassessment Laboratory
SCCWRP Established 1969
CALIFORNIA Water Boards
SWAMP Surface Water Ambient Monitoring Program

- **Technical Foundation** (Peter Ode/ Rafi Mazor – DFG, SCCWRP)
- **Regulatory Framework** (Karen Larsen, State Water Board)
- **Causal Analysis** (David Gillett, SCCWRP)
- **Stakeholder Process** (Brock Bernstein)
- **Open Discussion**

- **Measuring Stressor Distributions** (Andy Rehn, DFG)
- **Tools for Assessing Stream/Wetland Condition** (Eric Stein, SCCWRP)
- **SWAMP's Lab SOP for BMIs** (Melinda Woodard, QA Team)

SWAMP Surface Water Ambient Monitoring Program

Technical Foundation

Part I – Laying the groundwork (20)

Part II – Creating the scoring tools (40)

Part III – Supporting Implementation (20)

Surface Water Ambient Monitoring Program

Technical Team

*Andy Rehn, *DFG-ABL*

*Raphael Mazor, *SCCWRP +DFG-ABL*

Larry Brown, *USGS*

Jason May, *USGS*

David Herbst, *SNARL*

Peter Ode, *DFG-WPCL/ABL*

Ken Schiff, *SCCWRP*

David Gillett, *SCCWRP*

Eric Stein, *SCCWRP*

Betty Fetscher, *SCCWRP*

Kevin Lunde, *SF Water Board*

Why Develop Ecological Indicators?

- Global paradigm shift toward ecological indicators
- Provide direct evidence about resources we are trying to protect
- More relevant measures of impacts and BMP effectiveness
- Links resource protection across multiple agencies by focus on ultimate policy goals

CA's Ecological Indicators

Multiple Indicators – BMIs, algae, (fish), riparian vegetation

Multiple waterbody types – large rivers, non-perennial streams, lakes, wetlands

Start with invertebrates and perennial streams

B447

invertebrates:

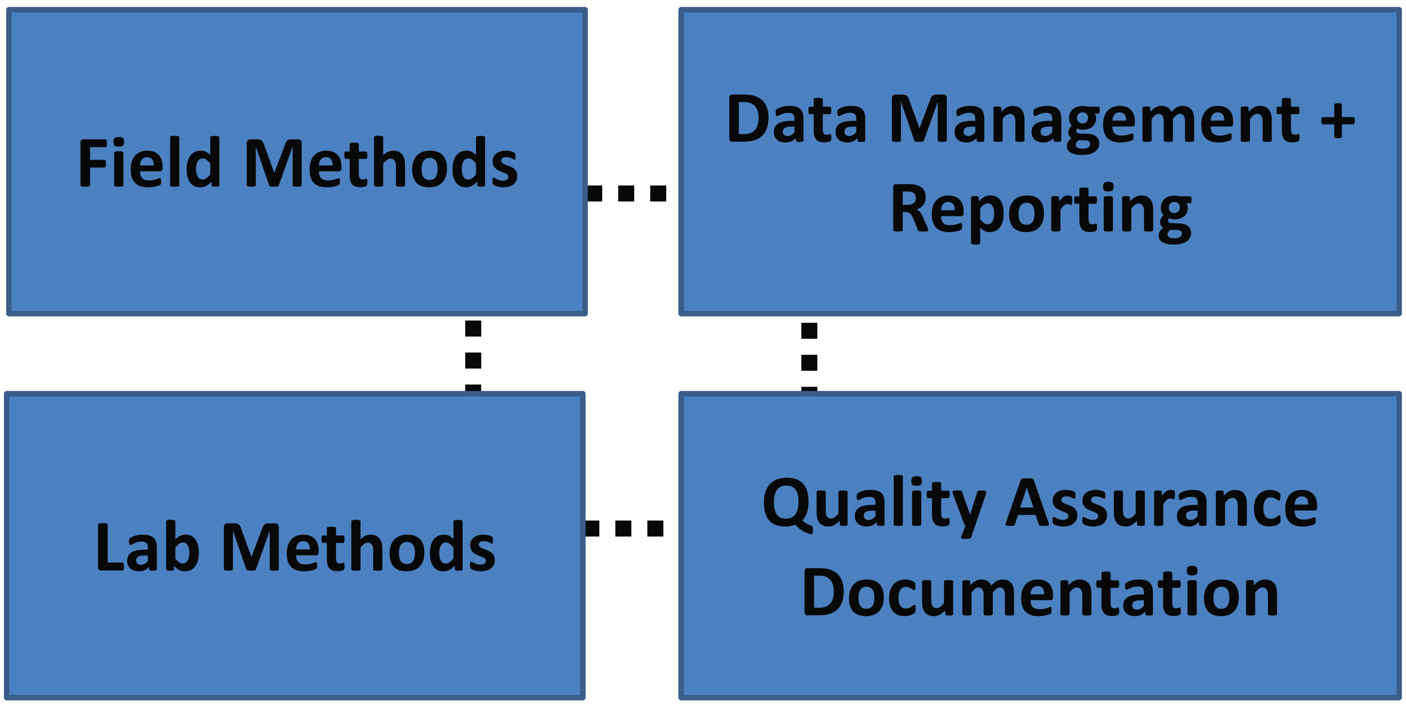
the backbone of bioassessment

- ***Abundant***
- ***Diverse***
- ***Informative***
- ***Adorable***


How do we convert a list of species
into a condition score?
NABS (www.benthos.org)

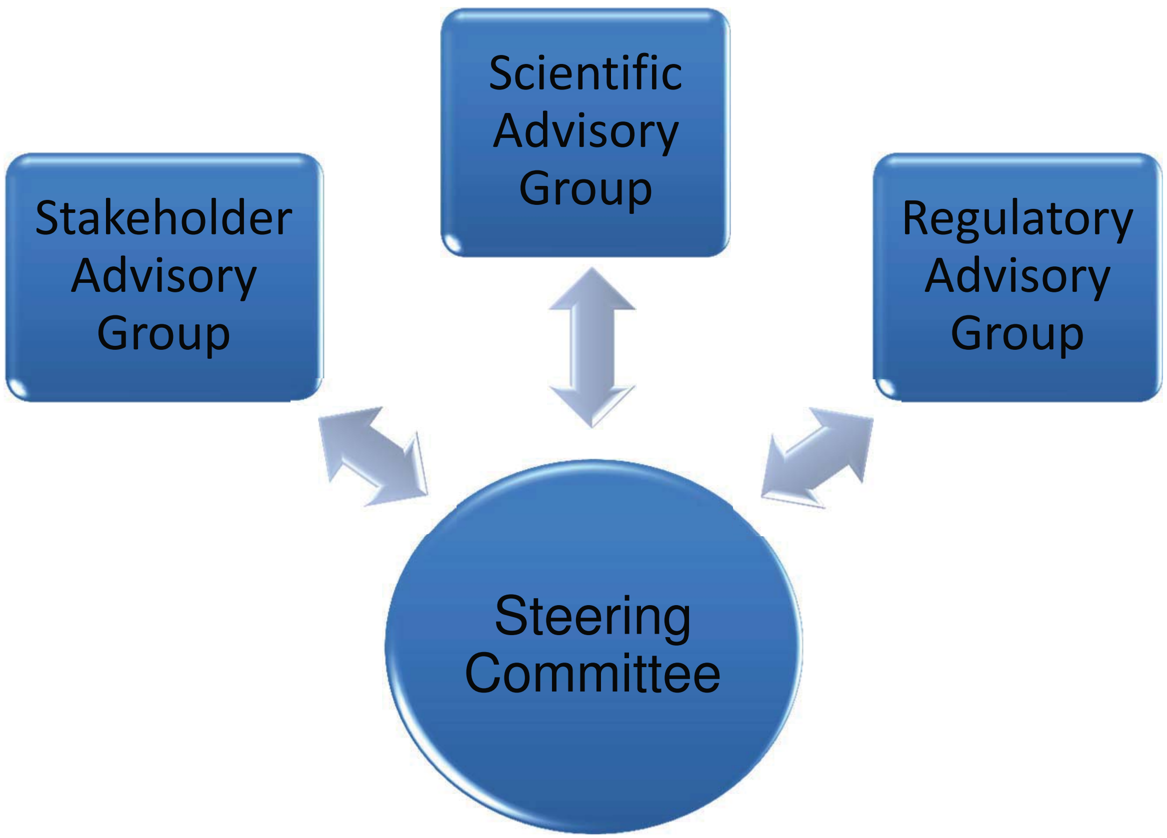
Standardized Bioassessment Infrastructure Elements

Surface Water Ambient Monitoring Program (SWAMP)



Biological Objectives Workgroups

> 20 meetings, excellent feedback



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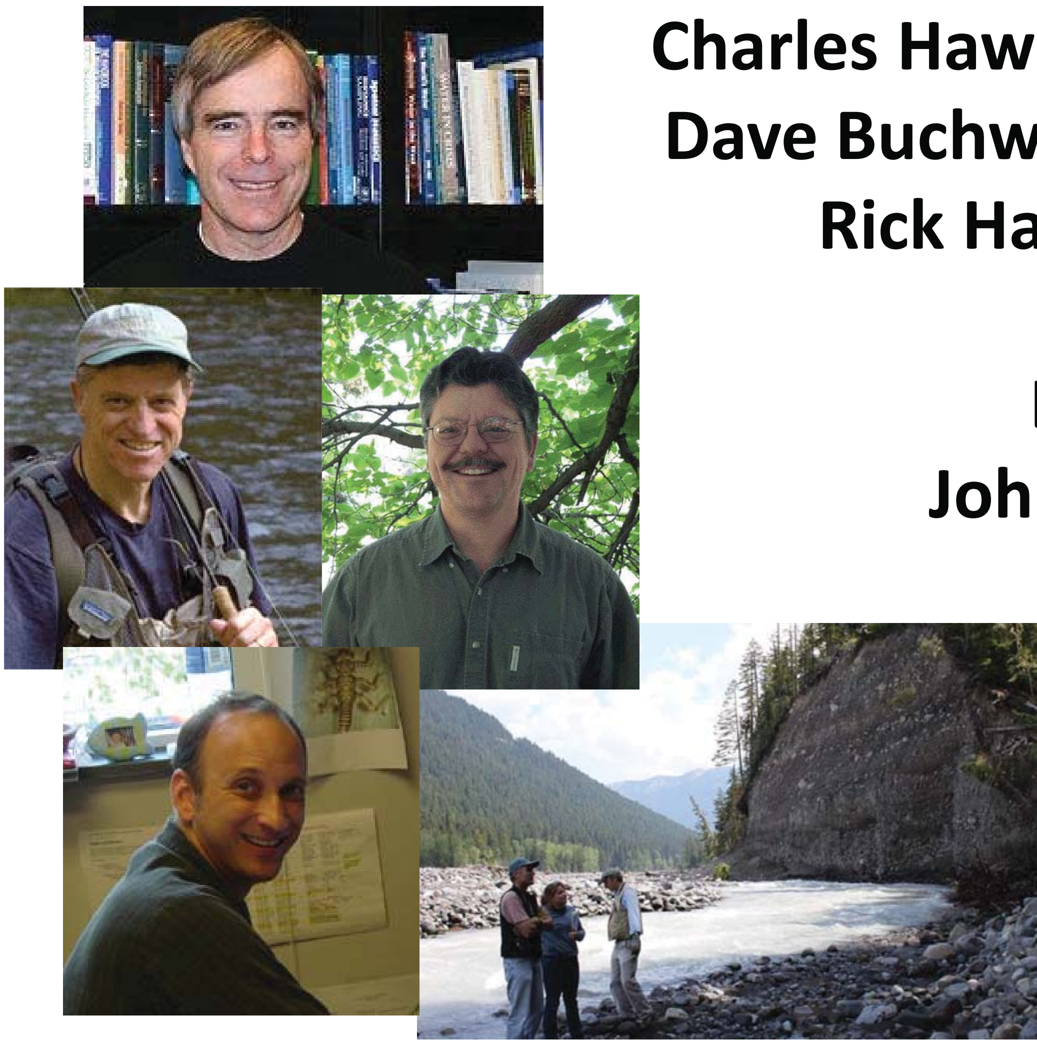
Scientific Advisory Panel



Charles Hawkins, *Utah State University*
Dave Buchwalter, *North Carolina State*
Rick Hafele, *Oregon DEQ (retired)*
Chris Konrad, *USGS*
LeRoy Poff, *Colorado State*
John VanSickle*, *EPA (retired)*
Lester Yuan*, *EPA*

**not pictured*

Surface Water Ambient Monitoring Program

Scoring Tools Depend on Reference Sites

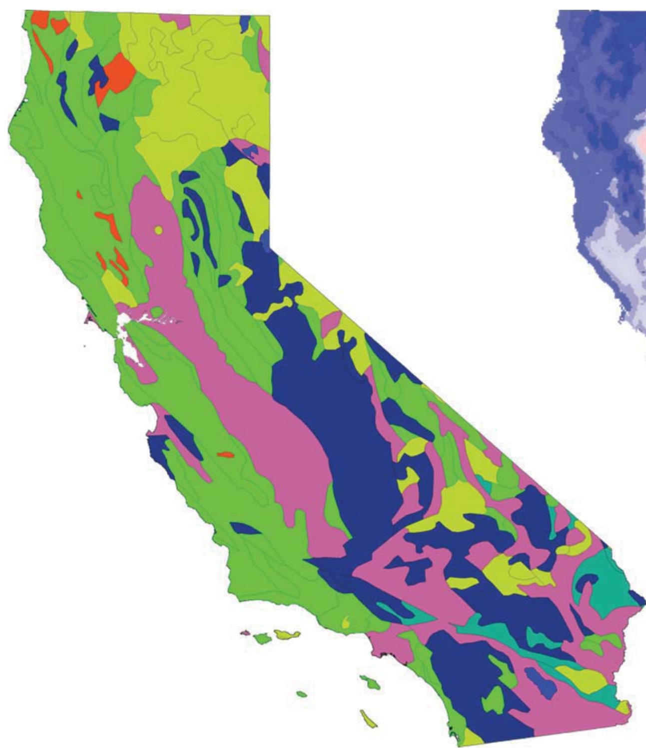
(sites with low levels of disturbance)

"What should the biology look like at a test site?"

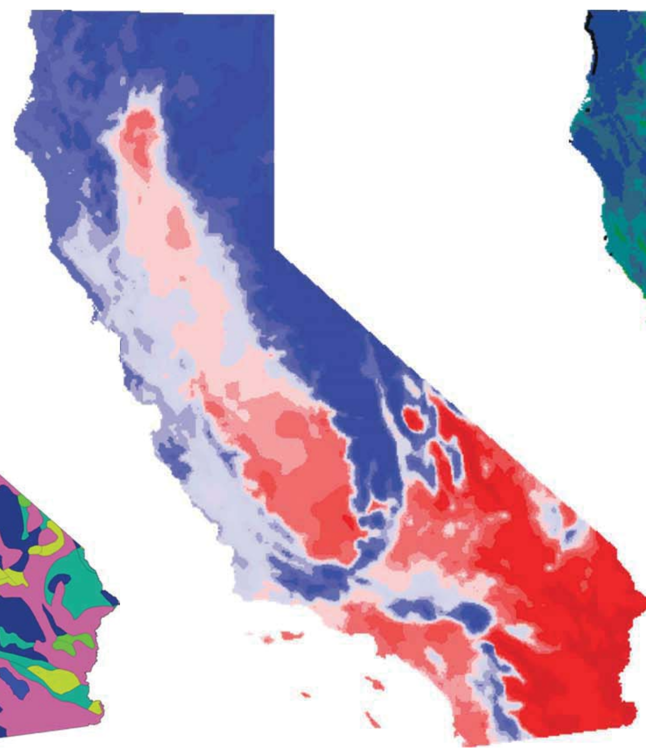
Technical Challenges:

Strong natural gradients result in natural variation in biological expectations

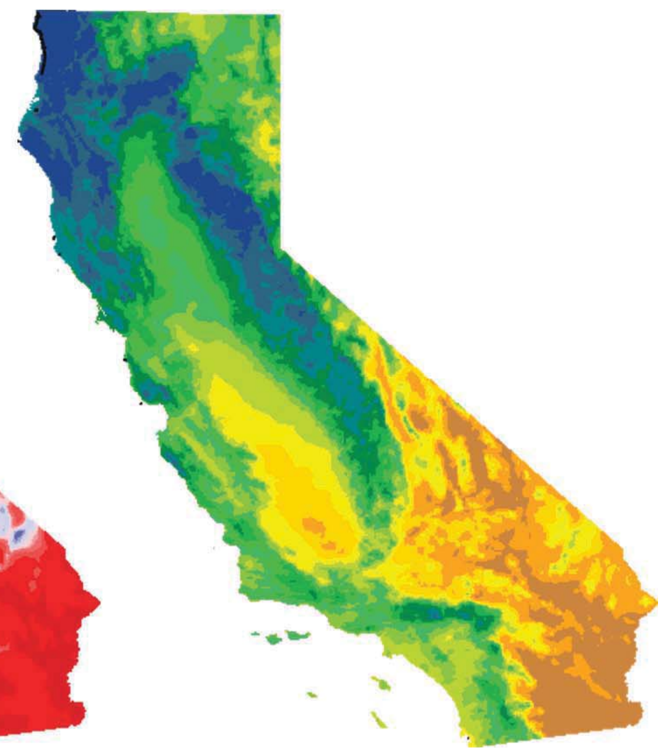
Geology



Temperature

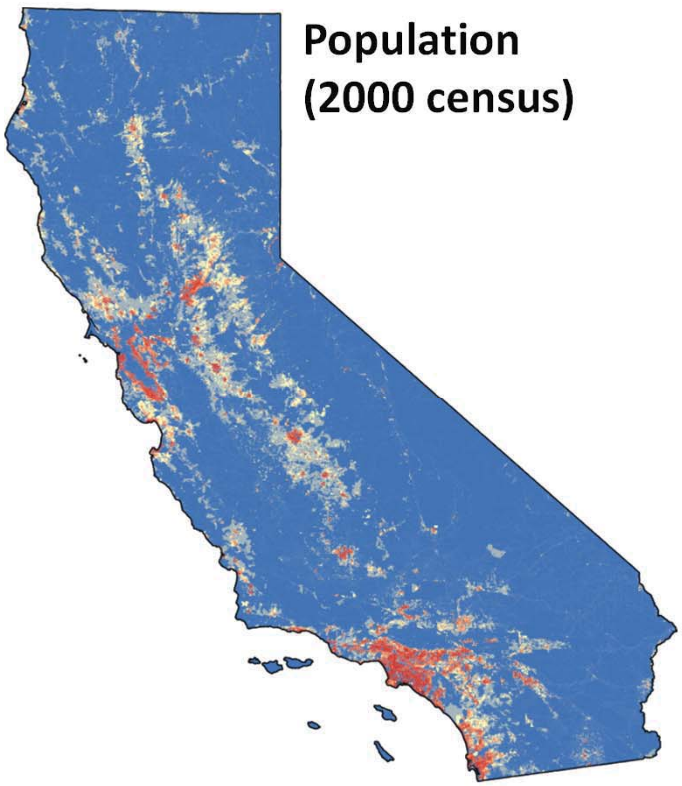


Precipitation



Technical Challenges:

Intense development can create regional gaps



Population
(2000 census)

Agricultural Areas
(2001 NLCD)

Reference Sites for Biocriteria

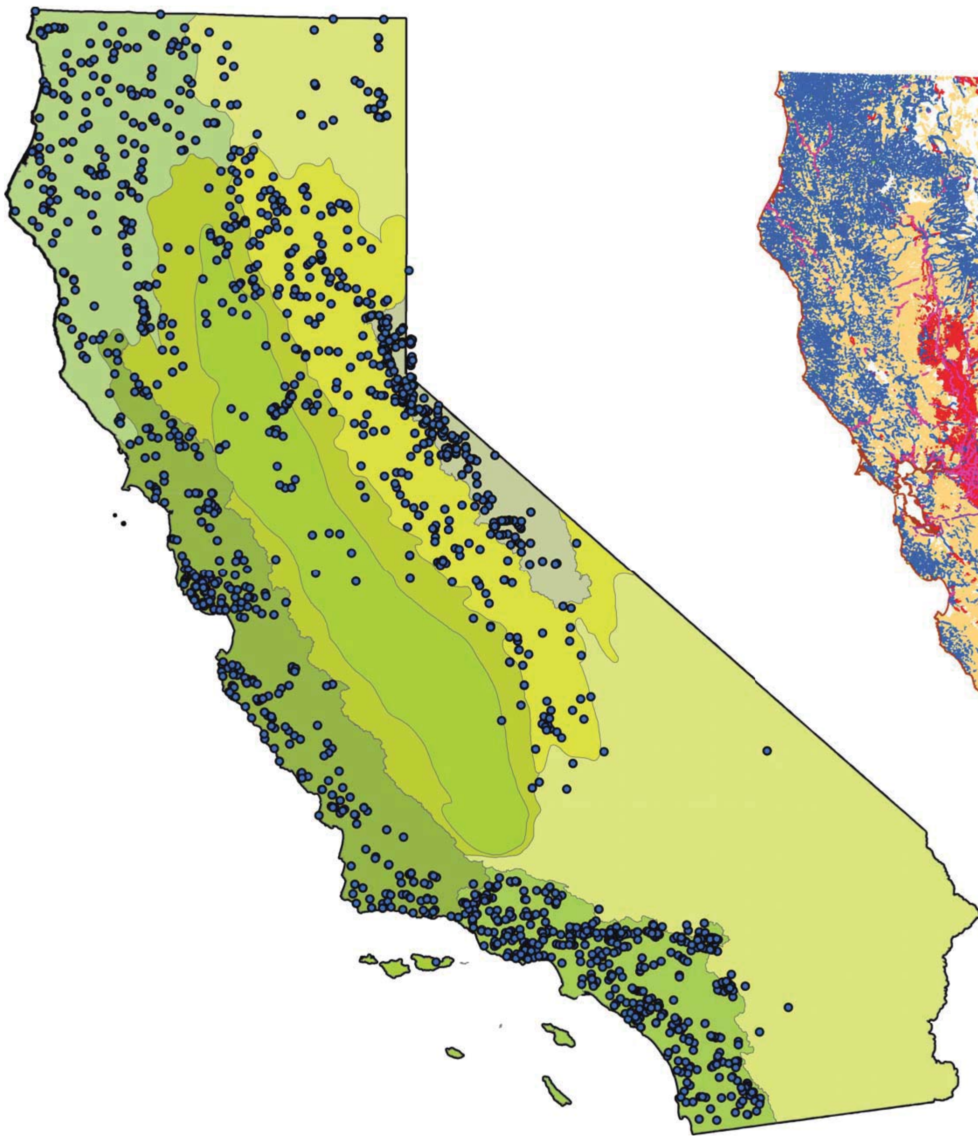
Selecting for site quality and representativeness

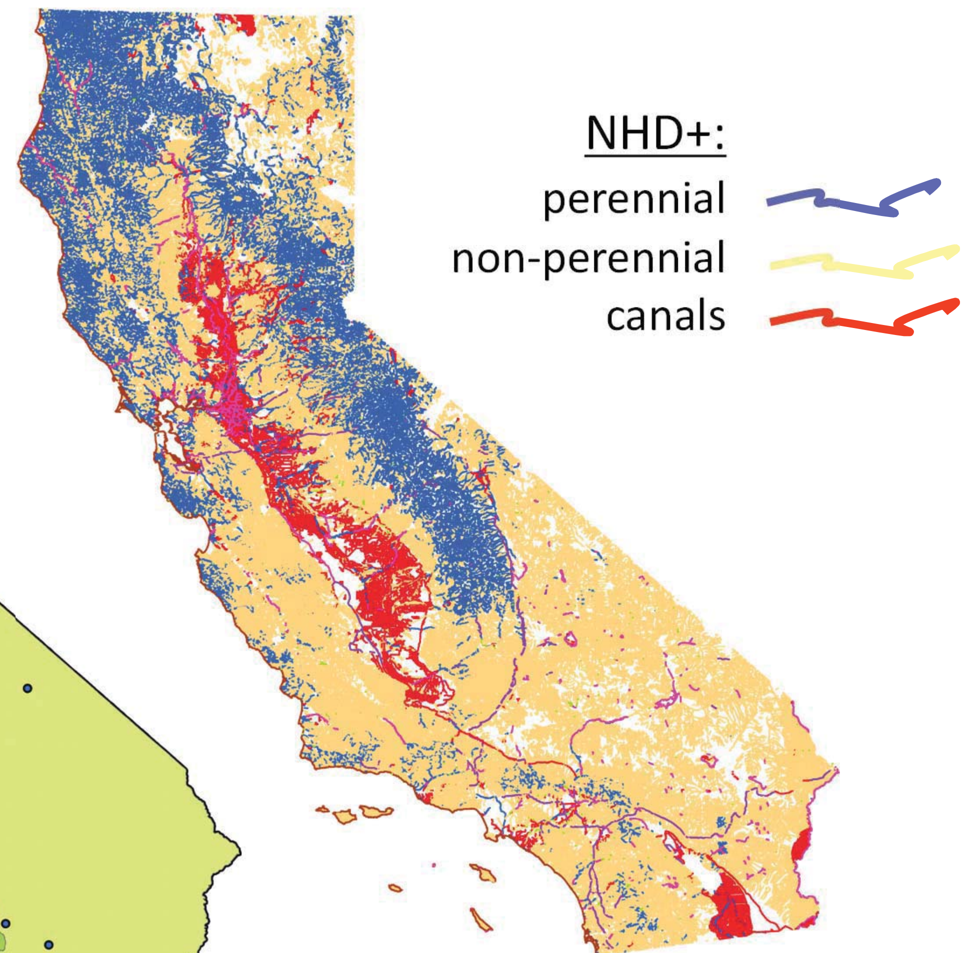
Challenge: Very few (if any) pristine streams exist; site selection process has to maximize representativeness while minimizing amount of disturbance at reference sites

Performance Objectives:

1. Reference pool represents the majority of CA streams
2. Biological "quality" is maintained at reference sites

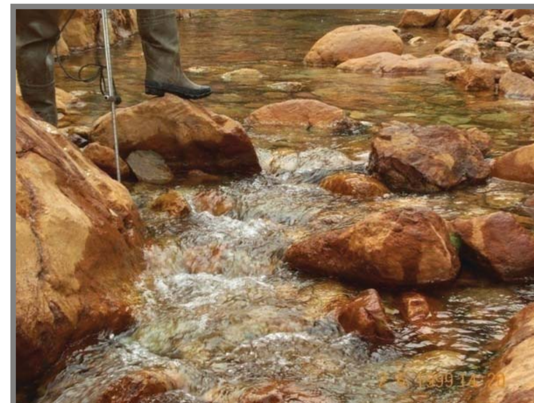
Assemble Data from > 2400 sites

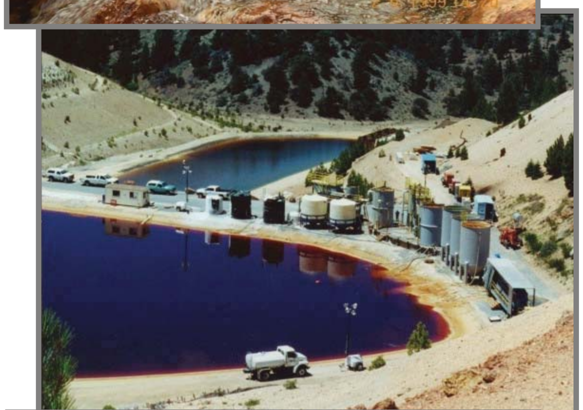


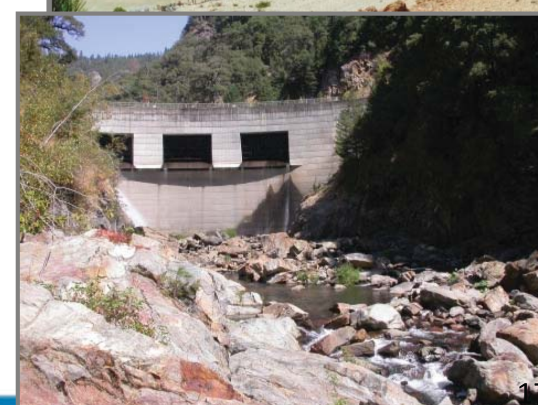


Reference sites have few sources of human stress

- **Infrastructure**: roads, railroads
- **Population**
- **Hydromodification**
  - manmade channels, canals, pipelines
- **Landuse**
  - Ag/Urban development
  - Timber Harvest, Grazing
- Fire history, dams, mines
- 303d list, known discharges
- Invasive invertebrates, plants
- Instream and riparian habitat
- Water chemistry





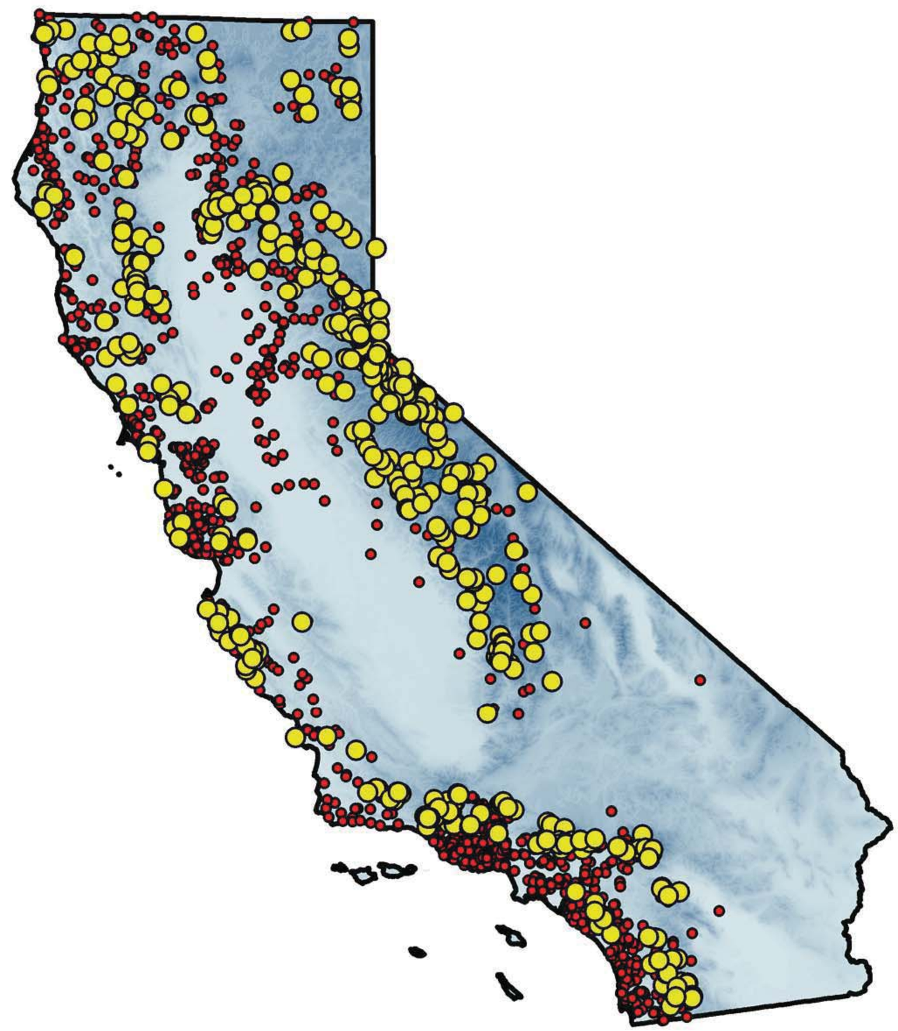


Thresholds are comparable or stricter than other CA indices and include many more criteria

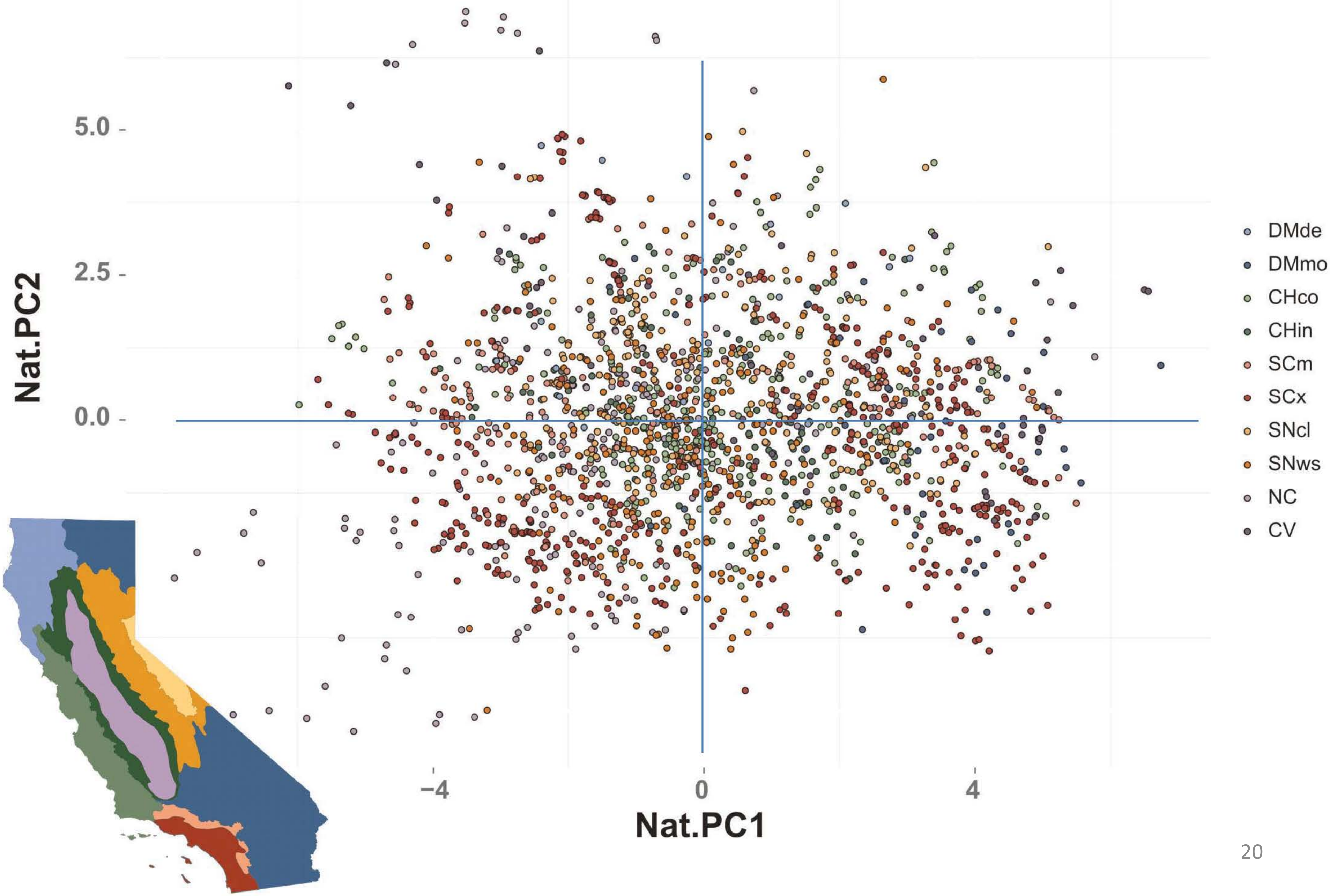
Metric	Bio-Objectives	South Coast IBI	North Coast IBI
Local Disturbance (W1_Hall)	1.5	-	-
% Agricultural	3,3,10	5	5
% Urban	3,3,10	3	3
% Ag + Urban	5,5,10		
% Code 21	7,7,10	in urban	in urban
Road Dens (km/km^2)	1.5	2.0	1.5/ 2.0
Paved Road X-ings (#/ws)	5/10/50		
Nearest Dams	>10 km	-	-
Active Producing Mines	0 (5k)	-	-
% Canals & Pipelines	10	-	-
Gravel Mine Density	0.1 (r5k)		
Conductivity	<2000 uS, + <99%, >1%		
BPJ Screen	X	X	X

Very good geographic coverage

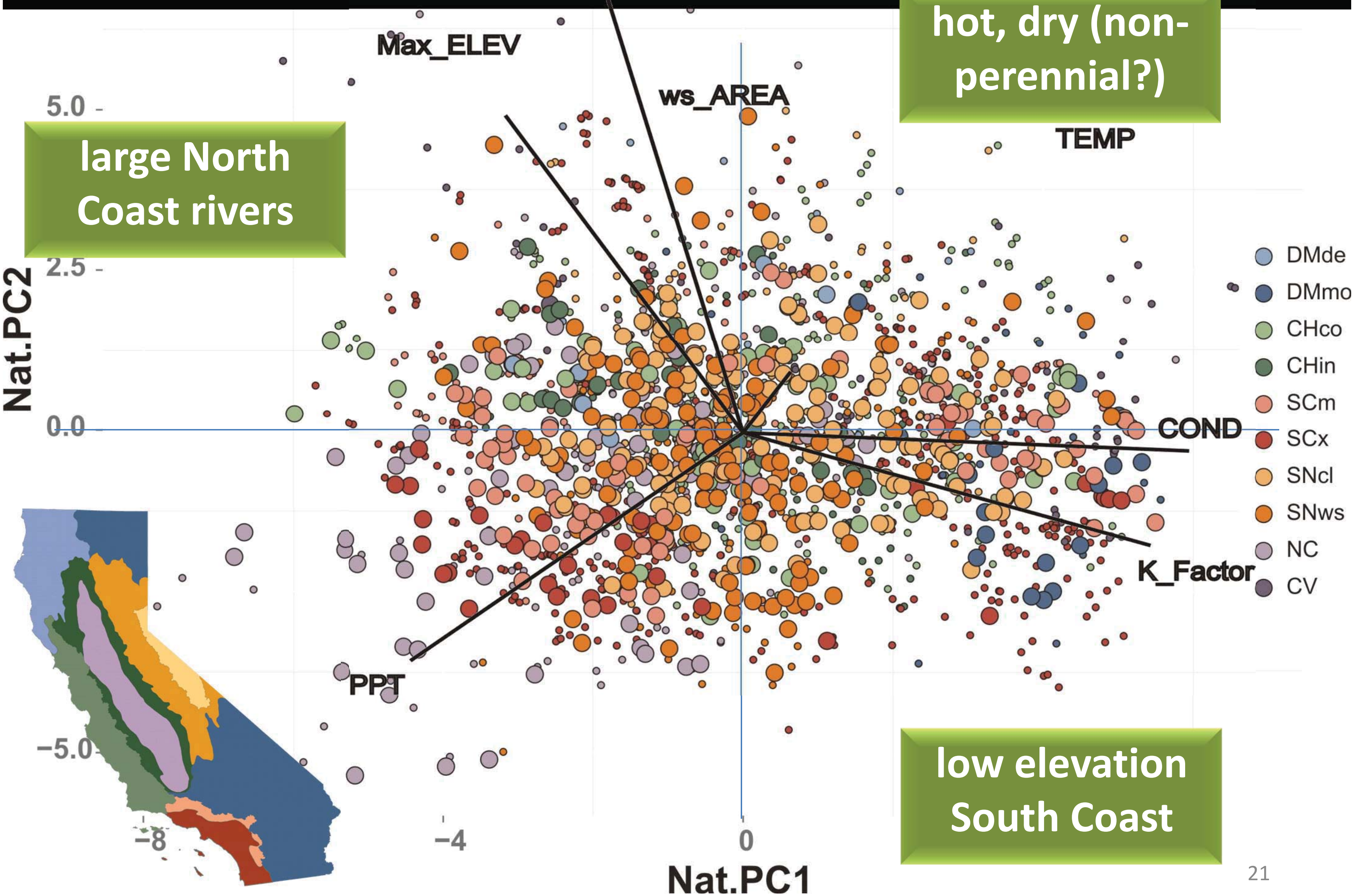
REGION	n
North Coast	75
Central Valley	1
Coastal Chaparral	57
Interior Chaparral	33
South Coast Mountains	85
South Coast Xeric	34
Western Sierra	131
Central Lahontan	114
Deserts + Modoc	27
TOTAL	**586**



Multivariate view of natural diversity



Strong environmental representativeness



B461

6-856


photo courtesy John Sandberg

Part III – Supporting Implementation
(technical support for policy decisions)

- Setting Impairment Thresholds
- Ensuring statewide consistency
- Applicability: Objective approaches for setting limits to the tools
- Summary and What's Next

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Desirable Qualities of Regulatory Thresholds

- **Objective**
- **Balance false positives and false negatives** – should be protective of resource, but not over-sensitive
- **Incorporate uncertainty of site score**

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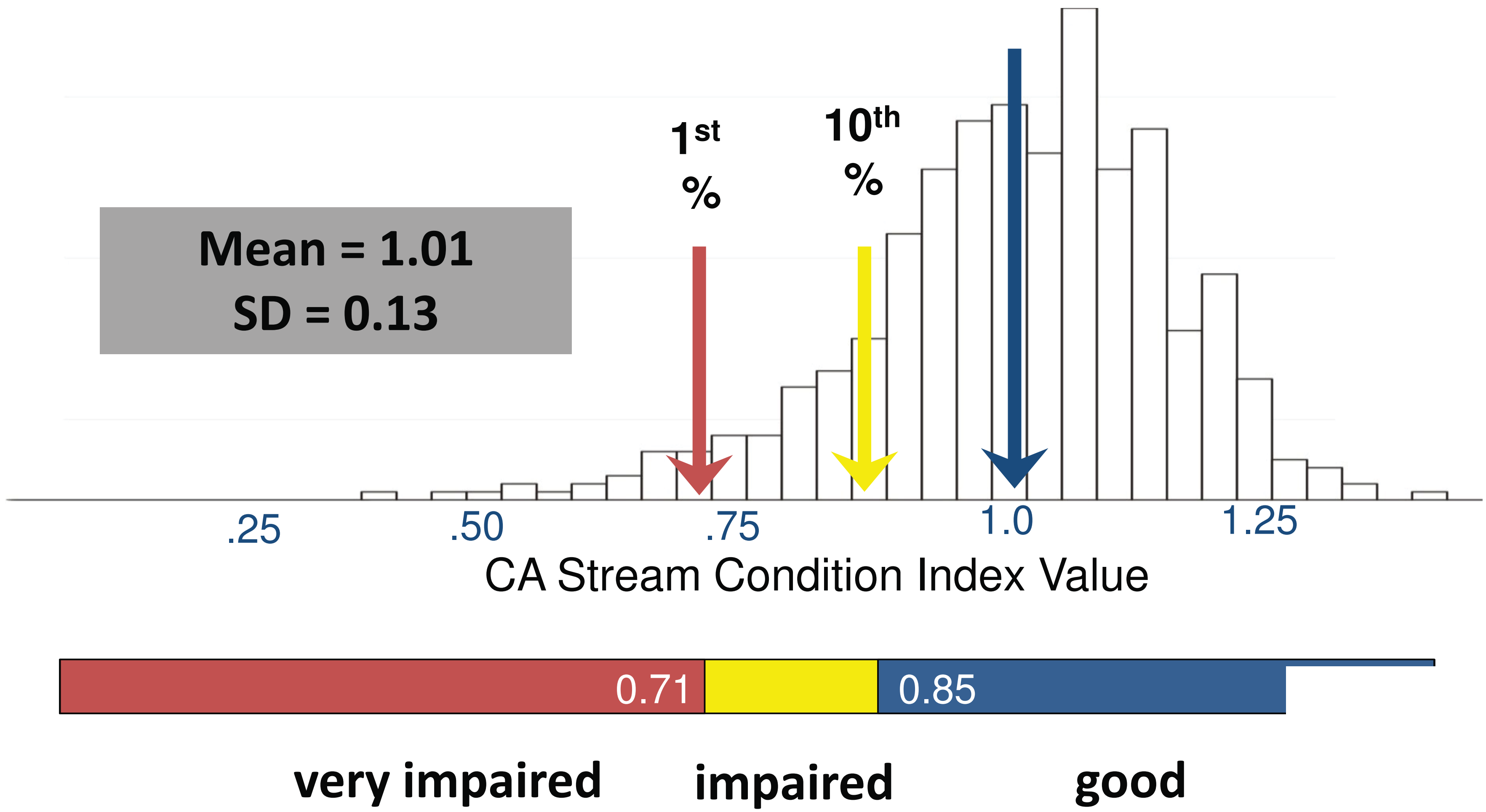
Distribution based thresholds:



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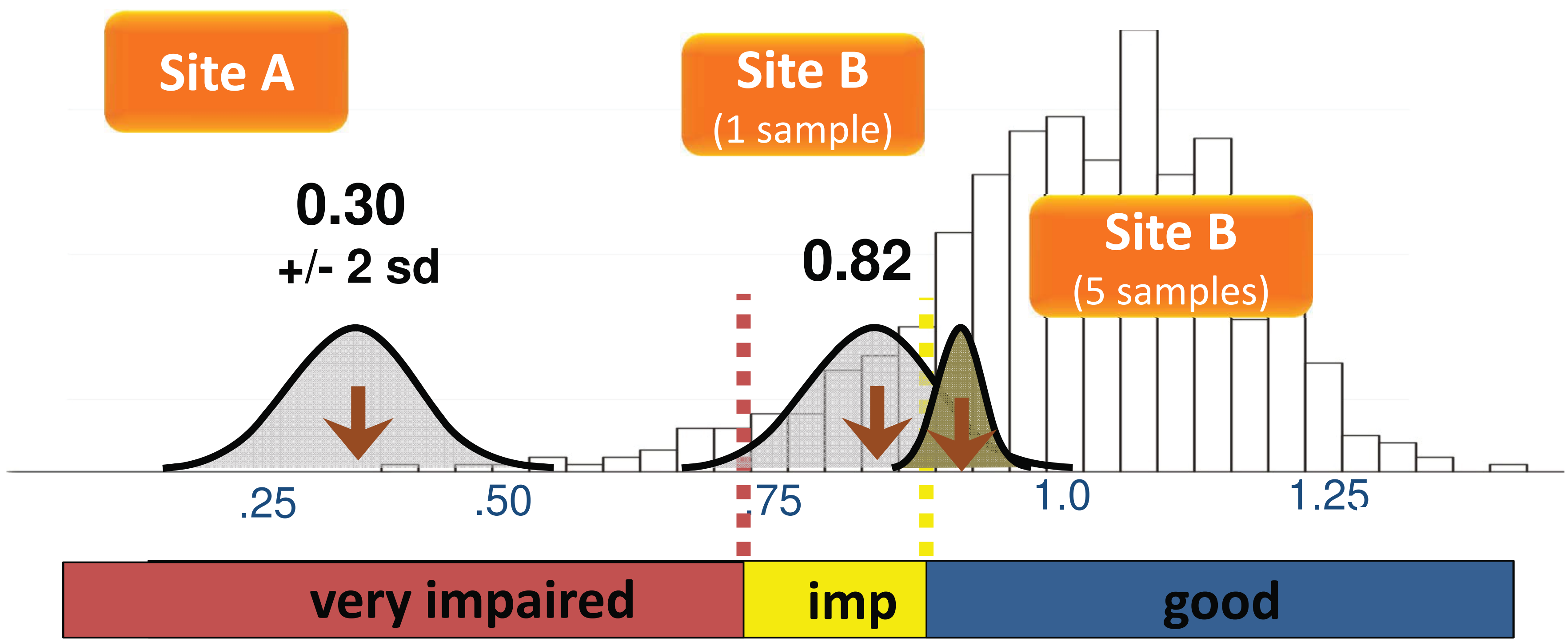
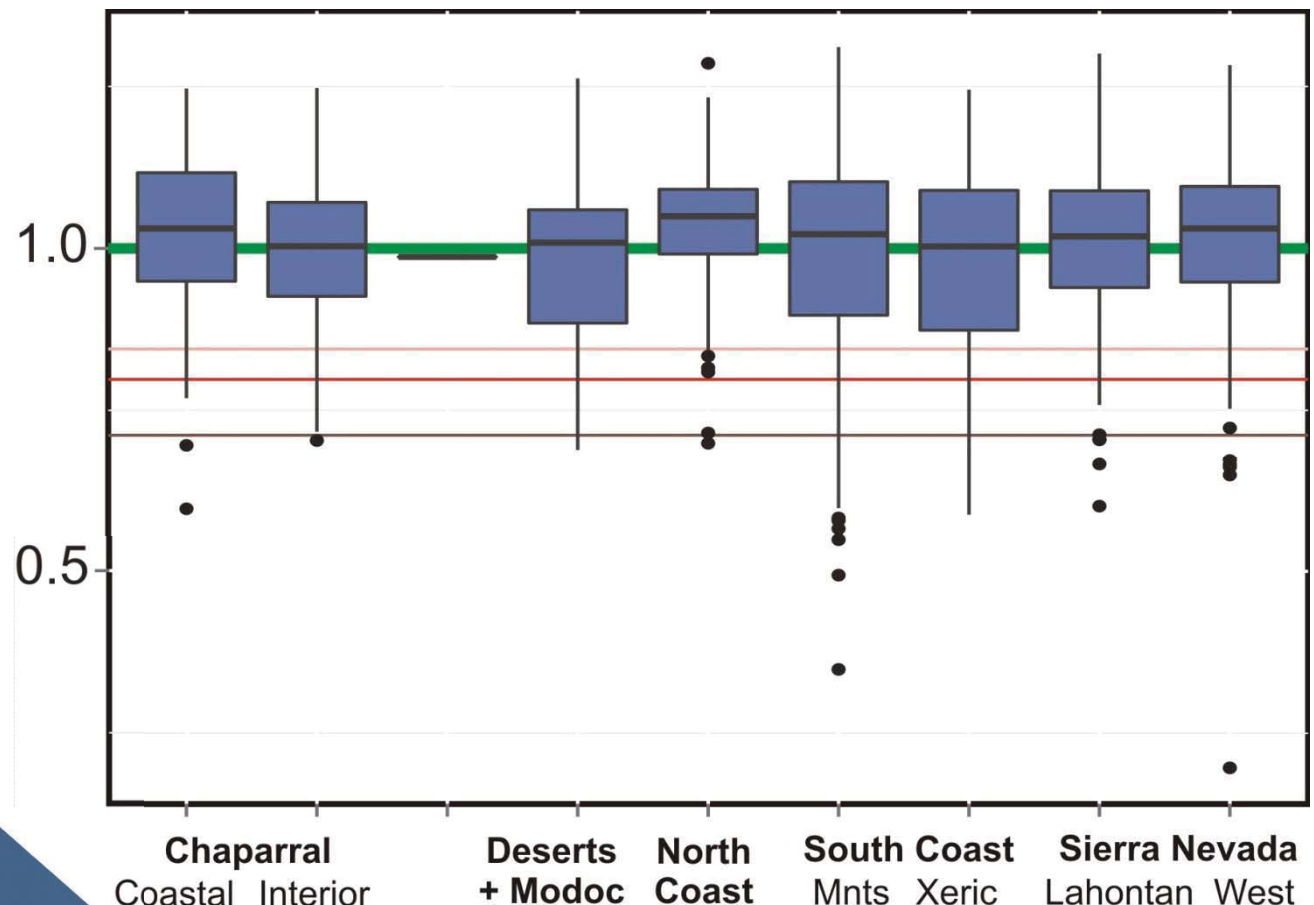
Incorporating Test Site Uncertainty

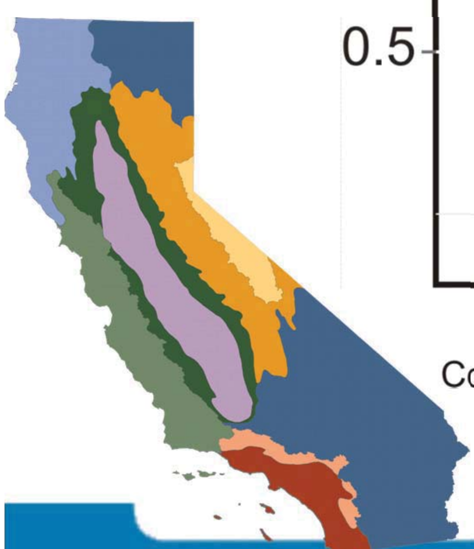
Use within-site error rate to account for uncertainty around test site score



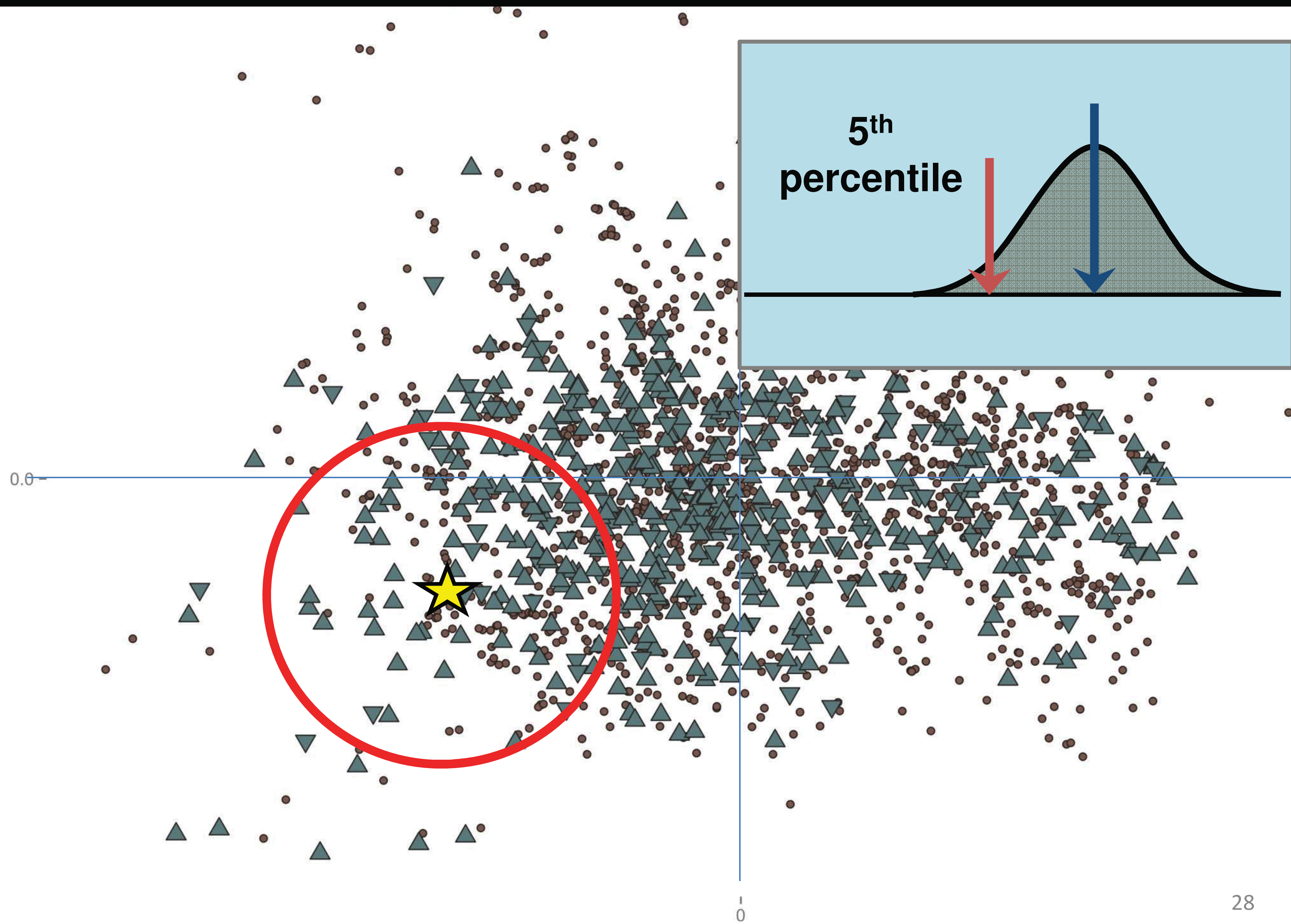
more certainty with multiple samples

Ensuring Regionally Consistent Thresholds





Enhancing threshold consistency



Where can we apply the CSCI?

- **Categorical** = exception classes in policy
  - Excepted regions (e.g., Central Valley)
  - Excepted waterbody types (e.g., modified channels)
- **Quantitative Approaches**

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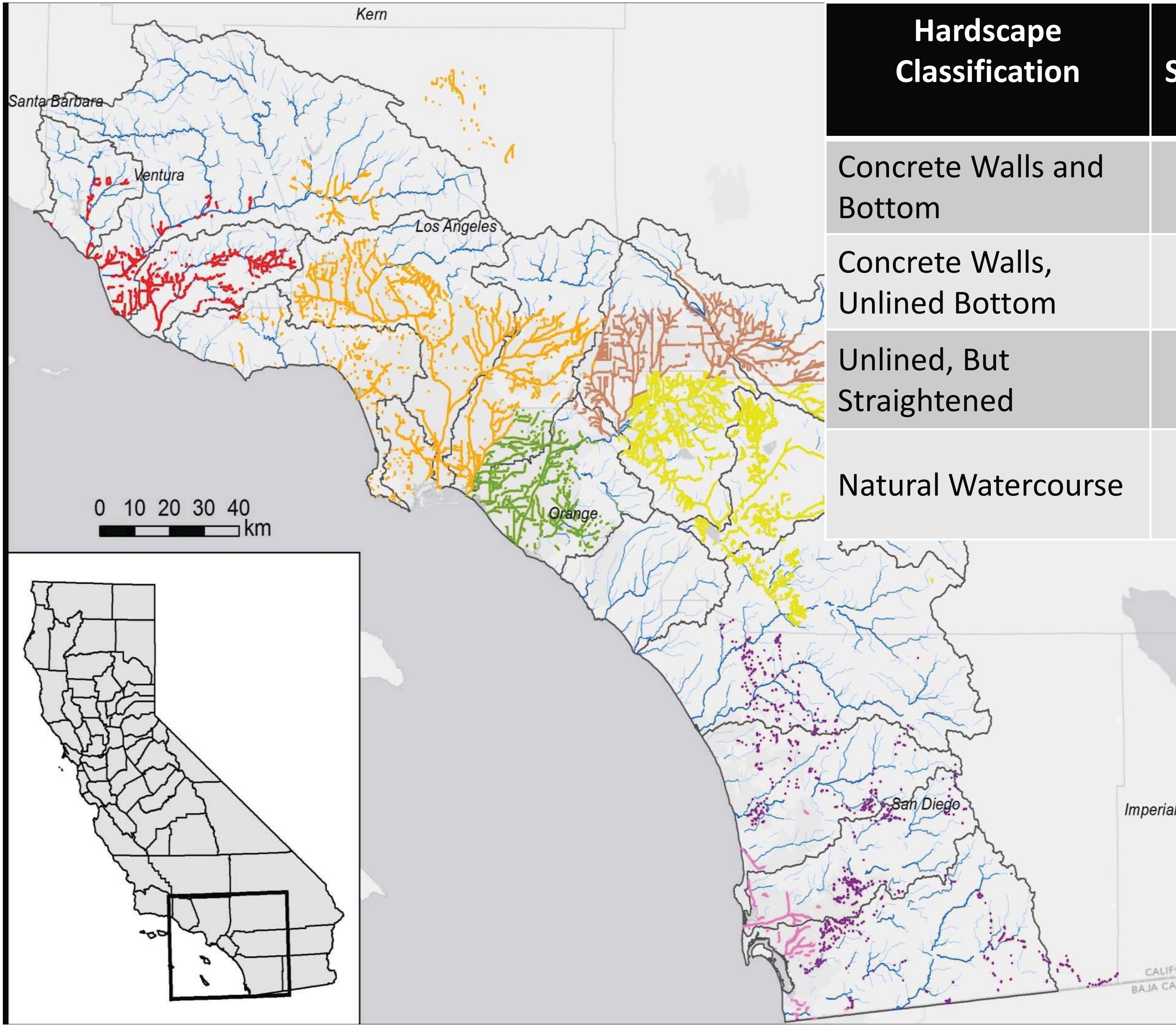
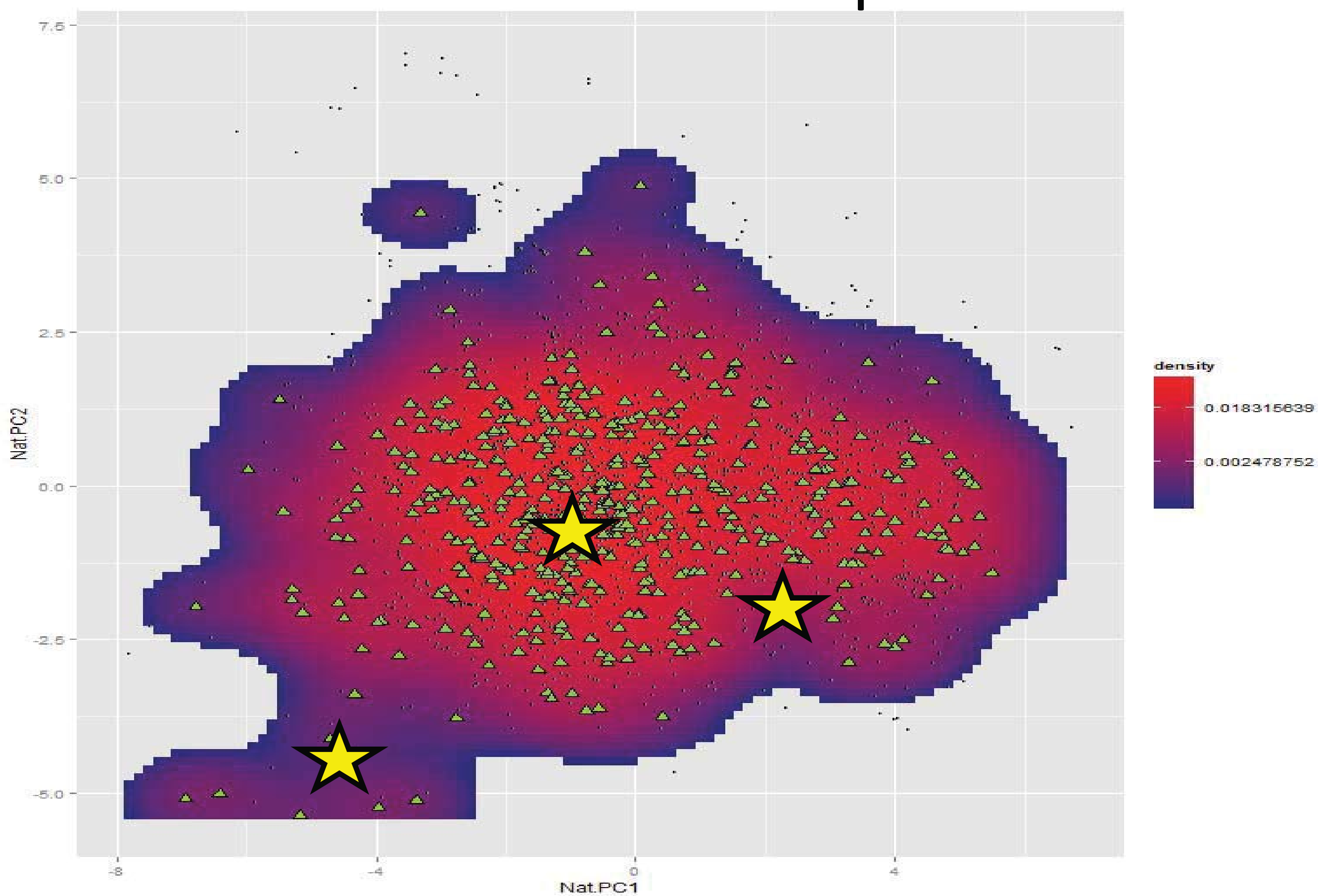


Hardscape Classification	% of So Cal Stream Miles
Concrete Walls and Bottom	3.2%
Concrete Walls, Unlined Bottom	3.6%
Unlined, But Straightened	16.6%
Natural Watercourse	76.3%

Quantitative Approaches:

"is a test site within the experience of the model in environmental space?"



Could be used to establish exceptions for truly unique environmental settings

Applicability of the CSCI in exception class settings

- We can still use the CSCI as a ruler, but we won't regulate based a reference-based threshold
- Could use "best attainable" approach instead of "reference" to set expectation, or use to compare among sites

SWAMP
Surface Water Ambient Monitoring Program

Automation and Documentation

STANDARD METHODS … available on SWAMP website

AUTOMATE calculations

- Package GIS layers
- Make standard calculation and reporting tools available via **CEDEN**

Document, document, document

- Journal articles
- Website 101 and FAQ
- Website appendices

SWAMP Surface Water Ambient Monitoring Program

Questions?

Appendix 14

Science Advisory Panel Response

18 October 2012

Prioritization of Issues

- Scoring Tool
- Determining Scoring Tool Coverage
- Thresholds
- Causal Assessment
- Regulatory Guidance

Scoring Tool

- The Panel supports the use of the hybrid scoring tool
  - Includes both species-specific and biological community responses
  - Science Team will need to work on developing a simple explanation of this tool
- Some additional model evaluation would build confidence
  - Independent validation data sets
  - Simulation of impairment data to test responsiveness
  - What are the actual taxa or metrics that are driving scoring tool disagreement
- The Team will need to automate the calculation of this more complex scoring tool

Determining Scoring Tool Coverage

- A multi-variate approach is preferred
  - Include core dimensions of natural variability that biology responds to
- Guidance should be developed for stakeholders who assert their stream is not covered by this tool
- Even for sites outside the experience of the models, assessment options are still available
  - i.e., upstream-downstream

Thresholds

- Select thresholds based on distributions of reference condition
  - Need to assure some ecological meaningfulness
  - This approach can be used for developing categories of impact
- Test site uncertainty should be included
- Incorporating multiple samples at the test site is preferable: two options
  - Binomial approach (frequency of exceedence)
  - Mean site condition
- Ensure condition is assessed consistently at all sites

Causal Assessment

- Causal Assessment is important for progress in bio-objectives development
  - Panel recognizes that CADDIS is an imperfect tool and needs refinement
- CA needs to take advantage of its large data set to streamline causal assessment
  - This unique opportunity should reduce future costs
- CA needs to improve comparator site selection
  - Incorporate comparators outside the watershed
- CA needs to improve diagnostic tools
  - Regional response models (i.e., Relative risk)
  - Species specific response models
  - Laboratory based species sensitivity distributions

Regulatory Guidance

- CA’s working definition of “perennial” and “wadeable” seem appropriate
  - This definition is the foundation of the scoring tools

- Inference of segment-scale biological condition from a single site should be done cautiously
  - Additional samples at multiple locations may be needed

Appendix 15

WORK PLAN

Predicting Biological Integrity of Streams Across a Gradient of Development in California Landscapes

Raphael Mazor, Martha Sutula, Eric Stein (SCCWRP)
Andy Rehn and Pete Ode (CDFW)

Introduction

The California State Water Resources Control Board (State Water Board) is developing a combined Biostimulatory (nutrient) and Biointegrity policy for wadeable streams, hereto referred to as the Biostimulatory-Biointegrity Project. The scientific approach supporting this project is grounded in biological assessments of the health of benthic macroinvertebrate and algal communities. The State is supporting the use of standardized bioassessment indices to quantify the biological integrity and support of aquatic life uses in wadeable streams. The benthic macroinvertebrate index (i.e., the California Stream Condition Index, or CSCI) has previously been developed (Mazor et al. 2016). An algal stream condition index (ASCI) is currently under development, with a provisional ASCI expected fall 2017 (see ASCI work plan).

As natural landscapes are converted to support urban or agricultural uses, the underlying hydrologic, physical, and biogeochemical factors within the stream and its catchment that support healthy stream communities are altered, potentially harming aquatic life. Developed landscapes are associated with an increase of many stressors in streams, such as elevated contaminant and nutrient concentrations, altered flow regimes, sedimentation, and habitat degradation (e.g., Waite et al. 2012). In some streams, direct channel modifications (e.g., bank armoring) may also limit opportunities to sustain high-quality ecological conditions for aquatic life. In these highly developed settings, the large number of linked stressors may prevent a stream from supporting its beneficial uses or attaining high scores on indices of biological condition. Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards. In these circumstances, the range of CSCI and/or ASCI scores may be constrained, but targeted restoration could improve conditions. Key technical questions underpinning the range of options and prioritization of management actions for wadeable streams along the continuum from undeveloped to highly developed landscapes found within California are: For which streams is biological integrity constrained by development in the catchment? How can they be identified and mapped? What are the ranges of biological conditions these developed landscapes can support?

The State Water Board is seeking to protect biointegrity in streams, including streams where integrity is constrained by development. Identifying landscapes where development has a high likelihood of limiting biointegrity is an important first step to identifying effective management options. This creates a technical need for 1) a simple, reproducible, and easy-to-understand methodology for identifying landscapes where development has a high likelihood of limiting biointegrity and 2) predicting expectations for CSCI and (when available) ASCI indices screening tool or starting point for discussions on appropriate management strategies. These analyses create a technical foundation for the State Water Board and the Regional Boards to protect biological integrity in streams by informing appropriate biological condition expectations or by prioritizing sites long and short term restoration activities in these landscapes.

Geographic information systems (GIS) are commonly used to quantify landscape development within stream catchments. Estimating landscape alteration in catchments has traditionally been time-consuming for large-scale programs that monitor hundreds of sites annually, but recent tools (i.e., STREAMCAT, Hill et al. 2015) have made it possible to rapidly estimate landscape alteration in all streams in California represented by the National Hydrography Dataset Plus (NHD Plus) stream network. STREAMCAT therefore presents an opportunity to model the influence of landscape alterations on stream bioassessment scores on a large scale, and to apply predictions of these models to any stream represented in NHD Plus. These models have the potential to predict a range of likely scores in a stream given a degree of landscape alteration, setting the stage for policy discussions about the level of support that these streams in developed landscapes provide to beneficial uses.

Study Objective, Conceptual Approach to Model Landscape Influences on Stream Bioassessment Index Scores

The purpose of this study is to explore constraints on bioassessment index scores in streams across a continuum of landscape development, using a predictive, GIS approach. Key graphics from this analysis will be used to support discussions between the Water Board and its Regulatory and Stakeholder Advisory Groups on policy options to prioritize and improve the management of streams in developed landscapes.

The GIS approach involves developing models that predict a range of bioassessment index scores based on measures of landscape development. The product of these models is a map of likely CSCI (and when available, ASCI) scores for each segment. The intent of such a map is to identify watersheds where discussions of policy options for undeveloped versus developed landscapes could be productive. This map is intended to be used as a screening tool or starting point for discussions; it is not intended to be a one-off, definitive assessment that is used to set expectations for developed landscapes without further field level investigations of stressors and causal factors.

This approach relies on the following definition of “developed landscapes”:

Landscapes where development is likely to limit bioassessment index scores.

Development of a GIS model and application to predict likely bioassessment index scores in developed landscapes require three types of decisions:

1. *Developed Land Uses*. Developed landscapes can be characterized by variables in the STREAMCAT dataset related to human alterations, such as urban and agricultural land-use types in the National Land Cover Dataset, land cover imperviousness, etc. (Table 1). Other variables could be included or excluded, but must be limited to variables included in or easily added to STREAMCAT.
2. *Likelihood*. The likelihood of achieving the desired biological condition can be calculated by statistical models, but determining if a likelihood is low enough to be considered "unlikely" is a value-based (i.e., non-technical) decision.
3. *Desired biological condition:* The management objective, as defined by bioassessment index scores, here to referred to as "assessment endpoints" (Biostimulatory-Biointegrity Project Science Plan).

Decisions on which developed landscape variables to include must occur during model development, while discussion of values appropriate to set the likelihood and desired CSCI and ASCI assessment endpoints are model application questions, all of which will ultimately be made by the Water Board. In order to foster discussion and provide the regulatory (RG) and stakeholder advisory groups (SAG) an opportunity to provide feedback on these three decisions, the Technical Team will iteratively engage the RG and the SAG in the model development and model application phases to provide ample opportunity for this feedback to occur.

Scope of Work:

The study has three tasks:

1) Develop models to predict a range of CSCI and ASCI scores based on measures of landscape development from the STREAMCAT dataset;
2) Apply the models to the entire NHD Plus stream network represented in the STREAMCAT dataset, classify stream segments based on likelihood of achieving target scores, and create maps illustrating these classifications, in order to engage Water Board staff and advisory groups on decisions on likelihood and CSCI and ASCI assessment endpoints; and
3) Produce a technical memo with key graphics and model output.

Task 1. Develop models to predict a range of CSCI and ASCI scores based on measures of landscape development derived from the STREAMCAT dataset

A dataset representing CSCI scores across a range of site conditions in California will be aggregated. Index scores from each site will be snapped to the corresponding stream segment in NHD Plus. STREAMCAT data characterizing landscape alteration variables (e.g., percent urban land cover, percent cropland, catchment imperviousness; Table 1) will be associated with each bioassessment site. Appropriate statistical models (e.g., quantile random forest) will be calibrated to associate measures of landscape development with bioassessment scores. A models will also be developed for ASCI, though decisions on which land use variables and likelihood values to use will focus on CSCI only, since a provisional ASCI index is anticipated late stage (Fall 2017).

Water Board staff will make provisional decisions on land use variables to include. The initial proposal will be based on consultation with the RG. The proposed land use variables and rationale will be presented to the SAG for feedback.

Deliverable:
1.1 Draft models and related graphics to predict bioassessment scores, in iterative stages of feedback.
1.2 Descriptive summaries of models, including evaluations of model performance, and list of landscape development variables in STREAMCAT selected for use in the models.

Table 1. List of STREAMCAT variables that can be evaluated in landscape modeling exercise. Most of these variables are calculated at multiple spatial scales.

Potential variables	Description
CanalDens	Density of NHDPlus line features classified as canal, ditch, or pipeline (km/ square km)
DamDens	Density of georeferenced dams (dams/ square km)
DamNrmStor	Volume all reservoirs (NORM_STORA in NID) per unit area (cubic meters/square km)
HUDen2010	Mean housing unit density (housing units/square km)
MineDens	Density of mines sites and within 100-m buffer of NHD stream lines (mines/square km)
PctAg2006Slp10	% area classified as ag land cover (NLCD 2006 classes 81-82) occurring on slopes ≥ 10%
PctAg2006Slp20	% area classified as ag land cover (NLCD 2006 classes 81-82) occurring on slopes ≥ 20%
PctCrop2006	% area classified as crop land use (NLCD 2006 class 82)
PctHay2006	% area classified as hay land use (NLCD 2006 class 81)
PctImp2006	Mean imperviousness of anthropogenic surfaces
PctUrbHi2006	% area classified as developed, high-intensity land use (NLCD 2006 class 24)
PctUrbLo2006	% area classified as developed, low-intensity land use (NLCD 2006 class 22)
PctUrbMd2006	% area classified as developed, medium-intensity land use (NLCD 2006 class 23)
PctUrbOp2006	% area classified as developed, open space land use (NLCD 2006 class 21)
PopDen2010	Mean populating density (people/square km)
RdCrs	Density of roads-stream intersections (2010 Census Tiger Lines-NHD stream lines) (crossings/square km)
RdDens	Density of roads (2010 Census Tiger Lines) (km/square km)

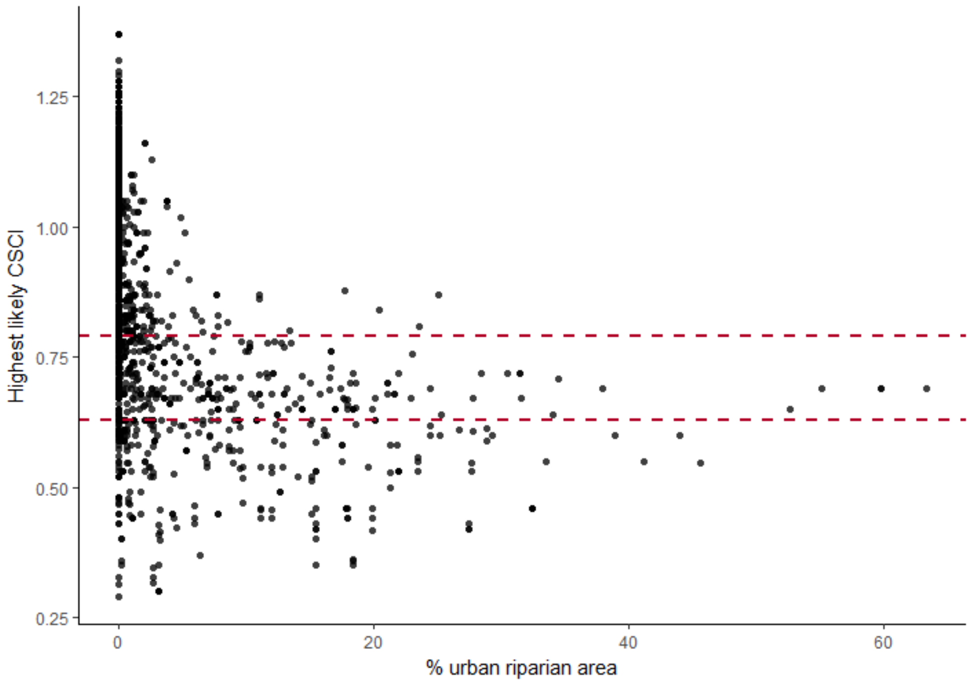


Figure 1. An example of the highest likely CSCI scores predicted by a quantile random forest model relating developed land use variables to biological integrity. The x-axis is percent of high density urban land cover within a 100-m buffer around the NHD stream lines (one of the variables included in example model). Dots above the top red line represent sites that are unconstrained by development (in this example, >10% chance of CSCI scores > 0.79). Dots between the two red lines are moderately constrained by development (<10% chance of CSCI scores > 0.79). Dots below the bottom red line are highly constrained by development (<10% chance of CSCI scores > 0.63). In this example, the 90th percentile of predicted scores represents the highest likely CSCI score.

Task 2. Apply the models to engage Water Board staff and advisory groups on discussions of sensitivity of model output to choice of likelihood and assessment endpoint

The purpose of this task is to help State Water Board staff and advisory groups understand how choice probabilities used to define modeling likelihood and desired assessment endpoint affects mapped categories of streams. The GIS mapping methodology will be applied to entire NHD Plus network of streams in California included in the STREAMCAT database. For selected regions or watersheds, the influence of key decision-points (e.g., minimum thresholds for acceptable bioassessment index scores, or minimum acceptable likelihood for attainment of these thresholds) will be illustrated by showing how the decisions described above influence the percentage and spatial extent of the stream network within the developed category. For example, the Water Board may define constrained channels as those with less than a 10% chance to achieve a CSCI score above 0.63 (e.g., dots below the bottom dashed line in Figure 1); maps will then be generated across the state to highlight which streams are designated as constrained under this definition, thereby helping stakeholders see the implications of this classification for their watersheds (e.g., segments shown as red lines in Figure 2).

Deliverable: 2.1 Interactive maps and oral presentations with maps, graphics, summary tables of the stream drainage network showing model outputs, e.g., maximum score likely to be attained in each stream segment (Figures 2 and 3) as a function of choice of likelihood and assessment endpoint value.

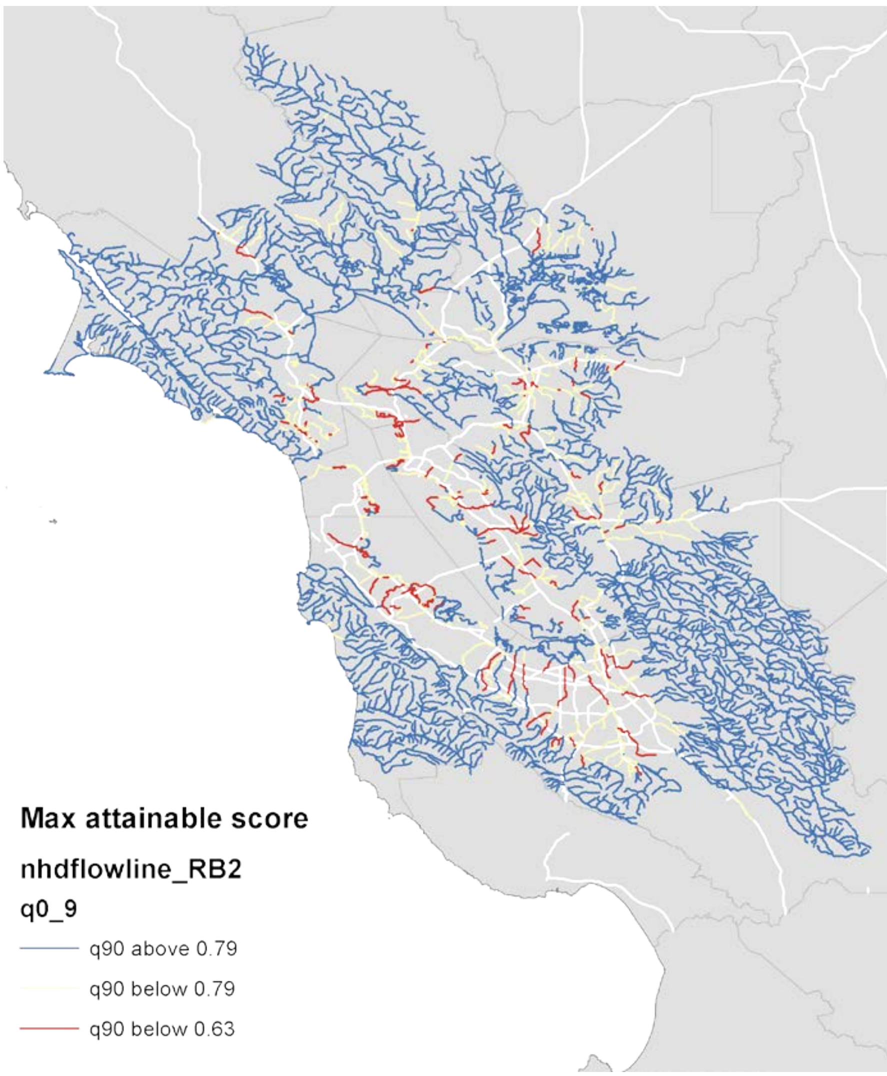


Figure 2. Map showing the classification of stream segments in the San Francisco Bay Area based on landscape development. In this map, attainability is defined as the 90th percentile of model predictions for each segment. Blue segments: Unconstrained by development, as described in Figure 1. Yellow segments: Moderately constrained by development. Red segments: Highly constrained by development.

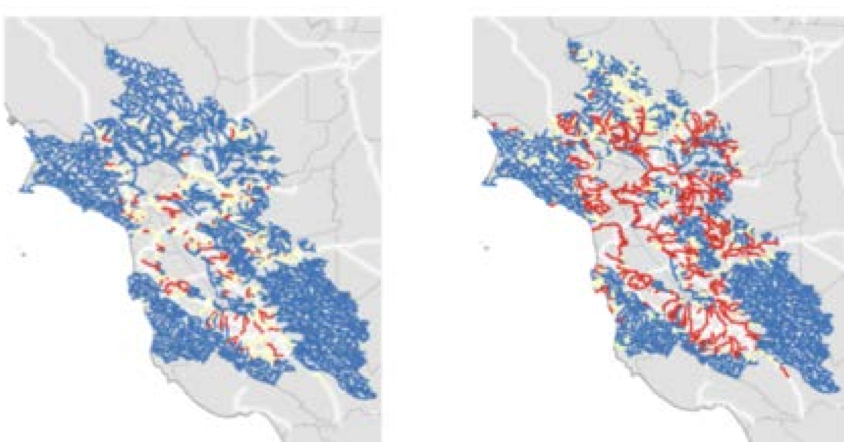


Figure 3: Example of maps generated with two different probabilities to define

likelihood. The map on the left was generated with a 10% probability to define likely scores, whereas the map on the right was generated with a 50% probability.

Task 3. Produce a Technical Memo with Key Graphics and Model Output

Based on feedback from group discussions and Water Board direction from Task 2, a reduced set of interactive maps and graphics can be generated to support this discussion. The purpose of this task is produce a technical memo with this reduced set of key graphics and model output in a format that can be easily shared and used to support discussions among Water Board staff and its advisory groups on policy options for channels in developed versus undeveloped landscapes. The maps and graphics will include ASCI scores and a linkage to Biological Condition Gradient calibration (see BCG workplan), and versions of maps and graphics to demonstrate policy options under consideration, as requested by Water Board staff.

Deliverables: 3.1) technical memo summarizing methodology and results of task 1 and 2, 3.2) model output that can be viewed in an interactive mode (e.g. Google Earth kmz file), 3.3) presentation to RG and SAG of illustrating policy options under consideration, upon request of Water Board staff.

Schedule of Interim Milestones and Deliverables

Task	Description	Estimated Date
1.1	Draft models and related graphics to predict bioassessment scores, in iterative stages of feedback	May 2017 (CSCI) September 2017 (ASCI)
1.2	Descriptive summaries of models, including evaluations of model performance, and list of landscape development variables in STREAMCAT selected for use in the models.	May 2017 and iteratively thereafter
2.1	Interactive maps and oral presentations with maps, graphics, summary tables as a function of choice of likelihood and assessment endpoint value.	May 2017 and iteratively thereafter
3.1	Draft and final technical memo summarizing methodology and results	September 2017 December 2017
3.2	Interactive model output (e.g. google earth .kmz file)	September 2017 December 2017
3.3	Presentation to RG and SAG of illustrating policy options under consideration	Upon request by Water Board staff

Citations

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Appendix 16

B495

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COMPARISON OF STREAM INVERTEBRATE RESPONSE MODELS FOR BIOASSESSMENT METRICS[1]

Ian R. Waite, Jonathan G. Kennen, Jason T. May, Larry R. Brown, Thomas F. Cuffney, Kimberly A. Jones, and James L. Orlando[2]

ABSTRACT: We aggregated invertebrate data from various sources to assemble data for modeling in two ecoregions in Oregon and one in California. Our goal was to compare the performance of models developed using multiple linear regression (MLR) techniques with models developed using three relatively new techniques: classification and regression trees (CART), random forest (RF), and boosted regression trees (BRT). We used tolerance of taxa based on richness (RICHTOL) and ratio of observed to expected taxa (O/E) as response variables and land use/land cover as explanatory variables. Responses were generally linear; therefore, there was little improvement to the MLR models when compared to models using CART and RF. In general, the four modeling techniques (MLR, CART, RF, and BRT) consistently selected the same primary explanatory variables for each region. However, results from the BRT models showed significant improvement over the MLR models for each region; increases in R^2 from 0.09 to 0.20. The O/E metric that was derived from models specifically calibrated for Oregon consistently had lower R^2 values than RICHTOL for the two regions tested. Modeled O/E R^2 values were between 0.06 and 0.10 lower for each of the four modeling methods applied in the Willamette Valley and were between 0.19 and 0.36 points lower for the Blue Mountains. As a result, BRT models may indeed represent a good alternative to MLR for modeling species distribution relative to environmental variables.

(KEY TERMS: modeling; macroinvertebrates; watershed disturbance; land use; prediction; statistical assessment.)

Waite, Ian R., Jonathan G. Kennen, Jason T. May, Larry R. Brown, Thomas F. Cuffney, Kimberly A. Jones, and James L. Orlando, 2012. Comparison of Stream Invertebrate Response Models for Bioassessment Metrics. *Journal of the American Water Resources Association* (JAWRA) 48(3): 570-583. DOI: 10.1111/j.1752-1688.2011.00632.x

INTRODUCTION

Modeling has increased markedly in the past decade in all areas of ecology, and major advances have been made in conceptual models and statistical techniques (Leathwick *et al.*, 2005; Austin, 2007; Cabecinha *et al.*, 2007; Turak *et al.*, 2011), which, in turn, help practitioners derive response models that better support the needs of bioassessment programs. A

[1]Paper No. JAWRA-11-0093-P of the *Journal of the American Water Resources Association* (JAWRA). Received July 26, 2011; accepted December 2, 2011. **Discussions are open until six months from print publication**.

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fundamental goal of bioassessment in stream ecology is a better understanding of the effects of human land use on stream biota and the processes at various scales that cause these effects. However, streams are complex spatial and temporal habitat mosaics that are directly and indirectly influenced by a combination of natural geology, climate, and human disturbance (Stanford *et al.*, 2005). Stream ecologists are trying to understand the spatial scales and processes associated with human and natural disturbances that are affecting the biota. Models provide a useful framework for testing hypotheses, determining potential direct and indirect linkages, and directing where further research is needed. The expansion and application of multivariate models in stream ecology are helping to address these issues and hopefully will lead to a broader understanding of ecological and anthropogenic pathways and responses (Oberdorff *et al.*, 2001; Cabecinha *et al.*, 2007; Turak *et al.*, 2011; Waite *et al.*, 2010).

Much of the research documenting the effects of land-use change on stream biota indicates that as the total watershed area in agricultural and/or urban land use increases, individual biological metrics and multimetric indices (MMIs) (such as an Index of Biotic Integrity, IBI) that reflect compositional changes in sensitive species generally decrease (Paul and Meyer, 2001; Allan, 2004; Van Sickle *et al.*, 2004; Cuffney *et al.*, 2005; Ode *et al.*, 2008; Waite *et al.*, 2010). Though some researchers have found a threshold response (i.e., a nonlinear or step function) of individual or multimetric biological indices to land-use indicators (e.g., Davis and Simon, 1995; Wang *et al.*, 2001; Walsh *et al.*, 2005; Hilderbrand *et al.*, 2010; King and Baker, 2010) much of the literature indicates that the response more often is a simple monotonic response with no initial resistance (Booth, 2005; Cuffney *et al.*, 2005, 2010; Kennen *et al.*, 2005; Morgan and Cushman, 2005; Roy *et al.*, 2005; Stanford *et al.*, 2005; Waite *et al.*, 2008, 2010). The debate about possible threshold responses continues not only because of the interest in determining, from a management perspective, where a threshold might occur along a land-use gradient, but also because of the effect thresholds and the resultant nonlinear responses have on the application of various modeling techniques. If biological responses to landscape measures are indeed complex and nonlinear, then newer modeling techniques such as classification regression trees (CART), random forest (RF) and boosted regression trees (BRT), multilevel hierarchical modeling, structural equation models, or artificial neural networks may be necessary to model these responses (Grace, 2006). However, if various biological responses to human disturbance are commonly simple and linear, then they should be more easily modeled via standard regression techniques, which are typically easier to develop and interpret.

There are three commonly used bioassessment variable types including individual biological metrics (e.g., Ephemeroptera, Plecoptera, and Trichoptera richness or EPT), combining individual metrics into a multimetric index (e.g., IBI) and development of the observed/expected ratio metric (O/E). Each method has its advantages and disadvantages, yet sometimes they can give different results in differ environmental settings (Herbst and Silldorff, 2006; Chessman *et al.*, 2010; Hawkins *et al.*, 2010). It is possible that individual metrics may be more stressor gradient specific and multimetric indices better at more general disturbance gradients, however, detailed comparison of these three methods is beyond the scope of this paper. We focus on two common individual biological metrics, the general tolerance of invertebrates to a multitude of stressors including sediment, temperature, dissolved oxygen, hydrological and habitat changes, nutrients, and contaminants following Barbour *et al.* (1999) and the ratio of the observed/expected taxa based on the RIVSPAC method (River Invertebrate Prediction and Classification System) (Clarke, 2000; Moss, 2000). The number of tolerant taxa is expected to increase while the O/E value is expected to decrease as the amount of disturbance to the stream increases.

Using the same dataset used in this paper, Waite *et al.* (2010) developed macroinvertebrate response models for three regions in the western United States (U.S.) and the best multiple linear regression (MLR) models based on Akaike Information Criterion (AIC) and R^2 from each individual region required only two or three explanatory variables to model macroinvertebrate metrics to explain 41-74% of the variation. In each region, their best model contained some measure of urban and/or agricultural land use, yet often the model was improved by including a natural explanatory variable such as mean annual precipitation or mean watershed slope (for the MLR equations, see Waite *et al.*, 2010). Two macroinvertebrate metrics, the richness of tolerant macroinvertebrates (RICHTOL) and some form of EPT richness, were common response variables in models developed among the three regions (Waite *et al.*, 2010). Models were developed for the same two invertebrate metrics even though the geographic regions they modeled reflect distinct differences in precipitation, geology, elevation, slope, population density, and land use. L. R. Brown, J. T. May, A. C. Rehn, P. R. Ode, I. R. Waite, and J. K. Kennen (personal communication) were also able to develop strong models using linear modeling techniques (MLR), they modeled an invertebrate index of biotic integrity (BIBI) across a gradient of urbanized streams in southern California and were able to explain approximately 48% of the variation based on MLR models including classification accuracy of 69 and 87% for impaired and unimpaired sites, respectively.

One important question that researchers are working to answer is whether the use of newer, more complex modeling techniques such as CART and regression trees improves our ability to predict biological metrics and potentially provide new insights into response patterns and mechanistic pathways. Generalized linear models (GLMs) and generalized additive models (GAMs) were introduced in the 1980s and 1990s as improved methods over MLR for data with non-normally distributed errors (e.g., presence–absence and count data) or nonlinear relations and usually outperform single regression trees (Elith *et al.*, 2008). Regression trees are one type of technique within the commonly used CART or decision tree family (e.g., Breiman *et al.*, 1984; De'ath and Fabricius, 2000; Prasad *et al.*, 2006). Trees attempt to explain variation in one categorical (classification) or continuous (regression) response variable by one or more explanatory variables, the resultant output being a dendogram or tree with varying numbers of branches or nodes. These techniques have a few properties that are highly desirable for ecological data analysis: (1) they can handle numeric, categorical, and censored response variables, (2) they are not affected by explanatory variables that follow non-normal distributions (i.e., skewed, Poisson, or bimodal), and (3) they can model complex interactions simply (De'ath, 2007). Maloney *et al.* (2009) found that CART models of watershed disturbance on BIBI values provided results that were intuitive and easy to interpret but they did not classify sites any better than logistic regression models; however, RF models showed minor improvements in performance over the other models. De'ath (2007) and Elith *et al.* (2008) show that BRTs outperform GLMs and GAMs in variable selection, predictive ability (higher R^2 and lower error), and can handle sharp discontinuities in data that are difficult for the other methods. Aertsena *et al.* (2010) also showed that BRT outperformed most modeling techniques (i.e., MLR, GLM, GAM, and CART), with the exception of artificial neural networks.

Over the past decade the estimate of O/E has become a common measure of biological condition for use in bioassessments (e.g., Hawkins, 2006; Carlisle *et al.*, 2008). The expected taxa for a site are commonly estimated by models (e.g., RIVPACS) (Clarke, 2000; Moss, 2000) of reference sites; this value is then compared to the actual taxa collected at a site. Models based on this approach have been developed in many international regions (e.g., Europe, New Zealand, and Australia) (Davies, 2000; Clarke and Murphy, 2006) and for separate regions within the U.S., including many states (Hubler, 2008). Recently, Hawkins *et al.* (2010) compared the response of three types of O/E models with five versions of MMIs for macroinvertebrates and found that in general, the O/E models were better able to distinguish managed or disturbed sites from reference sites than the MMIs. Due to these results and to its overall national and international popularity, we wanted to evaluate how models developed using O/E as the response variable would compare to models developed using single metrics, such as RICHTOL.

Our goal in this paper is to compare the overall performance (i.e., model fit, or R^2) of models developed using standard MLR techniques with more complex models developed using newer alternative techniques such as CART, RF, and boosted regression for the common macroinvertebrate metrics RICHTOL and O/E as the response variables. Also, we believe that the development of watershed disturbance predictive models such as those presented herein will build upon previous research to help the potential derivation of more complex models to better understand disturbance pathways in the landscape and ultimately the biocomplexity of aquatic systems.

METHODS

Data Aggregation and Landscape Analysis

For this comparative analysis we used the datasets (U.S. Geological Survey, U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, and California Department of Fish and Game) previously aggregated for three regions in the western U.S. by Waite *et al.* (2010). A brief summary of the methods follows. Sites were evaluated based on the following criteria: invertebrate data sampled with comparable methods; upstream watershed area of between 13 and 259 km^2; and watersheds could not be nested (i.e., no spatial autocorrelation). Sites meeting these conservative criteria resulted in three study regions: Coastal Southern California ($n = 55$), the Blue Mountains ecoregion of eastern Oregon ($n = 148$), and the Willamette Valley ecoregion in north-central Oregon ($n = 96$) (Figure 1).

For consistency, watersheds were re-delineated for the selected sampling sites within the three study regions using USGS 7.5 min quadrangle digital raster graphics as base layers. The digital raster graphics were displayed on-screen along with National Hydrography Dataset (NHD) high resolution stream lines for each region (U.S. Geological Survey, 2007).

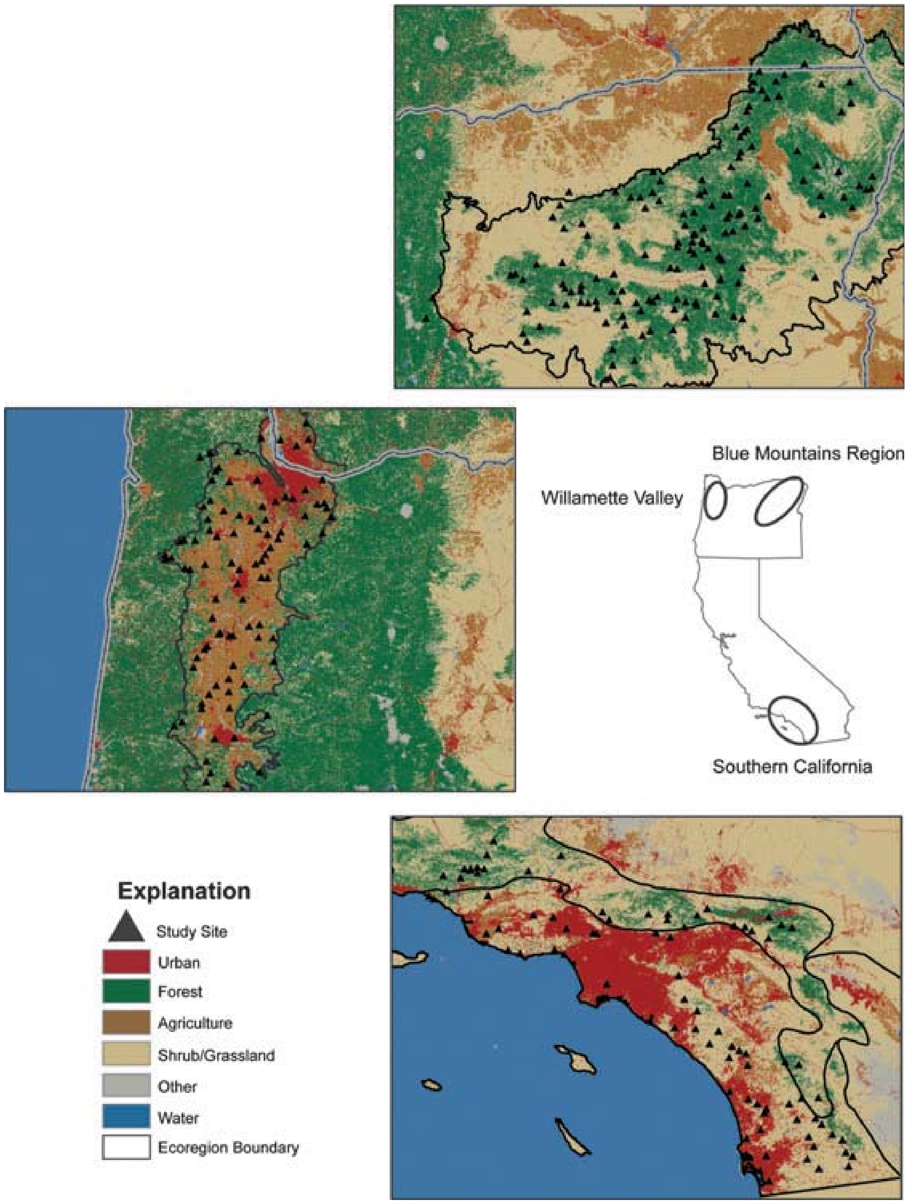

FIGURE 1. Map Showing Land Use and Land Cover for the Three Modeling Regions: Blue Mountains and Willamette Valley, Oregon, and Southern California.

Watershed boundaries were digitized on-screen at a scale of 1:10,000 or larger. Adjacent watershed polygons were edge matched to eliminate all overlaps and gaps. All work was conducted using ArcGIS, ArcMap 9.2 (Environmental Systems Research Institute, Redlands, CA; Table A1) GIS software.

Riparian buffer zone polygons were created within each watershed, extending 2 km upstream from the outlet of each watershed along the main stem and all tributaries and 90 m on either side of the stream centerlines. The buffers were created by selecting the appropriate NHD stream lines within each watershed and creating routes along each main stem and tributary flow path. The routes were then clipped to a distance of 2 km from the basin outlet and buffered. All abbreviations for riparian based explanatory variables begin with the letters "Rip"; otherwise, variables are watershed based (Table 1).

Spatial datasets representing landscape metrics of watershed disturbance were created for each watershed and riparian zone buffer from available national and regional datasets (Table A1) and included elevation, slope, land cover (1992 and 2001), population density, road networks, soil infiltration capacity, hydrography, pollution point sources, dams, and precipitation. Land-use summaries were based on either 1992 or 2001 spatial data (as described in Vogelmann *et al.*, 2001; Homer *et al.*,

TABLE 1. Description, Variable Code and Definition of Explanatory (landscape) and Predictor (invertebrate metrics) Variables Used for Response Model Development.

Explanatory Variables: Landscape		
Description	**Variable Code**	**Definition**
Watershed Scale Variables		
Percent urban land use	Urban	Percent watershed area in urban land use (NLCD 2000 categories 21, 22, 23, and 24)
Percent agricultural land use	Ag	Percent watershed area in agricultural land use (NLCD 2000 category 82)
Sum of percent Ag + Urban	Ag + Urb	Sum of percent watershed area in urban (NLCD 2000 categories 21, 22, 23, and 24) and agricultural (NLCD 82) land use
Percent forest	Forest	Percent watershed area in forest land use (NLCD 2000 categories 41, 42, 43)
Percent pasture	Pasture	Percent watershed area in pasture land use (NLCD 2000 category 81)
Percent shrub/scrub	Shrub	Percent watershed area in shrubland, shrub/scrub (NLCD 2000 category 52)
Road density	RdDens	Road density in watershed = Road length (km)/watershed area (km^2)
Mean population density	PopDen	Watershed mean population density based on 2000 census (persons/km^2)
Minimum elevation	Min-Elev	Elevation (m) at stream site, pour point of watershed
Mean slope percent	Slope	Mean percent watershed slope
Manmade stream density	MmStreams	Manmade stream density in watershed = manmade stream length (km)/ watershed area (km^2)
Mean annual precipitation	MnAnnPrecip	Mean annual precipitation (cm)
Soil infiltration rate	Soil_Mod-Infil	Hydrologic soil group B, moderate infiltration rate (min. infiltration rate 4-8 mm/h)
Riparian Scale Variables		
Percent urban land use	Rip_Urban	Percent buffer area in urban land use (NLCD 2000 categories 21, 22, 23, and 24)
Percent agricultural land use	Rip_Ag	Percent buffer area in agricultural land use (NLCD 2000 category 82)
Sum of percent Ag + Urban	Rip_Ag + Urb	Sum of percent buffer area in urban (NLCD 2000 categories 21, 22, 23, and 24) and agricultural (NLCD 82) land use
Percent forest	Rip_Forest	Percent buffer area in forest land use (NLCD 2000 categories 41, 42, 43)
Percent pasture	Rip_Pasture	Percent buffer area in pasture land use (NLCD 2000 category 81)
Percent shrub/scrub	Rip_Shrub	Percent buffer area in shrubland, shrub/scrub (NLCD 2000 category 52)
Road density	Rip_RdDens	Road density in buffer = Road length (km)/watershed area (km^2)
Mean population density	Rip_PopDens	Buffer area mean population density based on 2000 census (persons/km^2)
Mean slope percent	Rip_Slope	Mean percent buffer slope
Maximum elevation	Rip_Max-Elev	Maximum buffer elevation (m)
Response Variables: Invertebrate Metrics		
Observed/expected	O/E	Ratio of number of observed taxa at a site over the expected taxa based on modeled reference sites
Tolerant richness	RICHTOL	Average USEPA tolerance values for sample based on richness

2004), depending on which data source was closer to the macroinvertebrate sample date for that watershed. Watersheds and riparian zone buffers were used to define zones for analysis and calculate summary statistics. The 1992 and 2001 land cover datasets used slightly different classification schemes. Uniform codes based on the 2001 classification scheme were assigned to all land cover classes in the final summary statistics table (Fry *et al.*, 2009). We did not assess the distribution pattern of land use/land cover within the watershed though this can be important in some situations.

Description of Modeling Regions

The Coastal Southern California (SoCal; Southern and Central California Chaparral and Oak Woodlands Ecoregion) region has a Mediterranean climate of hot, dry summers and cool, moist winters (Ode *et al.*, 2005). Average precipitation at each site ranges from 25 to 50 cm/year. The geology of the ecoregion is dominated by recently uplifted and poorly consolidated marine sediments. Vegetative cover in this region consists mainly of chaparral and oak woodlands, though grasslands occur in some lower elevations and patches of pine are found at higher elevations (open low mountains or foothills). The landscape is currently dominated by urban development; the human population is approximately 19 million and is projected to exceed 28 million by 2025 (Ode *et al.*, 2005). Outside the urban centers, much of this region was historically grazed by domestic livestock or cultivated for fruits and vegetables, but most of this land has since been converted to urban uses.

The Blue Mountains (Blue_Mt) are the westernmost range of the Middle Rocky Mountains and, like the Cascade Range, are largely volcanic, with fertile plateaus and deeply fissured river valleys. Carved by two rivers (the John Day and Grande Ronde Rivers) the landscape has steep hillsides, bluffs and rimrock faces. Temperature and precipitation are highly correlated with elevation. Precipitation ranges from 22 to 45 cm/year along the river valleys and is >150 cm/year in the nearby mountains. This region is dominated by coniferous forests in mid to higher elevations and shrub and grassland in lower elevations, though much of the latter has been displaced by agriculture and grazing. The region has no large cities and urbanization is limited to scattered smaller cities and small towns.

The Willamette Valley (Will_V) ecoregion contains a mixture of rolling prairies, mixed forests, and extensive lowland valley wetlands. With temperate, dry summers and cool, wet winters, the Willamette River basin and surrounding area is characteristic of the Pacific Northwest climate. About 90% of the annual precipitation (100-130 cm/year) occurs during October through May (Uhrich and Wentz, 1999), falling as rain in the valley and snow in the mountains. The land use/land cover in the valley plains and foothills is primarily cultivated crops, pasture, and grasslands. Urbanization ranges from minimal to extensive (Waite *et al*., 2008). Centered on the confluence of the Columbia and Willamette Rivers, Portland is the most populous city in Oregon, with 539,000 people in city limits and nearly 3 million people in the Portland metropolitan area (U.S. Census Bureau, 2000). The population in the metropolitan area increased almost 30% from 1990 to 2000, with some suburban populations increasing more than 80% during the same period (U.S. Census Bureau, 2000). The drainage network in the Willamette Valley combines natural tributaries, complex networks of canals in agricultural areas, and stormwater canals and groundwater infiltration wells in cities.

The three geographic regions modeled in this study have differing natural settings and the extent and type of human disturbance in each respective region. SoCal has the driest climate, intermediate mean stream site elevation (Min-Elev) and percent agriculture, and the highest population density. Blue_Mt has the highest mean site elevation and mean watershed slope, intermediate mean precipitation, and the lowest population density, percent urban, and percent agriculture. Will_V has the greatest precipitation, lowest minimum site elevation, and the highest percent agriculture.

Macroinvertebrate Data

Macroinvertebrate data from 1994 to 2005 assembled for this study were considered to be comparable in terms of sampling protocols (sampled habitat, number of composite samples, and total sampled area) and laboratory procedures, including sorting, subsample count level, and taxonomic resolution (personal communication state agency personnel, 2005; Waite *et al.*, 2010). In general, all macroinvertebrate samples were collected in similar habitats using kick-net techniques from five to eight separate areas and combined for a composite sample (Moulton *et al.*, 2002; Peck *et al.*, 2006; Hubler, 2008). Extensive review of the data was completed to make sure aggregated data from disparate sources included the same taxonomic groups, followed the same nomenclature, and had appropriate taxonomic resolution before data analysis was attempted. The Invertebrate Data Analysis System software (Cuffney, 2003) was used to resolve by region all taxonomic issues (taxonomic identification level and nomenclature), to remove ambiguous taxa (Cuffney *et al.*, 2007), and to randomly subsample raw counts to an equal 300 (Will_V) or 500 specimen count (the highest possible based on the data in each region) across all study regions. In general, data for dominant aquatic insect orders were resolved at genus level. Less common orders were often aggregated to family level. Rare organisms or those with difficult taxonomy were sometimes aggregated to order or higher. The dipteran family Chironomidae is considered an important bioindicator group, yet historically a difficult group to identify to genus or species. As a result, data for this group were assigned to six taxa levels (five subfamilies plus Chironomidae) from the various family to genus level identifications within the original data. Tolerance and functional group metrics were calculated using values from Barbour *et al.* (1999), supplemented with values from Wisseman's tolerances for the Pacific Northwest (Wisseman, 1996, unpublished data). Macroinvertebrate O/E values were estimated using two existing regional models (East and West of the Cascade Mountains) that were developed by Oregon Department of Environmental Quality (Hubler, 2008). O/E models were not ready for the SoCal region at the time of analysis so we were not able to test O/E values for this area.

MODEL DEVELOPMENT

Details of MLR model development procedures are outlined in Waite *et al.* (2010). In brief, model performance was assessed using a variety of statistics, including adjusted mean sum of squares (R^2), root mean squared error, AIC, predicted sum of squares, and regression coefficients in Waite *et al.* (2010). We adopted a model fitting approach for each response variable. We used a step-wise selection based on AIC for all models ranging from 1 to 5 environmental variables, as appropriate by region. If necessary, variables were transformed to improve their distributions to better adhere to assumptions of linearity. Models were developed for each geographic region separately due to the large spatial separation between each region and as described above, because the climatic and disturbance regimes were distinct. Model residuals, potential outliers, and interaction terms were evaluated. A description of variables used in model development is provided in Table 1. A MLR model was developed for the response variable RICHTOL for all three regions; it included two predictor variables (population density and riparian road density) for SoCal, three predictor variables for Blue_Mt (percent shrubs, percent agriculture, and mean annual precipitation in the watershed) and three predictor variables for the Will_V region (percent agriculture plus urban land use in the watershed, mean annual precipitation, and percent agriculture plus urban land use in the riparian zone) (Waite *et al.*, 2010). As a comparison to the MLR models developed by Waite *et al.* (2010) for RICHTOL, new models were developed for O/E for the Blue_Mt and Will_V regions.

To gain additional insight into these data and as a comparison against the MLR models, single regression trees, RF, and BRT models were developed for each region individually. Regression trees are one type of technique within the commonly used CART or decision tree family, and their use and technical details have been described extensively in the literature (e.g., Breiman *et al.*, 1984; De'ath and Fabricius, 2000; Prasad *et al.*, 2006); therefore, we will only provide a brief overview. Trees attempt to explain variation in one categorical (classification) or continuous (regression) response variable by one or more explanatory variables, the resultant output being a dendogram, or tree, with varying numbers of branches or nodes. Trees are developed following a hierarchical binary splitting procedure that attempts to find the best single explanatory variable that minimizes the within group and maximizes the among group dissimilarity in the response variable at each split. It does this for each explanatory variable entered into model development and can thus provide a list of the explanatory or predictive power of the variables. We used R statistics scripts and software (R Development Core Team, 2007, version 2.10.0) following the procedures outlined by Therneau and Atkinson (1997) to determine the proper single regression tree and the appropriate pruning of branches (De'ath and Fabricius, 2000; Prasad *et al.*, 2006). Trees have a few properties that are highly desirable for ecological data analysis: (1) they can handle numeric and categorical variables (2) they are not affected by explanatory variables that follow non-normal distributions (i.e., skewed, Poisson, or bi-modal), and (3) they can model complex interactions simply (De'ath, 2007).

Random forests and BRT are among a family of techniques used to advance single classification or regression trees by averaging the results for each binary split from numerous trees or forests thus reducing the predictive error and improving overall performance (De'ath, 2007; Elith *et al.*, 2008). In BRT, after the initial tree has been generated, successive trees are grown on reweighted versions of the data giving more weight to those cases that are incorrectly classified than those that are correctly classified within each growth sequence. Thus, as more and more trees are grown in BRT, the large number of trees increases the chance that cases that are difficult to classify initially are correctly classified, thus representing an improvement to the basic averaging algorithm used in RF (De'ath, 2007). Boosted trees and RF models retain the positive aspects of single trees seen in CART models, yet have improved predictive performance, nonlinearities and interactions are catered to or easily assessed, and they can provide an ordered list of the importance of the explanatory variables (Cutler *et al.*, 2007; De'ath, 2007). Though RF and BRT offers improved modeling performance over CART, the simple single tree obtained from CART is lost, making it more difficult to visualize the results. Partial dependency plots (PDP) are a way to visualize the effect of a specific explanatory variable on the response variable after accounting for the average effects of all other explanatory variables (De'ath, 2007; Elith *et al.*, 2008); these are presented in this paper for select models as examples (e.g., Figures 2 and 3). Random forest models were developed using the rpart library in R following methods outlined in Cutler *et al*. (2007) and BRT models were run using the gbm library in R and specific code from Elith *et al.* (2008). We used R^2 values for assessing the amount of variation explained among the four modeling techniques since it is a common and well understood measure that allowed us to put each model on the same measurement currency; other model performance measures such as confidence intervals and p-values are not included for simplicity.

RESULTS

In general, the four modeling techniques selected the same primary explanatory variables within each

TABLE 2. Explanatory Variables in Order of Importance in the Models for Four Modeling Methods for Two Macroinvertebrate Metrics for Each of Three Study Regions (SoCal, Southern California; Will_V, Willamette Valley; Blue_Mt, Blue Mountains, Oregon).

	MLR	CART	RF	BRT
SoCal				
RICHTOL	PopDen	PopDen	PopDen	PopDen
	Rip_RdDens	MmStreams	Min-Elev	Rip_Slope
		Min-Elev	Rip_Slope	Min-Elev
Will_V				
RICHTOL	Ag + Urb	Ag + Urb	Ag + Urb	Ag + Urb
	MnAnnPrecip	MnAnnPrecip	MnAnnPrecip	MnAnnPrecip
	Rip_Ag + Urb	Rip_Forest	Rip_Forest	Rip_Max-Elev
			Rip_Max-Elev	Rip_Forest
O/E	Ag + Urb	Forest	Forest	Ag + Urb
	MnAnnPrecip	Rip_Max-Elev	Rip_Max-Elev	Rip_Max-Elev
	Rip_Ag + Urb		Soil_Mod-Infil	MnAnnPrecip
			Rip_Forest	
Blue_Mt				
RICHTOL	Shrub	Shrub	Shrub	Shrub
	Ag	Slope	Slope	MnAnnPrecip
	MnAnnPrecip	MnAnnPrecip	MnAnnPrecip	Slope
O/E	MnAnnPrecip	Slope	Shrub	Slope
	Shrub	MnAnnPrecip	Slope	MnAnnPrecip
	Slope		MnAnnPrecip	Shrub

Notes: MLR, multiple linear regression; CART, classification and regression trees; RF, random forest; BRT, boosted regression trees; RICHTOL, average tolerance value for sample based on richness at a site; O/E, ratio of observed/expected taxa.

region with minor variation among model types (Table 2): (1) SoCal: population density, minimum elevation, and riparian slope, (2) Blue_Mt: percent shrub, mean annual precipitation (MnAnnPrecip), and watershed slope, and (3) Will_V: percent agriculture plus urban, MnAnnPrecip, riparian maximum elevation, and percent riparian forest (see Table 1 for definitions). Generally, the RICHTOL R^2 values for MLR were slightly higher than those for the CART and RF models for all three regions (Table 3); however, this was not the case for the O/E models for Blue_Mt. Nevertheless, these differences are probably not meaningful because the R^2 values for CART and RF models are determined by a cross-validation method that ensures no over-fitting and thus usually gives a lower, more conservative value than the MLR values. Interaction affects were tested for and found to not be significant in the models developed. Conversely, the BRT models showed considerable improvement in the R^2 values over all the other models for both response variables (i.e., RICHTOL and O/E). For example, the SoCal RICHTOL R^2 values for the MLR compared to the BRT model increased from 0.67 to 0.79, Blue_Mt showed an increase from 0.44 to 0.59 for RICHTOL and from 0.08 to 0.28 for O/E, and the Will_V R^2 values increased from 0.74 to 0.83 for RICHTOL and from 0.64 to 0.75 for O/E (Table 3).

TABLE 3. Comparison of R^2 Values for Four Modeling Methods for Two Macroinvertebrate Metrics for Each of Three Study Regions (SoCal, Southern California; Will_V, Willamette Valley; Blue_Mt, Blue Mountains, Oregon).

	MLR	CART	RF	BRT
SoCal				
RICHTOL	0.67 (2)	0.64 (3)	0.65 (3)	**0.79** (3)
Will_V				
RICHTOL	0.74 (3)	0.68 (3)	0.73 (4)	**0.83** (4)
O/E	0.64 (3)	0.62 (2)	0.61 (4)	**0.75** (3)
Blue_Mt				
RICHTOL	0.44 (3)	0.34 (3)	0.41 (3)	**0.59** (3)
O/E	0.08 (3)	0.15 (2)	0.07 (3)	**0.28** (3)

Notes: Number of variables in model in parentheses. MLR, multiple linear regression; CART, classification and regression trees; RF, random forest; BRT, boosted regression trees; RICHTOL, average tolerance value for sample based on richness at a site; O/E, ratio of observed/expected taxa. Highest R^2 value across all models is shown in bold.

The O/E metric derived from RIVPACS type models specifically calibrated for Oregon consistently had lower R^2 values than RICHTOL for the two regions tested (Table 3). Modeled O/E R^2 values were between 0.06 and 0.10 lower than RICHTOL values for each of the four modeling methods applied in the Will_V region and were between 0.19 and 0.36 points lower for the Blue_Mt region.

As mentioned above, all modeling procedures (i.e., MLR, CART, RF, and BRT) generally retained the same subset of explanatory variables. These variables, with some minor exceptions in the Blue_Mt study region, generally accounted for approximately a similar proportion of the variance in the

RICHTOL and O/E response models. R^2 values, however, do not provide a complete picture of the model response pattern, and the overall influence of a specific explanatory variable on the environmental system or process being modeled is typically lost when the model is fit to a linear or nonlinear form. Partial dependency plots, which are provided as a diagnostic tool in the BRT and RF model output, provide a way to more fully examine the relative influence of individual explanatory variables on the response variable given the modeled structure. As explained in De'ath (2007) and Elith *et al.* (2008), PDP provide a way to visualize the effect of a specific explanatory variable on the response variable after accounting for the average effects of all other explanatory variables. For example, PDPs for the four variables retained in the BRT model for Will_V are shown in Figure 2. In general, the plots show a near linear increase in RICHTOL as the amount of agriculture plus urban land use in the watershed increases (Figure 2A) and a decrease in RICHTOL as riparian maximum elevation increases (Figure 2D). However, the response in RICHTOL values flattens out at approximately 60% agriculture plus urban land use, then again increases rapidly from approximately 90 to 100%. Likewise, the PDP graph shows that there is rapid change in RICHTOL values from near 0 to 200 m in riparian maximum elevation followed by no response beyond 400 m. The pattern shown for mean annual precipitation (Figure 2B) follows the opposite pattern of the amount of agriculture plus urban land use in the watershed, RICHTOL values decrease rapidly from the lowest precipitation values until approximately 80 cm/year beyond which values show no response. As the amount of riparian forest cover declines (Figure 2C), RICHTOL values increase little until riparian forest values drop to about 30%, where there is a step-wise increase until the point when there is only about 5% riparian forest remaining, whereupon there is a rapid increase in tolerance values. The PDPs for O/E in the Will_V show remarkable similarity to that described above for RICHTOL except that, as one would expect due to the differences in the invertebrate metrics, the curves respond in opposite directions (Figure 3). There is a general linear decrease in O/E values as agriculture plus urban land use increases (Figure 3A), a sharp increase in O/E values as riparian maximum elevation increases to 200 m (Figure 3B) or when mean annual precipitation increases to about 70 cm/year (Figure 3C). As seen for RICHTOL, O/E showed an abrupt threshold-type response at low levels of riparian forest (Figure 3D) followed by a step

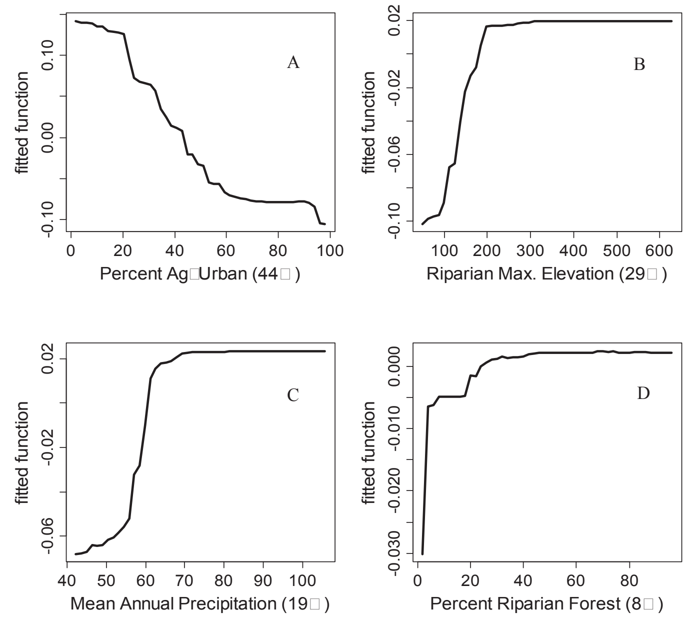

FIGURE 3. Partial Dependency Plots for Ag + Urb (A), Rip_Max-Elev (B), MnAnnPrecip (C), and Rip_Forest (D) in the Boosted Regression Model Developed for Observed/Expected (O/E) in Willamette Valley (Will_V). The y-axis represents the effect of the selected variable on the response variable O/E metric, the relative contribution of each explanatory variable is reported in parentheses. Refer to Table 1 for variable definitions.

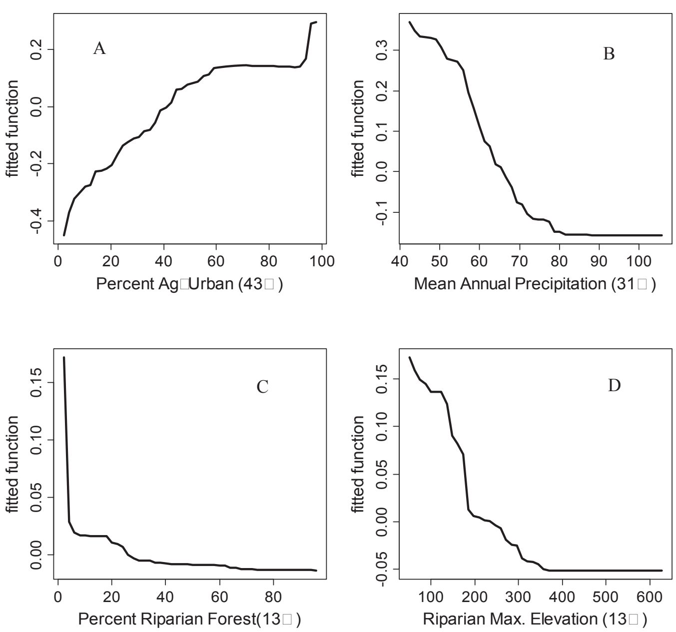

FIGURE 2. Partial Dependency Plots for Ag + Urb (A), MnAnnPrecip (B), Rip_Forest (C), and Rip_Max-Elev (D) in the Boosted Regression Model Developed for RICHTOL in Willamette Valley (Will_V). The y-axis fitted function represents the effect of the selected variable on the response variable RICHTOL; the relative contribution of each explanatory variable is reported in parentheses. Refer to Table 1 for variable definitions.

increase and a plateau above approximately 30% riparian forest cover.

DISCUSSION

It is encouraging that the MLR and the CART and RF (regression tree family) modeling techniques gave similar results selecting in general the same main explanatory variables (Table 2) and explaining similar amounts of variation (Table 3), which may indicate that the MLR methods used in this study are appropriate for these types of ecological data. The BRT models, however, did show notable improvement in model fit with increases in R^2 values ranging from 0.09 through 0.15 for RICHTOL to 0.11 through 0.20 for O/E compared to MLR models (Table 3). L. R. Brown, J. T. May, A. C. Rehn, P. R. Ode, I. R. Waite, and J. K. Kennen (personal communication), using a MMI for macroinvertebrates (i.e., BIBI) sampled across a strong urbanization gradient, also showed a notable improvement in model performance for BRT compared to MLR. De'ath and Fabricius (2000) suggest that for complex or messy data, even single regression trees will often outperform MLR and are preferred for determining variable selection and interaction effects due to the issue that MLR models with complex data are frequently difficult to interpret because they will often include too many variables with high order interactions. It was found that CART and RF models did not outperform the RICHTOL MLR models in this analysis which supports our overarching hypothesis that MLR will generally perform as well as many of the tree modeling techniques when data follows a general linear response or when, in the case of the three regions evaluated, there are few explanatory variables with no high order interactions. Maloney *et al.* (2009) found that CART models of land-use disturbance on macroinvertebrate IBI metrics provided results that were intuitive, but they did not classify sites any better than logistic regression models; however, unlike in this study, their RF models showed minor improvements in performance over CART and logistic regression models.

In general, regression trees allow the inclusion of more variables in the model building phase than MLR, allow for easier testing for interaction affects and produce a list of variables explaining the importance of variation in the response variable. In addition, the PDPs from BRT or RF can offer valuable insights into the pattern or form of the response variable based on select explanatory variables improving model interpretation. For example, the PDPs for Will_V (Figures 2 and 3) revealed that the response rate changed or flattened out and provided additional insight into potential thresholds along the range of the individual explanatory variables that are not easily depicted with MLR models.

The identification of thresholds (i.e., transition points in ecological condition) is of growing interest to the scientific and regulatory community, especially for forecasting the loss of biodiversity (Hilderbrand *et al.*, 2010) or for understanding system recovery (Clements *et al.*, 2010; Qian and Cuffney, 2012). More research is clearly needed to help better detect nonlinear and possible threshold responses (Dodds *et al.*, 2010) and new analytical tools are emerging (i.e., BRT results shown in this study) that can assist with identifying changes in taxa occurrence across an environmental gradient (Qian and Cuffney, 2012).

Even though we were able to successfully develop strong MLR models indicating that the primary responses were linear in nature (Waite *et al.*, 2010), the BRT PDPs reveal potential thresholds in the response variable in at least some of the regions (e.g., the Will_V PDPs shown for RICHTOL and O/E in Figures 2 and 3) that were not seen in the MLR models. It is possible that since MLR models assume linearity that they may sometimes miss nonlinear/thresholds in some explanatory variables. The response of RICHTOL and O/E for watershed agriculture plus urban (Ag + Urb) was primarily linear with a small step function at the end (Figures 2A and 3A). The two riparian variables, riparian maximum elevation (Rip_Max-Elev; Figures 2D and 3B) and riparian forest (Rip_Forest; Figures 2C and 3D) on the other hand showed potential thresholds. The response of the two invertebrate metrics to changes in Rip_Max-Elev showed no response from 600 to 400 m for RICHTOL and to 200 m for O/E, after which there was a steep increase or decrease to the lowest elevation (Figures 2D and 3B). It is likely that riparian elevation is acting as a surrogate for the natural climatic and geologic trend that occurs in the Willamette Valley, trending from the valley floor with low stream gradient and lower elevation and precipitation to higher values for these and other variables as one moves toward the foothills of the Coast or Cascade Ranges on either side of the valley. The response of RICHTOL and O/E to changes in Rip_Forest showed a slow but continuous linear increase or decrease as the amount of Rip_Forest decreased from 100% to approximately 5%, after which there appears to be a rapid change in either of the metric values, which may indicate a strong threshold at or near the 5% level. This suggests that as percent forest in the riparian zone along streams drops below approximately 5-10%

land cover, stream integrity degrades rapidly possible due to the reduction in natural buffering capacity seen in healthy riparian systems. L. R. Brown, J. T. May, A. C. Rehn, P. R. Ode, I. R. Waite, and J. K. Kennen (personal communication) found a similar response in the MMI they modeled (BIBI) against four explanatory variables across a strong urbanization gradient in some California streams. They showed that the amount of agriculture plus urban land use in the riparian zone and mean annual precipitation in the watershed showed approximate linear responses, though in opposite directions. They also found a threshold-type response in the BIBI to low values of population density (approximately 300 persons/km^2) in the watershed. Similar to the findings in this study, L. R. Brown, J. T. May, A. C. Rehn, P. R. Ode, I. R. Waite, and J. K. Kennen (personal communication) found that the BRT method appeared to be more sensitive for detecting nonlinear response patterns such as thresholds, for determining potential surrogate variables, and for model corroboration.

The overall poorer performance of the O/E metric compared to the single metric RICHTOL across all models was notable, yet the especially poor performance in the Blue_Mt region was particularly surprising (Table 3). When comparing the ability of O/E and a multimetric invertebrate IBI to differentiate between reference and degraded sites, Herbst and Silldorff (2006) found that the two methods were in close agreement for sites in eastern Sierra Nevada of California. Hawkins *et al.* (2010) compared the performance of a multimetric index and O/E for 225 sites from five ecoregions in the interior Columbia Basin, including many of the sites used in this study from the Blue_Mt ecoregions. They found that the O/E metric was better at distinguishing among the three disturbance classes, particularly between the intermediate and high disturbance classes than the multimetric index. The discrepancy between the poor performance of O/E in the Blue_Mt region in our study and the strong performance in their study may be due to a larger underlying disturbance gradient within their dataset, which resulted from the inclusion of data from multiple ecoregions. Models derived for the Will_V region, where there was a larger disturbance gradient than that found in the Blue_Mt region, showed relatively little difference in performance between the O/E and RICHTOL metrics. It is also possible that the lower R^2 for the O/E models may be because we are not able to model nor account for the error associated with estimation of the raw O/E metric values. Chessman *et al.* (2010) found that O/E values did not distinguish among site disturbance groups based on hydrologic alteration in Australia even though taxonomic richness and assemblage composition could. However, it is yet unclear why O/E performance would be inhibited in areas with a shorter disturbance gradient than that shown in Hawkins *et al.* (2010). One possibility is that because these O/E models are based on a subset of taxa that occur at 50% of the reference sites and therefore operate with a reduced taxa list, specifically with the relatively rare and arguably with the more sensitive portion of the taxa list removed, the resulting O/E values may be less able to distinguish the small more subtle differences among sites, such as that seen in the Blue_Mt study region. In contrast, the RICHTOL metric uses all the taxa that occur at a site and may be a more sensitive measure of changes in assemblage integrity in areas of low anthropogenic disturbance.

CONCLUSIONS

Waite *et al.* (2010) were able to successfully develop MLR models for the three distinct and separate regional datasets presented in this study for individual macroinvertebrate metrics (e.g., RICHTOL, EPT). This study developed alternate models, CART, RF, BRT, for the same datasets and compared them to the MLR models previously developed. The O/E metric performed nearly as well as RICHTOL in the Will_V region where there was a strong disturbance gradient but performed poorly in Blue_Mt, a region with a relatively weak gradient. Though the data modeled in this study were not particularly noisy or complex, the BRT models, in all cases, outperformed the MLR methods and provided specific information on the form of the response function for each variable giving important insight into potential thresholds in the data. As a result of this ecological modeling comparison, BRT models may indeed represent a good alternative to MLR for modeling species distribution relative to environmental variables. Modeling results indicate that even when the response pattern is simple and strongly linear, BRT models not only markedly improve model fit, but can also help to corroborate results from other methods, provide additional information on potential interactions among variables, and support greater insight into understanding the response profile of a given metric, whether it be a linear, step, or a threshold function, across environmental gradients that may not be easily seen with MLR. Models like these can be used to better understand potential causal linkages between environmental drivers and stream biological attributes or condition and predict expected values of macroinvertebrate metrics at unsampled sites.

APPENDIX

TABLE A1. Sources of Geographical Information System (GIS) and Digital Data Used in Model Development.

Spatial Dataset	Data Source	Source Data Format	Processing Format	Resolution/ Scale	Reference
Hydrography	National Hydrography Dataset (NHD)	Vector	Vector	1:24,000	U.S. Geological Survey, National Hydrography Dataset, Digital data, *accessed* January 2007 at http://nhd.usgs.gov/data.html
Land Cover 1992	National Land Cover Dataset 1992 (NLCD)	Raster	Vector	30 m	U.S. Geological Survey, National Land Cover Dataset 1992, Digital data, *accessed* March 2003 at http://landcover.usgs.gov/natllandcover.php
Land Cover 2001	NLCD 2001	Raster	Vector	30 m	U.S. Geological Survey, National Land Cover Dataset 2001, Digital data, *accessed* January 2007 at http://www.mrlc.gov/
Elevation	National Elevation Dataset (NED)	Raster	Raster	10 m	U.S. Geological Survey, National Elevation Dataset, Digital data, *accessed* May 2007 at http://seamless.usgs.gov/
Slope	NED	Raster	Raster	10 m	U.S. Geological Survey, National Elevation Dataset, Digital data, *accessed* May 2007 at http://seamless.usgs.gov/
Road networks	U.S. Census Bureau Tiger	Vector	Vector	1:100,000	U.S. Census Bureau, TIGER line data, Digital data, *accessed* May 2007 at http://www.census.gov/geo/www/tiger/
	Ground Transportation Roads Publications Arc	Vector	Vector	1:24,000	Oregon BLM, Ground Transportation Roads Publication Arc, Digital data, *accessed* July 2007 at http://www.blm.gov/or/gis/
Soil infiltration capacity	USDA NRCS STATSGO	Vector	Vector	1:250,000	Natural Resource Conservation Service, STATSGO soils data, Digital data, *accessed* May 2007 at http://datagateway.nrcs.usda.gov/
Population density	U.S. Census Bureau Census 2000	Vector	Raster	30 m	U.S. Census Bureau, Census 2000, Digital data, *accessed* May 2007 at http://www.census.gov/main/www/cen2000.html
Precipitation	Oregon State University PRISM	Raster	Raster	30 arc-seconds	PRISM Group, Oregon State University, Precipitation data for the U.S., Digital data, *accessed* May 2007 at http://www.prismclimate.org
Dams	National Inventory of Dams	Vector	Vector	Various	U.S. Army Corps of Engineers, National Inventory of Dams, Digital data, Not publicly available

ACKNOWLEDGMENTS

We thank each of the individuals that provided the macroinvertebrate data and associated advice: Shannon Hubler, Oregon Department of Environmental Quality; Alan Herlihy, Oregon State University and Environmental Protection Agency; Pete Ode and Andy Rehn, California Department of Fish and Game. We thank the many dedicated USGS colleagues who acquired the biological samples used in this analysis. We also gratefully acknowledge Alan Herlihy, John Van Sickle, and Anthony Olsen (Environmental Protection Agency, Corvallis) for their insight and advice on issues related to modeling macroinvertebrates, and Dr. Yangdong Pan (Portland State University) for advice on R programming and statistics. Finally, we thank one USGS reviewer and one outside reviewer for their review of the manuscript prior to submission to the journal.

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March 30, 2017

Jun Zhu
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Los Angeles Regional Water Quality Control Board
320 W 4th St., Suite 200
Los Angeles, CA 90013

RE: Draft 2016 Section 303(d) and 305(b) Integrated Report

Dear Mr. Zhu,

Please accept the following comments on the Los Angeles Regional Water Quality Control Board's (Regional Board's) 2016 Integrated Report, which are hereby submitted by Santa Barbara Channelkeeper.

Santa Barbara Channelkeeper is a non-profit environmental organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement. We have been conducting water quality monitoring in watersheds from Gaviota to the Ventura River since 2001. We have engaged more than 1,200 volunteers in our monitoring efforts and represent over 750 members. Our comments address the following concerns:

- Procedural issues related to data solicitation gaps
- Category 4C and Hydrologically Impaired Waterways
- Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment

Generally, Channelkeeper supports the Regional Board's ongoing efforts to document water quality impairments on the 303(d) List. Specific concerns regarding the Draft 2016 Integrated Report are summarized below.

<u>Procedural Concerns Related to Data Solicitation Gaps</u>

Channelkeeper is troubled that the Regional Board has fallen so far behind on data solicitations and review of 303(d) listings. 40 C.F.R. § 130.7(d)(1) mandates that:

> Each State shall submit ***biennially*** to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section.

The 2016 Integrated Report is based on data submitted in 2010 and will not be finalized until the middle of 2017. Based on EPA Guidance, the 2016 Integrated

Report was due in April 2016.[1] Clearly, the Regional Board has failed to achieve pertinent milestones and mandates related to the biennial review process.

The lack of any recent data solicitation is particularly troubling as a fully accurate and current depiction of water quality is not available for the 2016 Integrated Report. The Regional Board has a mandate to "assemble and evaluate all existing and readily available water quality-related data and information to develop the list."[2] Accordingly, the Regional Board should base 2016 Integrated Report decisions based on "all existing and readily available" data, which includes data collected since the 2010 data solicitation. Six years of additional data is available to the Board and should be appropriately utilized for the Region's listing, de-listing and planning purposes. Channelkeeper questions how such determinations can reasonably or legally be made without consideration of the last six years of existing and readily available data.

It is additionally concerning that due to the State's new staged approach to 303(d) List review, further data solicitation will be delayed until the Los Angeles Regional Board's 2022 report, which will include data submitted through 2021. This means that the Regional Board will not have reviewed existing water quality data for our region for more than a decade. This is clearly unacceptable from a legal standpoint.

Category 4C and Hydrologically Impaired Waterways

Channelkeeper echoes and supports comments submitted to the Regional Board on March 30, 2017 by *Earth Law Center*[3] regarding the necessity for evaluation and listing for hydrologically impaired waterways to fully comply with Clean Water Act Sections 305(b) and 303(d). Such evaluation and listing is clearly called for under the Clean Water Act, is supported by EPA Guidance, and paves the way for sound public policy and planning. Many other states around the country follow such Guidance to properly identify flow impaired waterways in their Integrated Reports. Recently, the San Diego Regional Water Quality Control Board notably identified 30 waterway segments for listing in Category 4C. Channelkeeper notes with concern that the Los Angeles Region has apparently forgone assessment of Category 4C impairments altogether in the Draft 2016 Integrated Report. We question the legality of such an oversight.

Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment

The Los Angeles Regional Board currently proposes to delist Reach 3 of the Ventura River for "Pumping" impairment. Channelkeeper strongly opposes this delisting decision. On February 5, 2015 Channelkeeper submitted detailed comments (Attachment 1) and data to the State Water Resources Control Board regarding its stated intent to delist Reaches 3 and 4 of the Ventura River for pumping and diversion impairments. These comments were submitted in response to the State Water Board's Draft Staff Report for the 2012 Integrated Report dated December 31, 2014, which stated that the four listings on the existing 303(d) list due to flow related alterations in the Ballona Creek and Ventura River watersheds "will likely be proposed for delisting as part of the next Listing Cycle."

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[1] Environmental Protection Agency. "Information Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions." August 13, 2015.
[2] 40 C.F.R. § 130.7(b)(5)
[3] Earth Law Center. "Comment Letter – Revisions to the Los Angeles Region 303(d) List". March 30, 2017

Channelkeeper's submittal outlined in detail why Reaches 3 and 4 of the Ventura River may not be delisted from the 303(d) list as impaired for flow by pumping and diversion. The existing listings for Reaches 3 and 4 of the Ventura River accurately reflect the current diminished flows and resulting impairments to designated beneficial uses in those Reaches. The listings are legally valid, and consistent with the State Water Board's Listing Policy. In contrast, delisting Reaches 3 and 4 from the 303(d) list as impaired for flows due to excessive pumping and diversion is inconsistent with the Listing Policy, the Clean Water Act, and facts on the ground. We refer the Los Angeles Regional Board to our February 5, 2015 letter as its legal and technical merits remain unchanged.

Channelkeeper additionally submitted multiple years of continuous monitoring data (submitted electronically via file "*MasterData_2013-2014.xls*") along with our 2015 comment letter. These data were summarized in tables as well as within an example "Listing Line of Evidence" provided with our 2015 letter. Lacking any formal data solicitation by the Los Angeles Regional Board since 2010, these submittals represent existing and readily available water quality-related data and information, which should have been used to develop the Draft 2016 Integrated Report.

Since the submittal of our 2015 comment letter, Channelkeeper has collected additional water quality data that supports the existing listings for pumping and diversions in Reaches 3 and 4. We are submitting an updated data file ("*MasterData_2013-2016*") electronically along with this comment letter.

Conclusion

When Reaches 3 and 4 of the Ventura River were identified as flow-impaired by pumping and diversions on California's 1998 303(d) list, the State Water Board took an important first step towards restoring the chemical, physical, and biological integrity of these waters. However, there is ongoing documentation that flow alterations from pumping and diversions continue to degrade Reaches 3 and 4 such that these waters cannot support their designated beneficial uses and water quality standards are not attained.

Reaches 3 and 4 of the Ventura River are impaired for pumping and diversions based on the "Numeric Water Quality Objectives for Conventional or Other Pollutants in Water" listing factor, the "Situation-Specific Weight of Evidence" listing factor, as well as the "Degradation of Biological Populations and Communities" listing factor. Removing the pumping impairment listing for Reach 3 is not only illegal but will also impede existing and future efforts to remedy the ongoing flow impairments in the Ventura River. Channelkeeper strongly urges the Los Angeles Regional Board to comply with the Clean Water Act by continuing to identify Reach 3 on the 303(d) list as flow-impaired by pumping.

Thank you for your consideration of our comments.

Sincerely,

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February 5, 2015

Via Electronic Mail
Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
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commentletters@waterboards.ca.gov

Re: Comment Letter—303(d) List portion of the 2012 California Integrated Report

Dear State Water Board Members and State Water Board Staff:

Thank you for the opportunity to comment on the proposed federal Clean Water Act ("Clean Water Act" or "CWA") section 303(d) list of water quality limited segments ("303(d) list") portion of the 2012 California Integrated Report as well as the associated supporting draft Staff Report and fact sheets ("2012 Integrated Report").

Santa Barbara Channelkeeper ("Channelkeeper") is a non-profit public benefit corporation whose mission is to protect and restore the Santa Barbara Channel and its tributaries for the benefit of its ecosystems and the surrounding human communities, including the Ventura River. Channelkeeper has served as a lead advocate, community organizer, educator, scientist, and monitor in the Ventura River watershed for 15 years. Based on Channelkeeper's extensive knowledge and experience surrounding the quality and flow in the Ventura River, Channelkeeper submits the following comments on the 2012 Integrated Report for the Board Member's consideration. Channelkeeper also joins and incorporates herein by reference the comments submitted by California Coastkeeper Alliance and Earth Law Center.

In its Draft Staff Report for the 2012 Integrated Report dated December 31, 2014, the State Water Board states that the four listings on the existing 303(d) list due to flow related alterations in the Ballona Creek and Ventura River watersheds "will likely be proposed for delisting as part of the next Listing Cycle." As described in detail below, Reaches 3 and 4 of the Ventura River may not be delisted from the 303(d) list as impaired for flow by pumping and diversion. The existing listings for Reaches 3 and 4 of the Ventura River accurately reflect the current diminished flows and resulting impairments to designated beneficial uses in those Reaches. The listings are legally valid, and consistent with the State Water Board's Listing Policy. In contrast, delisting Reaches 3 and 4 from the 303(d) list as impaired for flows due to excessive pumping and diversion is inconsistent with the Listing Policy, the Clean Water Act, and facts on the ground. Channelkeeper references substantial and significant evidence supporting the existing impairment listings, and submits herewith a draft Line of Evidence. The State Water Board must take all of this information into consideration prior to making any decision – information that renders delisting unsupported and illegal.

I. Consistent with the Existing 303(d) Listing, Reaches 3 and 4 of the Ventura River Are Flow Impaired by Pumping and Diversion.

Since 1998, Reaches 3 and 4 of the Ventura River have been accurately identified on California's 303(d) list as impaired by excessive pumping and diversions. Such pumping and diversions are clearly linked to reduced surface flows. Reduced surface flows and the resulting water quality degradation prevents Reaches 3 and 4 from supporting their designated and potential beneficial uses, which include endangered species habitat. In fact, pumping and diversions in Reaches 3 and 4 continue to result in flows below recommended thresholds needed to protect endangered steelhead trout.

A. The Ventura River Watershed and the Reaches 3 and 4 303(d) Impairment Listings.

The Water Quality Control Plan for the Los Angeles Region ("Basin Plan") describes the Ventura River as consisting of five reaches, which, upstream from the Pacific Ocean, are: Reach 1 (Ventura River Estuary to Main Street), Reach 2 (Main Street to Weldon Canyon), Reach 3 (Weldon Canyon to Casitas Vista Road), Reach 4 (Casitas Vista Road to Camino Cielo Road) and Reach 5 (above Camino Cielo Road). Basin Plan, pp. 2-6. There are two major dams which affect surface flows in reaches 3 and 4, Matilija and Casitas. Two major river diversions are located within these reaches, Robles Diversion Facility and the Foster Park Subsurface Diversion. The City of Ventura operates the Foster Park Subsurface Diversion ("Foster Park"). Three major municipal well fields are located in Reaches 3 and 4. These are operated by Meiners Oaks Water District, the Ventura River Water District, and the City of Ventura. Groundwater from these reaches is also pumped for agricultural and domestic purposes. *See* U.S. EPA Draft Ventura River Reaches 3 and 4 Total Maximum Daily Loads For Pumping & Water Diversion-Related Water Quality Impairments ("EPA Draft TMDL").

The designated potential and existing beneficial uses of Reaches 3 and 4 are municipal and domestic supply, industrial service supply, agricultural supply, ground water recharge, freshwater replenishment, warm freshwater habitat, cold freshwater habitat, wildlife habitat, rare, threatened, or endangered species, migration of aquatic organisms, spawning, reproduction, and/or early development, and wetland habitat. *See* Basin Plan, Table 2-1.

In 1998, the U.S. EPA approved California's list of impaired water bodies identified pursuant to Clean Water Act section 303(d) (33 U.S.C. § 1313(d)), which first listed Reaches 3 and 4 as impaired for pumping and diversion. According to Los Angeles Regional Water Quality Control Board ("Regional Board") staff, the original listing referenced a 1996 Steelhead Restoration and Management Plan for California ("Steelhead Restoration Plan") as one basis for the listing decision. The plan states, "The major obstacle to steelhead restoration in this system is blocked access to headwaters and excessive water diversion." Steelhead Restoration Plan, p. 201. The plan describes several large-scale water diversions in the river including Foster Park and the City of Ventura's wells in the lower River, which, "ha[ve] resulted in dewatering portions of the lower river during summer and fall." Steelhead Restoration Plan, p. 203.

Most recently, on August 4, 2010, the State Water Resources Control Board ("State Water Board") approved California's 2010 303(d) list. Channelkeeper notes that the supporting fact sheets for these listings state that both the Regional Board and State Water Board staff reviewed the existing Ventura River watershed listings for pumping, water diversions, and fish barriers and decided to make no modifications to the list. On October 11, 2011, the U.S. EPA approved the State Water Board's triennial review and update to the 303(d) list, which maintained the pumping and diversion impairments for Reaches 3 and 4 of the Ventura River.

B. There is an Established Relationship Between Surface Flows, Groundwater, and Pumping and Diversions in the Ventura River.

The hydraulic communication between surface and groundwater in the Ventura River has been acknowledged by experts and government agencies for several decades. The significant contribution of groundwater pumping to dewatering of the River has been similarly acknowledged, though its full extent remains undetermined.

A 1978 a Draft Environmental Impact Report on the Conjunctive Use Agreement between Casitas Municipal Water District and the City of Ventura ("Draft EIR") included the following statement:

> *There is a relationship between the groundwater in storage and the presence of year-round springs and surface flows in the live stretch between San Antonio Creek and Foster Park, and also below Foster Park. It is evident from the figure (V-3) that if the groundwater in either of the cells (above San Antonio Creek, or between San Antonio Creek and Foster Park) were to fall to very low levels, then seepage in the form of springs at the surface would stop, and surface flow would also stop.*

Draft EIR, p. V-22. Figure 1 below provides a diagram of the River's surface flows, alluvium, and alluvium with ground water cells. *See also* Draft EIR, p. V-23 (providing an example of when and where the relationship between the groundwater and surface water occurs).

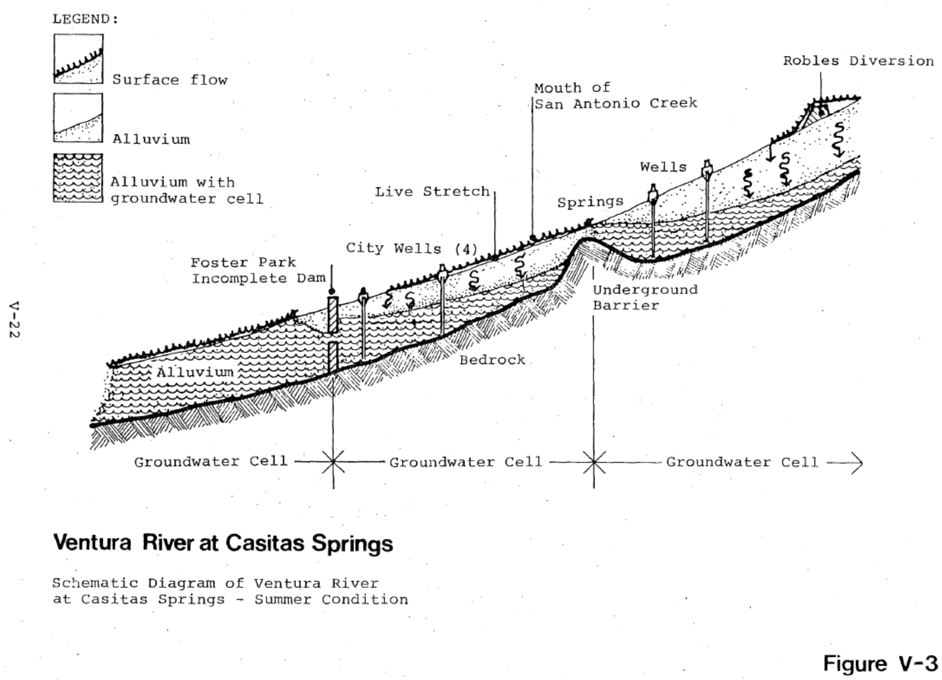

Figure 1: Excerpt figure from Draft Environmental Impact Report Ventura River Conjunctive Use Agreement. June 1978.

More recently, studies and reports continue to acknowledge the strong connection between groundwater pumping and diversions and the resulting loss of flows in the River.

For example, a National Marine Fisheries Service ("NMFS") 2007 Draft Biological Opinion ("Draft Biological Opinion") for the Army Corps of Engineers' permitting of the City of Ventura's proposed Foster Park Well Facility ("FPWF") repairs contains NMFS's summary of information available at the time and its determination that groundwater pumping and diversion at the FPWF detrimentally impacts downstream critical habitat for steelhead trout in Reach 3. On page 16 of the Draft Biological Opinion, NMFS states:

> *Water withdrawals from surface diversions and subsurface pumping have affected the timing and magnitude of the Ventura River flows in the action area* [6 miles downstream of the FPWF including Reaches 1, 2, and 3], *which has resulted in reduced surface flows. This has altered the natural hydrologic processes responsible for recharging the aquifer underlying the lower Ventura River Basin and the lower part of the action area, and has decreased the quantity and quality of critical habitat for steelhead, predominantly in the dry season.*

On page 25 of the Draft Biological Opinion, NMFS states:

> *Consequently, <u>resumed well field operations are expected to substantially reduce, and at times eliminate surface flows in the action area, and could completely</u>*

> *dewater the upper portion of the action area in the vicinity of the FPWF during most years.* (Emphasis added).

A Ventura River Natural Conditions Study further acknowledged loss of flow in the river (Reaches 3 and 4) due to ground water pumping in its model calibrations. TetraTech, 2009, p. A-3. In specific reference to Foster Park, lead authors of the Tetratech study responded to public comments by stating, "It is our understanding that water is withdrawn from pipes buried in the alluvium. Water entering these pipes comes from both flow in the river and from underlying groundwater. We agree that groundwater and surface water appear to be fully connected in this area… ." Jonathan Butcher, July 22, 2009 Memorandum to Scott Holder (VCWPD) Re: Ventura River Model Comment Response.

In December, 2012 the U.S. EPA, Region 9, released the EPA Draft TMDL. The EPA Draft TMDL clearly acknowledges the connection between surface flows, groundwater, and pumping and diversions. The EPA Draft TMDL states:

> *Flow in any particular reach of the* [Ventura] *River is additionally affected by the status of the underlying groundwater basin (whether full, filling, or emptying), the occurrence of natural recharge areas where surface flows will disappear at times, flow between groundwater basins, and the amount of surface or groundwater withdrawals for municipal, domestic, or agricultural uses. …The flow in the river is disrupted at Foster Park (which overlies the Upper Ventura River Groundwater Basin) due to subsurface diversions and groundwater extraction (p. 9).*

In June 2013, the City of Ventura conducted a preliminary hydrogeological and surface water/groundwater interaction study (Hopkins, 2013) for the City's diversions at Foster Park. In its concluding remarks, the study states, "We conclude that groundwater production at Foster Park during the low-flow season is substantially supported by underflow." In other words, the Ventura River itself accounts for a substantial proportion of the water produced by the City's wells during the low-flow season.

In the summer of 2012, using time-lapse video and a deployable pressure transducer sensor Channelkeeper and local citizens documented dramatic and irregular fluctuations in river and pool surface levels in Reach 4 near private wells and wells operated by Meiners Oaks and the Ventura River Water Districts. These observations are compiled in a YouTube video (SBCK, Watchdog Diaries – Episode 6) available at https://www.youtube.com/watch?v=JrGMRITAqH4, and provide strong evidence of surface and groundwater interactions being affected by pumping and/or diversions in Reach 4. The fluctuations captured by camera and sensor data are abrupt, dramatic, and do not resemble any known naturally occurring patterns indicating that pumping and diversions in Reach 4 are directly impacting surface flows.

C. Reduced Surface Flows Impair the Beneficial Uses of Reaches 3 and 4, Including Endangered Species Habitat.

As surface flows, groundwater, and pumping and diversions are connected, excessive pumping and diversions resulting in significantly reduced surface flows degrade critical habitat for endangered steelhead trout and impair additional designated and potential beneficial uses of the River. These impairments are documented by NMFS, U.S. EPA, and the City of Ventura.

NFMS's 2012 Southern California Steelhead Recovery Plan ("Steelhead Recovery Plan") recently affirmed the 1996 Department of Fish and Wildlife Steelhead Restoration Plan findings by describing dams, surface water diversions, and groundwater extraction as a "very high threat" to steelhead recovery in the Ventura River. NMFS found the critical recovery actions to include providing fish passage around dams and diversions, and developing and implementing water management plans for diversion operations such as Foster Park. NMFS also found that diversions from the Ventura River at Foster Park contribute to the present or threatened destruction, modification or curtailment of steelhead habitat or range, and disease and predation of steelhead. *See* Steelhead Recovery Plan, p. 9-42.

In the Draft Biological Opinion, NMFS concluded that summer and fall withdrawals from the Foster Park degrade downstream (Reaches 1, 2, and 3) habitat and water quality and decrease the functional value of these areas as an over-summering area for juvenile steelhead. NMFS states:

> *The reduction in discharge volume resulting from well-field withdrawals is expected to affect water quality within the action area… Reducing discharge and thus depth, is expected to increase water temperatures in the action area because of increased surface area to depth ratio and increased insolation of the river. Decreased flow velocities can reduce water quality by causing stagnant conditions, especially in pools, which will result in low oxygen levels (p. 27).*
>
> *After reviewing the best available scientific and commercial information, the status of the Southern California steelhead DPS, the environmental baseline, expected effects of the proposed action, cumulative effects, and the combined effects of past and present activities, the proposed action, and actions that are reasonably certain to occur, NMFS concludes the proposed action* [resumption of City pumping] *is likely to jeopardize the continued existence of the Southern California DPS, and is <u>likely to destroy or adversely modify critical habitat for this species</u> (p. 33).* (Emphasis added).

After NMFS issued its Draft Biological Opinion, Ventura dropped its permit application submitted to the Corps. However, repairs to water production facilities were completed outside of Corps jurisdiction. Therefore the diversions examined by NMFS – determined to be detrimental to critical habitat and the survival of Southern California steelhead in the River – continue unabated or unmitigated to present time.

NMFS findings were later affirmed by the City of Ventura's hydrological study (Hopkins, 2013), which included a steelhead habitat assessment examining the relationship between low flow conditions caused by pumping and steelhead habitat suitability. Surveys and data collected as part of the assessment generally support NMFS determination that the pumping at the Foster

Park well field results in degradation of downstream critical habitat and water quality. The City's study concludes:

> *The findings of this study indicate a flow threshold exists whereby when flows decrease below the threshold, the steelhead habitat suitability declines significantly…We conclude that the steelhead habitat is generally degraded throughout the low-flow season because the declining river flow results in shallower thalweg depths in pools, runs, and riffles which allows the hotter atmospheric temperatures to increase the surface water temperatures (p. 26).*

The EPA Draft TMDL further supports these findings:

> *Excess nutrients and eutrophic conditions are present in the Ventura River system. Low and intermittent flows exacerbate the nutrient-related problems (too much algae) and lead to low dissolved oxygen concentrations in the River. The cumulative impacts of these conditions result in the failure to attain several beneficial uses, as described throughout the remainder of this section (p. 11).*

Though the U.S. EPA ultimately decided to approve the State Water Board's Ventura River Algae TMDL as an alternative to its own Pumping and Diversions TMDL, a June 28, 2013 approval letter to the State Water Resources Control Board from the Executive Director of the U.S. EPA, states, "EPA found that the effects of pumping and water diversions in these reaches were correlated with the impairment of aquatic life and cold water habitat beneficial uses due to nutrient loading and algae growth."

As described above, both the U.S. EPA and NMFS have established linkages between pumping and diversions in the Ventura River and impairment of water quality standards, as pumping and diversions reduce surface flows such that Reaches 3 and 4 cannot support their beneficial uses. The City of Ventura's hydrological study of the River also confirms that surface flows and pumping and diversions are linked, and that beneficial uses are being degraded by low flows caused by pumping and diversions (Hopkins, 2013).

Channelkeeper has also conducted additional monitoring in 2013 and 2014 that demonstrates that reduced flows caused by pumping and diversion from Reaches 3 and 4 contribute to non-attainment of water quality objectives for water quality parameters indicative of low flows. As detailed in Section II.C., below, Channelkeeper's monitoring data for dissolved oxygen and temperature show that Reaches 3 and 4 are not attaining water quality objectives and/or criteria for these parameters. Specifically, Reach 3 exceeded the 7 mg/L water quality objective for dissolved oxygen on 558 occasions out of 574 samples from 2013-2014. For the 5 mg/L dissolved oxygen water quality objective Reach 3 exceeded on 459 occasions out of 574 samples from 2013-2014. Reach 4 exceeded the 7 mg/L dissolved oxygen water quality objective on 63 occasions out of 174 samples from 2013-2014. For temperature, Reach 3 exceeded the numeric criteria used for temperature by the State Water Board in prior 303(d) listings on 501 occasions out of 649 samples from 2013-2014, and Reach 4 exceeded the temperature criteria on 227 occasions out of 250 samples from 2013-2014. These exceedances of water quality objectives and/or criteria for dissolved oxygen and temperature are well above the minimum number of exceedances warranting 303(d) listing, indicate that reduced flows due to excessive pumping and diversions have and continue to degrade water quality in Reaches 3 and 4, and show that the water quality standards for these segments of the Ventura River are impaired by pumping and diversions.

D. Surface Flows in Reaches 3 and 4 Consistently Fall Below Recommended Flow Thresholds Needed to Protect Beneficial Uses.

To avoid jeopardizing steelhead existence and destruction or adverse modification of critical steelhead habitat, NMFS found that flows in the Ventura River at the Foster Park USGS gauge no. 111185000 should not fall below 11 to 12 cfs. *See* Draft Biological Opinion, p. 33. NMFS states: "This flow rate is based on past studies, which indicate that flows of 12 cfs and above will allow for natural rates of growth and high rates of survival of steelhead within the action area (Moore 1980), and essential features of critical habitat and PCEs within the action area will be preserved." *Id.*, p. 33.

The City of Ventura's hydrology study (Hopkins, 2013) also identified a protective threshold of 2 cfs at the Foster Park USGS gauge based on habitat suitability data. The study further recommended that the City consider reducing its diversion rates during the dry-season when river flows fell below this threshold.

> *We also recommend that during low flow conditions, the City observe streamflows documented by the USGS gage and consider reducing its diversion rates during the dry season as the River flow rate declines to 2 cfs. While the City has no control on how much water will seasonally flow into the Foster Park reach of the River, the reduction and eventual cessation of pumping will serve to maintain the steelhead habitat as long as it will last while the main stem of the River dries out (p. 28).*

Attachment A to Channelkeeper's draft Line of Evidence provides a summary of Foster Park well field production totals in comparison with flow thresholds recommended by NMFS and the City hydrology studies (12 and 2 cfs, respectively). As Attachment A clearly depicts, major withdrawals take place monthly despite the River being well below recommended thresholds at the USGS Foster Park Gage and even dry in many sections.

Figure 2. Dry Ventura River at the Foster Park subsurface dam and diversion on November 22, 2013. Dry conditions at Foster Park were prevalent throughout the 2013 - 2014 dry seasons.

For example, as seen in Figure 2 and as documented at the USGS gage, the River was completely dry at Foster Park throughout much of the 2013-2014 dry seasons.

Data from monitoring stations maintained by Channelkeeper further demonstrate that recommended flow thresholds needed to protect beneficial uses have not been achieved in recent years. Figure 3 identifies SBCK monitoring site locations in relation to water diversion facilities and designated Reaches of the Ventura River, and Table 1 provides the flow data at Channelkeeper's monitoring sites.

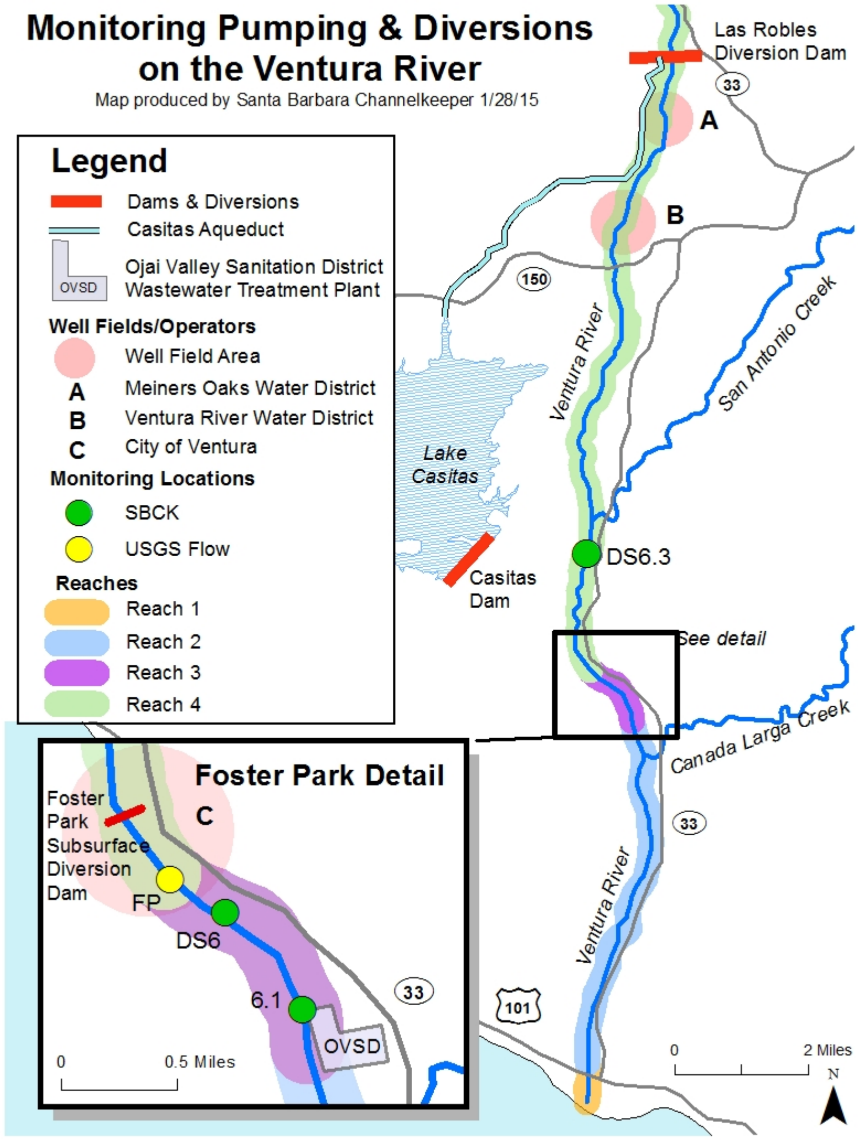

Figure 3. Monitoring sites, pumping and diversion facilities, and designated Reaches of the Ventura River

Most of Reach 4 ran dry through 2013 and 2014 including at Foster Park. Some sections of Reach 4 are known to consistently run dry during the dry season. However, additional sections such as Foster Park characterized as perennial (Beller et al., 2011) also experienced total loss of surface flows in these years. Reach 3 (downstream of Foster Park) is the primary reach for which the recommended thresholds were developed. But as shown in Figure 3 and Table 1, measurements indicate that flow levels of 11 or 2 cfs were not observed at sites in Reach 3 (6.1 and DS6. Attachment B provides a summary of flow rates at the USGS Foster Park gage from 2007 through 2014. As demonstrated in Attachment B to Channelkeeper's Line of Evidence and Table 1, Channelkeeper notes that flows have consistently fallen and remained below the recommended protective thresholds for many years.

Table 1: Flow on the Ventura River (cfs) – SBCK Monitoring

SBCK Monitoring Sites				
Reaches		**Reach 3**		**Reach 4**
Year	**Date**	**6.1**	**DS6**	**DS6.3**
2013	6/6/13		Flow not measured in 2013	
	6/13/13	1.1		
	6/14/13			2.8
	7/10/13	0.6		2.3
	7/11/13			
	7/26/13	0.3		0.6
	8/16/13	0.3		0.3
	9/6/13	0.2		0.1
	9/24/13	0.1		0
	10/17/13	0.1		0
	11/22/13	0.1		0
2014	6/5/14	0.4		3.6
	6/24/14	0.6	0.3	3.3
	7/15/14	0.6	0.3	2.4
	7/31/14	0.5	0.5	1.1
	8/21/14	0.3		0.7
	9/16/14	0.1	0.4	0.3
	10/21/14	0.2	0.3	

* Immediately downstream of OVSD Outfall

II. The Existing 303(d) Listings for Reaches 3 and 4 Are Valid Though the Listings Were Approved Before the Listing Policy Was Adopted.

In reference to the existing 303(d) listings for Reaches 3 and 4 of the Ventura River, the 2012 Integrated Report states:

> California has not considered the direct assessment of flow data since the adoption of the Listing Policy. There are four listings on the existing 303(d) List due to flow related alterations in the Ballona Creek and Ventura River watersheds. These decisions were made prior to adoption of the Listing Policy and before guidance was developed on the method to inventory waters impaired by pollution, and not pollutants. **Those four listings waters [sic] will likely be proposed for delisting as part of the next Listing Cycle**.

2012 Integrated Report, pp. 9-10 (emphasis added). The State Water Board's "likely" proposal to delist Reaches 3 and 4 of the Ventura River as flow impaired by pumping and diversion is improper for at least four reasons. First, the Clean Water Act as well as long-standing U.S. EPA Guidance provide for 303(d) listings for flow-impaired waters such as Reaches 3 and 4. Second, that Reaches 3 and 4 were listed as flow-impaired prior to adoption of a formal listing policy has no bearing on the validity of the listings. Third, the existing 303(d) listings for Reaches 3 and 4 meet the several listing factors in the State Water Board's Water

Quality Control Policy for Developing California's Clean Water act Section 303(d) List in September 2004 ("Listing Policy"). Fourth, Reaches 3 and 4 of the Ventura River must remain 303(d) listed as impaired for flow caused by pumping and diversions because no Listing Policy delisting factors can be met.

A. The Clean Water Act and U.S. EPA Guidance Provide for Flow-Impairment Listings.

Under the Clean Water Act, when effluent limitations are insufficient to ensure compliance with water quality objectives and a water body can no longer be put to its designated beneficial uses (collectively "water quality standards"), that water body's water quality standards have not been attained and its beneficial uses are impaired. The State must identify that water body on the list of impaired waters. 33 U.S.C. § 1313(d)(1). An impairment listing is required whether the impairment is caused by "pollutants" or "pollution." *See* 33 U.S.C. § 1313(d)(1)(A); *see also Pronsolino v. Nastri*, 291 F.3d 1123, 1137-38 (9th Cir. 2002), cert. denied, 123 S. Ct. 2573 (2003) ("Water quality standards reflect a state's designated *uses* for a water body and do not depend in any way upon the source of pollution").

Compliance with the Clean Water Act section 303(d), the Act's "safety net," requirements is a crucial element in achieving the Clean Water Act's goal of restoring the chemical, physical, and biological integrity of the nation's waters so that they are safe for swimming, fishing, drinking, and other "beneficial uses" that citizens enjoy, or used to be able to enjoy. It is the bedrock component of the Clean Water Act; the backstop to ensure that the goals of the Act can be achieved when initial efforts fail. Moreover, section 303(d) requires states to address comprehensively all human activities that affect the chemical, physical, and biological integrity of the nation's waters.

Consistent with the language and the purpose of Clean Water Act section 303(d), the U.S. EPA has found that "pollution" must result in a 303(d) listing if it results in impairment. *See* U.S. EPA, "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act," p. 56 ("2006 Guidance").[1] In describing categories of impairment listings, EPA specifically uses "lack of adequate flow" as an example of a cause an impairment to a water segment. *Id*.

Accordingly, a water body that cannot support its designated beneficial uses due to altered flow must be included on the State Water Board's 303(d) list as impaired. Altered flows in Reaches 3 and 4 of the Ventura River caused by pumping and diversions impair those Reaches' beneficial uses, as described in detail in Section I above. Thus, as provided by the Clean Water Act, in 1998 the State Water Board included Reaches 3 and 4 on the 303(d) list as impaired by pumping and diversion. Not only are these listings valid under the Clean Water Act, they are in line with relevant U.S. EPA Guidance.

[1] Available at: http://www.epa.gov/owow/tmdl/2006IRG/report/2006irg-report.pdf, last visited February 5, 2015.

B. A Formal Listing Policy or Guidance Are Not Prerequisites to an Impairment Listing.

As its reason for the likely proposal to delist Reaches 3 and 4 as flow-impaired, the State Water Board cites the timing of those listing decisions, which came before the adoption of the State Water Board's Listing Policy and "before guidance was developed on the method to inventory waters impaired by pollution, and not pollutants." The State Water Board's stated reason does not support delisting, however. A formal listing policy or guidance are not prerequisites to an impairment listing.

As discussed in Section II.A. above, the Clean Water Act requires that the State Water Board include all impaired water segments on the 303(d) list. The requirement to identify impaired waters on the 303(d) list is not conditioned on the existence of a *formal* listing policy. In fact, the State Water Board has issued multiple California 303(d) lists prior to the adoption of the Listing Policy. For example, in 1998 and 2003 the State Water Board issued 303(d) lists that identified numerous impaired water segments, including the pumping and diversion impairments of Reaches 3 and 4 of the Ventura River, without a formal listing policy. Because a formal listing policy had not been adopted, the State Water Board made listing determinations based on an assessment of all readily available data and facts relating to individual water bodies. *See, e.g.*, Staff Report, Vol. I, Revision of The Clean Water Act Section 303(d) List of Water Quality Limited Segments. U.S. EPA approved each of these 303(d) lists. As such, the State Water Board need not have had a formal listing policy in place to make these valid listing decisions. Channelkeeper further notes that the 2012 Integrated Report does not indicate that water segments other than the segments of the Ventura River and Ballona Creek identified as flow-impaired in 1998 and/or 2003 lists will likely be delisted on the ground that those listings were made prior to adoption of the Listing Policy.

The State Water Board also bases its likely proposal to delist Reaches 3 and 4 on its statement that those listings were made "before guidance was developed on the method to inventory waters impaired by pollution, and not pollutants." Channelkeeper understands the State Water Board to be referring to the U.S. EPA 2006 Guidance. *See* 2012 Integrated Report, pp. 9-10. As with the Listing Policy, formal guidance from U.S. EPA is not a prerequisite to impairment listings and listings issued and approved predating the 2006 Guidance are entirely valid. The State Water Board refers to no authority otherwise. In any event, as explained in Section I.A., U.S. EPA's 2006 Guidance, including the portion cited in the 2012 Integrated Report, supports the listing of Reaches 3 and 4 as flow-impaired due to pumping and diversion. *See* 2012 Integrated Report, p. 10 (explaining that water segments impaired solely by pollution should be included in category 4c of the 303(d) list, and in no way suggesting such waters not be identified as impaired on the 303(d) list).

C. Reaches 3 and 4 of the Ventura River Meet Multiple Listing Policy Factors.

Whether or not a listing policy is some how required for compliance with section 303(d) of the Clean Water Act, the pumping and diversions listings of Reaches 3 and 4 of the Ventura River meet the listing policy factors. The Listing Policy provides several different factors to use to determine whether a water segment should be identified as impaired on the 303(d) list. A water segment that meets any one of the listing factors should be included on the 303(d) list. As discussed below, Reaches 3 and 4 meet Listing Policy factors 3.2 (Numeric Water Quality Objectives for Conventional or Other Pollutants in Water), 3.9 (Degradation of Biological Populations and Communities), and 3.11 (Situation-Specific Weight of Evidence Listing Factor).

1. Reaches 3 and 4 are Impaired for Pumping and Diversions Based on the "Numeric Water Quality Objectives for Conventional or Other Pollutants in Water" Listing Factor.

Section 3.2 of the Listing Policy states that "using a binomial distribution, waters shall be placed on the 303(d) list if the number of measured exceedances supports rejection of the null hypothesis," as provided in Table 3.2 of the Listing Policy. Listing Policy, p. 4. "When continuous monitoring data are available, the seven-day average of daily minimum measurements shall be assessed." *Id*. As explained below, monitoring data for dissolved oxygen and temperature demonstrate that Reaches 3 and 4 meet the listing factor for exceedances of numeric water quality objectives or criteria. Because dissolved oxygen and temperature are parameters indicative of reduced flows, and given the connection between pumping and diversions and reduced surface flows, this listing factor supports the pumping and diversions impairment listings for Reaches 3 and 4.

<u>Dissolved Oxygen</u>

Channelkeeper deployed Onset dissolved oxygen sensors (model U26) and pressure transducers (model U20) at the Channelkeeper monitoring stations listed above from May-November in 2013 and May-October in 2014. Sensors were calibrated to collect measurements every ten minutes, 24 –hours a day, during the 2013 dry season and every 30 minutes, 24-hours a day during the 2014 dry season.

The Basin Plan states:

The dissolved oxygen content of all surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharges.

The dissolved oxygen content of all surface waters designated as COLD shall not be depressed below 6 mg/L as a result of waste discharges.

The dissolved oxygen content of all surface waters designated as both COLD and SPWN shall not be depressed below 7 mg/L as a result of waste discharges.

Tables 2 and Table 3 below evaluate the 2013-2014 dissolved oxygen data using this method based on the 7 mg/L and 5 mg/L dissolved oxygen water quality objectives ("WQO") set forth in the Basin Plan designated to protect Cold Water and Spawning Habitats and Warm Water Habitat beneficial uses, respectively. Based on the Listing Policy, Reach 3 and Reach 4 meet the 303(d) listing criteria for the 7 mg/L dissolved oxygen WQO to protect Cold Water and

Spawning Habitats. Reach 3 meets the listing criteria for the 5 mg/L WQO to protect Warm Water Habitat.

Table 2: Measurements Below the 7 mg/L Dissolved Oxygen Water Quality Objective

7 Day Average of Minimum DO Measurements					
Site	**Year**	**Total n**	**n <7 mg/L**	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	173	157		
	2014	155	155		
	Sub Total	328	312		
DS6	2013	140	140		
	2014	106	106		
	Sub Total	246	246		
	Grand Total	574	558	93	**Yes**
Reach 4					
DS6.3	2013	106	8		
	2014	68	55		
	Grand Total	174	63	29	**Yes**

Table 3: Measurements Below the 5 mg/L Dissolved Oxygen Water Quality Objective

7 Day Average of Minimum DO Measurements					
Site	**Year**	**Total n**	**n <5 mg/L**	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	173	100		
	2014	155	143		
	Sub Total	328	243		
DS6	2013	140	118		
	2014	106	98		
	Sub Total	246	216		
	Grand Total	574	459	93	**Yes**
Reach 4					
DS6.3	2013	106	0		
	2014	68	2		
	Grand Total	174	2	29	**No**

<u>Temperature</u>

The 2010 Integrated Report (CWA Section 303(d) list) includes listings of temperature water quality impairments for water bodies in Region 3, citing an evaluation guideline of 21°C maximum temperature to protect rainbow trout. This evaluation guideline was applied to Channelkeeper sensor data from 2013 and 2014. Daily maximums were used to evaluate measurements based on a binomial distribution as applied in Section 3.2 and Table 3.2 of the Listing Policy where minimum number of samples needed for listing was calculated based on the total number of seven day averages of the daily minimum dissolved oxygen concentration. Application of this evaluation method indicates that Reach 3 and Reach 4 for meet these 303(d) listing evaluation criteria.

Table 4: Measurements Above the 21° Temperature 303(d) Listing Evaluation Criteria

Daily Maximum Temperature Measurements					
Site	**Year**	**Total n**	**n > 21° *C***	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	179	125		
	2014	161	152		
	Sub Total	340	277		
DS6	2013	149	84		
	2014	160	140		
	Sub Total	309	224		
	Grand Total	649	501	108	**Yes**
Reach 4					
DS6.3	2013	124	114		
	2014	126	113		
	Grand Total	250	227	42	**Yes**

2. **Reaches 3 and 4 are Impaired for Pumping and Diversions Based on the "Degradation of Biological Populations and Communities" Listing Factor.**

Section 3.9 of the Listing Policy states that "[a] water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities as compared to reference site(s) and is associated with water or sediment concentrations of pollutants including but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." Listing Policy, p. 7. Given the biological populations and communities of steelhead in Reaches 3 and 4 of the Ventura River, this listing factor is met.

Specifically, the Ventura River watershed is home to at least 11 endangered or threatened species, including steelhead trout. *See* U.S. Fish & Wildlife Service, Listing and Occurrence for California.[2] Reaches 3 and 4 of the Ventura River are occupied by steelhead and are rated as

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[2] Available at:
http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=CA&s8fid=112761032792&s8fid=112762573902, and http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf, last visited February 5, 2015.

having high conservation value. *See* Draft Biological Opinion, pp. 355-56; *see also* Section I., above. These reaches of the River provide spawning and rearing habitat and serve as a migratory corridor for steelhead to upstream reaches. Draft Biological Opinion, pp. 356-57. The Ventura River (including Reaches 3 and 4), Ventura River Estuary, San Antonio Creek, Cañada Larga, Matilija Creek and North Fork Matilija Creek, among other tributaries, have been designated as critical habitat for the remaining population of the southern California Steelhead, which is estimated at less than 500 spawning adults. *See* EPA Draft TMDL, p. 104; Draft Biological Opinion, p. 354.

Before dams were constructed in the Ventura River Watershed, during normal to wet years the steelhead run was estimated at 4,000-5,000 individuals. EPA Draft TMDL, p. 100. Following the construction of Matilija Dam (located upstream of Reach 3), which cut off access to about half of the prime spawning habitat, and coincident with a drought in the late 1940s, steelhead runs dropped to about 2,000-2,500 individuals. EPA Draft TMDL, p. 101. By the 1990s there had been a 96% decline in the steelhead population in the Ventura River, prompting its listing as an endangered species in 1997. Draft Biological Opinion, p. 352; *see also* Steelhead Recovery Plan, p. 437 (describing declines in steelhead run sizes of 90% or more).

During dry years, juvenile fish unable to transit back downstream to the ocean due to low flows must survive in pools in the mainstem, i.e., Reaches 3 and 4. EPA Draft TMDL, p. 101. The fish are subjected to elevated temperatures, endure competition with other fish for a decreasing food supply, and are exposed to predators. EPA Draft TMDL, p. 101. Additional evidence of elevated temperatures is shown in Section II.C.1., above.

Since southern California steelhead were listed as endangered in 1997, the impacts leading to the listing remain prevalent and widespread. Steelhead Recovery Plan, p. 447. These impacts include present or threatened destruction, modification or curtailment of habitat or range, over-utilization of the steelhead population for commercial, recreational, scientific, or educational purposes, disease and predation, inadequacy of existing regulatory mechanisms, and other natural or human-made factors affecting continued existence. *Id*. at 448-453. As to the steelhead population in the Ventura River, NMFS found that diversions from the Ventura River at Foster Park contribute to the present or threatened destruction, modification or curtailment of steelhead habitat or range and disease and predation of steelhead. *See id.*, p. 514. The inadequacy of existing regulatory mechanisms for diversions at Foster Park contributed to the listing and continuing impacts to endangered steelhead. *See id.*, p. 514.

3. Reaches 3 and 4 are Impaired for Pumping and Diversions Based on the "Situation-Specific Weight of Evidence" Listing Factor.

The situation-specific weight of evidence listing factor provides that when information indicates non-attainment of applicable water quality standards that water segment is to be evaluated to determine whether the situation-specific weight of the evidence demonstrates that the water quality standard is not attained. *See* Listing Policy, Section 3.11, p. 8. A situation-specific weight of evidence impairment determination is to be justified by: (1) data or information including current conditions supporting the decision, (2) description of how that data or information affords a substantial basis in fact from which the impairment decision can be reasonably inferred, (3) demonstration that the weight of the evidence of the data and information indicate that the water quality standard is not attained, and (4) demonstration that the approach used is scientifically defensible and reproducible. *See id*.

Reaches 3 and 4 each meet the situation-specific weight of evidence listing factor. Current conditions show that Reaches 3 and 4 are impaired for flow, and that the impairment is caused by pumping and diversions. *See* Section I., above; *see also* Attachments A and B. The available information and data supporting impairment listing is scientifically defensible and reproducible. Further, in approving the State Water Board's TMDL for the Ventura River, U.S. EPA recognized need for further action to address flow impairment.

D. Reaches 3 and 4 of the Ventura River Must Remain 303(d) Listed as Impaired for Flow Caused by Pumping and Diversions.

If the Listing Policy applies, then it applies equally for listing and *delisting*. *See* Listing Policy, Section 4, pp. 11-13. In addition to satisfying the delisting factors, which it cannot, to remove Reaches 3 and 4 from the 303(d) list the responsible Regional Water Quality Control Board (here Region 4) must document the list change in a fact sheet and hold a public hearing to approve the change, respond in writing to all public comments, approve a resolution in support of the decision, and submit supporting fact sheets, responses to comments, documentation of the hearing process, and a copy of all data and information considered to the State Water Board. The State Water Board must also assemble supporting fact sheets and provide advance notice and opportunity for public comment on the listing decision. *See* Listing Policy, Section 6.3, p. 26. The 2012 Integrated Report makes no reference to the delisting factor, and Channelkeeper is unaware of any efforts by Region 4 or the State Water Board to comply with these delisting requirements.

Accordingly, unless the delisting factors and additional requirements are met, Reaches 3 and 4 must remain listed as flow-impaired due to pumping and diversions.

Because the existing pumping and diversion impairment listings for Reaches 3 and 4 are entirely consistent with the Clean Water Act, U.S. EPA Guidance, and the State Water Board's Listing Policy, that the impairments were identified on California's 303(d) list before the State Water Board adopted the Listing Policy or U.S. EPA adopted the 2006 Guidance in no way invalidates those listings.

III. The State Board Must Consider All Readily Available Information About Impairments to Reaches 3 and 4 Resulting from Pumping and Diversions Prior to Making a Listing Decision.

The body of regulations and guidance that bear on 303(d) listings are unambiguous about the information that should be considered in making listing decisions: *all of it*. Federal regulations state clearly that "[e]ach State shall assemble and evaluate all existing and readily available water quality-related data and information to develop the [303(d)] list." 40 C.F.R. § 130.7(b)(5). The regulations further mandate that local, state and federal agencies, members of the public, and academic institutions "should be *actively* solicited for research they may be conducting or reporting." 40 C.F.R. § 130.7(b)(5)(iii) (emphasis added). Furthermore, U.S. EPA's 2006 Guidance explicitly states that U.S. EPA's review of California's list will include an "assess[ment of] whether the state conducted an adequate review of all existing and readily available water quality-related information." 2006 Guidance, p. 29. To that end, the 2006 Guidance also requires states to provide "[r]ationales for any decision to not use any existing and readily available data and information." *Id.*, p. 18. Accordingly, any and all existing and readily available data and information must be considered to determine the health of the state's increasingly-degraded water bodies.

To provide the State Water Board with available data and information about the impairments to Reaches 3 and 4 of the Ventura River resulting from pumping and diversions described in Section I., Channelkeeper attaches hereto a draft Line of Evidence as Exhibit A. The Line of Evidence summarizes the existing flow-impairment to Reaches 3 and 4, relies on scientifically defensible and reproducible data and information,[3] and includes analysis of that data and information supporting the decision to identify Reaches 3 and 4 as flow-impaired on California's 303(d) list.

IV. Conclusion.

When Reaches 3 and 4 of the Ventura River were identified as flow-impaired by pumping and diversions on California's 1998 303(d) list, the State Water Board took an important first step towards restoring the chemical, physical, and biological integrity of these waters. However, there is ongoing documentation that flow alterations from pumping and diversions continue to degrade Reaches 3 and 4 such that these waters cannot support their designated beneficial uses and water quality standards are not attained.

Removing the impairment listings for Reaches 3 and 4 as the State Water Board says it will likely propose may impede existing and future efforts to remedy the ongoing flow-impairments of Reaches 3 and 4. Thus Channelkeeper strongly urges the State Water Board to comply with its Clean Water Act duty to continue to identify Reaches 3 and 4 on the 303(d) list as flow-impaired by pumping and diversions.

Respectfully,

[3] Data collected by Channelkeeper followed quality assurance protocols for continuous monitoring and flow measurements. *See* Attachment C. Additional data and findings referenced were produced by and for government agencies including the California Department of Fish and Game, the National Marine Fisheries Service, the City of Ventura, Ventura County, the United States Geologic Survey, the Los Angeles Regional Water Quality Control Board, the State Water Resources Control Board, and the United States Environmental Protection Agency.

Ben Pitterle
Watershed and Marine Program Director

Kira Redmond
Executive Director

Reference List

1. Water Quality Control Plan for the Los Angeles Region ("Basin Plan").
2. California Department of Fish and Wildlife 1996 Steelhead Restoration and Management Plan for California ("Steelhead Restoration Plan").
3. U.S. EPA Draft Ventura River Reaches 3 and 4 Total Maximum Daily Loads For Pumping & Water Diversion-Related Water Quality Impairments ("EPA Draft TMDL").
4. Draft Environmental Impact Report on the Conjunctive Use Agreement between Casitas Municipal Water District and the City of Ventura ("Draft EIR").
5. National Marine Fisheries Service 2007 Draft Biological Opinion ("Draft Biological Opinion").
6. Ventura River Natural Conditions Study, TetraTech, 2009.
7. Jonathan Butcher, July 22, 2009 Memorandum to Scott Holder (VCWPD) Re: Ventura River Model Comment Response.
8. City of Ventura Preliminary Hydrogeological and Surface Water/Groundwater Interaction Study (Hopkins, 2013).
9. NMFS 2012 Southern California Steelhead Recovery Plan ("Steelhead Recovery Plan").
10. Beller, EE et al., Historical Ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain: an analysis of terrestrial, riverine, and coastal habitats, San Francisco Estuary Institute, 2011.
11. 2010 California 303(d) List of Water Quality Limited Segments ("2010 Integrated Report").

Ventura River Reaches 3 and 4 Listing Line of Evidence

Pollution: Pumping and Diversions

Beneficial Uses Being Impaired: Cold Freshwater Habitat; Warm Freshwater Habitat; Rare, Threatened, or Endangered Species; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Contact and Non-Contact Water Recreation

Conclusion: Available data demonstrates that pumping and diversions are impairing the beneficial uses of Reaches 3 and 4 of the Ventura River, and that conditions in Reaches 3 and 4 meet Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (September 2004) listing factors 3.1, 3.9, and 3.11.

Summary of Evidence: In 1998, the United States Environmental Protection Agency (EPA) approved California's list of impaired water bodies identified pursuant to section 303(d) (303(d) list) of the Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1313(d), which first listed Reaches 3 and 4 of the Ventura River as impaired for pumping and diversion. The original listing referenced findings in a 1996 Steelhead Restoration and Management Plan for California as one basis for the listing decision. Over the last several decades, additional Lines of Evidence (LOE) have been produced, which verify and support the listing decision.

The hydraulic communication between surface and groundwater in the Ventura River and the contribution of groundwater pumping to dewatering of the river has been acknowledged by experts and government agencies for several decades. These relationships were clearly evaluated and established in numerous studies and reports including: (1) a Draft Environmental Impact Report on the Conjunctive Use Agreement between Casitas Municipal Water District and the City of Ventura (EDAW, Inc. et al. 1978); (2) a National Marine Fisheries Service (NMFS) 2007 Draft Biological Opinion (Draft Biological Opinion) for the Army Corps of Engineers' permitting of the City of Ventura's proposed Foster Park Well Facility repairs; (3) a Ventura River Natural Conditions Study (TetraTech, 2009); (4) the United States Environmental Protection Agency, Region 9, Draft Ventura River Reaches 3 and 4 Total Maximum Daily Loads For Pumping & Water Diversion-Related Water Quality Impairments (EPA Draft TMDL); and (5) the City of Ventura's Preliminary Hydrogeological and Surface Water/Groundwater Interaction Study (Hopkins, 2013).

Linkages have also been established between reduced surface flows caused by pumping and diverting and impairment of designated and potential beneficial uses of the River. The Draft Biological Opinion concluded that summer and fall withdrawals from Foster Park are, "likely to destroy or adversely modify critical habitat" through dewatering, reduction of water depth, and subsequent degradation of water quality (pp. 27, 33). Hopkins, 2013 concludes that pumping at Foster Park results in degradation of downstream critical habitat and water quality (p. 26). The EPA Draft TMDL found that low and intermittent flows result in, "failure to attain several beneficial uses" (p.11). During dry years, juvenile fish unable to transit back downstream to the ocean due to low flows must survive in pools in the mainstem, i.e., Reaches 3 and 4 (EPA Draft TMDL, p.

101). These oversummering fish are subjected to elevated temperatures, endure competition with other fish for a decreasing food supply, and are exposed to predators (EPA Draft TMDL, p.101).

Continuous dissolved oxygen and temperature monitoring conducted by Santa Barbara Channelkeeper through the 2013 and 2014 dry seasons confirms Reaches 3 and 4 consistently fail to meet Water Quality Objectives established in the Basin Plan to protect beneficial uses and/or criteria used in prior 303(d) listings (see Tables 1, 2, and 3 below).

To avoid jeopardizing steelhead existence and destruction or adverse modification of critical steelhead habitat, flow thresholds measured at the USGS Foster Park Gage were established by Hopkins (p. 28) and the National Marine Fisheries Service in the Draft Biological Opinion (p. 33). A comparison of Foster Park Well Field production totals with flow measurements at the USGS Foster Park Gage (Attachments A and B) clearly illustrates that pumping and diversion activities continued despite surface flows in Reaches 3 and 4 consistently falling below recommended flow thresholds. Flow monitoring in Reaches 3 and 4 conducted by Santa Barbara Channelkeeper in 2013 and 2014 further demonstrates that flows consistently fell below recommended protective thresholds through the dry seasons (see Table 4 below).

Finally, degradation of biological populations and communities has occurred and has been documented for southern California steelhead trout. By the 1990s there had been a 96% decline in the steelhead population in the Ventura River observed, prompting its listing as an endangered species in 1997 (Draft Biological Opinion, p. 352; *see also* National Marine Fisheries Service 2012 Southern California Steelhead Recovery Plan, p. 437) (Steelhead Recovery Plan) (describing declines in steelhead run sizes of 90% or more). The Steelhead Recovery Plan describes dams, surface water diversions, and groundwater extraction (including at Foster Park) as contributing to the present or threatened destruction, modification or curtailment of steelhead habitat or range and disease and predation of steelhead and as a "very high threat" to steelhead recovery in the Ventura River (p. 514).

Data Referenced:

1. Water Quality Control Plan for the Los Angeles Region ("Basin Plan").
2. California Department of Fish and Wildlife 1996 Steelhead Restoration and Management Plan for California ("Steelhead Restoration Plan").
3. U.S. EPA Draft Ventura River Reaches 3 and 4 Total Maximum Daily Loads For Pumping & Water Diversion-Related Water Quality Impairments ("EPA Draft TMDL").
4. Draft Environmental Impact Report on the Conjunctive Use Agreement between Casitas Municipal Water District and the City of Ventura ("Draft EIR").
5. National Marine Fisheries Service 2007 Draft Biological Opinion ("Draft Biological Opinion").
6. Ventura River Natural Conditions Study, TetraTech, 2009.
7. Jonathan Butcher, July 22, 2009 Memorandum to Scott Holder (VCWPD) Re:

Ventura River Model Comment Response.
8. City of Ventura Preliminary Hydrogeological and Surface Water/Groundwater Interaction Study (Hopkins, 2013).
9. NMFS 2012 Southern California Steelhead Recovery Plan ("Steelhead Recovery Plan").
10. Beller, EE et al., Historical Ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain: an analysis of terrestrial, riverine, and coastal habitats, San Francisco Estuary Institute, 2011.
11. 2010 California 303(d) List of Water Quality Limited Segments ("2010 Integrated Report").
12. Santa Barbara Channelkeeper Continuous Monitoring Data for Dissolved Oxygen, Ventura River Monitoring Program 2013 - 2014.
13. Santa Barbara Channelkeeper Continuous Monitoring Data for Temperature, Ventura River Monitoring Program 2013 - 2014.
14. USGS Foster Park Stream Gage Data, Gage 11118500. Data downloaded from nwis.waterdata.usgs.gov/nwis on August 18, 2014.
15. Ventura Water Calendar Year source Report 2013 – 2014. City of Ventura Water Department.
16. Santa Barbara Channelkeeper Ventura River Monitoring Program; Methods and QAQC Description, March 1, 2013. Santa Barbara Channelkeeper

Table 1: Measurements Below the 7 mg/L Dissolved Oxygen Water Quality Objective – Santa Barbara Channelkeeper Ventura River Monitoring Program

7 Day Average of Minimum DO Measurements					
Site	**Year**	**Total n**	**n <7 mg/L**	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	173	157		
	2014	155	155		
	Sub Total	328	312		
DS6	2013	140	140		
	2014	106	106		
	Sub Total	246	246		
	Grand Total	574	558	93	**Yes**
Reach 4					
DS6.3	2013	106	8		
	2014	68	55		
	Grand Total	174	63	29	**Yes**

Table 2: Measurements Below the 5 mg/L Dissolved Oxygen Water Quality Objective - Santa Barbara Channelkeeper Ventura River Monitoring Program

7 Day Average of Minimum DO Measurements					
Site	**Year**	**Total n**	**n <5 mg/L**	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	173	100		
	2014	155	143		
	Sub Total	328	243		
DS6	2013	140	118		
	2014	106	98		
	Sub Total	246	216		
	Grand Total	574	459	93	**Yes**
Reach 4					
DS6.3	2013	106	0		
	2014	68	2		
	Grand Total	174	2	29	**No**

Table 3: Measurements Above the 21° Temperature 303(d) Listing Evaluation Criteria - Santa Barbara Channelkeeper Ventura River Monitoring Program

Daily Maximum Temperature Measurements					
Site	**Year**	**Total n**	**n > 21° *C***	**Min n for listing**	**Meets Listing Criteria?**
Reach 3					
6.1	2013	179	125		
	2014	161	152		
	Sub Total	340	277		
DS6	2013	149	84		
	2014	160	140		
	Sub Total	309	224		
	Grand Total	649	501	108	**Yes**
Reach 4					
DS6.3	2013	124	114		
	2014	126	113		
	Grand Total	250	227	42	**Yes**

Table 4: Flow on the Ventura River (cfs) – Santa Barbara Channelkeeper Ventura River Monitoring Program

SBCK Monitoring Sites				
Reaches		**Reach 3**		**Reach 4**
Year	**Date**	**6.1**	**DS6**	**DS6.3**
2013	6/6/13		Flow not measured in 2013	
	6/13/13	1.1		
	6/14/13			2.8
	7/10/13	0.6		2.3
	7/11/13			
	7/26/13	0.3		0.6
	8/16/13	0.3		0.3
	9/6/13	0.2		0.1
	9/24/13	0.1		0
	10/17/13	0.1		0
	11/22/13	0.1		0
2014	6/5/14	0.4		3.6
	6/24/14	0.6	0.3	3.3
	7/15/14	0.6	0.3	2.4
	7/31/14	0.5	0.5	1.1
	8/21/14	0.3		0.7
	9/16/14	0.1	0.4	0.3
	10/21/14	0.2	0.3	

Attachment A

USGS Foster Park Stream Gage Data
Gage 11118500

Data downloaded from nwis.waterdata.usgs.gov/nwis on August 18, 2014

A	Approved for publication -- Processing and review completed.
P	Provisional data subject to revision.
e	Value has been estimated.

Daily Mean Discharge, cubic feet per second 2007

DATE	Jan 2007	Feb 2007	Mar 2007	Apr 2007	May 2007	Jun 2007	Jul 2007	Aug 2007	Sep 2007	Oct 2007	Nov 2007	Dec 2007
1	7.0 A	11 A	10 A	8.3 A	8.3 A	6.9 A	5.4 A	3.9 A	2.8 A	1.7 A	0.86 A	0.59 A
2	7.1 A	11 A	9.7 A	8.3 A	8.2 A	6.9 A	5.0 A	3.1 A	2.6 A	1.8 A	0.85 A	0.52 A
3	7.4 A	11 A	9.6 A	8.6 A	8.0 A	7.2 A	5.0 A	3.1 A	2.6 A	1.8 A	0.75 A	0.52 A
4	7.5 A	9.8 A	9.8 A	9.0 A	8.2 A	7.2 A	5.0 A	3.3 A	2.3 A	1.8 A	0.80 A	0.48 A
5	7.5 A	9.7 A	9.4 A	8.7 A	8.1 A	7.0 A	5.0 A	3.3 A	2.3 A	1.7 A	0.85 A	0.48 A
6	7.6 A	9.7 A	9.0 A	8.6 A	7.9 A	6.8 A	5.0 A	3.2 A	2.4 e A	1.5 A	0.86 A	0.49 A
7	7.6 A	9.8 A	9.0 A	8.7 A	7.9 A	6.7 A	5.1 A	3.4 A	2.4 e A	1.4 A	0.84 A	0.60 A
8	7.5 A	9.8 A	8.3 A	8.3 A	7.8 A	6.8 A	4.9 A	3.3 A	2.4 e A	1.4 A	0.78 A	0.52 A
9	7.5 A	9.7 A	8.3 A	8.3 A	8.1 A	6.9 A	5.1 A	3.3 A	2.5 e A	1.4 A	0.73 A	0.43 A
10	7.6 A	9.7 A	8.2 A	7.6 A	8.9 A	7.2 A	5.8 A	3.1 A	2.5 e A	1.5 A	0.73 A	0.43 A
11	7.6 A	10 A	7.7 A	7.6 A	8.2 A	7.3 A	4.7 A	2.8 A	2.5 e A	1.5 A	0.73 A	0.43 A
12	7.6 A	9.2 A	7.3 A	7.1 A	8.1 A	7.3 A	4.1 A	2.7 A	2.6 A	1.5 A	0.67 A	0.42 A
13	7.6 A	8.9 A	6.7 A	7.4 A	8.1 A	7.3 A	4.1 A	2.7 A	2.6 A	1.5 A	0.62 A	0.39 A
14	7.6 A	9.0 A	6.6 A	7.2 A	8.2 A	6.8 A	3.7 A	2.6 A	2.6 A	1.3 A	0.62 A	0.39 A
15	7.6 A	8.9 A	6.7 A	7.0 A	8.3 A	6.8 A	4.1 A	2.6 A	2.4 A	1.2 A	1.0 A	0.39 A
16	7.6 A	8.6 A	6.6 A	6.8 A	8.5 A	6.8 A	4.5 A	2.6 A	2.5 A	1.2 A	0.92 A	0.36 A
17	7.6 A	7.9 A	6.8 A	6.7 A	8.1 A	6.8 A	4.3 A	2.6 A	2.5 A	1.2 A	0.73 A	0.31 A
18	7.5 A	7.5 A	6.9 A	6.8 A	8.0 A	6.8 A	3.9 A	2.5 A	2.5 A	1.2 A	0.62 A	1.0 A
19	7.4 A	10 A	7.0 A	7.5 A	8.0 A	6.5 A	4.1 A	2.5 A	2.5 A	1.2 A	0.61 A	1.2 A
20	7.0 A	8.7 A	7.3 A	8.3 A	8.0 A	6.3 A	4.2 A	2.5 A	2.4 A	1.0 A	0.58 A	0.74 A
21	6.6 A	8.3 A	7.6 A	8.4 A	7.8 A	6.3 A	4.2 A	2.5 A	2.3 A	0.99 A	0.55 A	0.66 A
22	6.5 A	9.6 A	7.6 A	8.1 A	7.5 A	6.3 A	4.2 A	2.6 A	1.5 A	1.0 A	0.52 A	0.62 A
23	6.5 A	11 A	7.6 A	8.3 A	7.4 A	5.8 A	4.2 A	2.7 A	1.4 A	1.00 A	0.54 A	0.60 A
24	6.7 A	10 A	7.6 A	8.3 A	7.3 A	5.8 A	4.3 A	2.7 A	1.4 A	0.87 A	0.54 A	0.57 A
25	6.8 A	9.7 A	7.6 A	8.3 A	7.2 A	6.0 A	4.7 A	2.6 A	1.5 A	0.86 A	0.46 A	0.57 A
26	6.9 A	9.5 A	7.6 A	8.3 A	7.1 A	5.8 A	4.5 A	2.8 A	1.8 A	0.85 A	0.45 A	0.52 A
27	8.2 A	10 A	7.6 A	8.3 A	7.1 A	5.7 A	4.3 A	2.6 A	1.9 A	0.76 A	0.44 A	0.52 A
28	34 A	10 A	7.8 A	8.3 A	7.2 A	5.7 A	4.3 A	2.5 A	2.0 A	0.80 A	0.48 A	0.52 A
29	16 A		7.8 A	8.3 A	7.0 A	5.5 A	4.2 A	2.6 A	1.7 A	0.84 A	0.52 A	0.52 A
30	13 A		7.9 A	8.4 A	7.1 A	5.5 A	4.3 A	2.7 A	1.7 A	0.86 A	0.58 A	0.52 A
31	12 A		8.1 A		6.9 A		4.2 A	2.8 A		0.88 A		0.51 A
COUNT	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**34**	**11**	**10**	**9**	**8.9**	**7.3**	**5.8**	**3.9**	**2.8**	**1.8**	**1**	**1.2**
MIN	**6.5**	**7.5**	**6.6**	**6.7**	**6.9**	**5.5**	**3.7**	**2.5**	**1.4**	**0.76**	**0.44**	**0.31**

Daily Mean Discharge, cubic feet per second 2008

DATE	Jan 2008	Feb 2008	Mar 2008	Apr 2008	May 2008	Jun 2008	Jul 2008	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008
1	0.52 A	155 e A	85 A	40 A	25 A	16 A	14 A	10 A	6.7 A	5.4 A	8.2 A	5.1 A
2	0.51 A	130 A	82 A	40 A	23 A	16 A	15 A	9.8 A	6.7 A	5.4 A	7.3 A	5.0 A
3	0.56 A	158 A	78 A	40 A	22 A	17 A	15 A	9.5 A	6.9 A	5.4 A	6.1 A	4.7 A
4	1,300 A	112 e A	77 A	41 A	21 A	18 A	13 A	9.3 A	6.8 A	5.7 A	5.1 A	4.7 A
5	1,290 A	97 e A	75 A	41 A	19 A	19 A	13 A	8.8 A	6.8 A	5.3 A	4.0 A	4.7 A
6	32 A	96 e A	71 A	41 A	20 A	20 A	12 A	9.6 A	7.1 A	4.9 A	4.2 A	4.6 A
7	63 A	91 e A	71 A	41 A	20 A	20 A	12 A	9.5 A	7.3 A	4.7 A	5.4 A	4.8 A
8	17 A	86 e A	71 A	41 A	19 A	21 A	12 A	9.2 A	7.3 A	4.5 A	5.7 A	4.9 A
9	9.4 A	77 e A	66 A	40 A	18 A	22 A	13 A	9.1 A	7.6 A	4.6 A	5.5 A	4.8 A
10	6.9 A	74 e A	65 A	36 A	17 A	22 A	12 A	9.2 A	7.3 A	4.7 A	5.6 A	4.6 A
11	5.7 A	72 e A	61 A	36 A	17 A	20 A	12 A	9.5 A	7.3 A	4.9 A	5.6 A	4.4 A
12	5.1 A	66 e A	58 A	35 A	17 A	21 A	12 A	10 A	7.4 A	5.3 A	5.4 A	4.3 A
13	4.7 A	63 A	57 A	33 A	15 A	21 A	11 A	10 A	7.4 A	5.5 A	5.2 A	4.0 A
14	4.4 A	61 A	57 A	32 A	13 A	21 A	11 A	8.8 A	7.2 A	5.3 A	5.0 A	3.9 A
15	4.4 A	56 A	57 A	30 A	12 A	20 A	10 A	8.5 A	6.9 A	5.0 A	5.3 A	12 A
16	4.4 A	54 A	57 A	30 A	11 A	20 A	10 A	9.2 A	6.7 A	4.7 A	5.6 A	8.8 A
17	4.4 A	54 A	55 A	30 A	10 A	19 A	10 A	9.4 A	6.7 A	5.5 A	5.6 A	6.1 A
18	4.3 A	54 A	53 A	29 A	11 A	18 A	10 A	9.5 A	6.8 A	6.8 A	5.8 A	5.1 A
19	4.2 A	53 A	53 A	29 A	13 A	18 A	11 A	9.8 A	6.8 A	7.3 A	5.6 A	5.7 A
20	4.4 A	56 A	51 A	28 A	12 A	17 A	11 A	8.8 A	6.8 A	7.4 A	5.5 A	7.0 A
21	4.4 A	56 A	49 A	29 A	12 A	16 A	11 A	7.2 A	7.0 A	7.0 A	4.5 A	6.9 A
22	4.7 A	70 A	47 A	30 A	12 A	15 A	10 A	6.7 A	7.0 A	6.4 A	4.6 A	7.5 A
23	618 A	61 A	43 A	30 A	13 A	15 A	9.7 A	7.1 A	6.7 A	6.0 A	4.6 A	7.1 A
24	1,200 A	164 A	42 A	30 A	14 A	13 A	9.9 A	6.8 A	6.4 A	5.9 A	4.8 A	6.7 A
25	2,740 A	101 A	41 A	30 A	14 A	12 A	9.9 A	6.5 A	6.5 A	5.8 A	5.2 A	6.8 A
26	713 A	98 A	39 A	29 A	14 A	13 A	9.8 A	6.5 A	6.4 A	5.8 A	8.0 A	6.7 A
27	6,340 e A	93 A	39 A	27 A	13 A	13 A	10 A	6.8 A	6.2 A	5.8 A	7.1 A	7.0 A
28	3,630 e A	89 A	39 A	24 A	13 A	14 A	10 A	7.0 A	6.3 A	5.7 A	3.9 A	7.0 A
29	962 e A	85 A	39 A	25 A	14 A	16 A	11 A	6.5 A	6.3 A	6.0 A	3.6 A	6.8 A
30	354 e A		39 A	24 A	14 A	14 A	10 A	6.5 A	5.6 A	6.2 A	3.5 A	6.4 A
31	240 e A		38 A		15 A		10 A	6.6 A		6.3 A		6.1 A
COUNT	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**6,340**	**164**	**85**	**41**	**25**	**22**	**15**	**10**	**7.6**	**7.4**	**8.2**	**12**
MIN	**0.51**	**53**	**38**	**24**	**10**	**12**	**9.7**	**6.5**	**5.6**	**4.5**	**3.5**	**3.9**

Daily Mean Discharge, cubic feet per second 2009

DATE	Jan 2009	Feb 2009	Mar 2009	Apr 2009	May 2009	Jun 2009	Jul 2009	Aug 2009	Sep 2009	Oct 2009	Nov 2009	Dec 2009
1	6.1 [A]	4.8 [A]	16 [A]	12 [A]	9.1 [A]	8.2 [A]	7.0 [A]	2.2 [A]	3.3 [A]	2.1 [A]	2.5 [A]	2.3 [A]
2	6.3 [A]	4.7 [A]	16 [A]	12 [A]	8.7 [A]	7.2 [A]	7.1 [A]	2.4 [A]	3.3 [A]	2.0 [A]	1.6 [A]	2.3 [A]
3	6.4 [A]	4.7 [A]	15 [A]	12 [A]	8.5 [A]	7.1 [A]	5.4 [A]	2.6 [A]	3.1 [A]	1.9 [A]	1.8 [A]	2.4 [A]
4	6.6 [A]	4.6 [A]	16 [A]	12 [A]	8.4 [A]	6.1 [A]	5.5 [A]	2.0 [A]	3.1 [A]	2.0 [A]	2.2 [A]	2.3 [A]
5	6.5 [A]	5.3 [A]	16 [A]	11 [A]	7.8 [A]	6.6 [A]	5.5 [A]	1.8 [A]	3.3 [A]	2.3 [A]	2.6 [A]	2.3 [A]
6	6.1 [A]	8.2 [A]	16 [A]	11 [A]	7.2 [A]	6.5 [A]	4.8 [A]	2.1 [A]	3.2 [A]	2.3 [A]	2.7 [A]	2.3 [A]
7	6.0 [A]	13 [A]	15 [A]	11 [A]	6.7 [A]	6.0 [A]	4.7 [A]	2.4 [A]	3.2 [A]	2.2 [A]	2.7 [A]	3.1 [A]
8	6.2 [A]	12 [A]	15 [A]	11 [A]	6.6 [A]	6.2 [A]	4.7 [A]	2.9 [A]	3.1 [A]	2.2 [A]	2.7 [A]	3.0 [A]
9	6.1 [A]	12 [A]	15 [A]	11 [A]	6.8 [A]	6.2 [A]	4.4 [A]	3.1 [A]	3.0 [A]	2.1 [A]	2.7 [A]	2.8 [A]
10	6.1 [A]	11 [A]	15 [A]	11 [A]	7.0 [A]	7.2 [A]	4.3 [A]	3.3 [A]	2.8 [A]	2.0 [A]	2.6 [A]	2.7 [A]
11	5.9 [A]	10 [A]	15 [A]	11 [A]	7.2 [A]	6.1 [A]	4.0 [A]	3.5 [A]	2.9 [A]	2.1 [A]	2.6 [A]	3.4 [A]
12	5.6 [A]	10 [A]	14 [A]	11 [A]	7.4 [e A]	9.9 [A]	3.8 [A]	3.3 [A]	3.0 [A]	2.0 [A]	2.5 [A]	7.5 [A]
13	5.5 [A]	11 [A]	14 [A]	11 [A]	7.8 [e A]	11 [A]	3.8 [A]	3.0 [A]	2.9 [A]	2.5 [A]	2.7 [A]	23 [A]
14	5.3 [A]	11 [A]	14 [A]	10 [A]	8.2 [A]	11 [A]	3.9 [A]	2.6 [A]	2.9 [A]	36 [A]	2.8 [A]	5.7 [A]
15	5.3 [A]	11 [A]	14 [A]	10 [A]	8.1 [A]	12 [A]	3.9 [A]	2.4 [A]	2.9 [A]	6.7 [A]	2.7 [A]	4.1 [A]
16	5.3 [A]	65 [A]	14 [A]	10 [A]	8.2 [A]	12 [e A]	3.5 [A]	3.3 [A]	2.7 [A]	3.0 [A]	2.9 [A]	3.5 [A]
17	5.2 [A]	64 [A]	14 [A]	10 [A]	8.4 [A]	12 [e A]	3.6 [A]	3.5 [A]	2.5 [A]	2.9 [A]	2.4 [A]	3.4 [A]
18	5.1 [A]	35 [A]	14 [A]	10 [A]	8.8 [A]	12 [e A]	3.5 [A]	4.0 [A]	2.4 [A]	3.1 [A]	2.5 [A]	3.1 [A]
19	5.2 [A]	29 [A]	14 [A]	9.6 [A]	8.6 [A]	12 [A]	3.1 [A]	3.7 [A]	2.4 [A]	2.0 [A]	2.8 [A]	3.1 [A]
20	4.8 [A]	27 [A]	14 [A]	9.6 [A]	8.4 [A]	9.3 [A]	3.0 [A]	3.4 [A]	2.4 [A]	1.9 [A]	3.0 [A]	3.3 [A]
21	4.8 [A]	24 [A]	14 [A]	9.4 [A]	8.1 [A]	7.4 [A]	3.1 [A]	3.2 [A]	2.4 [A]	2.7 [A]	2.9 [A]	3.4 [A]
22	5.0 [A]	23 [A]	14 [A]	9.9 [A]	8.2 [A]	6.8 [A]	3.1 [A]	2.8 [A]	2.3 [A]	2.8 [A]	2.9 [A]	3.3 [A]
23	5.0 [A]	21 [A]	14 [A]	10 [A]	7.8 [A]	6.4 [A]	3.1 [A]	2.7 [A]	2.1 [A]	2.7 [A]	2.4 [A]	3.4 [A]
24	4.8 [A]	20 [A]	14 [A]	10 [A]	8.3 [A]	6.2 [A]	3.7 [A]	2.7 [A]	2.2 [A]	2.8 [A]	2.3 [A]	3.5 [A]
25	4.9 [A]	20 [A]	14 [A]	9.8 [A]	8.7 [A]	6.1 [A]	3.1 [A]	3.0 [A]	2.3 [A]	2.5 [A]	2.3 [A]	4.5 [A]
26	5.0 [A]	19 [A]	14 [A]	9.9 [A]	9.1 [A]	8.8 [A]	2.6 [A]	3.8 [A]	2.2 [A]	2.1 [A]	2.2 [A]	4.8 [A]
27	5.0 [A]	18 [A]	13 [A]	10 [A]	8.5 [A]	7.5 [A]	2.8 [A]	3.8 [A]	2.2 [A]	2.3 [A]	2.2 [A]	3.8 [A]
28	4.9 [A]	17 [A]	13 [A]	9.8 [A]	8.1 [A]	9.2 [A]	3.2 [A]	4.0 [A]	2.3 [A]	2.9 [A]	2.5 [A]	4.1 [A]
29	5.0 [A]		13 [A]	9.2 [A]	8.4 [A]	7.6 [A]	2.9 [A]	3.8 [A]	2.2 [A]	3.1 [A]	2.2 [A]	4.0 [A]
30	4.7 [A]		12 [A]	8.9 [A]	8.7 [A]	6.5 [A]	2.6 [A]	3.6 [A]	2.1 [A]	3.1 [A]	2.2 [A]	3.8 [A]
31	4.8 [A]		12 [A]		8.3 [A]		2.4 [A]	3.5 [A]		2.8 [A]		3.5 [A]
COUNT	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**6.6**	**65**	**16**	**12**	**9.1**	**12**	**7.1**	**4**	**3.3**	**36**	**3**	**23**
MIN	**4.7**	**4.6**	**12**	**8.9**	**6.6**	**6**	**2.4**	**1.8**	**2.1**	**1.9**	**1.6**	**2.3**

Daily Mean Discharge, cubic feet per second 2010

DATE	Jan 2010	Feb 2010	Mar 2010	Apr 2010	May 2010	Jun 2010	Jul 2010	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010
1	3.8 [A]	56 [A]	98 [A]	31 [A]	35 [A]	20 [A]	12 [A]	8.5 [A]	6.1 [A]	6.0 [A]	4.1 [A]	4.3 [A]
2	4.1 [A]	49 [A]	91 [A]	29 [A]	34 [A]	21 [A]	12 [A]	8.0 [A]	6.0 [A]	6.6 [A]	4.2 [A]	4.2 [A]
3	3.9 [A]	40 [A]	86 [A]	30 [A]	34 [A]	20 [A]	12 [A]	7.7 [A]	6.0 [A]	6.1 [A]	5.0 [A]	3.9 [A]
4	3.9 [A]	38 [A]	85 [A]	30 [A]	34 [A]	18 [A]	12 [A]	7.5 [A]	5.8 [A]	4.9 [A]	5.1 [A]	3.9 [A]
5	4.3 [A]	111 [A]	80 [A]	39 [A]	34 [A]	18 [A]	11 [A]	7.5 [A]	5.8 [A]	4.6 [A]	5.2 [A]	4.0 [A]
6	4.8 [A]	110 [A]	78 [A]	33 [A]	37 [A]	19 [A]	12 [A]	7.4 [A]	5.9 [A]	6.2 [A]	5.4 [A]	4.1 [A]
7	5.0 [A]	98 [A]	76 [A]	32 [A]	35 [A]	17 [A]	11 [A]	7.3 [A]	6.1 [A]	6.4 [A]	5.4 [A]	3.9 [A]
8	5.1 [A]	82 [A]	70 [A]	30 [A]	34 [A]	17 [A]	12 [A]	8.3 [A]	7.1 [A]	5.1 [A]	5.4 [A]	3.9 [A]
9	5.0 [A]	105 [A]	70 [A]	29 [A]	34 [A]	18 [A]	13 [A]	8.4 [A]	7.5 [A]	4.3 [A]	5.3 [A]	3.9 [A]
10	4.5 [A]	85 [A]	67 [A]	28 [A]	35 [A]	18 [A]	10 [A]	7.7 [A]	7.1 [A]	3.8 [A]	5.0 [A]	3.9 [A]
11	4.7 [A]	76 [A]	59 [A]	34 [A]	34 [A]	17 [A]	10 [A]	8.5 [A]	6.8 [A]	4.0 [A]	4.8 [A]	3.8 [A]
12	4.6 [A]	73 [A]	56 [A]	115 [A]	33 [A]	16 [A]	10 [A]	9.3 [A]	6.5 [A]	4.6 [A]	4.7 [A]	3.8 [A]
13	4.3 [A]	74 [A]	55 [A]	46 [A]	32 [A]	17 [A]	9.6 [A]	7.8 [A]	6.4 [A]	5.7 [A]	4.7 [A]	3.8 [A]
14	4.7 [A]	73 [A]	53 [A]	39 [A]	31 [A]	17 [A]	8.5 [A]	7.2 [A]	6.0 [A]	5.7 [A]	4.6 [A]	4.0 [A]
15	4.7 [A]	72 [A]	51 [A]	36 [A]	32 [A]	15 [A]	8.5 [A]	7.7 [A]	5.8 [A]	5.0 [A]	4.6 [A]	4.0 [A]
16	3.6 [A]	68 [A]	50 [A]	34 [A]	29 [A]	15 [A]	8.5 [A]	7.2 [A]	5.7 [A]	5.1 [A]	4.6 [A]	4.0 [A]
17	4.8 [A]	59 [A]	42 [A]	33 [A]	26 [A]	15 [A]	8.7 [A]	6.7 [A]	5.8 [A]	5.2 [A]	4.6 [A]	4.5 [A]
18	330 [A]	51 [A]	42 [A]	31 [A]	29 [A]	15 [A]	8.2 [A]	6.9 [A]	5.8 [A]	5.0 [A]	4.6 [A]	29 [A]
19	168 [A]	50 [A]	42 [A]	30 [A]	30 [A]	15 [A]	8.3 [A]	6.5 [A]	5.5 [A]	6.2 [A]	4.6 [A]	1,090 [A]
20	901 [A]	51 [A]	42 [A]	34 [A]	26 [A]	15 [A]	8.7 [A]	6.0 [A]	5.4 [A]	5.1 [A]	5.4 [A]	253 [A]
21	730 [A]	49 [A]	42 [A]	34 [A]	24 [A]	14 [A]	8.1 [A]	5.7 [A]	5.6 [A]	4.2 [A]	5.9 [A]	76 [A]
22	524 [A]	48 [A]	43 [A]	33 [A]	25 [A]	14 [A]	7.8 [A]	5.6 [A]	5.3 [A]	4.2 [A]	4.5 [A]	1,320 [A]
23	191 [A]	50 [A]	41 [A]	32 [A]	26 [A]	16 [A]	8.5 [A]	5.5 [A]	5.1 [A]	4.3 [A]	4.9 [A]	235 [A]
24	127 [A]	48 [A]	36 [A]	31 [A]	24 [A]	15 [A]	8.8 [A]	5.3 [A]	4.9 [A]	4.3 [A]	4.4 [A]	80 [A]
25	108 [A]	46 [A]	35 [A]	32 [A]	23 [A]	13 [A]	8.4 [A]	5.2 [A]	4.6 [A]	4.2 [A]	3.7 [A]	54 [A]
26	93 [A]	46 [A]	35 [A]	32 [A]	22 [A]	13 [A]	9.2 [A]	5.9 [A]	4.5 [A]	5.4 [A]	4.2 [A]	75 [A]
27	72 [A]	310 [A]	34 [A]	34 [A]	20 [A]	15 [A]	8.7 [A]	6.3 [A]	4.2 [A]	5.3 [A]	4.3 [A]	41 [A]
28	65 [A]	134 [A]	33 [A]	33 [A]	21 [A]	16 [A]	8.4 [A]	6.3 [A]	4.1 [A]	4.4 [A]	4.1 [A]	35 [A]
29	61 [A]		33 [A]	33 [A]	21 [A]	16 [A]	9.0 [A]	6.4 [A]	4.4 [A]	4.2 [A]	4.4 [A]	40 [A]
30	59 [A]		33 [A]	33 [A]	20 [A]	13 [A]	8.9 [A]	6.4 [A]	5.6 [A]	4.8 [A]	4.4 [A]	34 [A]
31	57 [A]		32 [A]		19 [A]		8.2 [A]	6.2 [A]		4.3 [A]		30 [A]
COUNT	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**901**	**310**	**98**	**115**	**37**	**21**	**13**	**9.3**	**7.5**	**6.6**	**5.9**	**1,320**
MIN	**3.6**	**38**	**32**	**28**	**19**	**13**	**7.8**	**5.2**	**4.1**	**3.8**	**3.7**	**3.8**

Daily Mean Discharge, cubic feet per second 2011

DATE	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011
1	28 A	24 A	75 A	130 A	42 A	37 A	27 A	19 A	13 A	11 A	7.7 A	7.9 A
2	32 A	24 A	73 A	112 A	42 A	38 A	25 A	16 A	11 A	9.7 A	7.4 A	6.2 A
3	42 A	24 A	74 A	100 A	43 A	39 A	26 A	16 A	11 A	8.6 A	6.2 A	5.8 A
4	33 A	24 A	71 A	89 A	43 A	41 A	27 A	16 A	12 A	9.1 A	7.1 A	5.7 A
5	29 A	23 A	69 A	80 A	42 A	41 A	27 A	16 A	12 A	14 A	7.6 A	5.6 A
6	29 A	23 A	69 A	77 A	42 A	43 A	24 A	16 A	10 A	16 A	6.9 A	6.4 A
7	30 A	23 A	68 A	75 A	43 A	43 A	23 A	17 A	9.9 A	13 A	7.6 A	6.4 A
8	28 A	22 A	67 A	74 A	42 A	43 A	22 A	17 A	10 A	12 A	7.4 A	5.7 A
9	27 A	24 A	62 A	72 A	43 A	41 A	22 A	16 A	9.6 A	12 A	7.9 A	5.3 A
10	27 A	24 A	56 A	68 A	42 A	40 A	22 A	16 A	9.4 A	11 A	7.2 A	5.3 A
11	27 A	22 A	54 A	66 A	41 A	43 A	24 A	16 A	9.5 A	11 A	7.6 A	5.5 A
12	29 A	20 A	54 A	65 A	41 A	40 A	26 A	16 A	11 A	12 A	8.9 A	5.6 A
13	31 A	21 A	55 A	65 A	40 A	38 A	24 A	15 A	13 A	11 A	8.1 A	7.0 A
14	27 A	21 A	56 A	63 A	39 A	38 A	23 A	14 A	12 A	8.8 A	7.8 A	8.2 A
15	26 A	21 A	56 A	58 A	38 A	36 A	22 A	15 A	11 A	8.0 A	6.4 A	6.8 A
16	27 A	32 A	56 A	57 A	39 A	38 A	21 A	17 A	11 A	7.9 A	7.8 A	6.9 A
17	27 A	30 A	56 A	57 A	48 A	38 A	20 A	18 A	12 A	7.6 A	8.6 A	8.4 A
18	27 A	62 A	58 A	55 A	49 A	36 A	19 A	16 A	9.9 A	7.5 A	8.3 A	9.0 A
19	26 A	118 A	60 A	54 A	40 A	36 A	18 A	14 A	9.7 A	8.5 A	7.0 A	6.8 A
20	25 A	82 A	6,270 A	51 A	40 A	38 A	22 A	13 A	9.1 A	9.3 A	13 A	6.5 A
21	26 A	73 A	2,670 A	51 A	39 A	37 A	22 A	14 A	9.3 A	9.4 A	12 A	7.1 A
22	26 A	69 A	490 A	50 A	40 A	35 A	19 A	15 A	11 A	9.4 A	11 A	8.7 A
23	24 A	67 A	300 A	49 A	39 A	31 A	18 A	13 A	9.5 A	7.4 A	10 A	9.0 A
24	24 A	66 A	277 A	48 A	38 A	33 A	18 A	12 A	10 A	7.4 A	8.5 A	6.6 A
25	25 A	126 A	1,260 A	48 A	38 A	32 A	17 A	11 A	11 A	9.9 A	8.4 A	6.9 A
26	24 A	221 A	430 A	47 A	38 A	31 A	18 A	12 A	11 A	9.7 A	8.1 A	6.9 A
27	23 A	96 A	319 A	45 A	38 A	31 A	21 A	12 A	9.4 A	7.4 A	7.3 A	6.7 A
28	24 A	80 A	257 A	44 A	38 A	31 A	17 A	11 A	9.3 A	6.6 A	6.3 A	6.5 A
29	23 A		212 A	43 A	39 A	29 A	16 A	11 A	9.0 A	7.0 A	5.9 A	7.4 A
30	23 A		180 A	42 A	39 A	29 A	18 A	10 A	9.0 A	7.3 A	7.0 A	7.9 A
31	23 A		158 A		38 A		19 A	11 A		6.3 A		7.6 A
COUNT	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**42**	**221**	**6,270**	**130**	**49**	**43**	**27**	**19**	**13**	**16**	**13**	**9**
MIN	**23**	**20**	**54**	**42**	**38**	**29**	**16**	**10**	**9**	**6.3**	**5.9**	**5.3**

Daily Mean Discharge, cubic feet per second 2012

DATE	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012
1	6.5 [A]	7.0 [A]	7.2 [A]	11 [A]	7.2 [A]	5.1 [A]	3.8 [A]	6.9 [A]	1.0 [A]	0.53 [A]	0.29 [A]	0.28 [A]
2	5.6 [A]	7.9 [A]	7.3 [A]	12 [A]	8.7 [A]	5.1 [A]	4.1 [A]	7.1 [A]	1.0 [A]	0.47 [A]	0.29 [A]	0.25 [A]
3	7.0 [A]	6.8 [A]	5.8 [A]	13 [A]	9.2 [A]	5.2 [A]	3.5 [A]	7.4 [A]	1.1 [A]	0.48 [A]	0.27 [A]	0.29 [A]
4	6.7 [A]	7.5 [A]	5.0 [A]	14 [A]	7.8 [A]	5.4 [A]	3.6 [A]	7.4 [A]	1.1 [A]	0.52 [A]	0.27 [A]	0.31 [A]
5	7.7 [A]	6.8 [A]	4.6 [A]	14 [A]	8.0 [A]	5.1 [A]	3.6 [A]	7.0 [A]	1.2 [A]	0.50 [A]	0.25 [A]	0.27 [A]
6	7.5 [A]	5.8 [A]	5.9 [A]	14 [A]	6.8 [A]	5.0 [A]	3.7 [A]	7.0 [A]	1.1 [A]	0.48 [A]	0.23 [A]	0.31 [A]
7	6.2 [A]	5.3 [A]	6.7 [A]	15 [A]	6.2 [A]	5.0 [A]	3.6 [A]	7.0 [A]	0.98 [A]	0.42 [A]	0.26 [A]	0.32 [A]
8	5.2 [A]	7.0 [A]	7.0 [A]	15 [A]	6.2 [A]	5.0 [A]	4.6 [A]	6.5 [A]	0.92 [A]	0.42 [A]	0.32 [A]	0.35 [A]
9	6.1 [A]	7.2 [A]	5.8 [A]	15 [A]	6.2 [A]	5.2 [A]	4.7 [A]	4.9 [A]	0.96 [A]	0.38 [A]	0.44 [A]	0.32 [A]
10	7.6 [A]	5.8 [A]	6.7 [A]	15 [A]	5.7 [A]	5.4 [A]	5.4 [A]	4.4 [A]	0.87 [A]	0.38 [A]	0.38 [A]	0.25 [A]
11	6.6 [A]	5.0 [A]	7.1 [A]	25 [A]	5.7 [A]	5.3 [A]	4.0 [A]	4.2 [A]	0.89 [A]	0.35 [A]	0.30 [A]	0.24 [A]
12	5.6 [A]	5.9 [A]	6.2 [A]	18 [A]	5.5 [A]	5.3 [A]	3.7 [A]	4.1 [A]	0.88 [A]	0.39 [A]	0.25 [A]	0.27 [A]
13	5.1 [A]	6.7 [A]	7.2 [A]	42 [A]	5.2 [A]	5.4 [A]	3.2 [A]	4.0 [A]	0.90 [A]	0.41 [A]	0.22 [A]	0.28 [A]
14	4.7 [A]	6.4 [A]	7.1 [A]	25 [A]	5.2 [A]	4.6 [A]	3.0 [A]	3.5 [A]	0.80 [A]	0.39 [A]	0.22 [A]	0.26 [A]
15	4.6 [A]	7.4 [A]	5.9 [A]	16 [A]	5.1 [A]	4.3 [A]	3.0 [A]	2.4 [A]	0.76 [A]	0.38 [A]	0.22 [A]	0.20 [A]
16	6.0 [A]	7.9 [A]	7.2 [A]	12 [A]	4.9 [A]	4.2 [A]	3.1 [A]	2.0 [A]	0.81 [A]	0.42 [A]	0.22 [A]	0.25 [A]
17	4.8 [A]	7.0 [A]	22 [A]	12 [A]	5.0 [A]	4.1 [A]	4.7 [A]	1.6 [A]	0.89 [A]	0.38 [A]	0.32 [A]	0.24 [A]
18	5.4 [A]	6.3 [A]	14 [A]	13 [A]	4.8 [A]	4.3 [A]	3.8 [A]	1.4 [A]	0.82 [A]	0.33 [A]	0.29 [A]	0.22 [A]
19	6.7 [A]	6.7 [A]	12 [A]	13 [A]	4.5 [A]	4.4 [A]	3.1 [A]	1.4 [A]	0.86 [A]	0.34 [A]	0.27 [A]	0.20 [A]
20	5.3 [A]	7.7 [A]	10 [A]	11 [A]	4.5 [A]	4.3 [A]	3.1 [A]	1.4 [A]	0.87 [A]	0.40 [A]	0.26 [A]	0.19 [A]
21	7.4 [A]	7.1 [A]	8.2 [A]	12 [A]	4.5 [A]	4.4 [A]	3.0 [A]	1.5 [A]	0.78 [A]	0.32 [A]	0.24 [A]	0.19 [A]
22	8.3 [A]	7.5 [A]	8.8 [A]	11 [A]	4.3 [A]	4.2 [A]	3.1 [A]	2.7 [A]	0.76 [A]	0.26 [A]	0.24 [A]	0.18 [A]
23	8.7 [A]	7.9 [A]	9.2 [A]	10 [A]	4.2 [A]	4.0 [A]	2.9 [A]	3.8 [A]	0.74 [A]	0.24 [A]	0.23 [A]	0.13 [A]
24	7.9 [A]	5.7 [A]	8.6 [A]	9.6 [A]	4.5 [A]	4.0 [A]	2.6 [A]	2.8 [A]	0.73 [A]	0.28 [A]	0.20 [A]	0.43 [A]
25	7.9 [A]	4.7 [A]	15 [A]	11 [A]	4.6 [A]	3.9 [A]	2.4 [A]	2.2 [A]	0.68 [A]	0.27 [A]	0.21 [A]	0.36 [A]
26	7.3 [A]	5.4 [A]	24 [A]	12 [A]	4.8 [A]	3.7 [A]	2.2 [A]	1.9 [A]	0.62 [A]	0.25 [A]	0.21 [A]	0.34 [A]
27	6.8 [A]	6.0 [A]	16 [A]	11 [A]	4.8 [A]	3.7 [A]	3.0 [A]	1.5 [A]	0.63 [A]	0.24 [A]	0.19 [A]	0.35 [A]
28	7.2 [A]	6.7 [A]	13 [A]	8.9 [A]	4.6 [A]	3.7 [A]	5.0 [A]	1.3 [A]	0.59 [A]	0.25 [A]	0.19 [A]	0.37 [A]
29	8.2 [A]	7.2 [A]	14 [A]	7.9 [A]	4.9 [A]	3.7 [A]	5.7 [A]	1.3 [A]	0.61 [A]	0.25 [A]	0.33 [A]	0.37 [A]
30	7.0 [A]		14 [A]	7.4 [A]	4.9 [A]	3.7 [A]	6.5 [A]	1.2 [A]	0.60 [A]	0.23 [A]	0.29 [A]	0.36 [A]
31	6.2 [A]		12 [A]		5.0 [A]		6.9 [A]	1.2 [A]		0.26 [A]		0.29 [A]
COUNT	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**8.7**	**7.9**	**24**	**42**	**9.2**	**5.4**	**6.9**	**7.4**	**1.2**	**0.53**	**0.44**	**0.43**
MIN	**4.6**	**4.7**	**4.6**	**7.4**	**4.2**	**3.7**	**2.2**	**1.2**	**0.59**	**0.23**	**0.19**	**0.13**

Daily Mean Discharge, cubic feet per second 2013

DATE	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
1	0.21 A	0.15 A	0.50 A	0.77 A	1.4 A	0.73 A	0.46 A	0.32 e A	0.18 A	0.14 A	0.08 A	0.00 A
2	0.21 A	0.21 A	0.55 A	1.5 A	1.5 A	0.59 A	0.54 A	0.24 A	0.23 A	0.14 A	0.04 A	0.00 A
3	0.21 A	0.29 A	0.59 A	3.0 A	1.6 A	0.59 A	0.57 A	0.22 A	0.26 A	0.17 A	0.02 A	0.00 A
4	0.21 A	0.28 A	0.60 A	3.4 A	1.8 A	0.64 A	0.57 A	0.31 A	0.24 A	0.16 A	0.01 A	0.00 A
5	0.21 A	0.30 A	0.64 A	3.7 A	1.9 A	0.66 A	0.62 A	0.30 A	0.25 A	0.14 A	0.00 A	0.00 A
6	0.20 A	0.23 A	0.50 A	3.8 A	1.7 A	0.67 A	0.62 A	0.33 A	0.18 e A	0.12 A	0.00 A	0.00 A
7	0.19 A	0.20 A	0.64 A	3.8 A	1.3 A	0.64 A	0.66 A	0.30 A	0.11 A	0.12 A	0.00 A	0.00 A
8	0.18 A	0.29 A	1.1 A	4.2 A	1.2 A	0.67 A	0.61 A	0.32 A	0.16 A	0.12 A	0.00 A	0.00 A
9	0.18 A	0.34 A	0.91 A	4.4 A	1.3 A	0.74 A	0.50 A	0.43 A	0.20 e A	0.15 A	0.00 A	0.00 A
10	0.16 A	0.30 A	0.92 A	4.4 A	1.5 A	0.67 A	0.52 A	0.40 A	0.21 A	0.13 A	0.00 A	0.00 A
11	0.15 A	0.27 A	0.92 A	3.8 A	1.6 A	0.63 A	0.52 A	0.39 A	0.18 A	0.10 A	0.00 A	0.00 A
12	0.14 A	0.29 A	1.0 A	1.5 A	1.8 A	0.57 A	0.55 A	0.29 A	0.19 A	0.11 A	0.00 A	0.00 A
13	0.13 A	0.29 A	0.71 A	1.1 A	1.7 A	0.53 A	0.50 A	0.33 A	0.17 A	0.12 A	0.00 A	0.00 A
14	0.14 A	0.30 A	1.0 A	0.90 A	1.9 A	0.52 A	0.47 A	0.33 A	0.17 A	0.10 A	0.00 A	0.00 A
15	0.15 A	0.28 A	1.1 A	0.72 A	2.1 A	0.59 A	0.42 A	0.32 e A	0.15 A	0.09 A	0.00 A	0.00 A
16	0.11 A	0.33 A	1.1 A	0.72 A	2.1 A	0.48 A	0.39 A	0.33 e A	0.16 A	0.09 A	0.00 A	0.00 A
17	0.11 A	0.41 A	0.86 A	0.56 A	2.1 A	0.47 A	0.33 A	0.34 e A	0.14 A	0.07 A	0.00 A	0.00 P
18	0.17 A	0.36 A	0.75 A	0.41 A	2.3 A	0.52 A	0.32 A	0.36 A	0.15 e A	0.06 A	0.00 A	0.00 P
19	0.15 A	0.43 A	0.70 A	0.45 A	2.2 A	0.52 A	0.34 A	0.27 A	0.16 A	0.05 A	0.00 A	0.00 P
20	0.16 A	0.47 A	1.0 A	0.44 A	2.3 A	0.49 A	0.38 A	0.35 A	0.15 A	0.07 A	0.00 A	0.00 P
21	0.11 A	0.51 A	1.8 A	0.42 A	2.5 A	0.52 A	0.42 A	0.41 A	0.15 e A	0.08 A	0.00 A	0.00 P
22	0.08 A	0.46 A	2.5 A	0.48 A	2.7 A	0.51 A	0.41 A	0.44 A	0.14 e A	0.11 A	0.00 A	0.00 P
23	0.08 A	0.39 A	0.99 A	0.43 A	2.8 A	0.52 A	0.39 A	0.41 A	0.14 e A	0.12 A	0.00 A	0.00 P
24	0.21 A	0.42 A	0.89 A	0.42 A	2.8 A	0.54 A	0.41 A	0.35 e A	0.14 e A	0.12 A	0.00 A	0.00 P
25	0.19 A	0.49 A	0.70 A	0.45 A	2.5 A	0.51 A	0.36 A	0.33 e A	0.14 e A	0.14 A	0.00 A	0.00 P
26	0.13 A	0.49 A	0.65 A	0.50 A	2.0 A	0.56 A	0.39 A	0.30 e A	0.14 e A	0.14 A	0.00 A	0.00 P
27	0.14 A	0.42 A	0.57 A	0.58 A	1.7 A	0.51 A	0.36 e A	0.30 e A	0.14 e A	0.12 A	0.00 A	0.00 P
28	0.20 A	0.47 A	0.36 A	0.81 A	1.4 A	0.51 A	0.35 e A	0.29 A	0.14 A	0.12 A	0.00 A	0.00 P
29	0.24 A		0.48 A	1.1 A	1.1 A	0.49 A	0.35 e A	0.24 A	0.15 A	0.12 A	0.00 A	0.00 P
30	0.18 A		0.56 A	1.3 A	1.1 A	0.49 A	0.35 e A	0.21 A	0.13 A	0.13 A	0.00 A	0.00 P
31	0.14 A		0.63 A		0.91 A		0.33 e A	0.20 A		0.12 A		0.00 P
COUNT	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	
MAX	**0.24**	**0.51**	**2.5**	**4.4**	**2.8**	**0.74**	**0.66**	**0.44**	**0.26**	**0.17**	**0.08**	
MIN	**0.08**	**0.15**	**0.36**	**0.41**	**0.91**	**0.47**	**0.32**	**0.2**	**0.11**	**0.05**	**0**	

Daily Mean Discharge, cubic feet per second 2014

DATE	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014
1	0.00 P	0.00 P	680 P	0.00 P	0.00 P	0.07 P	0.55 P	0.20 P
2	0.00 P	0.00 P	76 P	0.00 P	0.00 P	0.04 P	0.56 P	0.18 P
3	0.00 P	0.00 P	10 P	0.00 P	0.01 P	0.08 P	0.61 P	0.19 P
4	0.00 P	0.00 P	3.6 P	0.00 P	0.01 P	0.07 P	0.55 P	0.19 P
5	0.00 P	0.00 P	2.0 P	0.00 P	0.02 P	0.08 P	0.53 P	0.16 P
6	0.00 P	0.00 P	1.5 P	0.00 P	0.02 P	0.09 P	0.56 P	0.19 P
7	0.00 P	0.00 P	1.2 P	0.00 P	0.02 P	0.08 P	0.52 P	0.15 P
8	0.00 P	0.00 P	0.85 P	0.00 P	0.03 P	0.14 P	0.54 P	0.23 P
9	0.00 P	0.00 P	0.62 P	0.00 P	0.02 P	0.17 P	0.50 P	0.13 P
10	0.00 P	0.00 P	0.49 P	0.00 P	0.07 P	0.23 P	0.53 P	0.16 P
11	0.00 P	0.00 P	0.36 P	0.00 P	0.02 P	0.12 P	0.51 P	0.22 P
12	0.00 P	0.00 P	0.23 P	0.00 P	0.02 P	0.12 P	0.51 P	0.11 P
13	0.00 P	0.00 P	0.11 P	0.00 P	0.02 P	0.14 P	0.53 P	0.19 P
14	0.00 P	0.00 P	0.07 P	0.00 P	0.03 P	0.17 P	0.48 P	0.17 P
15	0.00 P	0.00 P	0.06 P	0.00 P	0.03 P	0.19 P	0.48 P	0.10 P
16	0.00 P	0.00 P	0.03 P	0.00 P	0.04 P	0.22 P	0.54 P	0.11 P
17	0.00 P	0.00 P	0.03 P	0.00 P	0.05 P	0.30 P	0.51 P	0.05 P
18	0.00 P	0.00 P	0.02 P	0.00 P	0.03 P	0.36 P	0.55 P	
19	0.00 P	0.00 P	0.03 P	0.00 P	0.03 P	0.26 P	0.50 P	
20	0.00 P	0.00 P	0.01 P	0.00 P	0.04 P	0.29 P	0.49 P	
21	0.00 P	0.00 P	0.01 P	0.00 P	0.04 P	0.29 P	0.43 P	
22	0.00 P	0.00 P	0.00 P	0.00 P	0.05 P	0.31 P	0.43 P	
23	0.00 P	0.00 P	0.00 P	0.00 P	0.06 P	0.38 P	0.38 P	
24	0.00 P	0.00 P	0.00 P	0.00 P	0.11 P	0.96 P	0.31 P	
25	0.00 P	0.00 P	0.00 P	0.00 P	0.09 P	1.3 P	0.31 P	
26	0.00 P	0.00 P	0.00 P	0.00 P	0.05 P	0.79 P	0.32 P	
27	0.00 P	0.00 P	0.00 P	0.00 P	0.06 P	0.67 P	0.32 P	
28	0.00 P	2.8 P	0.00 P	0.00 P	0.05 P	0.60 P	0.30 P	
29	0.00 P		0.00 P	0.00 P	0.11 P	0.54 P	0.26 P	
30	0.00 P		0.00 P	0.00 P	0.05 P	0.62 P	0.23 P	
31	0.00 P		0.00 P		0.06 P		0.22 P	
COUNT		28	31		31	30	31	17
MAX		2.8	680		0.11	1.3	0.61	0.23
MIN		0	0		0	0.04	0.22	0.05

Attachment B

Foster Park Production (acre-feet)[1] at 12 CFS and 2 CFS Thresholds (2007 - 2014)

Daily mean flow[2] < or = 12 cfs for entire month

Daily mean flow[2] < or = 2 cfs for entire month

2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	155.15	141.6	157.76	153.87	160.67	155.2	155.3	156.01	147.45	146.65	126.5	120.85	1777.01
Nye Well #11	22.62	18.48	20.57	19.77	20.8	19.73	19.51	17.45	16.67	15.03	11.85	10.76	213.24
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well#8	0	0	0	0	0	0	0	0.33	9.19	0	0	0	9.52
											Total Production		1999.77

2008	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	148.07	105.11	156.51	87.21	113.59	148.88	155.23	152.86	144.71	147.4	141.7	145.13	1646.4
Nye Well #11	17.12	13.23	20.82	19.75	19.54	16.99	19.67	20.88	19.18	15.08	9.33	21.81	213.4
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well#8	14.88	38.01	95.74	102.27	100.57	87.48	120.51	96.99	103.79	51.33	25.23	14.76	851.56
											Total Production		2711.36

2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	143.19	131.02	137.89	143.71	141.04	102.01	147.97	144.75	139.44	142.56	141.67	139.37	1654.62
Nye Well #11	4.97	0	16.9	21.88	20.7	11.24	19.03	6.68	15.12	8.51	9.48	17.36	151.87
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	0	0	138.05	159.04	186.16	121.61	130.91	56.56	0	5.58	3.29	0.08	801.28
Nye Well#8	0	64.74	56.86	63.38	65.58	37.4	78.04	50.24	0	10.66	1.86	0.05	428.81
											Total Production		3036.58

2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	86.98	105.5	156.61	148.87	123.67	134.3	148.08	149.75	143.24	138.02	114.66	106.01	1555.69
Nye Well #11	14.62	2.55	21.68	21.23	17.23	18.25	19.56	17.3	4.38	0.91	0	0.12	137.83
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	0.02	4.2	72.79	127.18	53.71	0.35	118.08	209.25	214.96	55.79	0	42.56	898.89
Nye Well#8	0	28.99	54	83.53	49.74	68.62	93.23	54.35	3.47	69.79	18.4	44.31	568.43
											Total Production		3160.84

2011	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	88.3	107.98	125.68	145.83	150.69	110.48	124.22	129.25	128.93	128.86	129.88	129.26	1499.36
Nye Well #11	19.59	12.84	22.63	17.01	10.1	16.9	17.91	17.89	17.67	17.23	17.35	7.61	194.73
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	90.78	0	106.14	63.55	62.69	29.2	106.1	81.53	75.05	87.32	62.73	94.98	860.07
Nye Well#8	86.56	48.87	51.44	79.92	85.4	42.71	93.05	104.95	83.79	68.83	65.22	63.51	874.25
											Total Production		3428.41

2012	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	129.31	120.67	127.29	91.64	134.39	128.63	129.65	129.69	117.67	92.73	73.54	82.76	1357.97
Nye Well #11	0.02	15.63	5.05	12.44	17.66	15.61	9.88	0	0.02	0	0	0	76.31
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	121.97	74.95	73.4	71.83	164.22	168.8	138.19	85.58	159.65	137.89	19.72	0	1216.2
Nye Well#8	30.29	36.77	0.08	23.54	68.83	78.94	52.44	60.47	71.85	67.95	83.51	91.12	665.79
											Total Production		3316.27

2013	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	84.08	93.84	123.96	90.03	137.65	118.48	106.55	97.32	92.24	72.36	37.95	21.26	1075.72
Nye Well #11	0	0	0	0	2.67	2.96	0.08	0	0	0	0	0	5.71
Nye Well #2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nye Well #7	0	0	32.68	72.18	59.9	178.58	161.57	134.3	96.92	61.11	34.79	23.93	855.96
Nye Well#8	65.36	11.33	0	0	0	0	0	0	0.04	21.97	75.52	67.47	241.69
											Total Production		2179.08

2014	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FP Intake Subsurface Flow	16.72	17.65	80.32	79.02	122.03	115.78	106.02	N/A	N/A	N/A	N/A	N/A	537.54
Nye Well #11	0	0	0.28	0.01	0.16	0.67	0.18	N/A	N/A	N/A	N/A	N/A	1.3
Nye Well #2								N/A	N/A	N/A	N/A	N/A	0
Nye Well #7	2.14	0	128.39	165.9	168.55	162.09	163.46	N/A	N/A	N/A	N/A	N/A	790.53
Nye Well#8	65.43	50.19	96.34	98.08	106.06	103.22	106.37	N/A	N/A	N/A	N/A	N/A	625.69
											Total Production		1955.06

[1] City of Ventura Water Source Reports 2007 - 2014

[2] USGS Station 11118500 Ventura R NR Ventura nwis.waterdata.usgs.gov/nwis

N/A - Data not presently available

Attachment C

LOGGERS
Continuous monitoring data are collected using Onset dissolved oxygen loggers (model U26). Specifications are found in Figure 1. All calibrations and uses are in accordance with Onset manual directives.[1]

Figure: 1 Dissolved Oxygen U26 Logger Specifications

Specifications

Dissolved Oxygen	
Sensor Type	Optical (dynamic luminescence quenching)
Measurement Range	0 to 30 mg/L
Calibrated Range	0 to 20 mg/L; 0 to 35°C (32 to 95°F)
Accuracy	0.2 mg/L up to 8 mg/L; 0.5 mg/L from 8 to 20 mg/L
Resolution	0.02 mg/L
Response Time	To 90% in less than 2 minutes
DO Sensor Cap Life	6 months (cap expires 7 months after initialization)

Temperature	
Temperature Measurement/ Operating Range	-5 to 40°C (23 to 104°F), non-freezing
Temperature Accuracy	0.2°C (0.36°F)
Temperature Resolution	0.02°C (0.04°F)
Response Time	To 90% in less than 30 minutes

Pre-deployment calibrations are performed for DO loggers using the "Lab Calibration Tool" and 100% saturation method as outlined on page 3 and 4 of the Onset U26 logger manual. Loggers will be deployed during the dry season, approximately May through October to minimize loss of instrument due to high flows.

Copper tape is applied to dissolved oxygen loggers to limit fouling. Additionally, zip ties are used to secure all loggers inside PVC piping with holes drilled at approximate 1" intervals to maintain water flow and limit fouling. The loggers and housing are mounted to the side of a 10-15 pound river rock using steel all-thread and epoxy. Rocks are carefully placed in the thalweg of the river (in flowing water) to collect representative measurements.

Data will be collected from the loggers approximately every 2-3 weeks. SBCK staff will collect dissolved oxygen calibration measurements upon arriving at each site using a Hach HQ3d portable meter, and ensuring that the meter probe is as close as possible to the dissolved oxygen logger sensor. Calibration measurements will be recorded at each site at a precise continuous sensor sampling interval (for comparison), in accordance with Ventura River Stream Team QAQC protocols with the time of calibration noted. After the field calibration is complete, the loggers will be removed from the rock. Data data will be uploaded to an Onset Hobo waterproof shuttle the dissolved oxygen coupler following procedures outlined in the shuttle manual.[2] Specifications for the shuttle are shown in Figure 2.

[1] Onset Dissolved Oxygen Logger Manual. http://www.onsetcomp.com/files/manual_pdfs/15603-E-MAN-U26x.pdf.

Figure 2: Waterproof Shuttle Specifications

Specifications

Compatibility	All HOBO U-Series loggers with optic USB. Not compatible with the HOBO U-Shuttle (U-DT-1).
Data Capacity	63 logger readouts of up to 64K each
Operating Temperature	0° to 50°C (32° to 122°F)
Storage Temperature	-20° to 50°C (-4° to 122°F)
Wetted Materials	Polycarbonate case, EPDM o-rings and retaining loop
Waterproof	To 20 m (66 feet)
Time Accuracy	±1 minute per month at 25°C (77°F); see Plot A
Logger-to-Shuttle Transfer Speed	Reads out one full 64K logger in about 30 seconds
Shuttle-to-Host Transfer Speed	Full shuttle offload (4 MB) to host computer in 10 to 20 minutes, depending on computer
Batteries	2 AA alkaline batteries required for remote operation
Battery Life	One year or at least 50 complete memory fills, typical use
Weight	150 g (4 oz)
Dimensions	15.2 x 4.8 cm (6.0 x 1.9 inches)

After data is transferred to the shuttle any fouling that has accumulated will be removed from the logger and logger housing using hands, water, and/or a toothbrush. Loggers will then be reattached to the PVC housing using zip ties and re-mounted on the rock in the flowing water. Upstream and downstream photos, as well as flow measurements (discussed below) will also be taken at each site.

After data from each site has been transferred to the shuttle, data will be transferred to an SBCK computer using Onset's Hoboware software. Recorded field calibration measurements for dissolved oxygen will be applied to the Hoboware Dissolved Oxygen Assistant for post-processing and calibration purposes. Data will be exported from Hoboware to Microsoft Excel for analysis.

[2] Onset Waterproof Shuttle Manual. http://www.onsetcomp.com/files/manual_pdfs/10264-I-MAN-U-DTW-1.pdf.

FLOW

Flow measurements will be taken by SBCK staff during each logger maintenance trip (approximately every 2-3 weeks) using a Glow Water flow meter. Specifications are shown in Figure 3.

Figure 3: Global Water Flow Meter Specifications

Flow Probe Specifications

Range: 0.3-19.9 FPS (0.1-6.1 MPS)
Accuracy: 0.1 FPS
Averaging: True digital running average. Updated once per second.
Display: LCD, Glare and UV Protected
Control: 4 button
Datalogger: 30 sets, MIN, MAX, and AVG
Features: Timer, Low battery warning
Sensor Type: Protected Turbo-Prop propeller with magnetic pickup.
Weight:
  Instrument: 2 lbs. (0.9 kg) (FP111), 3 lbs. (1.4 kg) (FP211), 2.8 lbs. (1.3 kg) (FP311)
  Shipping: 13 lbs. (5.9 kg) (FP111), 23 lbs. (10.4 kg) ((FP211), 19 lbs. (8.6 kg) ((FP311)
Expandable Length: 3.7 to 6 ft (1.1 to 1.8 m) (FP111); 5.5 to 15 ft (1.7 to 4.6 m) (FP211); 2.5 to 5.5 ft (0.76 to 1.7 m) (FP311)
Materials:
  Probe: PVC and anodized aluminum with stainless steel water bearing
  Computer: ABS/Polycarbonate housing with polyester overlay
Power: Internal Lithium Battery, Approx 5 year life with typical use, Non-Replaceable
Auto Shutoff: After 5 minutes of inactivity
Operating Temperature: -4° to 158° F (-20° to 70° C)
Storage Temperature: -22° to 176° F (-30° to 80° C)
Carrying Case: The Flow Probe is shipped in a padded carrying case.
Approvals: CE

Total width from bank to bank of the flowing water is recorded. Depth and velocity is then recorded at several (minimum of 3) equally-spaced intervals along the width. All measurements will be taken in accordance with procedures outlined in the Global Water flow meter manual.[3] Total stream flow will be calculated by adding the volume of water from each equal segment.

[3] Global Water Flow Meter Manual. http://www.globalw.com/downloads/flowprobe/FP111.pdf.

Sherwood Valley
Homeowners Association

March 29, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

RE: **Comment Letter – Revisions to the Los Angeles Region 303(d) List**

We thank you for this opportunity to comment on the proposed changes to the 303(d) list prior to the upcoming public hearing on May 4, 2017. Representatives from the Lake Sherwood Joint Lake Advisory Committee plan to attend this meeting to discuss these important issues.

We appreciate the proposed removal of the two pollutants, Ammonia and Organic Enrichment/Low Dissolved Oxygen. This is gratifying and recognizes the positive results produced by the time, effort and expense the Association has put forth over many years to mitigate these concerns. Respectfully, however, we are troubled to see that Algae and Eutrophic remain on the list.

To help understand why these are still considered pollutants in Lake Sherwood, we reviewed the Los Angeles Water Board's website of the Draft 2016 303(d) List, and specifically Appendix G – Fact Sheets of the Draft. Here we see that the listing of Algae and Eutrophic are noted as "placeholders" to support decisions made prior to the 2006 Clean Water Act, and further that no evidentiary data samples were collected which could be used to assess these pollutants relative to the 2006 standards. Clearly there are zero measured exceedances of these standards at this point yet they remain on the list. It seems to us somewhat arbitrary to continue to consider these as "pollutants" in Lake Sherwood especially where there is a consistently good dissolved oxygen level, a continuous effort to remove excess plant growth via a special harvester with a full time crew, monthly monitoring of water chemistry, and special attention to and approved treatment of any algae that occurs as needed throughout the year. If sufficient justification does exist to continue to include these on the 303(d) list, we would appreciate having the reasons and rational detailed to us in writing so we may take any necessary actions to remove them in the future.

We are looking forward to the upcoming meeting. Thank you again for the opportunity to respond to the proposed changes.

Sincerely,

Annette Louder, CMCA, AMS, PCAM
General Manager
Sherwood Valley Homeowners Association, Inc.

cc: Jenny Newman, Chief, TMDL Unit 3, CRWQCB
LB Nye, PhD, Senior Environmental Scientist, CRWQCB
Lake Sherwood Joint Lake Advisory Committee, Sherwood Valley Homeowners Association, Inc.
Board of Directors, Sherwood Valley Homeowners Association, Inc.

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CALLEGUAS CREEK

Watershed Management Plan

A COOPERATIVE STRATEGY FOR
RESOURCE MANAGEMENT & PROTECTION

March 30, 2017

Electronic Submission: losangeles@waterboards.ca.gov

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Comment Letter – Revisions to the Los Angeles Region 303(d) List

Dear Dr. Zhu,

The Stakeholders Implementing Total Maximum Daily Loads (TMDLs) in the Calleguas Creek Watershed (Stakeholders) appreciate the opportunity to provide comments on the proposed revisions to the Clean Water Act Section 303(d) List of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) List] which was distributed for public review on February 8, 2017.

The development and implementation of TMDLs is a significant investment of resources and it is critical that the 303(d) List be based on sound science and methodologies. The Stakeholders understand that the Los Angeles Regional Water Board (Water Board) is proposing over 200 new waterbody-pollutant segment combination 303(d) listings, of which 95 changes fall within the Calleguas Creek Watershed (CCW). The Stakeholders have developed and implemented six effective TMDLs in the CCW and thus have extensive experience in the area. The Stakeholders have serious concerns with the Region's Proposed 303(d) List and feel that it requires significant review and modification before adoption. The Stakeholders request that the issues identified in this letter be addressed and the proposed 303(d) List be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) List to be fully vetted and reviewed by the Stakeholders.

The requested modifications fall into four general categories:

1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g., mismatched units, incorrectly assigned sample locations)
2. Potential delistings that may exist if all watershed data were evaluated (e.g., TMDL monitoring program and all wastewater treatment plant NPDES monitoring).
3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants.
4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) List (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.

The remaining sections of this letter provide the detailed list of requested changes to the 303(d) List and the rationale for the requests. In summary, the Stakeholders request that all waterbody-pollutant combinations in **Table 1** not be listed on the 303(d) List, the waterbody-pollutant combinations in **Table 3** be considered for delisting through analysis of all available watershed data, waterbody-pollutant combinations in **Table 4** and **Table 5** be designated as being addressed by a TMDL if they remain on the 303(d) List after the reassessment, and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies.

I. REQUESTED MODIFICATIONS TO THE LISTING STATUS

Based on a review of the proposed Category 5 waterbody-pollutant combinations, the Stakeholders have identified a number of waterbodies that we feel should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in **Table 1**, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
Calleguas Creek Reach 2 (estuary to Potrero Rd)	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
Calleguas Creek Reach 2 (estuary to Potrero Rd)	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Dimethoate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Ammonia	• Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Bifenthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Chloride	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Cyfluthrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Malathion	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Mercury	• Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Permethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Sulfates	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Chlorpyrifos	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Diazinon	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Malathion	• Data does not appear to be from a station in Reach 12.
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Temperature, water	• Inappropriately applied beneficial use criteria (see temperature comment below).
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Sulfate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. *
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Specific Conductivity	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Total Dissolved Solids	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2	Toxaphene	• J-flagged data incorrectly used in assessment.
Rio De Santa Clara/Oxnard Drain No. 3	Nitrogen, Nitrate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Sulfate	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Specific Conductivity	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Total Dissolved Solids	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.*
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity	• Insufficient exceedances to warrant listing.
La Vista Drain (Ventura County)	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.
La Vista Drain (Ventura County)	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	Copper	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed

Waterbody segment	Pollutant	Justification
La Vista Drain (Ventura County)	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
La Vista Drain (Ventura County)	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	Indicator Bacteria	• Data from agricultural drain rather than waterbody used as basis for listing decision.
La Vista Drain (Ventura County)	Mercury	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.
Santa Clara Drain	Chlordane	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Chlorpyrifos	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Cypermethrin	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	DDD	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.
Santa Clara Drain	DDE	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.
Santa Clara Drain	DDT	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited with chain link fencing and locked gates.
Santa Clara Drain	Nitrogen, Nitrate	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara Drain	Specific Conductivity	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.

Table 1. Waterbody-pollutant combinations that should not be listed		
Waterbody segment	**Pollutant**	**Justification**
Santa Clara Drain	Sulfates	• Data from agricultural drain rather than waterbody used as basis for listing decision.
Santa Clara Drain	Total Dissolved Solids	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.
Santa Clara Drain	Toxaphene	• Data from agricultural drain rather than waterbody used as basis for listing decision.
*Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are not listed in the Basin Plan and therefore do not have assigned beneficial uses but they are tributaries to Mugu Lagoon which does not have a MUN beneficial use and are brackish waterbodies that would not support the MUN beneficial use.		

1. Agricultural Drain monitoring data incorrectly used as basis for listing decisions. There are multiple instances where listing decisions are based on data from the Ventura County Agricultural Irrigated Lands Group (VCAILG) which include monitoring data from agricultural drains. In several cases, data from agricultural drains that discharge to waterbody reaches were used to list the waterbody reach. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and are not representative of receiving water conditions. Therefore, any data collected from these sites cannot be used to list the downstream Calleguas Creek Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains.

In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) List even though data have been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as a tributary in the Basin Plan appendices. The La Vista Drain is an agricultural drain designed to convey excess irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. Inclusion of the MAR and EST beneficial uses are also inappropriately applied to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list.

Requested Action:

- **Remove all listings shown in Table 1 that were based on Ag monitoring data from agricultural drains not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.**
- **Remove the La Vista Drain and the Santa Clara Drain from the List as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) List.**

2. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.

Numerous listings were made using water quality objectives for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes.

State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards… [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated:

> *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ("*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order*

at p. 4. Thus, the waters identified with an ("") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."*[1]

In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1:

"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty."

Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use.

The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3",[2] where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and

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[1] Language adapted from the 2014 National Pollutant Discharge Elimination System permit findings for wastewater treatment plants in the Calleguas Creek Watershed.

[2] Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3. Approved by USEPA on October 6, 2011.

are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in **Table 1** should not be listed.

The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which as described above, cannot be used to justify a listing. Furthermore, the Fact Sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process and it is not clear that this threshold would meet the Listing Policy requirements.

Requested Action:

- **Revise all of the new listings in the Fact Sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.**
- **Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) List.**

3. Reassess mercury listings using correct objective and correct units

The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, and La Vista Drain are in ng/L and the objective is µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. The Stakeholders expect that after this calculation has been performed the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. An explanation for the use of a recommended criterion when an established water quality objective exists should be provided.

Requested Action:

- **Repeat the mercury analysis after correcting the units error.**

4. Incorrect location and data were used for listings in Reach 12

The name of the monitoring site presented in the Fact Sheet for the chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12 and TO1 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, TO1 should not be used for a 303(d) listing decision and University data is not from Reach 12. A review of the datasets provided in the link on the Fact Sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the Fact Sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12.

In addition, the Stakeholders request that only data collected *after* the implementation of applicable pesticide use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrates a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide use restrictions, monitoring data collected prior to 2009 is not representative of waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates a continued impairment.

Requested Action:

- **Remove listings for Reach 12 that are not based on receiving water data from that reach.**
- **Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide use restrictions.**

5. Correct the proposed temperature listing for Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list) which is based on incorrect criteria.

The temperature listing for Reach 12 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Reach 12 is WARM. The rainbow trout growth range threshold used for the listing is only applicable to the COLD beneficial use. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. [3]

The basin plan criteria for WARM beneficial uses states the following: "*For waters designated as WARM, water temperature shall not be altered more than 5 degrees F above the natural temperature. At no time shall these WARM designated waters be raised above 80 degrees F as a result of waste discharges.*" The Fact Sheet states that of 567 samples there were 3 instances of the downstream sample exceeding 80°F and in some cases a 30°F difference between upstream and downstream reaches. The Fact Sheet statement is unclear because Reach 12 is the upstream location and is not downstream of a waste discharge. Reach 12 drains a portion of the City of Thousand

[3] Notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Calleguas Creek Reach 12 given the water body's beneficial uses, the manner in which the evaluation guideline is applied is also inappropriate. Line of Evidence (LOE) 85933 references Moyle 1976 as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002[1]. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures (25, 26)." As such, while temperatures above 21°C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing.

Oaks and open space areas and is located upstream of the Thousand Oaks Wastewater Treatment Plant. Therefore, it is unclear if the exceedances discussed in the Fact Sheet actually occur in Reach 12 and if exceedances do occur, whether they are a result of waste discharge or are a natural condition. The data provided for review was not compiled in a way that made it possible to easily review the assessment to determine if the exceedances were observed in Reach 12 (upstream) or Reach 10 (downstream).

Regardless of the location of the samples, if there were 3 instances of temperature above 80°F and if they can be confirmed to be a result of waste discharge and not natural temperature conditions, according to the SWRCB 2015 303(d) Listing Policy[4] three samples out of 567 would not meet the minimum number of measured exceedances needed to place a water segment on the 303(d) List (see Listing Policy table 3.2). According to the binomial test, with a sample size of 500+ there would need to be well over 20 exceedances in order to be added to the 303(d) List, however, the Fact Sheet mentions only three exceedances of the Basin Plan criteria. According to the SWRCB's own guidance, this proposed listing should be removed.

Requested Action:

- **Do not use the 13-21°C rainbow trout evaluation guideline which only applies to COLD beneficial use segments.**
- **Remove the temperature listing for Reach 12 as it does not meet the minimum listing requirements based on the binomial test described above and ensure that the analysis is applied to the correct reach.**

6. Ensure no J-flagged data were used in the assessment.

The Listing Policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

> "*When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.*"

All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) List. Specific instances are included in **Table 1** and further explained in **Table 2** below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

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[4] State of California State Water Resources Control Board (SWRCB) Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Amended February 3, 2015.

Table 2. Incorrect use of J-flagged data

Segment	Pollutant	Comment
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2	Toxaphene	The Lines of Evidence (LOE) for Toxaphene lists the number of exceedances incorrectly at two. However, only one of six samples exceeded the indicated criterion. The other sample was reported by the laboratory as "estimated" (J-flagged). Because only one of six samples showed an exceedance this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy.
Rio de Santa Clara/Oxnard Drain No. 3	Chlordane	The LOE for Chlordane erroneously states that four out of five samples exceed the objectives. A review of the data shows that only 3 out of 5 samples exceed indicated criteria. The remaining 2 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit.
La Vista Drain	Chlordane	The LOE for chlordane shows that one of the samples used to justify the listing is based solely on estimated (J-flagged) data because results were below the reporting limit. Because Chlordane has only one detected value for two sampling events, more monitoring data are needed to justify the listing and the proposed listing should be removed.

Requested Action:

- **Review all Fact Sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.**
- **Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain, and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**

7. Remove listings where a waterbody assessment does not meet listing thresholds based on data provided.

Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) List. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) List.

Requested Action:

- **Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 based on meeting listing threshold requirements in the Listing Policy.**

II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET

The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process.

In 2013, the Stakeholders did an assessment of the watershed using all watershed data through 2012 and found that multiple waterbody-pollutant combinations could potentially be delisted as shown in **Table 3**. A summary of the assessment is included as an attachment to this letter and the datasets used in the analysis as well as all of the TMDL annual monitoring reports are available upon request.

Table 3. Waterbody-Pollutant Combinations to Consider for Delisting

Waterbody segment	Pollutant
Calleguas Creek Reach 1	Copper Dieldrin Endosulfan Mercury Nickel Zinc
Calleguas Creek Reach 2	Ammonia Copper
Calleguas Creek Reach 3	Ammonia Chlordane PCBs
Calleguas Creek Reach 4	Diazinon Dieldrin Endosulfan PCBs
Calleguas Creek Reach 6	Ammonia Chlordane Diazinon Dieldrin
Calleguas Creek Reach 7	Ammonia Diazinon
Calleguas Creek Reach 9A	Chlordane DDT Dieldrin Endosulfan Gamma HCH Nitrate as Nitrate Nitrogen, Nitrate PCBs Toxaphene
Calleguas Creek Reach 9B	Ammonia Chlordane Chlorpyrifos

Waterbody segment	Pollutant
	Diazinon Dieldrin Endosulfan PCBs Sulfates
Calleguas Creek Reach 10	Ammonia Chlordane Chlorpyrifos DDT Diazinon Dieldrin Endosulfan Fecal Coliform/Indicator Bacteria Nitrogen, Nitrite PCBs Sulfates Total Dissolved Solids Toxaphene
Calleguas Creek Reach 12	Ammonia DDT Dieldrin PCBs Toxaphene
Calleguas Creek Reach 13	Ammonia Chlordane DDT Dieldrin Endosulfan PCBs Toxaphene

While we recognize that this assessment uses two additional years of data than the current 303(d) listing analysis, a number of these waterbodies had many more samples than were necessary for delisting. As a result, we feel if all the watershed data were used in the assessment, a number of these waterbodies (particularly for metals) would be delisted. We also feel this assessment would demonstrate that several of the proposed listings, particularly for diazinon and chlorpyrifos and a number of organochlorine pesticides, are not warranted. A large number of new proposed listings are being added that are already covered by a TMDL. While the list acknowledges that a TMDL does not need to be developed by categorizing these new listings in Category 5B, in several cases, the watershed now has sufficient data to delist, whereas the listing is an artifact of old data being used to make the listing decision. These listings should not be added to the current list only to be removed during the next listing cycle as an artifact of the timing of the listing assessments.

Requested Action:
- **Reassess all Calleguas Creek waterbodies using all available data.**

III. REQUESTED CATEGORY ASSIGNMENT CHANGES

8. Correct pollutants listed as Category 5A which should be 5B based on coverage by an existing TMDL.

There are a number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. While the Stakeholders maintain that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B, as applicable.

A nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DDE, DDD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), which is already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, and the Metals TMDL and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for Chlorpyrifos – Honda Barranca and Duck Pond Agricultural Drains – but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL. The Stakeholders request that any listings in **Table 4** and **Table 5** that are maintained after addressing the issues in Comment I should also be corrected to be designated as Category 5B.

Table 4. 303(d) Category 5A listings which should be changed to 5B listings

Segment	Pollutant	Proposed 303(d) Category	Requested 303(d) Category	Existing CCW TMDL[5,6,7,8,9,10]
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Specific Conductivity	5A	5B	Salts TMDL
	Total Dissolved Solids	5A	5B	Salts TMDL
Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek)	Mercury	5A	5B	Metals TMDL
Calleguas Creek Reach 4	Mercury	5A	5B	Metals TMDL
	Specific Conductivity	5A	5B	Salts TMDL
	Total Dissolved solids	5A	5B	Salts TMDL
	Sulfates	5A	5B	Salts TMDL
Calleguas Creek Reach 9A	Nitrogen, Nitrite	5A	5B	Nitrogen TMDL
Calleguas Creek Reach 12	Chlorpyrifos	5A	5B	Toxicity TMDL
	Diazinon	5A	5B	Toxicity TMDL
Honda Barranca	DDT	5A	5B	OC Pesticides and PCBs TMDL
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity	5A	5B	Oxnard Drain #3 Pesticides, PCBs, Sediment Toxicity TMDL
La Vista Drain (Ventura County)	Chlorpyrifos	5A	5B	Toxicity TMDL
	Chlordane	5A	5B	OC Pesticides and PCBs TMDL
	DDT	5A	5B	OC Pesticides and PCBs TMDL
	DDE	5A	5B	OC Pesticides and PCBs TMDL
	DDD	5A	5B	OC Pesticides and PCBs TMDL
	Copper	5A	5B	Metals TMDL
	Mercury	5A	5B	Metals TMDL
Santa Clara Drain	Chlordane	5A	5B	OC Pesticides and PCBs TMDL
	Chlorpyrifos	5A	5B	Toxicity TMDL
	DDD	5A	5B	OC Pesticides and PCBs TMDL
	DDE	5A	5B	OC Pesticides and PCBs TMDL
	DDT	5A	5B	OC Pesticides and PCBs TMDL
	Nitrogen, Nitrate	5A	5B	Nutrients TMDL
	Specific Conductivity	5A	5B	Salts TMDL

[5] The Calleguas Creek Watershed Metals TMDL. RS 2006-012. Approved by USEPA on March 26, 2007.

In addition, we feel that the Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion) if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity and the Stakeholders have already begun actions to address these pesticides in addition to the organophosphate pesticides included in the TMDL. The structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. There are already sufficient controls in place through the agricultural waiver and MS4 permit. As a result, if the waterbodies are placed on the 303(d) List as new listings, we request that the waterbodies in **Table 5** be changed from 5A to 5B.

Table 5. Pyrethroid and Organophosphate listings which covered by the existing Toxicity TMDL[11]

Segment	Pollutant	Proposed 303(d) Listing Category	Requested 303(d) Listing Category
Calleguas Creek Reach 4 (was Revolon Slough Main Branch)	Bifenthrin	5A	5B
	Cyfluthrin	5A	5B
	Cypermethrin	5A	5B
	Malathion	5A	5B
	Permethrin	5A	5B
Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)	Malathion	5A	5B
Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	5A	5B
Honda Barranca	Bifenthrin	5A	5B
Santa Clara Drain	Cypermethrin	5A	5B

Requested Action:

- **Change all pollutant-waterbody segment combinations in Table 4 and Table 5 from 5A to 5B or 4A based on coverage by an existing USEPA approved TMDL.**

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6 The Calleguas Creek, Its Tributaries, and Mugu Lagoon Toxicity, Chlorpyrifos and Diazinon TMDL. RS 2005-009. Approved by USEPA on March 24, 2006.
7 The Calleguas Creek Nitrogen TMDL. RS 2002-017. Approved by USEPA on June 20, 2003.
8 Total Maximum Daily Load for Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation in Calleguas Creek, its Tributaries and Mugu Lagoon. RS 2005-010. Approved by USEPA on March 24, 2006.
9 The Calleguas Creek Watershed Salts TMDL. RS 2007-016. Approved by USEPA on December 2, 2008.
10 Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3. Approved by USEPA on October 6, 2011.
11 The Calleguas Creek, Its Tributaries, and Mugu Lagoon Toxicity, Chlorpyrifos and Diazinon TMDL. RS 2005-009. Approved by USEPA on March 24, 2006.

IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST

In reviewing the list the Stakeholders identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified and is not a comprehensive list as in many cases the information provided made it challenging to provide comprehensive comments.

9. Correct Appendix G Fact Sheets. The Appendix G Fact Sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include:

- Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally-influenced waterbody (e.g., Duck Ponds Agricultural Drain).
- Incorrect beneficial uses assigned to objectives. For example, MUN beneficial uses listed when aquatic life objectives are presented in the Fact Sheet.
- Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL.
- Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set.
- Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in Fact Sheets, including 3 samples with results of "ND". Stating that a pollutant actually exceeds criteria in only 40% of samples, versus 100% exceedances as presented in Fact Sheets, provides a more accurate picture of the degree of impairment for that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.

  Requested Action:
  Correct the Appendix G Fact Sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples/number of exceedances.

10. Correct the Appendices and Fact Sheet Categories. Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow the Stakeholders to fully vet and understand the proposed listings.

A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are not associated Fact Sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The Fact Sheets for the following name changes should provide justification or explanation for the name change as many appear to be switching tissue or sediment listings to water listings. If this is, in fact, the change being made, the justification for the water listing needs to be provided in the Fact Sheet. It is not appropriate to modify the medium that is the basis for the listing as a name change.

Table 6. Listed as Name Changes in Appendix A

CCW Segment	Pollutants
Reach 1	Toxicity
Reach 2	Chlordane, Endosulfan, Toxaphene
Reach 4	Chlorpyrifos (tissue), Fecal Coliform, Total DDT
Reach 12	DDT (tissue), Ammonia
Rio De Santa Clara/Oxnard Drain No. 3	Toxicity
Duck Pond	ChemA

There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies.

Table 7. Incorrectly listed waterbody segment-pollutant combinations

Segment	Pollutant	Issue
La Vista Drain	DDT	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
Honda Barranca	Bifenthrin	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
Rio De Santa Clara/Oxnard Drain No. 3	Total Dissolved Solids	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.
	Toxicity	Listed only as a "name change" in Appendix A but listed as a new 2014 5A listing in Appendix B.
Calleguas Creek Reach 2 (estuary to Potrero Rd)	Indicator Bacteria	Not included as a change in Appendix A but listed as a new 5A listing in Appendix B. Clarify if this is a new listing or a "coliform bacteria" name change as described for Calleguas Reaches 6, 9A, 10, and 11.
	PCBs	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B.
	Toxicity	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B.
	ChemA	Not included as a new change in Appendix A but listed as a new 2014 5B listing in Appendix B despite cited as a historical use of pesticides and lubricants.
Calleguas Creek Reach 4	Cyfluthrin	Not included as a new change in Appendix A but listed as a new 2014 5A listing in Appendix B.

There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) List were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. The Stakeholders would like clarification if these listings are in fact being delisted as some align with the assessment shown in **Table 3**.

Table 8. Not described as delisted in Appendix A but not found Appendix B or C

CCW Segment	Pollutants
Reach 2	Ammonia
Reach 3	Ammonia
Reach 4	Chlordane (tissue & sediment), DDT (tissue & sediment), PCBs (tissue), Toxaphene (tissue & sediment)
Reach 5	Chlordane (tissue & sediment), Chlorpyrifos (tissue), DDT (tissue & sediment), Dieldrin (tissue), Endosulfan (tissue & sediment), Nitrogen, PCBs (tissue), Toxaphene (tissue & sediment)
Reach 6	DDT (sediment)
Reach 9A	Chlorpyrifos, DDT (tissue), Dieldrin (tissue), Endosulfan (tissue), PCBs (tissue), Toxaphene (tissue & sediment)
Reach 9B	Endosulfan (tissue), Toxaphene (tissue & sediment)
Reach 10	DDT (tissue)
Reach 11	DDT (tissue), Endosulfan (tissue), Toxaphene (tissue & sediment)

Requested Action:
Correct the numerous inconsistencies described above in Table 6, Table 7, and Table 8 and ensure that all of the proposed 303(d) List appendices are internally consistent.

11. Correct the waterbody assigned Hydrologic Unit (HUCs) and Calwater numbers to reflect those listed in the Basin Plan. There are multiple instances of what appear to be incorrectly Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) List to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors.

Requested Action:
Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.

12. Correct or clarify inconsistencies in the staff report. There is inconsistent discussion in the staff report about some proposed listings that should be clarified to avoid confusion about the listings. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants "*For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 … are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL … and would then be in Category 4A.*" However, we could find no listings of DDE and DDD for Reach 3 in any Appendix of the report including Appendix C – Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that DDE and DDD should *not* be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement and clarify any other inconsistencies between the staff report and the list.

Requested Action:
Correct or remove language cited on page 10 of the staff report regarding DDE and DDD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.

13. Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy. In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment, which is inconsistent with the Listing Policy which states that it must be demonstrated that an evaluation guideline is *"applicable to the beneficial use, protective of the beneficial use, scientifically-based and peer reviewed, and well described"*. Because it has not been demonstrated that the individual species response to these pollutants is applicable and protective of the beneficial use these guidelines should not be used to make a listing. The Stakeholders ask that the Board review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin) as well as applicability to the beneficial use as described in the Listing Policy.

Table 9. 303(d) Pollutants Using Thresholds for Interpreting Narrative Objectives

Pollutant	Segment	Objective Used
Bifenthrin	CCW Reach 4	0.0006μg/L (4-day average) from UC Davis[1]
	Honda Barranca	0.0006μg/L (4-day average) from UC Davis[1]
	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	0.00397μg/L mean acute value for mysid from Cal Dep of Fish and Game[2]
Cyfluthrin	CCW Reach 4	LC50: 29000μg/L from the USEPA OPP Pesticide Ecotox database
Cypermethrin	CCW Reach 4	0.002μg/L from the Cal Dep of Fish and Game[2]

Malathion	CCW Reach 4	0.28µg/L (4-day average) from UC Davis[1]
	CCW Reach 12	0.1µg/L USEPA[3]
Permethrin	CCW Reach 4	0.0002µg/L from UC Davis[1]
[1]Aquatic life water quality criteria derived via the UC Davis method: II. Pyrethroid insecticides. Reviews of Environmental Contamination and Toxicology 216:51-103.		
[2] Hazard Assessment of the Synthetic Pyrethroid Insecticides Bifenthrin, Cypermethrin, Esfenvalerate, and Permethrin to Aquatic Organisms in the Sacramento-San Joaquin River System; 2000. Cal Dept. of Fish and Game. Report 00-6.		
[3] USEPA National Recommended Water Quality Criteria (Red Book). 1976. United States Environmental Protection Agency. Office of Water. Office of Science and Technology.		

The 303(d) List includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in CCW. Currently, no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken):

- The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain.
- Use of LC50 for listing of cyfluthrin for CCW Reach 4 is inappropriate. LC50s do not meet the standard set forth in the Listing Policy as stated on page 20 " *the evaluation guideline… identifies a range above which impacts occur and below which no or few impacts are predicted*." By definition, an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline.
- The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis[12] criteria. However, upon reviewing the UC Davis source the listed chronic standard for permethrin is 2 ng/L (page 92) which is 0.002µg/L, not 0.0002µg/L as listed in the 303(d) List.
- In many instances the incorrect evaluation guideline and guideline reference are used. For example, the evaluation guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200, and 88712 is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited guideline reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained)

[12] Aquatic life water quality criteria derived via the UC Davis method: ll. Pyrethroid insecticides. Reviews of Environmental Contamination and Toxicology 216:51-103.

form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final Fact Sheets and 303(d) List.

Requested Action:

- **Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.**
- **Remove all guidelines that do not comply with the stated Listing Policy as described above.**

The Stakeholders appreciate the opportunity to comment on the 303(d) List and look forward to continuing to work with the Water Board to address these concerns. Thank you for your time and consideration of these comments. If you have questions, please contact Ashli Desai at (310) 394-1036 / AshliD@lwa.com or me at (805) 388-5334.

Sincerely,

Lucia M. McGovern

Lucia McGovern
Chair of Stakeholders Implementing TMDLs in Calleguas Creek Watershed

Attachment A: Data Tables from CCW Water Quality Priorities Memorandum

Calleguas Creek Watershed Assessment

1. Data Sources

In order to fully evaluate the progress of TMDL implementation, as well as the general state of the watershed, data was collected from a variety of CCW stakeholders. Data sources include NPDES monitoring data from three Publicly Owned Treatment Works (POTWs) in the watershed along with long-term MS4 monitoring data from the County of Ventura. Ventura County Agricultural Irrigated Lands Group (VCAILG) monitoring data and available Navy data was also provided. Water, sediment, fish tissue, and toxicity data from ongoing TMDL and data was also retrieved from the State Water Quality Control Board's California Environmental Data Exchange Network (CEDEN).

Overall, a data set of over 375,000 data points gathered between 2003 and 2014 was compiled. The data set was then refined by focusing the analysis on receiving water samples and removing POTW effluent, MS4 outfalls, and agricultural discharge data.

The aggregation of data spanning the ten year study period revealed varying levels of completeness in the monitoring data; therefore several conservative assumptions were necessary to carry out the analysis. Where appropriate, constituents sampled under unknown wet/dry conditions were assumed to be sampled during dry weather conditions and were thus subject to dry weather criteria. POTW metals data reported without indication whether they were in the dissolved or total fraction were assumed to be reported in their dissolved fraction for constituents with dissolved targets (copper, nickel, and zinc). Mercury and selenium targets are for the total fraction; undesignated data for these constituents was assumed to be total. These assumptions were intended to provide the most conservative analysis of the data in light of the uncertainty related to the incomplete data.

Table 1. Summary of Receiving Water Data Used in Analysis

Monitoring Program/Data Source	Date Range		Number of Samples by Reach														Total
			1	2	3	4	5	6	7	8	9A	9B	10	11	12	13	
Camarillo POTW Monitoring	1/22/2003	11/5/2013									7221	237					7458
CCW Characterization Study DBF	1/1/2003	5/3/2005			125				799			238					1162
CCW Salts TMDL	1/31/2011	12/5/2013			296				154		151	135					736
CCW TMDL DBF	2/6/2002	2/3/2014	2593	120	1221	1237	119	596	726		66	525	494		110	414	8221
CCW TMDL Work Plan Monitoring	8/26/2003	10/27/2004	291	292	371	465	208	209	261	158	231	209	231	6	155	207	3294
Navy Monitoring	5/3/2003	1/7/2005	91	59		59											209
RWB4 So. CA Stormwater Monitoring Coalition	5/5/2008	5/13/2008						15		5	15	15			28		78
Simi Valley POTW Monitoring	1/8/2008	6/3/2014							4808								4808
SWAMP Perennial Stream Surveys	5/21/2008	5/21/2008			5												5
Thousand Oaks POTW Monitoring	1/15/2002	10/9/2013											4200		4250		8450
Ventura County MS4 Monitoring	2/12/2003	4/25/2014			4811	541	541							1			5894
Total:			**2975**	**471**	**6829**	**2302**	**868**	**820**	**6748**	**163**	**7684**	**1359**	**4925**	**7**	**4543**	**621**	**40315**

1.1 METALS AND SELENIUM TMDL

The Los Angeles Regional Water Quality Control Board (RWQCB) adopted Resolution No. R4-2006-012 to address water quality issues related to metals and selenium in Calleguas Creek, its tributaries and Mugu Lagoon.

Table 2 summarizes the analysis of available receiving water data for constituents included in the Metals TMDL, as well as the number of exceedances of the final numeric targets. The table illustrates that in most cases a sufficient number of samples is available and the data supports a delisting of the metals. It is important to note that compliance with metals and selenium targets in reach 2 was assessed using data from CCW TMDL monitoring site 01_RR_BR, which is located at the break between reach 1 and 2. Much of the POTW data did not distinguish between the dissolved and total fraction for metals constituents. For metals with dissolved targets (copper, nickel, and zinc) a conservative approach was used by comparing undistinguished metals samples to the dissolved targets. Mercury and selenium have established targets for total metals, in these instances all total and undistinguished samples were compared to these targets. For conservative analysis, available fish tissue mercury data was compared to the lowest fish tissue target for all samples.

Table 2. Analysis of Metals TMDL Constituents in Receiving Water by Reach

Copper (Dry)		**303(d) Listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**								
Reach		**1**	**2**	**4**	**3**	**5**	**6**	**7**	**9A**	**9B**	**10**	**11**	**12**
Date Range Available		5/3/2003	6/10/2003	6/10/2003	6/5/2003	NS	5/13/2008	2/5/2003	2/19/2003	2/19/2003	2/6/2002	8/13/2013	2/6/2002
		11/5/2013	11/11/2008	11/5/2013	4/25/2014	NS	5/13/2008	5/6/2014	8/7/2013	5/7/2008	10/9/2013	8/13/2013	10/9/2013
TMDL Targets (ug/L):		4.7	11.4	3.1	25.9	3.1	29.3	29.3	27.9	27.9	27.9	27.9	27.9
Previous 10 Years	N	172	102	43	88	NS	1	71	41	2	127	1	129
	N Detect	166	94	41	88	NS	1	61	28	1	126	1	126
	N Exceed	26	30	13	19	NS	0	5	0	0	0	1	1
Previous 5 Years	N	100	29	28	36	NS	NS	44	18	NS	58	1	58
	N Detect	96	29	28	36	NS	NS	44	18	NS	58	1	58
	N Exceed	0	0	5	0	NS	NS	5	0	NS	0	1	1

Copper (Wet)		**303(d) Listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**								
Reach		**1**	**2**	**4**	**3**	**5**	**6**	**7**	**9A**	**9B**	**10**	**11**	**12**
Date Range Available		10/27/2004	2/26/2004	2/13/2003	2/12/2003	2/13/2003	NS	NS	NS	NS	NS	NS	NS
		1/25/2013	10/27/2004	1/25/2013	2/28/2014	11/26/2008	NS	NS	NS	NS	NS	NS	NS
TMDL Targets (ug/L):		7.2	17.2	4.8	26.3	4.8	29.8	29.8	41.6	41.6	41.6	41.6	41.6
Previous 10 Years	N	NS	12	18	46	7	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	12	18	46	7	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	3	0	7	NS	NS	NS	NS	NS	NS	NS
Previous 5 Years	N	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS

Copper (Wet and Dry Data)	**303(d) Listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**							
Reach	**1**	**2**	**4**	**3**	**5**	**6**	**7**	**9A**	**9B**	**10**	**11**	**12**
N (previous 5 years)	100	37	36	61	NS	NS	44	41[1]	NS	58	1	58
N Exceed	0	0	5	0	NS	NS	5	0	NS	0	1	1
	Potential for Delisting?			**Achieving Targets per Listing Policy?**								
	Yes	**Yes**	No	**Yes**	No[1]	NE[1]	No	**Yes**	NE[1]	**Yes**	ID[1]	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detected and the potential for listing may exist.

Nickel (Dry)	**303(d) Listed Reaches**	**Un-listed Reaches with TMDL Targets and Available Data**

Reach		1	2	4	3	5	6	7	8	9A	9B	10	12
Date Range Available		5/3/2003	6/10/2003	6/10/2003	6/5/2003	NS	5/13/2008	2/5/2003	NS	2/19/2003	2/19/2003	2/6/2002	2/6/2002
		11/5/2013	11/11/2008	11/5/2013	4/25/2014	NS	5/13/2008	5/6/2014	NS	8/7/2013	5/7/2008	8/7/2013	8/7/2013
TMDL Target (ug/L):		8.2	8.2	8.2	149	8.2	168	168	168	160	160	160	160
Previous 10 Years	N	138	61	43	63	NS	1	71	1	41	2	44	46
	N Detect	138	59	43	63	NS	1	62	1	25	1	43	43
	N Exceed	0	11	9	0	NS	0	0	1	0	0	0	0
Previous 5 Years	N	100	29	28	36	NS	NS	44	NS	18	NS	19	19
	N Detect	100	29	28	36	NS	NS	44	NS	18	NS	19	19
	N Exceed	0	1	3	0	NS	NS	0	NS	0	NS	0	0

Nickel (Wet)		303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach		1	2	4	3	5	6	7	8	9A	9B	10	12
Date Range Available		10/27/2004	2/26/2004	2/13/2003	2/12/2003	2/13/2003	NS	NS	NS	NS	NS	NS	NS
		1/25/2013	1/25/2013	1/25/2013	2/28/2014	11/26/2008	NS	NS	NS	NS	NS	NS	NS
TMDL Targets (ug/L):		74	74	74	856	74	958	958	958	1292	1292	1292	1292
Previous 10 Years	N	NS	12	18	46	7	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	12	18	46	7	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	0	0	0	NS	NS	NS	NS	NS	NS	NS
Previous 5 Years	N	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS

Nickel (Wet and Dry Data)	303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach	**1**	**2**	**4**	**3**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**
N (previous 5 years)	100	37	36	61	NS	NS	44	NS	41[1]	NS	44[1]	46[1]
N Exceed	0	1	3	0	NS	NS	0	NS	0	NS	0	0
	Potential for Delisting?			**Achieving Targets per Listing Policy?**								
	Yes	**Yes**	No[2]	**Yes**	NE	NE	**Yes**	ID	**Yes**	NE	**Yes**	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.
2. Single exceedance over the number of allowable exceedances for the given sample size. Constituent is likely to have potential for delisting.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

Selenium (Dry)		303(d) Listed Reaches					Un-listed Reaches with TMDL Targets and Available Data					
Reach		1	2[3]	4	3	5	6	7	9A	9B	10	12
Date Range Available		8/26/2003	8/27/2003	8/28/2003	6/5/2003	3/29/2004	5/13/2008	8/5/2003	5/8/2008	5/7/2008	8/12/2003	5/5/2008
		11/5/2013	11/11/2008	11/5/2013	4/25/2014	9/7/2004	5/13/2008	6/3/2014	5/8/2008	5/7/2008	8/7/2013	5/13/2008
TMDL Targets (ug/L):		71	5	5	5	5	5	5	5	5	5	5
Previous 10 Years	N	138	64	55	66	7	1	199	1	1	41	43
	N Detect	113	51	51	63	7	1	190	1	1	32	41
	N Exceed	0	14	49	2	6	1	156	0	0	0	2
Previous 5 Years	N	100	29	29	36	NS	NS	132	NS	NS	19	19
	N Detect	75	25	29	36	NS	NS	132	NS	NS	18	19
	N Exceed	0	5	29	0	NS	NS	111	NS	NS	0	0

Selenium (Wet)		303(d) Listed Reaches					Un-listed Reaches with TMDL Targets and Available Data					
Reach		1	2[3]	4	3	5	6	7	9A	9B	10	12
Date Range Available		NS	2/26/2004	2/13/2003	2/12/2003	2/13/2003	NS	NS	NS	NS	NS	NS
		NS	1/25/2013	1/25/2013	2/28/2014	11/26/2008	NS	NS	NS	NS	NS	NS
TMDL Targets(ug/L):		290	290	290	--	290	--	--	--	--	--	--
Previous 10 Years	N	NS	12	18	46	7	NS	NS	NS	NS	NS	NS
	N Detect	NS	12	18	46	7	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	3	--	0	NS	NS	NS	NS	NS	NS
Previous 5 Years	N	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	3	--	NS	NS	NS	NS	NS	NS	NS

Selenium (Wet and Dry Data)	303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data							
Reach	1	2[3]	4	3	5	6	7	9A	9B	10	12
N (previous 5 years)	100	37	37	36	NS[1]	NS[1]	132	NS[1]	NS[1]	41	43[1]
N Exceed	0	5	32	0	NS	NS	111	NS	NS	0	2
	Potential for Delisting?			Achieving Targets per Listing Policy?							
	Yes	No	No	**Yes**[2]	NE	ID	No	NE	NE	**Yes**[2]	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.
2. In reaches where wet weather targets were not established, only dry weather data were compared to dry weather targets
3. Data may not be representative of conditions in reach 2 due to the consideration of data that includes the influence of reach 4.

NE – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

Zinc (Dry)		303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach		1	2	4	3	5	6	7	9A	9B	10	11	12
Date Range Available		5/3/2003	6/10/2003	6/10/2003	6/5/2003	NS	5/13/2008	2/5/2003	2/19/2003	2/19/2003	2/6/2002	8/13/2013	2/6/2002
		11/5/2013	11/5/2013	11/5/2013	4/25/2014	NS	5/13/2008	5/6/2014	8/7/2013	5/7/2008	8/7/2013	8/13/2013	8/7/2013
TMDL Targets (ug/L):		81	81	81	338	81	382	382	365	365	365	365	365
Previous 10 Years	N	138	61	43	63	NS	1	77	41	2	44	1	46
	N Detect	124	57	35	63	NS	1	70	41	2	44	1	15
	N Exceed	1	0	1	0	NS	0	0	0	0	0	1	0
Previous 5 Years	N	100	29	28	36	NS	NS	48	18	NS	19	1	19
	N Detect	89	26	20	36	NS	NS	48	18	NS	19	1	1
	N Exceed	0	0	1	0	NS	NS	0	0	NS	0	1	0

Zinc (Wet)		303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach		1	2	4	3	5	6	7	9A	9B	10	11	12
Date Range Available		NS	2/26/2004	2/13/2003	2/12/2003	2/13/2003	NS	NS	NS	NS	NS	NS	NS
		NS	1/25/2013	1/25/2013	2/28/2014	11/26/2008	NS	NS	NS	NS	NS	NS	NS
TMDL Targets (ug/L):		90	90	90	214	90	240	240	324	324	324	324	324
Previous 10 Years	N	NS	12	18	46	7	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	12	18	45	6	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	0	0	0	NS	NS	NS	NS	NS	NS	NS
Previous 5 Years	N	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	8	8	25	NS	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS

Zinc (Wet and Dry Data)	303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach	1	2	4	3	5	6	7	9A	9B	10	11	12
N (previous 5 years)	100	37	36	61	NS	NS	48	41[2]	NS	44[2]	NS	46[2]
N Exceed	0	0	1	0	NS	NS	0	0	NS	0	NS	0
	Potential for Delisting?			Achieving Targets per Listing Policy?								
	Yes	Yes	Yes	Yes	NE	NE	Yes	Yes	NE	Yes	ID	Yes

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

NE – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

Mercury		**303(d) Listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**					
Reach		**1**	**2**	**4**	**3**	**5**	**7**	**9A**	**10**	**12**
Date Range Available		8/26/2003	8/27/2003	2/12/2003	2/12/2003	2/12/2003	8/5/2003	8/5/2003	8/15/2003	8/15/2003
		11/5/2013	11/5/2013	11/5/2013	4/25/2014	11/26/2008	5/6/2014	8/7/2013	10/9/2013	10/9/2013
TMDL Targets (ug/L):		0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051
Previous 10 Years	N	136	75	61	114	7	66	39	123	123
	N Detect	102	60	55	103	7	59	5	24	23
	N Exceed	0	6	7	18	6	26	5	3	2
Previous 5 Years	N	100	37	37	65	NS	44	18	58	58
	N Detect	68	31	35	55	NS	44	2	12	12
	N Exceed	0	2	3	10	NS	24	2	0	0
		Potential for Delisting?			**Achieving Targets per Listing Policy?**					
		Yes	**Yes**	**Yes**	No	No	No	No	**Yes**	**Yes**

Table 3. Analysis of Metals TMDL Constituents in Sediment by Reach

Reach	Constituent	Date Range Available		TMDL target (ppb)[1]	Previous 10 Years			Previous 5 Years			Potential for Delisting
					N	N Detect	N Exceed	N	N Detect	N Exceed	
1	Copper	5/3/2003	8/18/2011	34,000	18	18	1	5	5	0	PD[2]
	Nickel	5/3/2003	8/18/2011	20,900	18	18	6	5	5	0	PD[2]
	Zinc	5/3/2003	8/18/2011	150,000	18	18	3	5	5	0	PD[2]
2	Copper	2/3/2004	8/22/2013	34,000	11	11	4	3	3	0	PD[2]

1. TMDL target only applies if sediment toxicity occurs.
2. No exceedances in most recent five years with a significant number of samples. Considering the exceedances that occurred more than five years ago would inappropriately categorize this as a higher priority.

PD (Potential Delisting) - Insufficient data to information listing decision, however a significant number of the most recent 5 years of monitoring are non-detect. The potential for delisting the reach may exist.

Table 4. Analysis of Metals TMDL Constituents in Fish Tissue by Reach

Mercury		1	2	3	4	5	6	7	9A	9B	10	12	13
Date Range Available		8/19/2008	5/6/2004	12/19/2003	12/18/2003	NS	12/16/2003	12/16/2003	12/19/2003	12/19/2003	12/18/2003	12/17/2003	12/17/2003
		8/21/2008	8/24/2004	8/24/2004	8/27/2013	NS	8/23/2004	8/23/2004	8/26/2004	8/26/2004	8/25/2004	8/25/2004	8/25/2004
TMDL Target (mg/kg MeHg)[1]:		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Previous 10 Years	N	9	2	10	23	NS	2	7	5	8	6	3	6
	N Detect	9	1	8	21	NS	1	7	5	8	6	3	6
	N Exceed	0	0	2	13	NS	0	6	4	5	6	0	6
Previous 5 Years	N	NS	NS	NS	13	NS	NS	NS	NS	NS	NS	NS	NS
	N Detect	NS	NS	NS	13	NS	NS	NS	NS	NS	NS	NS	NS
	N Exceed	NS	NS	NS	13	NS	NS	NS	NS	NS	NS	NS	NS
Potential for Delisting:		NE	NE	No	No	--	NE	No	No	No	No	NE	NE

1. Mercury was compared against Methyl-Mercury final numeric targets.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data

1.2 NUTRIENT TMDL

The Calleguas Creek Nitrogen Compounds and Related Effects (Nitrogen TMDL) was incorporated into the Water Quality Control Plan for the Los Angeles Region (Basin Plan) through the RWQCB adoption of Resolution No. R4-2002-017. An update to the Nitrogen TMDL has since been adopted (Resolution No. 2008-009) and went into effect on October 15, 2009. **Table 5** summarizes the comparison of available receiving water data to numeric objectives identified in the Nitrogen TMDL. The data supports the delisting of Ammonia-N and Nitrite-N in many of the river reaches where sufficient data is available.

Table 5. Analysis of Nitrogen TMDL Constituents in Receiving Water by Reach

Ammonia-N		**303(d) Listed Reaches**											**Un-listed Reaches with TMDL Targets and Available Data**
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**9A**	**9B**	**10**	**12**	**13**	**7**
Date Range Available		8/26/2003	8/28/2003	2/12/2003	2/12/2003	2/12/2003	8/28/2003	1/22/2003	1/22/2003	1/15/2002	1/15/2002	8/28/2003	1/8/2003
		11/5/2013	11/5/2013	4/25/2014	11/5/2013	11/6/2013	11/5/2013	11/6/2013	11/5/2013	11/6/2013	11/6/2013	11/5/2013	6/3/2014
TMDL Targets (mg/L)		8.1	5.5	8.4	5.7	5.7	8.7	9.5	9.5	8.4	3.2	5.1	4.7
Previous 10 Years	N	53	27	108	49	48	40	252	54	178	171	31	289
	N Detect	43	25	105	47	41	39	214	49	175	53	24	254
	N Exceed	0	0	0	0	0	0	0	0	1	10	0	32
Previous 5 Years	N	28	20	52	28	28	27	114	34	86	78	20	188
	N Detect	28	20	47	27	26	27	72	32	80	74	19	185
	N Exceed	0	0	0	0	0	0	0	0	0	0	0	0
		Potential for Delisting?											**Achieving Targets per Listing Policy?**
		Yes	**Yes[1]**	**Yes**	**Yes**	**Yes**	**Yes[1]**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes[1]**	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

Nitrate-N		**303(d) Listed Reaches**											**Un-listed Reaches with TMDL Targets and Available Data**
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**9A**	**9B**	**10**	**12**	**13**	**7**
Date Range Available		8/21/2008	8/7/2008	1/1/2003	2/13/2003	2/13/2003	5/13/2008	1/22/2003	1/1/2003	1/15/2002	1/15/2002	8/7/2008	1/8/2003
		11/5/2013	11/5/2013	4/25/2014	11/5/2013	11/6/2013	11/5/2013	11/6/2013	11/5/2013	11/6/2013	11/6/2013	11/5/2013	6/3/2014
TMDL Targets (mg/L):		10	10	10	10	10	10	10	10	10	10	10	10
Previous 10 Years	N	31	22	115	38	38	31	242	93	168	171	22	284
	N Detect	31	22	113	37	38	31	242	93	167	169	22	284
	N Exceed	14	20	36	30	31	14	29	48	1	0	0	13
Previous 5 Years	N	28	20	52	28	28	27	114	34	86	78	20	188
	N Detect	27	19	51	27	27	26	72	31	77	62	20	188
	N Exceed	13	18	5	23	26	12	3	0	1	0	0	10
		Potential for Delisting?											**Achieving Targets per Listing Policy?**
		No	No	No	No	No	No[1]	**Yes**	**Yes**	**Yes**	**Yes**	**Yes[1]**	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

Nitrite-N		**303(d) Listed Reaches**												**Un-listed Reaches with TMDL Targets and Available Data**	
		1	**2**	**3**	**4**	**5**	**6**	**9A**	**9B**	**10**	**11**	**12**	**13**	**7**	**8**
Date Range Available		8/21/2008	8/7/2008	1/1/2003	2/13/2003	2/13/2003	5/13/2008	1/22/2003	1/1/2003	1/15/2002	NS	1/15/2002	8/7/2008	1/8/2003	NS
		11/5/2013	11/5/2013	11/5/2013	11/5/2013	11/6/2013	11/5/2013	11/6/2013	11/5/2013	11/6/2013	NS	11/6/2013	11/5/2013	6/3/2014	NS
TMDL Targets (mg/L):		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Previous 10 Years	N	32	22	96	38	38	31	242	93	168	NS	171	22	284	NS
	N Detect	21	22	79	37	36	31	217	70	65	NS	50	22	276	NS
	N Exceed	0	0	11	1	2	0	4	19	2	NS	2	0	12	NS
Previous 5 Years	N	29	20	32	28	28	27	114	34	86	NS	78	20	188	NS
	N Detect	28	18	30	28	27	26	55	31	69	NS	69	18	186	NS
	N Exceed	0	0	0	0	1	0	0	0	0	NS	0	0	0	NS
		Potential for Delisting?												**Achieving Targets per Listing Policy?**	
		Yes	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**	**Yes**	**Yes**	--	**Yes**	NE	**Yes**	**--**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Nitrite-N + Nitrate-N		**303(d) Listed Reaches**												**Un-listed Reaches with TMDL Targets and Available Data**	
		1	**2**	**3**	**4**	**5**	**6**	**9A**	**9B**	**10**	**11**	**12**	**13**	**7**	**8**
Date Range Available		8/12/2008	8/7/2008	2/13/2003	2/13/2003	2/13/2003	5/13/2008	1/22/2003	1/1/2003	1/15/2002	NS	1/15/2002	8/7/2008	1/8/2003	5/7/2008
		11/5/2013	11/5/2013	11/5/2013	11/6/2013	11/6/2013	11/5/2013	11/6/2013	11/5/2013	11/6/2013	NS	11/6/2013	11/5/2013	6/3/2014	5/7/2008
TMDL Targets (mg/L)		10	10	10	10	10	10	10	10	10	10	10	10	10	10
Previous 10 Years	N	31	22	116	38	38	31	242	93	168	NS	166	22	284	1
	N Detect	31	22	115	37	38	31	242	93	167	NS	164	22	284	1
	N Exceed	14	21	37	31	31	14	30	48	0	NS	1	0	18	1
Previous 5 Years	N	28	20	52	28	28	27	114	34	86	NS	78	20	188	NS
	N Detect	28	20	52	28	28	27	114	34	85	NS	76	20	188	NS
	N Exceed	13	19	5	23	26	12	3	0	0	NS	0	0	12	NS
		Potential for Delisting?												**Achieving Targets per Listing Policy?**	
		No	No	No	No	No	No	**Yes**	**Yes**	**Yes**	--	**Yes**	NE	**Yes**	ID[1]

1. Historical monitoring data available; however, no samples in previous 5 years. Insufficient number of samples to inform a listing decision.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

1.3 OC PESTICIDES AND PCBS TMDL

The RWQCB adopted Resolution No. R4-2005-010 to incorporate the OC Pesticides and PCBs TMDL in Calleguas Creek, its Tributaries, and Mugu Lagoon into the Basin Plan. The TMDL became effective on March 24, 2006. Final numeric targets are specified for water, fish tissue, and/or sediment depending on the constituent. The TMDL also specifies load reductions for sediment and habitat preservation in Mugu Lagoon. **Table 6** summarizes the evaluation of receiving water concentrations in the watershed to TMDL targets. However, when TMDL numeric targets were found to be greater than the Human Health Consumption Criteria for Organisms Only, as outlined in Table (b)(1) §131.38 of 40 CFR Part 131, the Human Health Criteria were used in the analysis. Overall, constituents covered by the OC Pesticides and PCBs TMDL have not been detected in the previous ten years in water samples. DDT compounds, chlordane, and toxaphene are the exception, with exceedances within the past 5 years.

Table 6. Analysis of OC Pesticides and PCBs TMDL Constituents in Receiving Water by Reach.

4,4'-DDD		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		6/10/2003	6/10/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	1/7/2005	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	10/9/2013	5/29/2014
WQO (ng/L):		0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Previous 10 Years	N	41	18	108	68	20	45	80	10	164	48	167	137	35
	N Detect	19	2	22	35	10	9	10	0	10	2	1	0	1
	N Exceed	17	1	22	35	10	9	10	0	10	2	1	0	1
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	68	30	80	58	19
	N Detect	11	NS	7	19	NS	8	8	NS	2	2	1	0	1
	N Exceed	11	NS	7	19	NS	8	8	NS	2	2	1	0	1
		Achieving Targets per Listing Policy												
		No	ID	No	No	No	No	No	NE	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

4,4'-DDE		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		6/10/2003	6/10/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	1/7/2005	5/29/2014	5/29/2014	11/26/2008	2/19/2014	6/3/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	10/9/2013	5/29/2014
WQO (ng/L):		0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Previous 10 Years	N	41	18	108	68	20	45	247	10	164	48	167	137	35
	N Detect	30	8	65	57	15	9	178	0	24	11	1	0	4
	N Exceed	30	8	65	57	15	9	178	0	24	11	1	0	4
Previous 5 Years	N	29	NS	54	31	NS	28	162	NS	68	30	80	58	19
	N Detect	18	NS	31	30	NS	8	150	NS	6	7	1	0	4
	N Exceed	18	NS	31	30	NS	8	150	NS	6	7	1	0	4
		Achieving Targets per Listing Policy												
		No	No	No	No	No	No	No	NE	**Yes**	No	**Yes**	**Yes**	No

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data

4,4'-DDT		**303(d) Listed Reach**	**Un-listed Reaches with TMDL Targets and Available Data**											
Reach		**2[2]**	**1**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		6/10/2003	NS	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	NS	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/5/2013	5/29/2014
WQO (ng/L):		0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Previous 10 Years	N	59	NS	108	68	20	45	80	10	92	48	62	33	35
	N Detect	19	NS	24	29	8	10	7	0	10	1	2	0	1
	N Exceed	15	NS	24	29	8	10	7	0	10	1	2	0	1
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	31	9	19
	N Detect	6	NS	10	13	NS	8	6	NS	2	1	2	0	1
	N Exceed	6	NS	10	13	NS	8	6	NS	2	1	2	0	1
		Potential for Delisting	**Achieving Targets per Listing Policy**											
		No	--	No	No	No	No	No	NE	**Yes**	**Yes**	**Yes**	**Yes[1]**	**Yes[1]**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
2. Station 01-RR-BR is located immediately downstream of the boundary between Reach 1 and Reach 2. The monitoring station was included in analysis of Reach 2 for this constituent due to its 303(d) listing.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Aldrin		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	300
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	84	55	35
	N Detect	0	0	1	0	0	0	1	0	6	0	0	0	0
	N Exceed	0	0	1	0	0	0	1	0	6	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	1	NS	3	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	1	NS	3	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endosulfan I		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/5/2013	5/29/2014
TMDL Targets (ng/L):		8.7	56	56	56	56	56	56	56	56	56	56	56	56
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	62	33	35
	N Detect	0	0	0	0	0	0	0	0	6	0	1	0	0
	N Exceed	0	0	0	0	0	0	0	0	0	0	1	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	31	9	19
	N Detect	0	NS	0	0	NS	0	0	NS	0	0	1	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	1	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endosulfan II		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/5/2013	5/29/2014
TMDL Targets (ng/L):		8.7	56	56	56	56	56	56	56	56	56	56	56	56
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	62	33	35
	N Detect	0	0	0	0	0	0	0	0	0	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	0	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	31	9	19
	N Detect	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Chlordane (Total)		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/23/2004	5/29/2014
WQO (ng/L):		0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Previous 10 Years	N	32	11	108	58	20	45	50	10	92	48	43	14	35
	N Detect	9	0	10	11	5	1	3	0	0	3	3	0	1
	N Exceed	9	0	10	11	5	1	3	0	0	3	3	0	1
Previous 5 Years	N	29	NS	54	31	NS	28	30	NS	34	30	22	NS	19
	N Detect	8	NS	3	6	NS	1	3	NS	0	3	3	NS	1
	N Exceed	5	NS	3	6	NS	1	3	NS	0	3	3	NS	1
		Achieving Targets per Listing Policy												
		No	NE	**Yes**	No	No[1]	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**[1]	NE	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Dacthal		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	12/3/2003	12/3/2003	12/4/2003	12/5/2003	12/5/2003	12/9/2003	12/4/2003	12/19/2003	12/4/2003	12/9/2003	12/5/2003
		8/26/2010	8/24/2004	4/25/2014	8/17/2010	11/26/2008	8/17/2010	8/17/2010	8/23/2004	8/23/2004	8/17/2010	8/17/2010	8/23/2004	8/17/2010
TMDL Targets (ng/L):		--[1]	3500000	3500000	3500000	3500000	3500000	3500000	3500000	3500000	3500000	3500000	3500000	3500000
Previous 10 Years	N	12	11	54	31	12	25	28	10	13	25	24	11	21
	N Detect	8	10	45	18	9	19	21	0	7	9	3	0	5
	N Exceed	--	0	0	0	0	0	0	0	0	0	0	0	0
Previous 5 Years	N	9	NS	34	10	NS	10	10	NS	NS	10	8	NS	7
	N Detect	6	NS	34	6	NS	8	9	NS	NS	4	3	NS	3
	N Exceed	--	NS	0	0	NS	0	0	NS	NS	0	0	NS	0
		Achieving Targets per Listing Policy												
		--	NE	**Yes**	**Yes[2]**	NE	NE	**Yes[2]**	NE	NE	NE	NE	NE	NE

1. TMDL does not establish salt water numeric targets that would apply to this reach.
2. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Dieldrin		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	84	55	35
	N Detect	0	0	0	0	0	0	0	0	1	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	1	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes[1]**	**Yes[1]**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endrin		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/5/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
TMDL Targets (ng/L):		2.3	36	36	36	36	36	36	36	36	36	36	36	36s
Previous 10 Years	N	32	11	108	61	20	45	116	10	92	48	84	55	35
	N Detect	0	0	0	0	0	0	52	0	4	0	0	0	0
	N Exceed	0	0	0	0	0	0	1	0	0	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	74	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	44	NS	1	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	1	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

gamma-BHC (Lindane)		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/5/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	6/3/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		63	63	63	63	63	63	63	63	63	63	63	63	63
Previous 10 Years	N	32	11	108	61	20	45	247	10	92	48	84	55	35
	N Detect	0	0	1	0	1	0	156	0	4	0	2	1	0
	N Exceed	0	0	0	0	0	0	0	0	0	0	1	1	0
Previous 5 Years	N	29	NS	54	31	NS	28	162	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	132	NS	1	0	1	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Heptachlor		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	84	55	35
	N Detect	0	0	0	0	0	0	0	0	1	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	0	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Heptachlor Epoxide		**Un-listed Reaches with TMDL Targets and Available Data**												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Previous 10 Years	N	32	11	108	61	20	45	80	10	92	48	84	55	35
	N Detect	0	0	0	0	0	0	0	0	2	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	1	0	0	0	0
Previous 5 Years	N	29	NS	54	31	NS	28	53	NS	34	30	41	19	19
	N Detect	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
	N Exceed	0	NS	0	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		Yes	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Total PCBs		Un-listed Reaches with TMDL Targets and Available Data												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	8/28/2003	8/28/2003	8/28/2003	8/28/2003	8/28/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/5/2013	5/29/2014
WQO (ng/L):		0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Previous 10 Years	N	32	11	104	58	19	45	80	10	96	49	62	33	35
	N Detect	5	0	2	0	1	0	0	0	1	0	1	0	0
	N Exceed	5	0	2	0	1	0	0	0	0	0	0	0	0
Previous 5 Years	N	29	NS	54	32	NS	28	53	NS	37	31	31	9	19
	N Detect	5	NS	1	0	NS	0	0	NS	0	0	0	0	0
	N Exceed	5	NS	1	0	NS	0	0	NS	0	0	0	0	0
		Achieving Targets per Listing Policy												
		No	NE	**Yes**	**Yes**	ID	**Yes**	**Yes**	NE	**Yes**	**Yes**	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

Toxaphene		Un-listed Reaches with TMDL Targets and Available Data												
Reach		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/21/2008	12/4/2003	2/12/2003	2/13/2003	2/13/2003	8/28/2003	8/5/2003	12/9/2003	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		5/13/2014	8/24/2004	5/29/2014	5/29/2014	11/26/2008	2/19/2014	5/29/2014	8/23/2004	8/7/2013	5/29/2014	5/29/2014	8/7/2013	5/29/2014
WQO (ng/L):		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Previous 10 Years	N	31	11	108	61	20	45	116	10	92	48	84	55	35
	N Detect	15	0	16	23	1	10	59	0	0	4	1	0	1
	N Exceed	15	0	16	23	1	10	59	0	0	4	1	0	1
Previous 5 Years	N	28	NS	54	31	NS	28	74	NS	34	30	41	19	19
	N Detect	13	NS	11	19	NS	9	51	NS	0	3	1	0	1
	N Exceed	13	NS	11	19	NS	9	51	NS	0	3	1	0	1
		Achieving Targets per Listing Policy												
		No	NE[1]	No	No	ID[1]	No	No	NE[1]	**Yes**	No	**Yes**	**Yes**[1]	**Yes**[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

Table 7. Analysis of OC Pesticides and PCBs TMDL Constituents in Sediment by Reach

4,4'-DDD		303(d) listed Reaches					Un-listed Reaches with TMDL Targets and Available Data				
Reach		1	2	4	5	6	3	7	9A	9B	10
Date Range Available		8/19/2008	8/27/2003	8/25/2003	NS	8/28/2003	8/25/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	NS	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		2000	3500	3500	3500	3500	3500	3500	3500	3500	3500
Previous 10 Years	N	10	7	7	NS	7	7	7	7	6	1
	N Detect	5	2	5	NS	1	0	1	0	0	0
	N Exceed	4	1	4	NS	0	0	0	0	0	0
Previous 5 Years	N	5	5	5	NS	5	5	5	5	5	NS
	N Detect	0	1	4	NS	1	0	0	0	0	NS
	N Exceed	0	0	3	NS	0	0	0	0	0	NS
		Potential for Delisting					Achieving Targets per Listing Policy				
		No	ID	No	--	NE	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

4,4'-DDE		303(d) listed Reaches					Un-listed Reaches with TMDL Targets and Available Data				
Reach		1	2	4	5	6	3	7	9A	9B	10
Date Range Available		8/19/2008	8/27/2003	8/25/2003	NS	8/28/2003	8/25/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	NS	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDL Targets (ng/dry kg):		2200	1400	1400	1400	1400	1400	1400	1400	1400	1400
Previous 10 Years	N	10	7	7	NS	7	7	7	7	6	1
	N Detect	10	6	7	NS	4	5	3	7	6	0
	N Exceed	9	6	7	NS	4	4	3	7	6	0
Previous 5 Years	N	5	5	5	NS	5	5	5	5	5	NS
	N Detect	5	5	5	NS	4	4	2	5	5	NS
	N Exceed	4	5	5	NS	4	4	2	5	5	NS
		Potential for Delisting					Achieving Targets per Listing Policy				
		No	No	No	--	No	No	No	No	No	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data

4,4'-DDT		303(d) listed Reaches					Un-listed Reaches with TMDL Targets and Available Data				
Reach		1	2	4	5	6	3	7	9A	9B	10
Date Range Available		8/19/2008	8/27/2003	8/25/2003	NS	8/28/2003	8/25/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	NS	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		1000	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]
Previous 10 Years	N	10	7	7	NS	7	7	7	7	6	1
	N Detect	4	0	2	NS	0	0	1	0	0	0
	N Exceed	4	--	--	--	--	--	--	--	--	--
Previous 5 Years	N	5	5	5	NS	5	5	5	5	5	NS
	N Detect	0	0	1	NS	0	0	0	0	0	NS
	N Exceed	0	--	--	--	--	--	--	--	--	--
		Potential for Delisting					Achieving Targets per Listing Policy				
		No	--	--	--	--	--	--	--	--	--

1. The TMDL does not establish numeric targets for freshwater reaches.

BHC-gamma		303(d) listed Reaches		Un-listed Reaches with TMDL Targets and Available Data							
Reach		4	5	1	2	3	6	7	9A	9B	10
Date Range Available		8/25/2003	NS	8/19/2008	8/27/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/21/2013	NS	8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		940	940	--[1]	940	940	940	940	940	940	940
Previous 10 Years	N	7	NS	10	7	7	7	7	7	6	1
	N Detect	0	NS	0	0	0	0	0	0	0	0
	N Exceed	0	NS	--	0	0	0	0	0	0	0
Previous 5 Years	N	5	NS	5	5	5	5	5	5	5	NS
	N Detect	0	NS	0	0	0	0	0	0	0	NS
	N Exceed	0	NS	--	0	0	0	0	0	0	NS
		Potential for Delisting		Achieving Targets per Listing Policy							
		NE	--		NE	NE	NE	NE	NE	NE	NE

1. The TMDL does not establish numeric targets for saltwater reaches.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data

Chlordane (Total)		**303(d) listed Reaches**		**Un-listed Reaches with TMDL Targets and Available Data**							
Reach		**4**	**5**	**1**	**2**	**3**	**6**	**7**	**9A**	**9B**	**10**
Date Range Available		8/25/2003	NS	8/19/2008	8/27/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/21/2013	NS	8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		4500	4500	500	4500	4500	4500	4500	4500	4500	4500
Previous 10 Years	N	7	NS	10	7	7	7	7	7	6	1
	N Detect	2	NS	3	0	0	0	0	0	0	0
	N Exceed	0	NS	3	0	0	0	0	0	0	0
Previous 5 Years	N	5	NS	5	5	5	5	5	5	5	NS
	N Detect	2	NS	0	0	0	0	0	0	0	NS
	N Exceed	0	NS	0	0	0	0	0	0	0	NS
		Potential for Delisting		**Achieving Targets per Listing Policy**							
		NE	--	No	NE	NE	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Dieldrin		**Un-listed Reaches with TMDL Targets and Available Data**								
Reach		**1**	**2**	**3**	**4**	**6**	**7**	**9A**	**9B**	**10**
Date Range Available		8/19/2008	8/27/2003	8/25/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		20	2900	2900	2900	2900	2900	2900	2900	2900
Previous 10 Years	N	10	7	7	7	7	7	7	6	1
	N Detect	0	0	0	0	0	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	0
Previous 5 Years	N	5	5	5	5	5	5	5	5	NS
	N Detect	0	0	0	0	0	0	0	0	NS
	N Exceed	0	0	0	0	0	0	0	0	NS
		Achieving Targets per Listing Policy								
		NE	NE	NE	NE	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endrin		**Un-listed Reaches with TMDL Targets and Available Data**								
Reach		**1**	**2**	**3**	**4**	**6**	**7**	**9A**	**9B**	**10**
Date Range Available		8/19/2008	8/27/2003	8/25/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		--[1]	2700	2700	2700	2700	2700	2700	2700	2700
Previous 10 Years	N	10	7	7	7	7	7	7	6	1
	N Detect	0	0	0	0	0	0	0	0	0
	N Exceed	--	0	0	0	0	0	0	0	0
Previous 5 Years	N	5	5	5	5	5	5	5	5	NS
	N Detect	0	0	0	0	0	0	0	0	NS
	N Exceed	--	0	0	0	0	0	0	0	NS
		Achieving Targets per Listing Policy								
		--	NE	NE	NE	NE	NE	NE	NE	NE

1. The TMDL does not establish numeric targets for saltwater reaches.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Heptachlor Epoxide		**Un-listed Reaches with TMDL Targets and Available Data**								
Reach		**1**	**2**	**3**	**4**	**6**	**7**	**9A**	**9B**	**10**
Date Range Available		8/19/2008	8/27/2003	8/25/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDLTargets (ng/dry kg):		--[1]	600	600	600	600	600	600	600	600
Previous 10 Years	N	10	7	7	7	7	7	7	6	1
	N Detect	0	0	0	0	0	0	0	0	0
	N Exceed	--	0	0	0	0	0	0	0	0
Previous 5 Years	N	5	5	5	5	5	5	5	5	NS
	N Detect	0	0	0	0	0	0	0	0	NS
	N Exceed	--	0	0	0	0	0	0	0	NS
		Achieving Targets per Listing Policy								
		--	NE	NE	NE	NE	NE	NE	NE	NE

1. The TMDL does not establish numeric targets for saltwater reaches.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

PCBs (Total)		Un-listed Reaches with TMDL Targets and Available Data								
Reach		**1**	**2**	**3**	**4**	**6**	**7**	**9A**	**9B**	**10**
Date Range Available		8/19/2008	8/27/2003	8/25/2003	8/25/2003	8/28/2003	8/28/2003	8/27/2003	8/5/2008	8/27/2003
		8/18/2011	8/22/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/21/2013	8/27/2003
TMDL Targets (ng/dry kg):		23000	34000	34000	34000	34000	34000	34000	34000	34000
Previous 10 Years	N	10	7	7	7	7	7	7	6	1
	N Detect	3	0	0	0	0	0	0	0	0
	N Exceed	0	0	0	0	0	0	0	0	0
Previous 5 Years	N	5	5	5	5	5	5	5	5	NS
	N Detect	0	1	0	1	0	0	0	0	NS
	N Exceed	0	0	0	0	0	0	0	0	NS
		Achieving Targets per Listing Policy								
		NE	NE	NE	NE	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Table 8. Analysis of OC Pesticides and PCBs TMDL Constituents in Fish Tissue by Reach.

4,4'-DDD		303(d) listed Reaches										Un-listed Reaches with TMDL Targets and Available Data		
Reach		1	2	4	5	9A	9B	10	11	12	13	3	6	7
Date Range Available		8/19/2008	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/17/2003	12/19/2003	12/16/2003	12/16/2003
		8/27/2008	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/25/2004	8/27/2013	9/3/2009	8/28/2013
TMDL Targets (ng/kg):		45000	45000	45000	45000	45000	45000	45000	45000	45000	45000	45000	45000	45000
Previous 10 Years	N	9	2	23	NS	5	22	6	NS	3	6	28	9	16
	N Detect	7	2	20	NS	4	17	0	NS	1	0	23	8	10
	N Exceed	1	1	15	NS	0	4	0	NS	0	0	9	6	5
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8
	N Detect	NS	NS	10	NS	NS	11	NS	NS	NS	NS	14	6	7
	N Exceed	NS	NS	10	NS	NS	4	NS	NS	NS	NS	8	6	5
		Potential for Delisting										Achieving Targets per Listing Policy		
		ID	ID	No	--	NE	No	NE	--	NE	NE	No	No	No

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

4,4'-DDE		303(d) listed Reaches										Un-listed Reaches with TMDL Targets and Available Data		
Reach		1	2	4	5	9A	9B	10	11	12	13	3	6	7
Date Range Available		8/19/2008	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/17/2003	12/19/2003	12/16/2003	12/16/2003
		8/21/2008	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/25/2004	8/27/2013	9/3/2009	8/28/2013
TMDL Targets (ng/kg):		32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000
Previous 10 Years	N	9	2	23	NS	5	22	6	NS	3	6	28	9	16
	N Detect	9	2	23	NS	5	22	4	NS	3	3	28	9	15
	N Exceed	9	2	23	NS	5	20	0	NS	3	0	28	9	11
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8
	N Detect	NS	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	7
	N Exceed	NS	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	7
		Potential for Delisting										Achieving Targets per Listing Policy		
		No	No	No	--	No	No	NE	--	No	NE	No	No	No

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

4,4'-DDT		**303(d) listed Reaches**										**Un-listed Reaches with TMDL Targets and Available Data**		
Reach		**1**	**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**12**	**13**	**3**	**6**	**7**
Date Range Available		8/19/2008	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/17/2003	12/19/2003	12/16/2003	12/16/2003
		8/21/2008	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/25/2004	8/27/2013	9/3/2009	8/28/2013
TMDL Targets (ng/kg):		32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000	32000
Previous 10 Years	N	9	2	23	NS	5	22	6	NS	3	6	28	9	16
	N Detect	4	0	19	NS	2	9	0	NS	0	0	17	0	3
	N Exceed	2	0	10	NS	0	4	0	NS	0	0	11	0	1
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8
	N Detect	NS	NS	11	NS	NS	8	NS	NS	NS	NS	14	0	3
	N Exceed	NS	NS	9	NS	NS	3	NS	NS	NS	NS	9	0	1
		Potential for Delisting										**Achieving Targets per Listing Policy**		
		No	NE	No	--	NE	No	NE	--	NE	NE	No	NE	No[1]

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

Aldrin		**303(d) listed Reaches**								**Un-listed Reaches with TMDL Targets and Available Data**				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/18/2011	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg)		50	50	50	50	50	50	50	50	50	50	50	50	50
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	0	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE	--	NE	NE	Yes[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

BHC-alpha		303(d) listed Reaches									Un-listed Reaches with TMDL Targets and Available Data			
Reach		**1**	**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**3**	**6**	**7**	**12**
Date Range Available		NS	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		NS	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Previous 10 Years	N	NS	2	23	NS	5	22	6	NS	6	28	9	16	3
	N Detect	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
	N Exceed	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	17	0	8	NS
	N Detect	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
	N Exceed	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
		Potential for Delisting									**Achieving Targets per Listing Policy**			
		--	NE	NE	--	NE	NE	NE	--	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

BHC-beta		303(d) listed Reaches									Un-listed Reaches with TMDL Targets and Available Data			
Reach		**1**	**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**3**	**6**	**7**	**12**
Date Range Available		NS	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		NS	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Previous 10 Years	N	NS	2	23	NS	5	22	6	NS	6	28	9	16	3
	N Detect	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
	N Exceed	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	17	6	8	NS
	N Detect	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
	N Exceed	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
		Potential for Delisting									**Achieving Targets per Listing Policy**			
		--	NE	NE	--	NE	NE	NE	--	NE	NE	NE	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

BHC-gamma		**303(d) listed Reaches**									**Un-listed Reaches with TMDL Targets and Available Data**			
Reach		**1**	**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**3**	**6**	**7**	**12**
Date Range Available		NS	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		NS	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		8200	8200	8200	8200	8200	8200	8200	8200	8200	8200	8200	8200	8200
Previous 10 Years	N	NS	2	23	NS	5	22	6	NS	6	28	9	16	3
	N Detect	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
	N Exceed	NS	0	0	NS	0	0	0	NS	0	0	0	0	0
Previous 5 Years	N	NS	NS	13	NS	NS	13	NS	NS	NS	17	6	8	NS
	N Detect	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
	N Exceed	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
		Potential for Delisting									**Achieving Targets per Listing Policy**			
		--	NE	NE	--	NE	NE	NE	--	NE	**Yes**[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Chlordane (Total)		**303(d) listed Reaches**						**Un-listed Reaches with TMDL Targets and Available Data**					
Reach		**1**	**2**	**4**	**5**	**9A**	**12**	**3**	**6**	**7**	**9B**	**10**	**13**
Date Range Available		8/19/2008	5/6/2004	12/18/2003	NS	12/19/2003	12/17/2003	12/19/2003	12/16/2003	12/16/2003	12/19/2003	12/18/2003	12/17/2003
		8/21/2008	8/24/2004	8/27/2013	NS	8/26/2004	8/25/2004	8/27/2013	9/3/2009	8/28/2013	8/28/2013	8/25/2004	8/25/2004
TMDL Targets (ng/kg):		830	830	830	830	830	830	830	830	830	830	830	830
Previous 10 Years	N	9	2	22	NS	5	3	27	9	16	22	6	6
	N Detect	7	1	15	NS	1	0	17	6	5	13	0	0
	N Exceed	7	1	15	NS	1	0	17	6	5	13	0	0
Previous 5 Years	N	NS	NS	12	NS	NS	NS	17	6	8	13	NS	NS
	N Detect	NS	NS	10	NS	NS	NS	15	6	5	11	NS	NS
	N Exceed	NS	NS	10	NS	NS	NS	15	6	5	11	NS	NS
		Potential for Delisting						**Achieving Targets per Listing Policy**					
Potential for Delisting:		No	ID	No	--	ID	NE	No	No	No	No	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist

Dieldrin		**303(d) listed Reaches**								**Un-listed Reaches with TMDL Targets and Available Data**				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		650	650	650	650	650	650	650	650	650	650	650	650	650
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	0	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	3	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	0	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	0	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE	--	NE	NE	**Yes[1]**	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endosulfan I		**303(d) listed Reaches**								**Un-listed Reaches with TMDL Targets and Available Data**				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
Targets (ng/kg):		65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	1	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	3	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	0	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	0	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE		NE	NE	**Yes[1]**	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endosulfan II		303(d) listed Reaches								Un-listed Reaches with TMDL Targets and Available Data				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		65000000	65000000	65000000	65000000	65000000	65000000	65000000	65000000	6500000	6500000	6500000	6500000	6500000
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	1	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE	--	NE	NE	**Yes**[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Endrin		303(d) listed Reaches								Un-listed Reaches with TMDL Targets and Available Data				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000	3200000
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	1	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	NS	NE	NE	NE	--	NE	NE	**Yes**[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Heptachlor		**303(d) listed Reaches**								**Un-listed Reaches with TMDL Targets and Available Data**				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	0	0	0	NS	0	0	0	0	0	0
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE	--	NE	NE	**Yes**[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Heptachlor Epoxide		**303(d) listed Reaches**								**Un-listed Reaches with TMDL Targets and Available Data**				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Previous 10 Years	N	2	23	NS	5	22	6	NS	6	9	28	9	16	3
	N Detect	0	0	NS	0	0	0	NS	0	0	0	0	0	NS
	N Exceed	0	0	NS	0	0	0	NS	0	0	0	0	0	0
Previous 5 Years	N	NS	13	NS	NS	13	NS	NS	NS	NS	17	6	8	NS
	N Detect	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
	N Exceed	NS	0	NS	NS	0	NS	NS	NS	NS	0	0	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	NE	--	NE	NE	NE	--	NE	NE	**Yes**[1]	NE	NE	NE

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis
NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

PCBs		303(d) listed Reaches									Un-listed Reaches with TMDL Targets and Available Data			
Reach		**1**	**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**3**	**6**	**7**	**12**
Date Range Available		8/19/2008	5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/21/2008	8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		5300	5300	5300	5300	5300	5300	5300	5300	5300	5300	5300	5300	5300
Previous 10 Years	N	9	2	22	NS	5	22	6	NS	6	27	9	16	3
	N Detect	9	2	10	NS	2	9	0	NS	0	15	6	2	0
	N Exceed	9	2	9	NS	2	7	0	NS	0	12	6	1	0
Previous 5 Years	N	NS	NS	12	NS	NS	13	NS	NS	NS	17	6	8	NS
	N Detect	NS	NS	9	NS	NS	9	NS	NS	NS	11	6	2	NS
	N Exceed	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0	NS
		Potential for Delisting									**Achieving Targets per Listing Policy**			
		No	No	PD[1]	--	No	PD[1]	NE	--	NE	PD[1]	PD[1]	PD	NE

1. No exceedances in most recent five years with a significant number of samples. Considering the exceedances that occurred more than five years ago would inappropriately categorize this as a higher priority.

PD (Potential Delisting) – Insufficient data to information listing decision, however a significant number of the most recent 5 years of monitoring are non-detect. The potential for delisting the reach may exist.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

Toxaphene		303(d) listed Reaches								Un-listed Reaches with TMDL Targets and Available Data				
Reach		**2**	**4**	**5**	**9A**	**9B**	**10**	**11**	**13**	**1**	**3**	**6**	**7**	**12**
Date Range Available		5/6/2004	12/18/2003	NS	12/19/2003	12/19/2003	12/18/2003	NS	12/17/2003	8/19/2008	12/19/2003	12/16/2003	12/16/2003	12/17/2003
		8/24/2004	8/27/2013	NS	8/26/2004	8/28/2013	8/25/2004	NS	8/25/2004	8/21/2008	8/27/2013	9/3/2009	8/28/2013	8/25/2004
TMDL Targets (ng/kg):		9800	9800	9800	9800	9800	9800	9800	9800	9800	9800	9800	9800	9800
Previous 10 Years	N	2	22	NS	5	22	6	NS	6	9	27	9	16	3
	N Detect	0	18	NS	0	7	0	NS	0	4	10	3	0	0
	N Exceed	0	18	NS	0	7	0	NS	0	4	10	3	0	0
Previous 5 Years	N	NS	12	NS	NS	13	NS	NS	NS	NS	16	6	8	NS
	N Detect	NS	12	NS	NS	7	NS	NS	NS	NS	10	3	0	NS
	N Exceed	NS	12	NS	NS	7	NS	NS	NS	NS	10	3	0	NS
		Potential for Delisting								**Achieving Targets per Listing Policy**				
		NE	No	--	NE	No	NE	--	NE	No	No	No	NE	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

1.4 TOXICITY TMDL

The RWQCB adopted Resolution No. R4-2005-009 to incorporate the Toxicity, Chlorpyrifos and Diazinon (Toxicity) TMDL in Calleguas Creek, its Tributaries, and Mugu Lagoon into the Basin Plan. The TMDL was effective as of March 25, 2006. Chlorpyrifos and diazinon have been phased out from non-agricultural uses and it was recently announced that additional restrictions on the use of chlorpyrifos on farms may be enacted.

Table 9. Analysis of Toxicity TMDL Constituents in Receiving Water by Reach.

Chlorpyrifos (Dry)		**303(d) listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**									
Reach		**4**	**5**	**7**	**1**	**2**	**3**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/28/2003	8/28/2003	8/28/2003	8/21/2008	3/24/2004	6/5/2003	8/28/2003	3/24/2004	8/28/2003	8/28/2003	2/6/2002	2/6/2002	8/28/2003
		11/5/2013	8/23/2004	11/5/2013	11/5/2013	8/24/2004	4/25/2014	11/5/2013	8/23/2004	8/23/2004	11/5/2013	8/21/2013	8/23/2004	11/5/2013
TMDL Targets (ug/L):		0.014	0.014	0.014	0.009	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Previous 10 Years	N	34	9	30	21	7	54	29	6	9	30	26	9	21
	N Detect	19	6	12	7	0	13	12	0	0	4	0	0	0
	N Exceed	14	6	7	4	0	5	6	0	0	0	0	0	0
Previous 5 Years	N	20	NS	19	19	NS	26	18	NS	NS	19	12	NS	11
	N Detect	13	NS	7	6	NS	6	7	NS	NS	2	0	NS	0
	N Exceed	9	NS	4	3	NS	1	3	NS	NS	0	0	NS	0

Chlorpyrifos (Wet)		**303(d) listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**									
Reach		**4**	**5**	**7**	**1**	**2**	**3**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		2/13/2003	2/13/2003	2/3/2004	12/15/2008	2/3/2004	2/12/2003	2/3/2004	2/3/2004	2/3/2004	2/3/2004	2/3/2004	NS	12/15/2008
		1/25/2013	11/26/2008	1/25/2013	1/25/2013	2/26/2004	2/28/2014	1/25/2013	2/25/2004	2/25/2004	1/25/2013	3/17/2012	NS	3/17/2012
TMDL Targets (ug/L):		0.025	0.025	0.025	0.02	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Previous 10 Years	N	22	9	12	9	3	49	10	3	3	10	11	NS	8
	N Detect	19	7	9	9	2	32	8	0	0	4	0	NS	1
	N Exceed	18	7	9	9	2	24	7	0	0	3	0	NS	0
Previous 5 Years	N	8	NS	8	8	NS	25	8	NS	NS	8	7	NS	7
	N Detect	8	NS	7	8	NS	19	7	NS	NS	3	0	NS	1
	N Exceed	7	NS	7	8	NS	13	6	NS	NS	2	0	NS	0

Chlorpyrifos (Wet and Dry Data)	**303(d) Listed Reaches**			**Un-listed Reaches with TMDL Targets and Available Data**									
Reach	**4**	**5**	**7**	**1**	**2**	**3**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
N (previous 5 years)	28	18[1]	42[1]	30[2]	10[1]	51	39[1]	NS	NS	40[1]	37[1]	NS	29[2]
N Exceed	16	13	14	13	3	14	13	NS	NS	3	0	NS	0
	Potential for Delisting?			**Achieving Targets per Listing Policy?**									
	No	No	No	No	No	No	No	NE	NE	**Yes**	**Yes**	NE	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis.

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Diazinon (Dry)		**303(d) listed Reaches**	**Un-listed Reaches with TMDL Targets and Available Data**											
Reach		**7**	**1**	**2**	**3**	**4**	**5**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		8/28/2003	8/21/2008	3/24/2004	6/5/2003	8/28/2003	8/28/2003	8/28/2003	3/24/2004	2/19/2003	2/19/2003	2/6/2002	2/6/2002	8/28/2003
		11/5/2013	11/5/2013	8/24/2004	4/25/2014	11/5/2013	8/23/2004	11/5/2013	8/23/2004	8/23/2004	11/5/2013	8/21/2013	8/23/2004	11/5/2013
TMDL Targets (ug/L):		0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Previous 10 Years	N	30	21	7	55	34	9	29	6	10	31	26	9	21
	N Detect	9	3	6	17	10	2	9	0	5	8	5	2	4
	N Exceed	1	0	3	4	0	1	1	0	2	2	3	0	0
Previous 5 Years	N	19	19	NS	27	20	NS	18	NS	NS	19	12	NS	11
	N Detect	2	3	NS	5	5	NS	2	NS	NS	2	0	NS	0
	N Exceed	0	0	NS	1	0	NS	0	NS	NS	1	0	NS	0

Diazinon (Wet)		**303(d) listed Reaches**	**Un-listed Reaches with TMDL Targets and Available Data**											
Reach		**7**	**1**	**2**	**3**	**4**	**5**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
Date Range Available		2/3/2004	12/15/2008	2/3/2004	2/12/2003	2/13/2003	2/13/2003	2/3/2004	2/3/2004	2/3/2004	2/3/2004	2/3/2004	NS	12/15/2008
		1/25/2013	1/25/2013	2/26/2004	2/28/2014	1/25/2013	11/26/2008	1/25/2013	2/25/2004	2/25/2004	1/25/2013	3/17/2012	NS	3/17/2012
TMDL Targets (ug/L):		0.1	0.82	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Previous 10 Years	N	12	9	3	51	22	9	10	3	3	10	11	NS	8
	N Detect	5	4	1	25	9	1	3	0	1	1	0	NS	0
	N Exceed	2	0	0	6	3	0	1	0	1	0	0	NS	0
Previous 5 Years	N	8	8	NS	27	8	NS	8	NS	NS	8	7	NS	7
	N Detect	4	4	NS	10	5	NS	3	NS	NS	1	0	NS	0
	N Exceed	1	0	NS	3	2	NS	1	NS	NS	0	0	NS	0

Diazinon (Wet and Dry Data)	**303(d) Listed Reaches**	**Un-listed Reaches with TMDL Targets and Available Data**											
Reach	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**8**	**9A**	**9B**	**10**	**12**	**13**
N (previous 5 years)	42[1]	30[1]	10[1]	54	28	18[1]	39[1]	NS	13[1]	41	37	NS	28
N Exceed	3	0	3	4	2	1	2	NS	3	2	3	NS	0
	Potential for Delisting	**Achieving Targets per Listing Policy**											
	Yes	**Yes**	No	**Yes**	**Yes**	ID	**Yes**	NE	No	**Yes**	**Yes**	NE	**Yes**

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

1.5 SALTS TMDL

The Boron, Chloride, Sulfate, TDS (Salts) TMDL was incorporated into the Basin Plan through the RWQCB's adoption of Resolution No. R4-2007-016. **Table 10** summarizes the comparison of available receiving water grab sample data to the final numeric targets established in the Salts TMDL. This evaluation does not include consideration of continuous monitoring for salts at the receiving water compliance points, however, grab samples collected at these locations to calibrate and verify the sensors are a part of the dataset. Additionally, reaches 1 and 2 are tidally influenced and salts targets do not apply, therefore, those reaches are not considered.

Table 10. Analysis of Salts TMDL Constituents in Receiving Water by Reach

Boron		303(d) Listed Reaches			Un-listed Reaches with TMDL Targets and Available Data								
Reach		**4**	**7**	**8**	**3**	**5**	**6**	**9A**	**9B**	**10**	**11**	**12**	**13**
Date Range Available		2/25/2004	2/5/2003	NS	2/26/2004	2/25/2004	NS	2/19/2003	2/19/2003	2/15/2002	NS	2/15/2002	NS
		11/5/2013	6/3/2014	NS	11/5/2013	2/25/2004	NS	11/6/2013	11/5/2013	10/9/2013	NS	10/9/2013	NS
TMDL Targets (mg/L):		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Previous 10 Years	N	65	235	NS	27	1	NS	237	25	124	NS	133	NS
	N Detect	65	235	NS	27	1	NS	237	25	124	NS	133	NS
	N Exceed	65	85	NS	0	1	NS	1	0	0	NS	0	NS
Previous 5 Years	N	64	162	NS	26	NS	NS	116	23	58	NS	58	NS
	N Detect	64	162	NS	26	NS	NS	116	23	58	NS	58	NS
	N Exceed	64	55	NS	0	NS	NS	1	0	0	NS	0	NS
		Potential for Delisting			**Achieving Targets per Listing Policy**								
		No	No	--	NE	ID	--	**Yes**	NE	**Yes**	--	**Yes**	--

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

Chloride		303(d) Listed Reaches						Un-listed Reaches with TMDL Targets and Available Data					
Reach		**6**	**7**	**8**	**9B**	**10**	**13**	**3**	**4**	**5**	**9A**	**11**	**12**
Date Range Available		NS	1/8/2003	NS	1/1/2003	1/15/2002	NS	1/1/2003	2/13/2003	2/13/2003	1/22/2003	NS	1/15/2002
		NS	6/3/2014	NS	12/5/2013	10/9/2013	NS	4/25/2014	12/5/2013	11/26/2008	12/5/2013	NS	10/9/2013
WQOs (mg/L):		150	150	150	150	150	150	150	150	150	150	150	150
Previous 10 Years	N	NS	281	NS	116	126	NS	206	99	7	282	NS	135
	N Detect	NS	278	NS	116	126	NS	206	99	7	282	NS	135
	N Exceed	NS	205	NS	31	40	NS	144	75	0	247	NS	125
Previous 5 Years	N	NS	194	NS	63	58	NS	144	92	NS	156	NS	58
	N Detect	NS	193	NS	63	58	NS	144	92	NS	156	NS	58
	N Exceed	NS	142	NS	16	11	NS	108	73	NS	138	NS	56
		Potential for Delisting						**Achieving Targets per Listing Policy**					
		--	No	--	No	No	--	No	No	NE[1]	No	--	No

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.

Sulfate		303(d) Listed Reaches										Un-listed Reaches with TMDL Targets and Available Data	
Reach		**4**	**6**	**7**	**8**	**9A**	**9B**	**10**	**11**	**12**	**13**	**3**	**5**
Date Range Available		2/25/2004	5/13/2008	2/5/2003	NS	2/19/2003	1/1/2003	2/15/2002	NS	2/15/2002	NS	1/1/2003	2/25/2004
		11/5/2013	5/13/2008	6/3/2014	NS	11/6/2013	11/5/2013	10/9/2013	NS	10/9/2013	NS	11/5/2013	2/25/2004
WQOs (mg/L):		250	250	250	250	250	250	250	250	250	250	250	250
Previous 10 Years	N	44	1	237	NS	250	86	125	NS	136	NS	103	1
	N Detect	44	1	237	NS	250	86	125	NS	136	NS	103	1
	N Exceed	42	1	233	NS	51	5	0	NS	116	NS	31	0
Previous 5 Years	N	43	NS	164	NS	128	36	58	NS	58	NS	74	NS
	N Detect	43	NS	164	NS	128	36	58	NS	58	NS	74	NS
	N Exceed	42	NS	161	NS	22	1	0	NS	54	NS	27	NS
		Potential for Delisting										**Achieving Targets per Listing Policy**	
		No	ID	No	--	No	**Yes**	**Yes**	--	No	--	No	NE

NE (No Exceedances) – Insufficient data to inform listing decision, however no exceedances were reported in the available monitoring data.
ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

TDS		303(d) Listed Reaches											Un-listed Reaches with TMDL Targets and Available Data
Reach		**3**	**4**	**6**	**7**	**8**	**9A**	**9B**	**10**	**11**	**12**	**13**	**5**
Date Range Available		1/1/2003	2/13/2003	5/13/2008	2/5/2003	NS	2/19/2003	1/1/2003	2/15/2002	NS	2/15/2002	NS	2/13/2003
		4/25/2014	11/5/2013	5/13/2008	11/5/2013	NS	11/6/2013	11/5/2013	10/9/2013	NS	10/9/2013	NS	11/26/2008
WQOs (mg/L):		850	850	850	850	850	850	850	850	850	850	850	850
Previous 10 Years	N	172	70	1	80	NS	244	89	113	NS	124	NS	8
	N Detect	172	70	1	80	NS	244	89	113	NS	112	NS	8
	N Exceed	101	61	1	74	NS	133	26	1	NS	97	NS	2
Previous 5 Years	N	100	44	NS	31	NS	127	37	46	NS	46	NS	NS
	N Detect	100	44	NS	31	NS	127	37	46	NS	34	NS	NS
	N Exceed	61	43	NS	27	NS	77	5	0	NS	33	NS	NS
		Potential for Delisting											**Achieving Targets per Listing Policy**
		No	No	ID	No	--	No	No	**Yes**	--	No	--	No

ID (Insufficient Data) – Insufficient data to inform listing decision, however a single exceedance was detect and the potential for listing may exist.

1.6 INDICATOR BACTERIA FECAL COLIFORM

Reaches in the CCW are listed for Indicator Bacteria and Fecal Coliform. The recent revision to bacteria objectives in the Basin Plan replaced limits on Fecal and Total Coliforms in REC1 designated waters with geometric means and instantaneous limits on *E. coli*. This analysis compared available *E. coli* monitoring data to the updated instantaneous objectives of 235 MPN/100mL. Table 11 summarizes the findings of the analysis.

Table 11. Analysis of 303(d) listed Reaches for Bacteria

E. *coli*		1	2	3	4	5	6	7	8	9A	9B	10	11	12
Currently 303(d) Listed:			X		X		X	X		X	X	X	X	
Date Range Available		5/27/2004	8/28/2003	2/12/2003	2/12/2003	2/12/2003	8/28/2003	8/28/2003	12/2/2003	8/28/2003	8/28/2003	8/15/2003	2/26/2004	8/15/2003
		1/7/2005	5/5/2005	4/25/2014	11/26/2008	11/26/2008	3/29/2006	5/5/2005	5/5/2005	5/5/2005	1/7/2005	2/22/2014	8/13/2013	10/27/2013
WQOs (MPN/100mL):		235	235	235	235	235	235	235	235	235	235	235	235	235
Previous 10 Years	N	7	24	88	38	21	32	23	22	23	15	180	4	161
	N Detect	7	24	87	38	21	30	23	22	23	15	150	4	158
	N Exceed	3	15	62	24	12	20	9	12	7	6	6	4	62
Previous 5 Years	N	NS	NS	24	NS	NS	NS	NS	NS	NS	NS	92	1	96
	N Detect	NS	NS	24	NS	NS	NS	NS	NS	NS	NS	69	1	94
	N Exceed	NS	NS	16	NS	NS	NS	NS	NS	NS	NS	0	1	38
Potential for Delisting:		LP[1]	No[1]	LP	No[1]	LP[1]	No[1]	No[1]	LP	No[1]	No[1]	**Yes**	No[1]	No

1. Previous 5 years of data was insufficient to inform a listing decision, however historical monitoring data was available and used in analysis

LP (Listing Possible) – Considering current and/or earlier data there is potential for this reach to be listed based on the number of observed exceedance

TECS Environmental Compliance Services
106 South Mentor Avenue – 125 • Pasadena, CA 91106 • Tel: 626.396.9424
Fax: 626.396.1916 email: rtahir tecsenv.com

March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Email: losangeles waterboards.ca.gov

Subject: Comment Letter – Revisions to the Los Angeles Region 2016 (303(d) List

Dear Mr. Zhu:

TECS Environmental is pleased to comment on the Regional Board's proposed 2016 303(d) list revisions.

Because there are almost 900 listing revisions for water quality segments in the Los Angeles County Basin, it would be impossible to address each one. Therefore, I will restrict my comments to general issues.

To begin with, I am sure that a number of MS4 Permittees and industrial dischargers will be pleased to know that many of the pollutants proposed on the 303(d), which are current TMDLs or are scheduled to become ones, have been placed on the "de-list" or placed on the "do not list" category. Most conspicuous are metals for Reach 2 of the Rio Hondo[1] and Reach 3 of the San Gabriel River[2]. Although the 2010 303(d) list did not list any of these reaches for metals-related impairment, they were nevertheless required to comply with metals TMDLs (Los Angeles River Metals TMDL for Reach 2 of the Rio Hondo and the San Gabriel River Metals TMDL for Reach 3 of the San Gabriel River). The 2016 303(d) list proposes to rectify this mistake by placing both of these reaches under the "do not list" category for copper, lead, selenium and zinc, which form the basis for both of the TMDLs.

[1]Alhambra (partially), Arcadia, Bradbury, Duarte, El Monte, Irwindale (partially), Monrovia, Montebello (partially), Monterey Park, Pasadena (partially), Rosemead, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena (partially) and Temple City.
[2]Azusa, Baldwin Park, Claremont, Covina, Duarte (partially), El Monte, Glendora, Irwindale, La Verne, Pomona, South El Monte, and West Covina.

However, the proposed 2016 303(d) list did not place any of the Arroyo Seco reaches on the "do not list." Like Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River, Arroyo Seco Reaches 1 and 2 were not on 2010 303(d) list, nor were they on the 2012 303(d) list, which did not make it to Los Angeles Basin Plan as an amendment. Nevertheless, the Los Angeles MS4 Permit subjects MS4 Permittees by extending the Los Angeles River Metals TMDL to Arroyo Seco reaches. The 2016 303(d) list should place these reaches on the "do not list" category for metals.
Recommendation: place Arroyo Seco Reaches 1 and 2 on the "do not list" for any metal.

I. CTR and 303(d) Listing Policy

Nevertheless, additional pollutants should be considered for exclusion because they were not established in accordance with the California Toxics Rule (CTR) adopted in 2000; and/or did comply with the *Water Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004.

- *California Toxic Rule*

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as:

> *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.*

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.

Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of metals and toxics more accurate. Generally, the higher the hardness value the higher the toxic/metal pollutant expressed as a numeric limit. And, the higher the limit there less difficult it is to meet. The metals and toxics TMDLs rely on differing hardness values. For the Dominguez Channel/Harbor Toxics TMDL an average hardness value of 50 mg/l is used. For Ballona Creek hardiness values for setting the wet weather TMDLs metals are varied, based on an average or median hardness that ranged from 77 mg/l to 108 mg/l. For dry weather, a median hardness value of 300 mg/l was applied. As mentioned, CTR is expressed exclusively as ambient and not wet weather standards. Thus the77 mg/l to 108 mg/l hardness values relative to wet weather are meaningless. For dry weather, a median value of 300 mg/l was used. For the Los Angeles River Metals TMDL variable hardness values were also used for wet and dry weather. The same is true to the San Gabriel River Metals TMDL. In any case, CTR requires actual hardness value to be determined at the time samples of metals/toxic pollutants are taken.

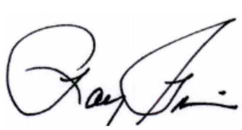
Thus, in the final analysis, each of the metals/toxics pollutants that was placed on the “list” or “do not de-list” category should be placed on the “de-list” or “do not list” category because they were not established in ambient terms only and failed to use an actual hardness value.

- *303(d) Listing Policy*

The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment □1). A review of the 2016 303(d) list fact sheets reveals that many of the metals and toxics placed on previous 303(d) lists did not conform to the Listing Policy. Those that do not should be placed on the “de-list” or “do not list” category.

This concludes my comments. Should you have any questions or require additional information please let me know.

Sincerely,



Ray Tahir

Attachment □1

TABLE 3.1: MINIMUM NUMBER OF MEASURED EXCEEDANCES NEEDED TO PLACE A WATER SEGMENT ON THE SECTION 303(D) LIST FOR TOXICANTS.

Null Hypothesis: Actual exceedance proportion < 3 percent. Alternate Hypothesis: Actual exceedance proportion > 18 percent. The minimum effect size is 15 percent.

Sample Size	List if the number of exceedances equal or is greater than
2 – 24	2□
25– 36	3
37– 47	4
48– 59	5
60– 71	6
72– 82	7
83– 94	8
95– 106	9
107– 117	10
118– 129	11

□Application of the binomial test requires a minimum sample size of 16. The number of exceedances required using the binomial test at a sample size of 16 is extended to smaller sample sizes.

For sample sizes greater than 129, the minimum number of measured exceedances is established where α and f3 < 0.2 and where |α - f3□is minimized.

α = Excel® Function BINOMDIST(n-k, n, 1 – 0.03, TRUE)
f3 □ Excel□ Function BINOMDIST(k-1, n, 0.18, TRUE)
where n □ the number of samples,
k □ minimum number of measured exceedances to place a water on the section 303(d) list,
0.03 □ acceptable exceedance proportion, and
0.18 □ unacceptable exceedance proportion.

Attachment □1

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 0.03 = acceptable exceedance proportion, and
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Ventura Countywide
Stormwater Quality
Management Program

Participating Agencies

Camarillo

County of Ventura

Fillmore

Moorpark

Ojai

Oxnard

Port Hueneme

San Buenaventura

Santa Paula

Simi Valley

Thousand Oaks

Ventura County
Watershed Protection
District

March 30, 2017

Electronic Submission: losangeles@waterboards.ca.gov

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Jun Zhu
320 W 4th Street, Suite 200
Los Angeles, CA 90013

Subject: **Comment Letter – Revisions to the Los Angeles Region 303(d) List**

Dear Dr. Zhu:

On behalf of the Ventura Countywide Stormwater Quality Management Program (Program), which includes the Watershed Protection District, the County of Ventura and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, we thank you for the opportunity to provide input on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list] which was distributed for public review on February 8, 2017.

The Program has many concerns with the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waters. Several errors and inconsistencies hampered our ability to fully vet and review the proposed 303(d) list. It is our opinion that significant review and modifications must be made before adoption and additional public review after modifications will be necessary.

Requested Action:
After full consideration of all comments, revise draft 303(D) list, and allow for another 60-day comment period prior to adoption.

It is critical that the Los Angeles Water Board's proposed revisions to the 303(d) list follow the State Water Resources Control Board (SWRCB) Listing Policy and be based on sound science and methodologies. The development and implementation of Total Maximum Daily Loads (TMDLs) is already a significant investment of resources, and the 303(d) list will drive pollutant waterbody prioritization under the potential Watershed Management Plan option in our next NPDES MS4 Permit.

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Without closely following the Listing Policy, pollutants may be listed where an impairment does not exist leading to misplaced priorities and squandered resources. Focused attention should be paid to identifying beneficial uses, impairments due to natural conditions, and applicability of data.

Data from a single point in time, or which is not representative of the receiving water, should be excluded from this effort as should data with results reported below reporting limits (J-flagged). It appears the Program's outfall data was erroneously included for the Santa Clara River. This sampling location represents the runoff discharging from an MS4, not the receiving water quality, and is mostly from infrequent and short-term rain events. Of special concern is where the beneficial use MUN is driving 303(d) listings even though it should not be applied because it is identified as P* and is a conditionally applicable beneficial use.

> **Requested Action:**
> **Strictly comply with the State Water Resources Control Board (SWRCB) Listing Policy on identifying beneficial uses, impairments due to natural sources, and the appropriate data to support a listing.**

The Program supports the comments from the County of Ventura where a more detailed description of the issues identified here is discussed. The Program also supports the comments from the Calleguas Creek Watershed Stakeholders, as well as the Ventura County Irrigated Lands Group (VCAILG) who will be submitting separate comment letters regarding the proposed listing changes in the Calleguas Creek Watershed and VCAILG-affected waterbody segments.

Significant resources are expended when a pollutant is included on the 303(d) list. Errors in this process, and the challenges of delisting a pollutant, divert our limited funding and staff time away from improving water quality. We greatly appreciate your attention to these requests and look forward to a 303(d) list that appropriately identifies the water quality issues within Ventura County.

If you have questions, please contact me at Arne.Anselm@ventura.org or (805) 654-3942.

Sincerely,

Arne Anselm, Chair
On Behalf of the Ventura Countywide Stormwater Management Committee

Cc: Ventura County Stormwater Quality Management Committee
Glenn Shephard, Director - Ventura County Watershed Protection District

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VENTURA WATER

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March 30, 2017

California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

RE: Comment Letter – Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report

Attn: Jun Zhu,

Ventura Water, a department of the City of San Buenaventura (City), appreciates the opportunity to comment on the proposed revisions to the Clean Water Act Section 303(d) list for the Los Angeles Region and the 2016 Integrated Report (hereinafter "303(d) list"). The City's Public Works Department is submitting a concurrent letter that discusses the overall proposed listings that impact the City generally. The specific focus of this comment letter by Ventura Water is on the Santa Clara River Estuary (SCRE) proposed listings. New constituents on the list for the SCRE include ammonia and pH. Constituents that are proposed to remain on the list of particular note include nitrate and toxicity.

Ventura Water specifically requests the Los Angeles Regional Water Quality Control Board (Regional Board):

- Reconsider proposed ammonia listing by recalculating the exceedances and using more recent data sets currently available to the Regional Board.
- Reconsider the proposed pH listing based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries.
- Delist nitrate based on a recalculation using appropriate data and correct use of averaging periods for the data.
- Reevaluate toxicity listing once the data is appropriately aggregated and averaged.
- Reevaluate ChemA, Taxophene, and Indicator Bacteria listings once more recent data is taken into consideration.
- Address the issues identified in this letter and release a revised, proposed 303(d) list for another 60-day comment period prior to adoption.

Relevant Background Information. It is important to our overall comments on the 303(d) list to understand the context of the Santa Clara River and SCRE. Like many southern California rivers, the Santa Clara River has very minimal flows in the dry months leading to stagnant conditions in the SCRE that encourage algae growth and variations in both dissolved oxygen (DO) and pH due to the algae respiration cycles, as is the case to some extent even in more natural estuaries where conditions have not been modified. The river ends in the SCRE, which experiences both open and closed mouth periods due to beach berm formation and periodic, typically wet weather breaches. The SCRE is wind-mixed and mostly uniform in water quality, especially during closed mouth conditions. The Ventura Water Reclamation Facility (VWRF) discharges approximately 8 million gallons per day (mgd) of disinfected, tertiary effluent first to wildlife/water quality ponds, and then to the SCRE. During dry weather, the tertiary treated flows can be the dominate supply of water to the SCRE to support wildlife species that utilize it. Species that utilize the SCRE include the following state and federally listed species: steelhead trout, tidewater goby, snowy plover, and California least tern.

Ventura Water has spent many years studying the SCRE both independently, and pursuant to requirements of its NPDES permits. Ventura Water has invested more than $21,000,000 dollars in treatment process upgrades of the Ventura Water Reclamation Facility (VWRF) to improve the quality of the tertiary treated flows discharged to the SCRE. Ventura Water also currently recycles approximately 1 mgd for urban irrigation. Ventura Water is also currently working on implementing a potable reuse program that would divert up to 100% of its discharges to water reclamation uses, and identifying how much effluent can be diverted from the SCRE while still protecting its ecology and ecology-related beneficial uses and without "taking" (as that term is defined under the state and federal Endangered Species Acts, as applicable) any of the listed species that use or occupy the SCRE.

General Comments. Of particular concern to Ventura Water with regard to the proposed 303(d) list is that much of the data used to determine water quality impairment for the SCRE is older data that is not representative of current conditions. The Staff report states, "Data used as part of the 2016 Integrated Report were received through August 30, 2010." The report then goes on to later say, "All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report." These statements are at odds with each other as by choosing to only rely on data collected through 2010; quite clearly the 303(d) list was not developed with all readily available data as required by the Listing Policy. Significant plant improvements have be implemented since 2010. VWRF monitoring data since the plant upgrades are readily available and should be included within the 303(d) list determination analyses.

The SCRE has also been heavily regulated by the VWRF's NPDES permits. Many of those permit requirements have become more stringent since 2010, with the application of technology based limitations. By Ventura Water's estimation, many of constituents on the proposed 303(d) list are not appropriate given recent water quality data.

Lastly, based on current data and the State Water Resources Control Board's "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List" ("Listing Policy")[1] requirements to aggregate the data by appropriate reach or area and to use appropriate averaging periods, Ventura Water disagrees with some of the constituent listings and requests recalculation of exceedances. This letter addresses the proposed 303(d) listings and presents current data for each proposed SCRE impairment listing.

Ammonia Comments

The new ammonia listing cites that it is based on 4 exceedances out of 42 samples based on un-ionized ammonia concentrations using data collected from 1997 to 2010. While this meets the technical, formulaic requirements for number of exceedances set forth in the Listing Policy Table 3.1 for placing a waterbody on the 303(d) list, the methods and data used to calculate the exceedances are not clear. To calculate the concentration of un-ionized ammonia, total ammonia must be converted to un-ionized ammonia using site specific pH and temperature conditions within the SCRE at the time of the ammonia sampling. No conversion calculations for total ammonia were provided in the data set provided in the fact sheet; therefore, it is difficult to determine which pH and temperature data were used to correlate to corresponding total ammonia data. An accurate analysis should ideally connect pH, temperature, and ammonia data with a reasonable averaging criteria or statistical determination if multiple data points were used. Ventura Water requests recalculation of the exceedances based on current total ammonia data as well as proper calculations of un-ionized ammonia that take into account temperature and pH conditions that occurred, or should have been expected during the total ammonia sampling events.

More specifically, closer inspection of the 1997 through 2010 data set used to determine the 4 exceedances indicates that the pH data used to calculate un-ionized ammonia was potentially data retrieved from a continuous monitoring, multiparameter Sondes (2009-2010) deployed for the City's Phase 1 Estuary Study (Stillwater Sciences 2011), among other data. The only total ammonia data collected as part of the Phase 1 study were collected on 6 days in 2009 and 2010. Corresponding pH and temperature were collected along with these samples. However, Ventura Water is concerned that these data do not represent the SCRE as a whole, specifically after the improvements to the VWRF (after November 2011). Moreover, only total ammonia is shown in that data set, and the data set does not include the calculation of un-ionized ammonia. Monthly grab sample temperature and pH data for the receiving water exists for some of the monitoring years cited (1997 - 2010), but grab data is not reliable for purposes of determining the one-hour maximum values for temperature and pH.

In light of the aforementioned issues with the methods that appear to have been used to calculate un-ionized ammonia using a 1997 to 2010 data set, Ventura Water requests the Regional Board provide the

[1] California State Water Resources Control Board, "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List," Adopted September 30, 2004, Amended February 3, 2015.

calculation for the un-ionized ammonia, and update the calculation as appropriate to include more recent and more valid total ammonia, pH, and temperature assumptions from other data sets readily available to the Regional Board. Based on Ventura Water's more recent monitoring results, all of which constitute data readily available to the Regional Board, it does not appear that the SCRE un-ionized ammonia water quality objective is likely to have been exceeded a sufficient number of times to warrant a listing. Ventura Water requests the Regional Board utilize the data submitted to it by Ventura Water more recently than 2010 to assure that the evaluation of receiving water conditions in the SCRE is reasonably representative of current conditions.

The Regional Board imposed stringent ammonia limits and a time schedule to attain those limits on VWRF discharges of tertiary treated flows in both its 2008 and 2013 NPDES permits. To comply with these limits and to better control nitrates, Ventura Water invested more than $21 million in a VWRF plant improvement project to implement nutrient removal in its biological processes. This treatment upgrade project undertaken to meet the stringent NPDES permit ammonia effluent limits came online in November 2011. Since then, VWRF NPDES permit effluent limits for ammonia, including its water quality based effluent limits, have only been exceeded once, indicating that ammonia conditions in the SCRE have changed since November 2011, and the data relied upon in developing the proposed 303(d) list is not representative of conditions within the SCRE.

The receiving water standards for the SCRE (used to establish the NPDES effluent limitation) are set based on un-ionized ammonia for saltwater criteria. The limits used to determine the 303(d) listing are the same criteria that are used to calculate limits in the NPDES permit (1999 Update of Ambient Water Quality Criteria for Ammonia):

- One Hour Concentration = 0.233 mg/l unionized ammonia, based on fish spawning, and
- 4 day average of 0.035 mg/L of unionized ammonia

The total ammonia NPDES effluent limit calculated to meet this water quality objective is total ammonia of 1.07 mg/l average monthly and 1.17 mg/l max daily in the summer. Limits in the winter months are slightly higher. The limits were determined in accordance with EPA standards by considering the 50th and 90th percentile pH and temperature for considering chronic and acute toxicity.

As shown in Figure 1 below, the total effluent ammonia from 2012 to 2016 only exceeded 1 mg/l once out of 59 samples, thus not exceeding the Listing Policy's binomial distribution null hypothesis Table 3.1 criteria for listing a constituent on the 303(d) list (i.e., would need at least 5 exceedances). Similarly, the receiving water samples from 2012 to 2016 only exceeded 1 mg/l total ammonia twice out of 60 samples, so also not meeting the Table 3.1 criteria for listing a constituent on the 303(d) list.

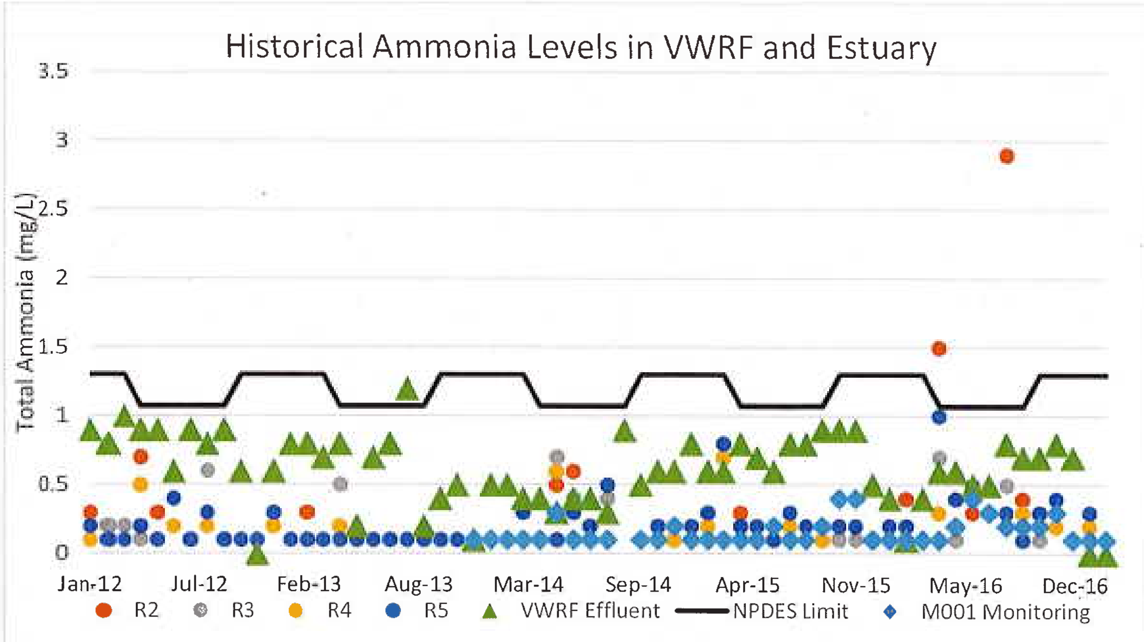

Figure 1 Historical Effluent and Receiving Water Ammonia Monitoring

The effluent compliance point for all constituents except for flow in the 2013 NPDES permit for the VWRF is station M001, which is located at the Effluent Transfer Station (ETS) right before discharge into the wildlife ponds. Station M001A is located downstream of the wildlife ponds. It is only used for compliance with flow, but ammonia levels have been monitored there, starting in December 2013. Total ammonia actually drops from the compliance point to M001A as water passes through the wildlife ponds, likely due to a combination of volatilization and vegetative uptake. Therefore, the ammonia concentrations in the discharges into the SCRE are well below the permit standards that were set up to meet the ammonia receiving water quality objectives for saltwater, which are more stringent than freshwater standards. The comparison of ETS versus M001A data is shown in Figure 2.

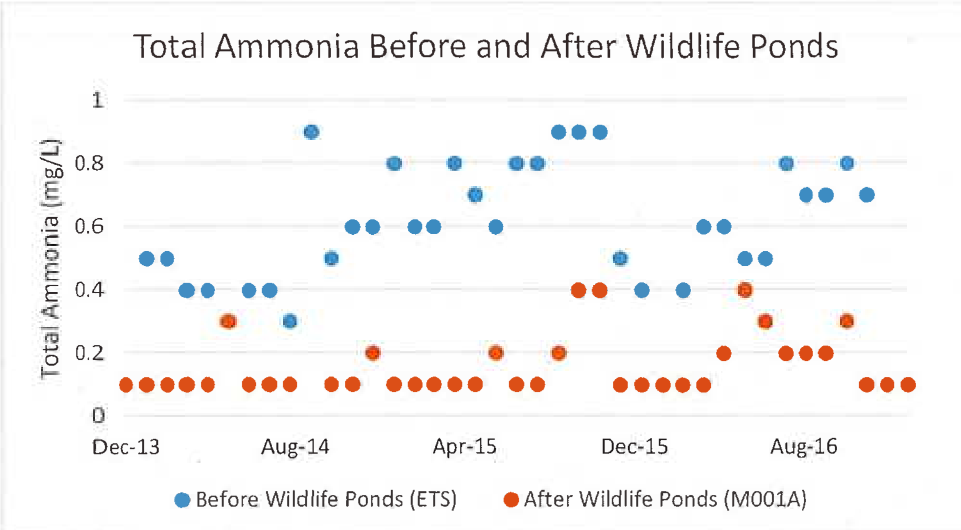

Figure 2 Historical Effluent Ammonia Before and After Wildlife Ponds

In light of the treatment plant upgrades implemented to reduce ammonia, and the fact that more recent data indicates only 1 exceedance in 59 samples, Ventura Water requests recalculation of the exceedances for ammonia and reconsideration of the listing decision based on the more recent data set currently available to the Regional Board.

pH Comments

It is important to understand that many estuaries exhibit wide daily variations in pH mediated by algae as the result of daily photosynthesis and nighttime respiration (Park et al 1958).[2] Beyond potential connections between algal productivity with the multiple nutrient sources to the SCRE (e.g., VWRF, agricultural runoff, groundwater, riverine, VWRF, ocean exchanges), algal growth and pH variations in the SCRE are exacerbated by physical factors as well (e.g., shallow waters, lack of consistent riverine flows, intermittent breaching and limited tidal exchange with the ocean). Consideration of the estuarine conditions likely to induce large pH swings is supported by recent monitoring data fully available to the Regional Board that shows that the VWRF plant tertiary treated flows are always in compliance with pH effluent limits (shown as a black dot on Figure 3). However, despite the very steady and compliant pH values for the tertiary treated flows, the receiving water does experience wide swings in pH as shown in Figure 3 below even when data collected from 2012 through 2016 is analyzed. However, it is important to note that the receiving water pH data is collected by grab samples (via boat) in the SCRE, likely at

[2] Park, K., D.W. Hood, and H.T. Odum. 1958. Diurnal pH variation in Texas bays, and its application to primary production estimation. Publication of the Institute for Marine Sciences, Texas 5: 47–64.

similar times of day and therefore does not necessarily reflect actual conditions in the estuary over the course of the day or the month.

The receiving water data collected could theoretically meet the Listing Policy formulaic criteria. However, the determination whether to list should not be considered in a vacuum, but rather must also take into account the "type of waterbody (Bay and Harbors, Coastal Shoreline, *Estuary*, Lake/reservoir...)" being considered for impairment.[3] One way to take into account the type of waterbody considered for a 303(d) listing is to consider "reference conditions" as defined in Section 7 of the Listing Policy to understand the characteristics of estuarine water bodies that are least impaired by human activities to determine attainable biological conditions for such waterbodies in southern California. As discussed earlier, studies of pH variation in estuaries reveals that wide swings in pH due to the presence of algae constitute reference conditions for typical estuaries.

The proposed listing does not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan).[4] As stated in the Fact Sheets and according to the Basin Plan, "The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges."[5] However, it was not demonstrated for the SCRE that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if not such evidence exists, the Regional Board should remove this proposed listing.

Ventura Water requests reconsideration of the proposed pH listing for the SCRE based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries.

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[3] Listing Policy § 6.1.2.2B (emphasis added).

[4] Water Quality Control Plan Los Angeles Region R4 Basin Plan.

[5] Basin Plan at 3-35.

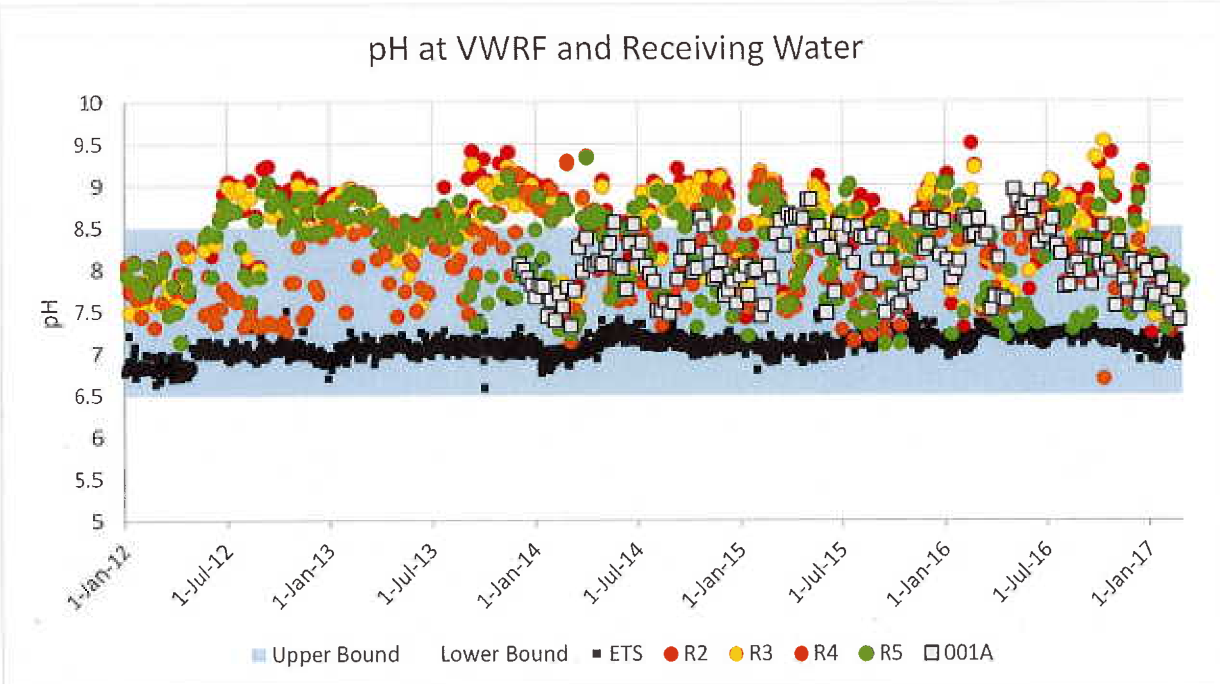

Figure 3 pH at VWRF and Receiving Water Locations

Nitrogen and Nitrate Comments

Nitrogen/nitrate (collectively "nitrate") was originally listed on the 303(d) list adopted in 2012. The nitrate listing is based on receiving water samples collected between 2002 and 2007. Given that Ventura Water implemented a nitrification and denitrification project in November 2011, nitrate data collected before 2011 is no longer representative of SCRE conditions, and is therefore not reliable for determining current SCRE exceedance estimates. In reviewing receiving water data collected monthly from 2012 through 2016 (60 sample dates), which is submitted to the Regional Board as part of NPDES reporting and is therefore readily available data under the Listing Policy, there were only 5 days during which SCRE water quality exceeded the nitrate receiving water quality objective of 10 mg/l . Because the SCRE is wind-mixed and fairly uniform (Phase 1 Estuary Subwatershed Study, Stillwater 2011), we would argue that on any given day, sampling at a given location is strongly influenced by conditions at other nearby locations. The Listing Policy states:

> "Based on these evaluations of the water body setting, the Regional Water Boards should aggregate the data by appropriate reach or area. ... To be considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling

event. ... If the averaging period is not stated for the standard, objective, criterion, or evaluation guideline, then the samples collected less than 7 days apart shall be averaged."[6]

As shown in Figure 4 below, exceedances in multiple locations occurring in the SCRE on the same sampling date should be considered a single event because the multiple sampling results are designed to provide a spatial representation of the estuary during any particular event of exceedance. According to the binomial distribution null hypothesis (Listing Policy Table 3.1), the listing requirement for 60 to 71 data points is 6 exceedances, which is more than the current 5 exceedances demonstrated by the more recent data set developed after Ventura Water's implementation of treatment plant and treatment process upgrades.

Section 4 of the Listing Policy states that a water segment shall be removed from a 303(d) listing if the water meets the water quality standards. Using Policy Table 4.1, the null hypothesis indicates that for 60 to 71 data points, if there are 5 exceedances or less, then the water segment can be delisted. **Based on current data, the number of exceedances (5) meets the delisting criteria, and given that VWRF already has an NPDES permit limit for nitrate, Ventura Water requests recalculation of the exceedances based on current data and correct use of averaging periods for the data (data collected on the same day to be averaged). Ventura Water requests that based on this recalculation, nitrate be removed from the 303(d) list for the SCRE.**

[6] Listing Policy, pp. 23, 24.

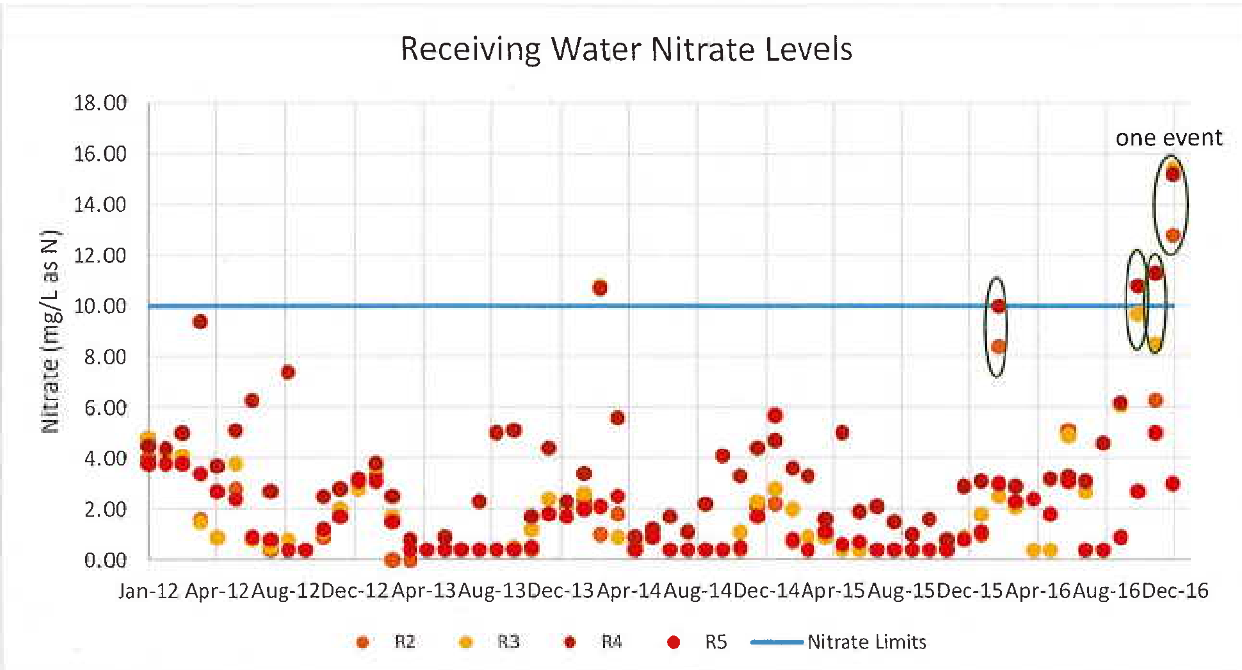

Figure 4 Receiving Water Nitrate Levels

Toxicity Comments

The City monitors chronic toxicity using Selanstrum for both effluent and receiving water. Using readily available data collected by Ventura Water from 2012 – 2016 and submitted to the Regional Board, the VWRF tertiary treated flows consistently met toxicity criteria of 1 TUc for the 60 samples, as shown in Figure 5. However, receiving water monitoring data does not similarly show consistent and full attainment of toxicity criteria. The receiving water monitoring locations have a data set of 25 sample dates. **Using the argument presented above that the data should be aggregated and appropriate averaging should be used, Ventura Water requests that each sampling event (day) be considered separately and the data points be averaged.**

To meet the Listing Policy Table 4.1 requirements for delisting, with 26 data points there would need to be 2 or fewer exceedances of toxicity objectives for the SCRE. Even considered as single events, there have been more than 2 exceedances of a 1 TUc, although those exceedances are unrelated to toxicity of tertiary treated flows, which did not show exceedances. Therefore, it does not appear that delisting the SCRE for toxicity would be appropriate at this time, even though toxicity exceedances are unrelated to VWRF tertiary treated flows. **However, Ventura Water requests this listing be reevaluated once the data is appropriately aggregated and averaged.**

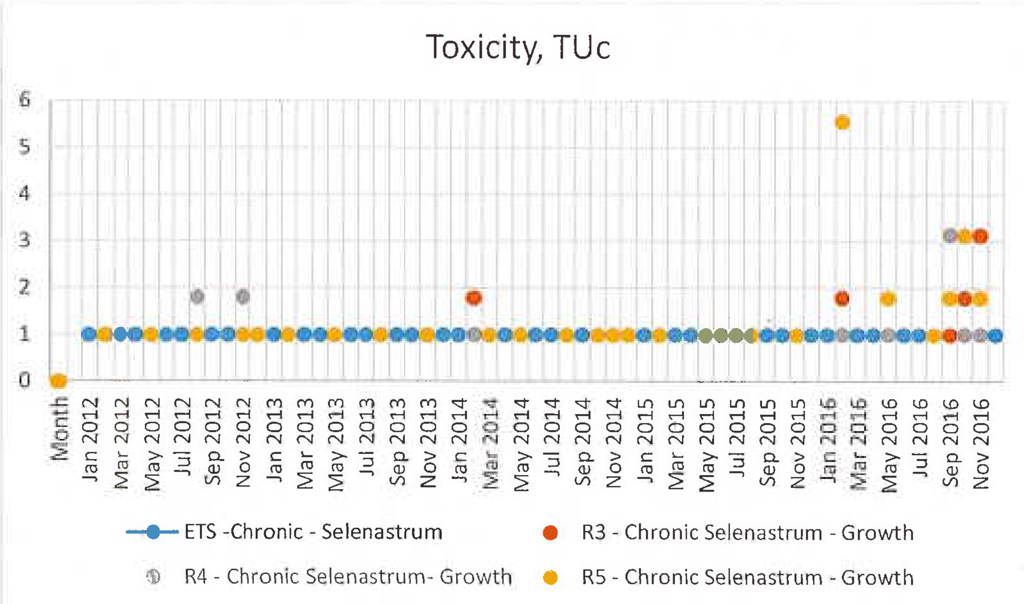

Figure 5 Effluent and Receiving Water Toxicity

ChemA

ChemA is being included on the 303(d) list without any supporting data. The reasons for its listing are that the U.S. EPA approved a TMDL for the estuary in 2011. However, no data, historic or otherwise, were used to support the continued placement on this list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of ChemA on the 303(d) list.**

Toxaphene

Similar to ChemA, toxaphene was included on the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. Based on data collected semiannually by the VWRF, toxaphene has not even been detected in either the effluent or the receiving water in recent memory. **Ventura Water requests that recent readily available data be taken into consideration when assessing the placement of toxaphene on the 303(d) list.**

Indicator Bacteria

Similar to ChemA and toxaphene, indicator bacteria was included in the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of indicator bacteria on the 303(d) list.**

Summary/Conclusion

Ventura Water appreciates the opportunity to comment on the proposed 303(d) list. Based on the analysis presented above using more recently collected, readily available data that properly represents existing conditions in the SCRE (2012 - 2016), our findings include:

- Appropriate ammonia data were not considered in the proposed listing and current data do not meet the Listing Policy criteria for 303(d) listing.
- A listing for pH is not warranted in light of reference conditions for pH within estuaries, which indicates that steady state pH values in compliance with water quality objectives are not biologically attainable even in high functioning estuaries.
- Nitrate should be delisted based on relevant Listing Policy criteria.
- Toxicity is unrelated to VWRF discharges of tertiary treated water to the SCRE, and the listing should be reevaluated once the data is appropriately aggregated and averaged.
- Chem A, Toxaphene, and Indicator Bacteria listings did not include recent data and should be reevaluated based on current data.

It is important to note the City has been conducting studies on the SCRE since 2009 per the special studies requirements in the NPDES permits for the VWRF. These studies analyze the existing discharge impacts/benefits to aquatic habitat, and evaluate alternatives that include a reduction in discharge, improvement in discharge water quality, or a combination of both, for the purpose of improving aquatic habitat. These studies are site specific, taking into account the listed species using or occupying the SCRE, and the associated physical/chemical parameters that contribute to site specific aquatic habitat conditions. The results of the studies will be presented in the Phase 3 Estuary Studies Report (expected January 2018), and will provide a detailed understanding of the SCRE and information relevant to the 303(d) listing process.

Respectfully,

Gina Dorrington

Gina Dorrington
Ventura Water Wastewater Utility Manager
City of San Buenaventura

Table of Contents for Item 9 on the Agenda of the 605th

Regular Meeting of the California Regional Water Quality Control Board

Los Angeles Region

Consideration of the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

(Note: Appendix B through Appendix H are available and will be updated next week at http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d/2016/2016_303d.shtml)

Consideration of the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

EXECUTIVE SUMMARY

California Regional Water Quality Control Board
Los Angeles Region
May 4, 2017

Item Number	9
Proposed Board Action	Approval of Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region
Need for Action	**Background.** The federal Clean Water Act requires each state to assess the status of water quality in the state (per section 305(b)), and provide a list of impaired waterbodies (per section 303(d)) to the U.S. Environmental Protection Agency (USEPA) every two years. An "Integrated Report" documents the outcome of these two efforts.

These efforts entail reviewing available monitoring data for surface waters, including river reaches, tributaries, lakes, and coastal waters. Waterbodies are evaluated for their support of beneficial uses including, among others, aquatic life support, fish consumption, recreation, and municipal and domestic supply based on a comparison of water quality data to applicable water quality objectives. Waterbodies are placed into one of five non-overlapping categories based on the overall beneficial use support of the water segment and the need for a TMDL.

Waterbody Categories

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data to make a beneficial use support determination but data indicate beneficial uses may be threatened.
4	At least one beneficial use is not supported, but a TMDL is not needed.
4a	*One or more TMDLs have been developed and approved by USEPA for all pollutants causing impairment.*
4b	*Another regulatory program is reasonably expected to result in attainment of the water quality standard.*
4c	*The impairment is the result of pollution, not a pollutant.*
5	At least one beneficial use is not supported and a TMDL is still needed.

EXECUTIVE SUMMARY

Waterbodies listed in categories 4a, 4b and 5 make up the 303(d) list. For water quality limited segments (a.k.a. impaired waterbodies) included on the 303(d) list, the state is required to develop a Total Maximum Daily Load (TMDL) or take other action to address the impairment.

Scheduling. The State Water Board has established a procedure for developing California's statewide "Integrated Report," including its 303(d) list, in which groups of three Regional Water Boards submit their regional "Integrated Reports" and 303(d) lists in a rotating fashion every six years. The State Water Board established this procedure in consideration of the large size of the State, the extensive amount of data to evaluate, and the increasing complexity of data analysis. In addition, beginning with the 2018 303(d) list, all data to be evaluated by the Water Boards for the Integrated Report and 303(d) list must be submitted to the California Environmental Data Exchange Database (CEDEN).

The State Water Board adopted these changes as amendments to the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) in February 2015. The purpose of these and other changes is to improve the State of California's ability to produce a statewide 303(d) list every two years.

The last update to the State's 303(d) list that included the Los Angeles Region was the 2010 303(d) list. The 2010 303(d) list included data submitted through February 28, 2007. For the 2016 303(d) list, the State Water Board accelerated the schedule for Regions 2, 4 and 8 and set a deadline of May 2017 for these Regional Water Boards to provide their region's changes to the 303(d) list. The State Water Board determined that the 2016 303(d) list for these three regions would only address data submitted prior to August 30, 2010, which is the same data period as for the other six regions' most recent 303(d) lists. The State Water Board intends to consider the 303(d) lists for Regions 2, 3, 4, 5, 8, and 9 in fall 2017. The State Water Board previously approved the 303(d) lists for Regions 1, 6, and 7.

Workflow. During this process, the State and Regional Water Boards have divided the work in the following manner. State Water Board staff solicited data, reviewed the data received, entered all acceptable data into the California Water Quality Assessment (CalWQA) database, and created lines of evidence (LOEs) to be considered at the decision-making stage. Each LOE addresses a specific waterbody pollutant combination. The key fields in the LOEs include, but are not limited to, waterbody name, pollutant, beneficial use assessed, sample type (water, sediment, or tissue), evaluation guideline (i.e., applicable water quality objective), number of samples and number of exceedances.

Each LOE also identifies the spatial and temporal representation of the samples as well as quality assurance information. Regional Water Board staff assessed the LOEs in CalWQA and made the listing recommendations of "list," "do not list," "delist" or "do not delist." For this list update, Regional Water Board staff reviewed approximately 11,000 LOEs and made approximately 5,800 decisions.

All of the waterbodies assessed, whether in previous listing cycles or this listing cycle, are grouped into the categories presented in the table above. The waterbodies in each category are listed in appendices to the Staff Report. As previously indicated, the lists of waterbodies in categories 4a, 4b and 5 are those that comprise the 303(d) list. Lists of the waterbodies in the other categories are provided, but do not require Board approval per the State's Listing Policy.

The Staff Report and Appendix A to the Staff Report, "Proposed Updates to the 303(d) List," are included in the Board Package. Appendices B - H are provided as web links due to the length of the documents, and to preserve access to hyperlinks embedded in these appendices. For each proposed change to the 303(d) list, a "factsheet" with detailed information on the decision is available (Appendix G).

Stakeholder Participation

The State Water Board issued a public solicitation for water quality data on January 14, 2010 (and an amended solicitation on May 24, 2010). The data solicitation closed on August 30, 2010.

The Los Angeles Water Board publicly noticed the Tentative Resolution and Staff Report with appendices including factsheets for this listing cycle on February 8, 2017 for a 30-day public comment period. In response to stakeholder requests, the Los Angeles Water Board extended the public comment deadline to March 30, 2017. During the public comment period, Board staff met with several commenters.

Summary of Comments

The Los Angeles Water Board received 32 comment letters from municipalities, POTW agencies, other dischargers, and environmental non-profit organizations.

The majority of comments concerned the appropriateness of a specific pollutant or waterbody condition being included or not included on the 303(d) list of impaired waters. The Board's responses are included in the Response to Comments. We present some of the key comments and responses below.

Several commenters identified instances where data submitted to the State Water Board by the August 2010 deadline were not included in the CalWQA database. Several commenters also noted that LOEs were developed to evaluate a municipal and domestic water supply (MUN) beneficial use in waters where the MUN use was conditionally designated (i.e., identified as MUN P in the Basin Plan). These LOEs were developed in error. To address these comments, Regional Water Board staff will work with the State Water Board staff to resolve them prior to consideration by the State Water Board.

In addition, several commenters identified instances where data were not assigned to the correct waterbody because the mapping underlying the CalWQA database did not match the waterbody delineations in the Los Angeles Region Basin Plan. Board staff will work with State Water Board staff to correct the CalWQA mapping and propose revised decisions, where appropriate. This will be addressed as soon as possible and no later than the next listing cycle for the Los Angeles Region.

Two commenters, Wishtoyo and Earth Law Center, provided comments on flow and flow-related listings that have long been on the Los Angeles Water Board's 303(d) list, such as listings for "fish barriers," "pumping" and "water diversion." The State's Listing Policy clarifies that the 303(d) list only covers waterbody impairments by "pollutants" (rather than flow-related listings such as pumping or water diversion). In addition, a TMDL already addresses four of these flow-related listings in the Ventura River. In cases where a TMDL is addressing the listing, Board staff proposes to retain the listing as "being addressed by a TMDL" in the 4a category (or 5B if another pollutant requires a TMDL in that waterbody). In the other cases, Board staff proposes to remove the listing from the 303(d) list, since it is not a "pollutant". The Water Boards do not have a defined methodology or established thresholds for determining impairment due to non-pollutant related pollution and, more specifically, the Water Boards do not have an established approach to analyzing the extent to which flow-related alterations may cause water quality impairments relative to applicable water quality standards.

The Farm Bureau of Ventura County provided comments on listing decisions that were based primarily on data collected under the Irrigated Lands Conditional Waiver program. The Farm Bureau maintains that several of the waterbodies assessed are "agricultural ditches" and, therefore, not candidates for identification on the 303(d) list. Board staff finds that all these surface waters are subject to the provisions of section 303(d). However, we intend to review the data with the commenter to determine if waterbody-pollutant combinations could be included in Category 4b (where another regulatory program such as the Irrigated Lands Program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified timeframe).

Many commenters noted that the proposed 303(d) list revisions only consider data up to 2010 and that more recent data would support different listing decisions. As discussed in the summary above, the State Water Board determined that the Water Boards would only consider data through August 2010 for the 2016 303(d) list.

Finally, in response to comments, we have made a number of corrections to the 303(d) list by identifying more waterbody-pollutant combinations that are within the category of "being addressed by a TMDL."

Status of Response to Comments

The comment letters received are included in the Board Package. The Response to Comments will be included in a supplement to the Board Package.

Alternatives

Alternatives for Board consideration include:

1. Approve the proposed 303(d) list.

   The approved Los Angeles Region 303(d) list will be forwarded to the State Water Board for inclusion in the Statewide 303(d) list. The Statewide list will be made available for public comment and will require approval by the State Water Board before being forwarded to USEPA for final approval.

   The 303(d) list is always a work-in-progress; new data are being collected continually, waterbody delineations are periodically updated, water quality objectives are added and/or modified, analytical methodologies advance, etc. While the 303(d) list is approved at set intervals, the Water Boards are continually working on it in some fashion. In light of this reality, and as indicated earlier, Regional Water Board staff will work with State Water Board staff to address several of the issues described above either prior to State Water Board consideration, or for mapping inconsistencies, as soon as possible and no later than the next listing cycle.

2. Do not approve the proposed 303(d) list.

   The State Water Board will proceed with its action to consider a consolidated 2014/2016 303(d) list based on the approved or proposed 303(d) lists for each of the six Regional Water Boards, including the Los Angeles Water Board.

Recommendation

Staff recommends approval of the proposed 303(d) list.

State Of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. R17-XXX

April 6, 2017

Approval of Recommendations for the Federal Clean Water Act (CWA) Section 303(d) List

T E N T A T I V E

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region finds that:

3. Section 303(d) of the CWA and Title 40, Code of Federal Regulations Section 130.7 require states to develop and submit to the U.S. Environmental Protection Agency (U.S. EPA) for approval a list of water bodies for which water quality standards (beneficial uses and water quality objectives) are not attained, or are not expected to be attained, with the implementation of certain technology-based controls. This list is commonly referred to as the "303(d) List" or the "List of Impaired Waters."

2. Section 305(b) of the CWA requires states to monitor, assess and submit biennially to the U.S. EPA a report assessing statewide surface water quality.

3. The California Integrated Report includes the requirements of CWA Section 305(b) and Section 303(d).

4. The 303(d) List must include a description of the pollutants causing impairment and a completion date for prioritizing the development of a Total Maximum Daily Load (TMDL) for each pollutant.

5. Only the 303(d) List portion of the California Integrated Report requires approval by the State Water Resources Control Board (State Water Board) and the U.S. EPA. Neither agency approves the 305(b) Report portion of the California Integrated Report.

6. The process for developing and approving the 303(d) List, including requests for review of specific listing recommendations by a Regional Water Quality Control Board is outlined in the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy).

7. Upon approval, the Los Angeles Water Board's recommended 303(d) List will be submitted to the State Water Board and compiled into a statewide 303(d) List. The

statewide 303(d) List is subject to the approval of the State Water Board and the U.S. EPA.

8. In accordance with sections 6.2 and 6.3 of the Listing Policy, before the Executive Director of the State Water Board or the State Water Board approves the California section 303(d) List, the State Water Board shall provide advance notice and opportunity for public comment. Public comment will be limited to listing recommendations that are timely requested for review pursuant to section 6.2 of the Listing Policy unless the Executive Director or the State Water Board elects to consider recommendations on other waters. To request that the State Water Board or Executive Director review specific listing recommendations approved by a Regional Water Board, the request must be submitted to the State Water Board within 30 days after the Regional Water Board approval.

9. In January of 2010, the State Water Board solicited water quality data from the public with a formal "Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report," which was sent to interested persons subscribed to the State Water Board's Integrated Report e-mail distribution list. In addition, the Los Angeles Water Board sent the notice to persons subscribed to the Los Angeles Water Board's Basin Plan Amendments and TMDL e-mail distribution lists.

10. In developing the 2016 Integrated Report for CWA Section 305(b) and the Section 303(d) List, the Los Angeles Water Board considered all readily available data and information submitted to the State Water Board during the State Water Board data solicitation period of January 14, 2010 to August 30, 2010.

11. After reviewing all relevant evidence submitted, Los Angeles Water Board staff has:

    - For 305(b), made overall beneficial use support ratings for the water bodies that have been assessed for this 2016 assessment cycle. Categories 1, 2, 3, 4, and 5 of the Los Angeles Water Board's Integrated Report reflect the outcome of the overall use support ratings.

    - For 303(d), made recommendations to add, remove or change the 2016 CWA Section 303(d) List of Impaired Waters for the Los Angeles Water Board's 2016 Integrated Report. The 303(d) List is reflected in Categories 4a, 4b, and 5 of the Integrated Report.

12. On February 8, 2017, the Los Angeles Water Board provided public notice of the 2016 Integrated Report for the Los Angeles Region and a 30-day comment period; issued a Notice of Hearing to interested persons; and published notice of the 2016 Integrated Report and the hearing in the Los Angeles Times and Ventura County Star.

13. Los Angeles Water Board staff responded in writing to the written comments received during the public comment period and revised staff's recommendations for additions, deletions, and changes to the 303(d) List, the supporting 2016 Integrated Report, and water body fact sheets as appropriate.

14. No action is required by the Los Angeles Water Board for staff's assessment of non-impaired water bodies under Section 305(b).

15. On April 6, 2017, the Los Angeles Water Board held a Public Hearing to consider and approve the recommendations for the 303(d) List. The Los Angeles Water Board considered all evidence provided by Los Angeles Water Board staff and the public.

THEREFORE BE IT RESOLVED THAT:

1. The Los Angeles Water Board hereby approves the recommendations for the 2016 303(d) List for the Los Angeles Region.

2. The Executive Officer is to transmit the Los Angeles Water Board's proposed recommendations for the 2016 Integrated Report with its supporting information and evidence including approved revisions, to the State Water Board for its consideration and incorporation into the final 2016 California Integrated Report.

I, Samuel Unger, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 6, 2017.

____

Samuel Unger
Executive Officer

LOS ANGELES REGIONAL
WATER QUALITY CONTROL BOARD

2016 CLEAN WATER ACT
SECTIONS 305(b) AND 303(d)
INTEGRATED REPORT
FOR THE LOS ANGELES REGION

STAFF REPORT

April 2017

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List of Tables

List of Appendices

List of Acronyms and Abbreviations

Basin Plan	Water Quality Control Plan: Los Angeles Region
BPTCP	Bay Protection and Toxic Cleanup Program
BMI	Benthic Macro Invertebrates
CalWQA	California Water Quality Assessment (database)
CCC	Criteria Continuous Concentration
CCR	California Code of Regulations
CDPH	California Department of Public Health
CFR	Code of Federal Regulations
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act
ºC	degrees Celsius
ºF	degrees Fahrenheit
FED	Functional Equivalent Document
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DFW	Department of Fish and Wildlife, formerly Department of Fish and Game (DFG)
DO	Dissolved oxygen
dw	dry weight
ERM	Effects Range Median
HCH	Hexachlorocyclohexane
HSA	Hydrologic Sub Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILRP	Irrigated Lands Regulatory Program
IR	Integrated Report
kg	kilogram(s)
Listing Policy	Water Quality Control Policy for Developing California's Section 303(d) List
LOE	Line of Evidence
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	milligrams per kilogram (parts per million)
mg/L	milligrams per liter (parts per million)
µg/g	micrograms per gram (parts per million)
µg/L	micrograms per liter (parts per billion)
MTBE	Methyl tertiary-butyl ether
MTRL	Maximum Tissue Residue Level
NAS	National Academy of Sciences
ng/g	nanograms per gram (parts per billion)
ng/L	nanograms per liter (parts per trillion)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

NTU	Nephelometric Turbidity Unit
oc	organic carbon
OEHHA	Office of Environmental Health Hazard Assessment
PAH	Polynuclear aromatic hydrocarbon
PBDE	Polybrominated diphenyl ethers
PCB	Polychlorinated biphenyl
PEL	Probable Effects Level
pg/L	picograms per liter
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBI	Relative Benthic Index
RL	Reporting Level
SCCWRP	Southern California Water Research Project
SMWP	State Mussel Watch Program
SQG	Sediment quality guideline
SWAMP	Surface Water Ambient Monitoring Program
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSMP	Toxic Substance Monitoring Program
TSS	Total Suspended Solids
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirement
WQO	Water quality objective
WQS	Water quality standard
ww	wet weight

1. Introduction

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring water quality. Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress. Under CWA Section 303(d), states are required to review, makes changes as necessary, and submit to the USEPA a list identifying waterbodies not meeting water quality standards and identifying the water quality parameter (i.e., pollutant) not being met (303(d) list). Placement on this list generally triggers development of a pollution control plan called a total maximum daily load (TMDL) for each waterbody/pollutant pair on the list.

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is responsible for developing and adopting the 2016 Integrated Report for waters within the Los Angeles Region of California. Following adoption by the Los Angeles Water Board, the 2016 Integrated Report will be transmitted to the State Water Resources Control Board (State Water Board), where it will be considered by the State Water Board in combination with other Regional Water Board Integrated Reports.

The purpose of this staff report is to describe the assessment process (the procedures used by the State Water Board and Los Angeles Water Board staff to analyze data and information), provide a report of surface water quality in the Los Angeles Region as required by CWA Section 305(b), and provide Los Angeles Water Board staff recommendations for additions, deletions, and changes to the California CWA Section 303(d) List.

The results of the staff analysis are presented as staff recommendations in the form of fact sheets that contain a decision and supporting lines of evidence for each water body/pollutant pair assessed. A summary of staff recommendations can be found in Section 4. The fact sheets are available in Appendix G of this Staff Report.

2. Legal Requirements and Policy

This section provides a summary of the federal and state legal requirements and applicable policies for the 2016 Integrated Report.

2.1 Federal Requirements

2.1.1 CWA Section 303(d) – Impaired Waters

Section 303(d) of the Clean Water Act requires states to identify waters that do not meet applicable water quality standards after the application of certain technology-based controls.[1] The Section 303(d) List must include a description of the pollutants causing the violation of water quality standards (40 CFR §130.7(b)(iii)(4)) and a priority ranking of the water quality limited segments, taking into account the severity of the pollution and the uses to be made of the waters.

Water quality standards include the designated beneficial uses of a waterbody, the adopted water quality objectives to protect those uses (numeric and narrative), and the State's Antidegradation Policy (State Water Board Resolution No. 68-16) (SWRCB 1968).

Federal regulation defines a "water quality limited segment" as "any segment [of a surface waterbody] where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after application of technology-based effluent limitations required by CWA Sections 301(b) or 306" (40 CFR 130.2(j)).

States are required to review the Section 303(d) List in even-numbered years, make changes as necessary, and submit the list to the USEPA for approval. A TMDL is generally developed for a water quality limited segment. A TMDL is the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources, and natural background (40 CFR 130.2(i)).

2.1.2 CWA Section 305(b) – Water Quality Assessment

Under CWA Section 305(b), states are required to report biennially to the USEPA on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress.

2.1.3 The Integrated Report and Waterbody Categories

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements.

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping

1 Technology-based controls are defined in CWA Section 301. They include effluent limits (primary and secondary treatment requirements) for industrial discharges and discharges from publically owned treatment works.

categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments are evaluated for at least one of six "core" beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation.

Table 1. Integrated Report Categories

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.
4	At least one beneficial use is not supported but TMDL is not needed.
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame..
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.
5	At least one beneficial use is not supported and a TMDL is needed.

A waterbody will often have multiple pollutants impairing multiple beneficial uses. In these cases, when the waterbody has TMDLs for all the impaired uses, the waterbody is placed in category 4a; when the waterbody is lacking a TMDL for at least one impairment, the waterbody is placed in category 5.

2.2 California Requirements

On September 30, 2004, the State Water Board adopted the "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," also known as the Listing Policy (SWRCB 2004a) in accordance with California Water Code Section 13191.3(a). The Listing Policy identifies the process by which the State Water Board and the Regional Water Quality Control Boards will comply with the listing requirements of CWA Section 303(d). The Listing Policy became effective in December 2004. Justification of each portion of the Listing Policy is presented in the Final Functional Equivalent Document (SWRCB, 2004b) that was developed to support the provisions of the Listing Policy.

The objective of the Listing Policy is to establish a standardized approach for developing California's Section 303(d) List with the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters. TMDLs will generally be developed as needed for the waters identified under the provisions of the Listing Policy.

The Listing Policy outlines a "weight of evidence" approach that provides the rules for making decisions based upon different kinds of data, an approach for analyzing data statistically, and requirements for data quality, data quantity, and the administration of the listing process. Decision rules for listing and delisting are provided for chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisance such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities. The Listing Policy also requires that situation specific weight of evidence listing or delisting factors be used if available information indicates water quality standards are attained or not attained and the other decision rules do not support listing or delisting.

The Listing Policy also provides direction related to:

- The definition of readily available data and information.
- Administration of the listing process including data solicitation and fact sheet preparation.
- Interpretation of narrative water quality objectives using numeric evaluation guidelines.
- Data quality assessments.
- Data quantity assessments including waterbody specific information, data spatial and temporal representation, aggregation of data by reach/area, quantitation of chemical concentrations, evaluation of data consistent with the expression of water quality objectives or criteria, binomial model statistical evaluation, evaluation of bioassessment data, and evaluation of temperature data.

The Listing Policy requires that *all* surface waters that do not meet water quality standards be placed on the Section 303(d) List. The Policy also states that the California 303(d) List includes (1) waters still requiring a TMDL under Category 5, and (2) waters where the water quality limited segment is being addressed under Category 4. Waterbodies in the "Water Quality Limited Segments Being Addressed" category must meet either of the following conditions:

1. A TMDL has been approved by USEPA and is expected to result in full attainment of the standard within a reasonable, specified time frame (Category 4a).

2. It has been determined that an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame (Category 4b).

Waterbodies that are impaired by a non-pollutant source (Category 4c) do not require a TMDL and the State Water Board, in accordance with the Listing Policy, does not consider waters in Category 4c as a part of the 303(d) List. This means that, for California, waters that fall into the Integrated Report Categories 4a, 4b, and 5 are considered part of the California 303(d) List. The USEPA considers Category 5 waterbodies as the only category that constitutes the 303(d) List.

2.3 TMDL Scheduling

In conformance with Section 5 of the Listing Policy, a TMDL completion schedule date is required for all waterbody-pollutant combinations placed on the 303(d) List. Water Board staff relied on guidance from the USEPA (1997), which states that “schedules should be expeditious and normally extend from eight to thirteen years in length, but could be shorter or slightly longer depending on State-specific factors.” Therefore, the timeline for completing TMDLs for waterbodies listed for the first time as part of the 2016 Integrated Report is estimated to be no longer than thirteen years, which equates to an estimated completion date of 2029. Expected TMDL completion dates are proposed by Los Angeles Water Board staff in the fact sheets of this report (Appendix G).

2.4 2010 303(d) List of Impaired Waters

The 2010 303(d) list was adopted by the Los Angeles Water Board on July 16, 2009, in Resolution No. R09-004; adopted by the State Water Board on August 4, 2010, in Resolution No. 2010-0040; and approved by the USEPA on October 11, 2011. The 2010 list included data submitted through February 28, 2007. The 2010 303(d) list is the most recent list which included updates from the Los Angeles Region.

2.5 Changes to California’s Integrated Report 303(d) and 305(b) Process

In February 2013, the State Water Board announced a new strategy for the development of the State’s Integrated Report including establishing three groups of Regional Water Boards and submitting an Integrated Report for one group per listing cycle (i.e. every two years). This strategy was formally described in an *Integrated Report Update Memo* in November 2013 (SWRCB, 2013). The Listing Policy was amended to reflect this and other changes on February 3, 2015.

Therefore, the 2012 Integrated Report consisted of data submitted for the North Coast Regional Water Quality Control Board (Region 1), the Lahontan Regional Water Quality Control Board (Region 6), and the Colorado River Basin Regional Water Quality Control Board (Region 7). On July 30, 2015, the USEPA issued its final decision this update to the 303(d) list and this 2012 303(d) list replaced the 2010 303(d) list as California's current 303(d) list.

The Central Coast Regional Water Quality Control Board (Region 3), the Central Valley Regional Water Quality Control Board (Region 5), and the San Diego Regional Water Quality Control Board (Region 9) recently approved Integrated Reports including a 303(d) list for their respective regions. Region 9 approved its 303(d) list in October 2016 and Regions 3 and 5 approved their 303(d) lists in December 2016. These updates to the 303(d) list were to be approved by the State Water Board as the 2014 303(d) list.

The 2016 Integrated Report will consist of data for the San Francisco Bay Regional Water Quality Control Board (Region 2), the Los Angeles Water Board (Region 4), and the Santa Ana Regional Water Quality Control Board (Region 8). Each of these Regions is expected to approve their lists by April 2017. Until the 2014 and 2016 303(d) list updates are approved by the USEPA, the current list is the 2012 303(d) list.

Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed. Each of the 2012, 2014 and 2016 303(d) lists have assessed only data from the 2010 data solicitation.

In addition, changes to the procedures included in the February 2015 amendment to the Listing Policy, included a requirement that all data be submitted to the California Environmental Data Exchange Database (CEDEN); this change will significantly improve the efficiency of the listing and delisting process so that even with regional updates only once every six years, California will have a more comprehensive assessment and 303(d) list than in the past. The CEDEN website has a new page dedicated to the 303(d) list: http://www.ceden.org/303d_list.shtml.

The data solicitation for the 2018 303(d) list was released on November 3, 2016. The 2018 303(d) list will address Regions 1, 6, and 7.

The Los Angeles Water Board will develop its next Integrated Report, including an updated 303(d) list, in 2022. Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021.

2.6 Public Review and Board Approval of the 2016 303(d) List

Pursuant to section 6.2 of the Listing Policy, waterbodies listed in Category 4a, 4b, or 5, which make up the 303(d) list, are subject to public review and approval by the Los Angeles Water Board. Waterbodies listed in Categories 1, 2, 3, or 4c are provided to the public and to the Los Angeles Water Board as additional waterbody information. All categories will be submitted to the State Water Board for inclusion into the California Integrated Report. Once compiled, the State Water Board will provide public notice of the California Integrated Report for additional public review prior to approval by the State Water Board, as outlined in section 6.3 of the Listing Policy. Waterbodies in Categories 4a, 4b, and 5 will be considered for inclusion in the California 303(d) list.

It is anticipated that the State Water Board will approve the 2014 list updates of Regional 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017.

The California 303(d) list will require final approval by USEPA. If USEPA determines that changes are needed to the submitted report they will initiate further public review before finalizing and publishing the report.

3. Development of the 2016 Los Angeles Region 303(d) List

This section provides a review of the data analysis for the Los Angeles Region's 2016 Integrated Report.

3.1 Data Solicitation for the 2016 303(d) List

In January of 2010, the State Water Board solicited data from the public with a formal "Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report" (Notice), which was sent to interested persons subscribed to the State Water Board's Integrated Report e-mail distribution list. In addition, the Los Angeles Water Board sent the notice to persons subscribed to the Los Angeles Water Board's Basin Plan Amendments and TMDL e-mail distribution lists. Data used as part of the 2016 Integrated Report were received through August 30, 2010. Data sources include government agencies, municipalities, environmental groups, citizen groups, receiving water data from the National Pollutant Discharge Elimination System (NPDES) dischargers and data collected by the Regional and State Water Boards under the Surface Water Ambient Monitoring Program (SWAMP).

All data and information submitted are available as part of the electronic administrative record (Appendix H). Data and information pertaining to specific waterbody-pollutant assessments are provided in the fact sheets (Appendix G) and link directly to the administrative record.

3.2 Data Processing and Analysis

All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report. However, only high-quality data supported by a Quality Assurance Project Plan was used to make determinations of water quality standards attainment. In the absence of quality assurance documentation, data is used only as supporting evidence and is not the basis of a listing decision.

Fact sheets and overall beneficial use support determinations were developed in the California Water Quality Assessment (CalWQA) database. Lines of evidence (LOE) summarize: water quality data, information pertaining to where and when the water quality monitoring took place, the pollutant sampled, the beneficial use affected, the water quality objective or guideline protective of the beneficial use, the number of samples collected, and how many samples exceeded the objective or guideline. Potential sources are identified in fact sheets in some cases, otherwise, the potential source was marked "Source Unknown".

Data were aggregated by waterbody segment following the requirements of Section 6.1.5.4 of the Listing Policy, and assessments were performed on the individual segments. Waterbodies were segmented to account for hydrologic features.

Spatial and temporal representation of data was assessed using the requirements and guidance of the Listing Policy. The available data were used to represent concentrations during the averaging period associated with the particular pollutant and water quality objective, as required by Section 6.1.5.6 of the Listing Policy. For example, if only one data point was available during a 4-day period, it was used to represent the four-day average concentration for that period.

Following data assessment, Los Angeles Water Board staff determined whether or not the waterbody was attaining relevant water quality standards. Decision recommendations were completed to summarize all relevant LOEs for a waterbody-pollutant combination and, based on the statistical evaluation described in the Listing Policy, to state if the exceedances of water quality standards constituted an impairment of a beneficial use and, thus, necessitated a 303(d) listing.

3.3 Water Quality Standards Used in the Data Assessment

Beneficial uses for waters in the Los Angeles Region are identified in Table 2-1, 2.1a and 2.3 of the Los Angeles Regional Water Quality Control Plan (Basin Plan).

Water Board staff assessed data using regulatory limits when available. The most common regulatory limits used include water quality objectives in the Basin Plan or any statewide Water Quality Control Plans applicable to the waterbody, including objectives for toxic chemicals promulgated by the USEPA under the California Toxics Rule (40 CFR §131.38). When numeric regulatory limits were not available, evaluation guidelines were considered to interpret narrative water quality objectives. Evaluation guidelines are selected in conformance with section 6.1.3 of the Listing Policy.

3.4 Determination of Beneficial Use Support and Integrated Report Categories

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments were evaluated for at least one of six “core” beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation. For each core beneficial use associated with each waterbody segment, a rating of fully supporting, not supporting, or insufficient information was assigned based on the assessment of readily available data and information.

Table 2. Los Angeles Integrated Report Waterbody Categories, 2016 303(d) List

Category	Description	Waterbody Segments
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.	**38**
2	There is insufficient information to determine beneficial use support.	**55**
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.	**13**
4	At least one beneficial use is not supported but TMDL is not needed.	
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.	**77**
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.	**0**
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.	**3**
5	At least one beneficial use is not supported and a TMDL is needed.	**134**
Total Waterbodies Assessed		**320**

Detailed Category Reports can be found in Appendices B-F.

Pursuant to Section 2 of the Listing Policy, waterbodies remain in Category 5 until all 303(d)-listed pollutants are addressed by USEPA-approved TMDLs or by another regulatory program that is expected to result in the reasonable attainment of the water quality standards, at which point the waterbody will be placed into Category 4a or 4b. Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant but rather caused by pollution, such as flow alteration or habitat alteration. Waterbodies placed in Category 4c are not included as part of the 303(d) list and do not require the development of a TMDL.

Waterbody-pollutant combinations listed in Category 5 (Appendix B) show the TMDL requirement status. If a “TMDL is still needed” for the waterbody-pollutant combination, the TMDL requirement status is labeled 5A. If the waterbody-pollutant combination is “being addressed by a USEPA approved TMDL”, the TMDL requirement status is labeled 5B. If the waterbody-pollutant combination is “being addressed by an action other than a TMDL”, the TMDL requirement status is labeled 5C. These labels were created for internal tracking and are not Integrated Report sub-categories required by the USEPA.

4. Proposed Changes to the Section 303(d) List

While, due to the changes to the 303(d) process described in Section 2.5, data review was restricted to data collected prior to September 2010, a significant number of changes to the Los Angeles Region's 303(d) list are proposed. The 211 proposed new listings include:

- Additional PCB and pesticide listings arising from California's Surface Water Ambient Monitoring Program (SWAMP) water quality sampling conducted in 2009 focusing on lakes and reservoirs. For example, staff has proposed new listings for Castaic Lake (PCBs), Pyramid Lake (chlordane, dieldrin, DDT and PCBs) and Echo Park Lake (dieldrin).

- Additional pesticide and other pollutant listings in Ventura County waters draining agricultural lands including the Santa Clara Drain, Tapo Canyon, Wheeler Canyon and Boulder Cove, arising from the Ventura County Agricultural Irrigated Lands Group water quality monitoring.

- Additional toxicity listings in the Los Angeles River arising from water quality sampling conducted the City of Los Angeles' Bureau of Sanitation, required pursuant to the City's NPDES permits.

- Various other proposed listings arising from special studies or ongoing water quality monitoring programs.

Most of the proposed new listings are new waterbody segment-pollutant combinations where a TMDL will be needed. These waterbodies would then be in Category 5. However, several of the proposed new listings identify additional impairments in watersheds already being addressed by a TMDL for that pollutant. For example, the proposed new listings for mercury in Calleguas Creek Reach 3 and the proposed DDT listings in Hondo Barranca are being addressed by the Calleguas Creek Metals TMDL and the Organochlorine Pesticides, PCBs and Siltation TMDL. In addition, the proposed Los Angeles River Reach 3 indicator bacteria listing is already being addressed by the Los Angeles River Bacteria TMDL. These waterbodies would then be in Category 4a unless another waterbody pollutant combination requires a TMDL such that the waterbody would remain in Category 5.

The proposed 48 delistings include:

- Several proposed delistings for indicator bacteria at Santa Monica Beaches, including Abalone Cove Beach, Bluff Cove Beach, Outer Cabrillo Beach, Manhattan Beach and Hermosa Beach. It is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved.

- Various other proposed delistings arising from special studies or ongoing water quality monitoring programs.

In a number of cases, in both fresh and marine waters, listings for “coliform bacteria” were renamed “indicator bacteria” based on USEPA’s recommendation and for statewide consistency.

In addition, because 21 TMDLs including 252 listings, have gone into effect since the development of the 2010 303(d) list, a number of Category changes are proposed to change waterbody-pollutant combinations from “requiring a TMDL” (Category 5A) to “being addressed by a USEPA approved TMDL” (Category 5B or, if all waterbody-pollutant combinations have been addressed for that waterbody, Category 4a).

For detailed information on proposed changes, refer to the waterbody-pollutant “fact sheets” in Appendix G.

As discussed in Section 2.6, it is anticipated that the State Water Board will approve the 2014 list updates of Regions 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017. Table 3, below, shows the 303(d) list changes approved by Regional Water Boards 3, 5 and 9 and the 303(d) list changes proposed, at this time, for approval by the staff of Regional Water Boards 2, 4, and 8.

Table 3. Summary of 2014 and 2016 Changes to the California 2012 303(d) List

2014-2016 INTEGRATED REPORT						
REGION	2012 303(d) LIST	2014 and 2016 303(d) List proposed changes				
	Total 303(d) Listings (Categories 4a, 4b and 5)	Regional Water Board 303(d) Listing Recommendations		Miscellaneous Changes*		Total proposed 303(d) Listings (Categories 4a, 4b and 5)
		New Listings	New Delisting	Resulting in Listings	Resulting in Delistings	
1	159	0	0	0	0	159
2	333	41	7	0	9	358
3	712	269	48	0	23	910
4	823	211	48	0	0	986
5	730	269	45	0	0	954
6	155	0	0	0	0	155
7	68	0	0	0	0	68
8	132	31	16	0	0	147
9	445	244	14	0	0	675
Totals	3557	1065	178	0	32	4412

*Miscellaneous changes include adjustments to the 303 (d) list when waterbody reaches are combined or split resulting in a decrease or increase in the number of listings.

5. References

For a complete list of references used in all the assessment fact sheets, see Appendix H.

SWRCB. (2004a). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (amended February 3, 2015). Sacramento, CA.

SWRCB. (2004b). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, Final Functional Equivalent Document*. Sacramento, CA.

SWRCB. (2013). *California Integrated Report [Clean Water Act Sections 303(d) and 305(b)] Update* (Memorandum dated November 12, 2013). Sacramento, CA.

U.S. EPA. (2001). *2002 Integrated Water Quality Monitoring and Assessment Report Guidance* (Memorandum dated November 19, 2001). Washington, D.C.

U.S. EPA. (2015). *Information Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Report and Listing Decisions* (Memorandum dated August 13, 2015). Washington, D.C.

Date: 04/20/17

2016 INTEGRATED REPORT
SUMMARY OF REGIONAL BOARD RECOMMENDED CHANGES TO THE 2012 303(d) LIST
(includes Categories 4a, 4b, and 5)

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Abalone Cove Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Alamitos Bay	Indicator Bacteria				
		Oxygen, Dissolved	Y			
4	Alhambra Wash	Ammonia	Y			
		Benthic Community Effects	Y			
4	Aliso Canyon Wash	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Alondria Park Lake	PCBs (Polychlorinated biphenyls)	Y			
4	Amarillo Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	Benthic Community Effects	Y			
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Artesia-Norwalk Drain	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Arundell Barranca (Ventura County)	Indicator Bacteria	Y			
4	Ashland Avenue Drain	Indicator Bacteria			Y	
		Organic Enrichment/Low Dissolved Oxygen				
		Toxicity				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Avalon Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Balboa Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
		Toxicity	Y			
4	Ballona Creek	~~Cadmium~~		Y		
		ChemA				
		Chlordane				
		Copper				
		Cyanide				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria			Y	
		Lead				
		PCBs (Polychlorinated biphenyls)			Y	
		~~Selenium~~		Y		
		Silver			Y	
		Toxicity				
		Trash				
		Viruses (enteric)				
		~~Zinc~~		Y		
		pH				
4	Ballona Creek Estuary	Cadmium				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Indicator Bacteria			Y	
		Lead			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)			Y	
		Silver				
		Toxicity			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Zinc			Y	
4	Ballona Creek Wetlands	Exotic Vegetation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Habitat alterations				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Hydromodification				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Reduced Tidal Flushing				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash				
4	Bell Creek	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Big Rock Beach	Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bluff Cove Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Boulder Creek (Ventura County)	Bifenthrin	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Toxicity	Y			
4	Brown Barranca/Long Canyon	Nitrate and Nitrite				
4	Bull Creek	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bull Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
4	Burbank Western Channel	Ammonia				
		Cadmium				
		Copper				
		Cyanide				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Scum/Foam-unnatural				
		Selenium				
		Taste and odor				
		Trash				
4	Cabrillo Beach (Outer)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Chlordane (tissue)				
		Copper				
		DDT (tissue & sediment)				
		Dieldrin				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Endosulfan (tissue)				
		Mercury				
		Nickel				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene				
		Toxicity			Y	
		Zinc				
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA				
		Chlordane			Y	
		Copper				
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Dimethoate	Y			
		Endosulfan			Y	
		Indicator Bacteria				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Specific Conductivity	Y			
		Total Dissolved Solids	Y			
		Toxaphene			Y	
		Toxicity				
		Trash				
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria	Y			
		Mercury	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Nitrate and Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Total Dissolved Solids				
		Toxaphene				
		Trash				
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	Ammonia	Y			
		Bifenthrin	Y			
		Boron				
		ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chloride	Y			
		Chlorpyrifos (tissue)			Y	
		Cyfluthrin	Y			
		Cypermethrin	Y			
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Fecal Coliform			Y	
		Malathion	Y			
		Mercury	Y			
		Nitrate as Nitrate (NO3)				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls) (tissue)				
		Permethrin	Y			
		Sedimentation/Siltation				
		Selenium				
		Specific Conductivity	Y			
		Sulfates	Y			
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	
		Total Dissolved Solids	Y			
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue & sediment)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Chlorpyrifos (tissue)				
		DDT (tissue & sediment)				
		Dacthal (sediment)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (sediment)				
		Diazinon				
		Dieldrin				
		Indicator Bacteria			Y	
		Nitrate and Nitrite				
		Nitrate as Nitrate (NO3)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Boron				
		Chloride				
		Chlorpyrifos				
		Diazinon				
		Indicator Bacteria				
		Organophosphorus Pesticides				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
		Trash				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	Boron				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (Dichlorodiphenyltrichloroethane)				
		Diazinon				
		Dieldrin				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue)				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue)				
		Nitrate as Nitrate (NO3)				
		Nitrogen, Nitrate				
		Nitrogen, Nitrite	Y			TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		~~Chlordane~~		Y		
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		~~Endosulfan (tissue)~~		Y		
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Nitrogen, Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Excess Algal Growth				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	~~Ammonia~~		Y	Y	
		Chlordane (tissue)				
		Chlorpyrifos	Y			
		DDT (tissue)			Y	
		Diazinon	Y			
		Dieldrin				
		Malathion	Y			
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Canada Larga (Ventura River Watershed)	Indicator Bacteria			Y	
		Oxygen, Dissolved			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	Carbon Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Casitas, Lake	Mercury				
4	Castaic Lagoon	PCBs (Polychlorinated biphenyls)	Y			
4	Castaic Lake	Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Castlerock Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Channel Islands Harbor	Lead			Y	
		Zinc			Y	
4	Channel Islands Harbor Beach	Indicator Bacteria			Y	
4	Colorado Lagoon	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		Lead			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Compton Creek	Benthic Community Effects			Y	
		Copper				
		Indicator Bacteria				
		Iron	Y			
		Lead				
		Trash				
		Zinc	Y			
		pH				
4	Coyote Creek	Abnormal Fish Histology (Lesions)				
		~~Ammonia~~		Y		
		Copper, Dissolved				
		Diazinon				
		Excess Algal Growth				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron	Y			
		~~Lead~~		Y		
		Malathion	Y			
		Toxicity				
		Zinc				
		pH				
4	Coyote Creek, North Fork	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Crystal Lake	Organic Enrichment/Low Dissolved Oxygen				
4	Dan Blocker Memorial (Coral) Beach	Indicator Bacteria			Y	
4	Dockweiler Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Dominguez Channel (lined portion above Vermont Ave)	Aldrin				
		Ammonia			Y	
		ChemA				
		Chlordane				
		Chromium			Y	
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				
		~~Diazinon~~		Y		TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Aldrin				
		~~Ammonia~~		Y		
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		ChemA				
		Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium (total)				
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Zinc (sediment)~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Copper	Y			
		Oxygen, Dissolved	Y			
4	Dry Canyon Creek	Indicator Bacteria			Y	
		Selenium, Total				
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	Y			
		ChemA			Y	
		Chlordane				
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene				
		Toxicity				
4	Echo Park Lake	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Ammonia~~		Y		
		Chlordane	Y			
		~~Copper~~		Y		
		Dieldrin	Y			
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	El Dorado Lakes	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Elderberry Forebay	Dieldrin	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Elizabeth Lake	Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
		Trash				
		pH				
4	Ellsworth Barranca	Chlorpyrifos	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
4	Escondido Beach	Beach Closures				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Flat Rock Point Beach Area	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	Boron				
		Chlordane	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Sulfates				
		Total Dissolved Solids				
4	Hermosa Beach	~~Indicator Bacteria~~		Y	Y	
4	Hobie Beach (Channel Islands Harbor)	Indicator Bacteria			Y	
4	Honda Barranca	Bifenthrin	Y			
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
4	Hopper Creek	Sulfates				
		Total Dissolved Solids				
4	Inspiration Point Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	J Street Drain (Ventura County)	Trash	Y			
4	Javon Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	La Costa Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	La Vista Drain (Ventura County)	Chlordane	Y			
		Chlorpyrifos	Y			
		Copper	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Indicator Bacteria	Y			
		Mercury	Y			
4	Lake Calabasas	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Hughes	Algae				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Eutrophication			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		~~Fish Kills~~		Y		
		Odor				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Trash				
4	Lake Lindero	Algae				
		Chloride				
		Eutrophic				
		Odor				
		Selenium				
		Specific Conductivity				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Sherwood	Algae				
		~~Ammonia~~		Y	Y	
		Eutrophic				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Mercury (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Organic Enrichment/Low Dissolved Oxygen~~		Y	Y	
4	Las Flores Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Tunas Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Virgenes Creek	Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Organic Enrichment/Low Dissolved Oxygen			Y	
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Legg Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				
		pH				
4	Leo Carillo Beach (South of County Line)	~~Indicator Bacteria~~		Y	Y	
4	Lincoln Park Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 1	Algae				
		Benthic Community Effects				
		Indicator Bacteria			Y	
		Invasive Species				
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 2 (Above Lake)	Algae				
		Indicator Bacteria			Y	
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Beach City Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Cabrillo Marina	Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Consolidated Slip	2-Methylnaphthalene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Cadmium (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nickel				
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls) (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Fish Harbor	Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dibenz[a,h]anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Beach Closures				
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles River Estuary (Queensway Bay)	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	
		Trash				
		Zinc				
4	Los Angeles River Reach 1 (Estuary to Carson Street)	Aluminum				
		Ammonia				
		Cadmium				
		Copper, Dissolved				
		Cyanide				
		Diazinon				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Trash				
		Zinc, Dissolved				
		pH				
4	Los Angeles River Reach 2 (Carson to Figueroa Street)	Ammonia				
		Copper				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Ammonia			Y	
		Copper				
		Indicator Bacteria	Y			
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Temperature, water	Y			
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	~~Ammonia~~		Y	Y	
		Benthic Community Effects	Y			
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 5 (within Sepulveda Basin)	Ammonia			Y	
		Copper				
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	1,1-Dichloroethylene (DCE)/ Vinylidene Chloride				
		Copper	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Tetrachloroethylene/PCE				
		Toxicity	Y			
		Trichloroethylene/TCE				
4	Los Angeles/Long Beach Inner Harbor	~~Beach Closures~~		Y		
		Benthic Community Effects				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Cerritos Channel	Ammonia				
		Bis(2ethylhexyl)phthalate (DEHP)				
		Chlordane (sediment)				
		Copper				
		Indicator Bacteria			Y	
		Lead				
		Trash				
		Zinc				
		pH				
4	Los Sauces Creek	Selenium	Y			
4	Lunada Bay Beach	Beach Closures				
		Indicator Bacteria				
4	Machado Lake (Harbor Park Lake)	Algae				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Ammonia				
		ChemA			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				
		Odor				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Trash				
4	Madranio Canyon	Benthic Community Effects	Y			
		Copper	Y			
		Selenium	Y			
4	Malaga Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y		
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Malibou Lake	Algae				
		Dieldrin	Y			
		Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
4	Malibu Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
4	Malibu Creek	Benthic Community Effects			Y	
		Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Sulfates				
		Toxicity	Y			
		Trash				
4	Malibu Lagoon	Benthic Community Effects				
		Eutrophic				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	
		Swimming Restrictions				
		Viruses (enteric)				
		pH				
4	Malibu Lagoon Beach (Surfrider)	Beach Closures				
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Manhattan Beach	~~Indicator Bacteria~~		Y	Y	
4	Marina del Rey Harbor - Back Basins	Chlordane			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Copper			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin			Y	
		Indicator Bacteria				
		Lead			Y	
		Oxygen, Dissolved	Y			
		PCBs (Polychlorinated biphenyls)			Y	
		Toxicity			Y	
		Zinc			Y	
4	Marina del Rey Harbor Beach	Indicator Bacteria			Y	
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Creek Reach 2 (Above Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Reservoir	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	McCoy Canyon Creek	Indicator Bacteria			Y	
		Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium, Total				
4	McGrath Beach	Indicator Bacteria			Y	
4	McGrath Lake	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (sediment)				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls) (sediment)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	McGrath Lake Agricultural Drain	Bifenthrin	Y			
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Toxaphene	Y			
4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	Algae				
		Benthic Community Effects	Y			
		Indicator Bacteria			Y	
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 2 (Abv Confl. with Lindero)	Algae				
		Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	Nitrate and Nitrite				
4	Monrovia Canyon Creek	Lead				
4	Munz Lake	Eutrophic				
		Trash				
4	Nicholas Canyon Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ormond Beach	Indicator Bacteria				
4	Padre Juan Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	Palo Comado Creek	Indicator Bacteria			Y	
4	Palo Verde Shoreline Park Beach	Pathogens				
		Pesticides				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Paradise Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peck Road Park Lake	Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peninsula Beach	Indicator Bacteria				
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	Chloride				
		Toxicity	Y			
		pH				
4	Point Dume Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Fermin Park Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Mugu Beach	Indicator Bacteria	Y		Y	
4	Point Vicente Beach	Beach Closures				
		Indicator Bacteria				
4	Pole Creek (trib to Santa Clara River Reach 3)	Sulfates				
		Total Dissolved Solids				
4	Port Hueneme Beach Park	Indicator Bacteria	Y		Y	
4	Port Hueneme Harbor (Back Basins)	Arsenic	Y			
		Cadmium	Y			
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)	Y			
		PCBs (Polychlorinated biphenyls)			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Port Hueneme Pier	PCBs (Polychlorinated biphenyls)				
4	Portuguese Bend Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Potrero Canyon Creek	Oxygen, Dissolved	Y			
4	Promenade Park Beach	~~Indicator Bacteria~~		Y	Y	
4	Puddingstone Reservoir	Chlordane			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Mercury			Y	
		Organic Enrichment/Low Dissolved Oxygen				
		PCBs (Polychlorinated biphenyls)			Y	
4	Puente Creek	Indicator Bacteria			Y	
		Selenium				
4	Puerco Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Pyramid Lake	Chlordane	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Redondo Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Resort Point Beach	Beach Closures				
		Indicator Bacteria				
4	Rincon Beach	Indicator Bacteria				
4	Rincon Parkway Beach	Indicator Bacteria	Y			
4	Rio De Santa Clara/Oxnard Drain No. 3	ChemA (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene (tissue)				
		Toxicity			Y	
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Toxicity				
		Trash				
		Zinc				
		pH				
4	Rio Hondo Reach 2 (At Spreading Grounds)	Ammonia				
		Coliform Bacteria				
		Cyanide				
		Indicator Bacteria	Y			
		Iron	Y			
		Oxygen, Dissolved	Y			
		Toxicity	Y			
4	Robert H. Meyer Memorial Beach	~~Beach Closures~~		Y		
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Rocky Point Beach	Beach Closures				
4	Royal Palms Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	San Antonio Creek (Tributary to Ventura River Reach 4)	Indicator Bacteria				
		Nitrogen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	San Buenaventura Beach	Indicator Bacteria				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	San Gabriel River Estuary	Abnormal Fish Histology (Lesions)				
		Copper				
		Dioxin				
		Indicator Bacteria	Y			
		Nickel				
		Oxygen, Dissolved				
		Toxicity	Y			
4	San Gabriel River Reach 1 (Estuary to Firestone)	Abnormal Fish Histology (Lesions)				
		Excess Algal Growth				
		~~Indicator Bacteria~~		Y	Y	
		Temperature, water	Y			
		Toxicity				
		pH				
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	Copper				
		Cyanide				
		~~Indicator Bacteria~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Temperature, water	Y			
		Zinc				
4	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Gabriel River, East Fork	Benthic Community Effects	Y			
		Trash				
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	Ammonia				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxicity				
		pH				
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Pedro Bay Near/Off Shore Zones	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Copper			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	
4	Santa Clara Drain (Ventura County)	Chlordane	Y			
		Chlorpyrifos	Y			
		Cypermethrin	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene	Y			
4	Santa Clara River Estuary	Ammonia	Y			
		ChemA				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
		pH	Y			
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	Oxygen, Dissolved	Y			
		Toxicity				
		Trash	Y			
		pH	Y			
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	~~Ammonia~~		Y	Y	
		Chlordane	Y			
		Chloride				
		Chlorpyrifos	Y			
		Cyfluthrin	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Cypermethrin	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Indicator Bacteria	Y			
		Mercury	Y			
		Selenium	Y			
		Total Dissolved Solids				
		Toxicity				
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	Ammonia			Y	
		Benthic Community Effects	Y		Y	
		Chloride				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron				
		Nitrate and Nitrite				
		Toxicity	Y			
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	Ammonia				
		Chloride				
		Chlorpyrifos				
		Copper				
		Diazinon				
		~~Indicator Bacteria~~		Y	Y	
		~~Iron~~		Y		
		Temperature, water	Y			
		Toxicity				
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	Boron				
		Specific Conductance				
		Sulfates				
		Total Dissolved Solids				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Santa Fe Dam Park Lake	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Bay Offshore/Nearshore	Arsenic	Y			
		Chlordane				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Toxicity~~		Y	Y	
		Trash			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Beach	Indicator Bacteria			Y	
4	Santa Monica Canyon	Indicator Bacteria				
		Lead				
4	Sawpit Creek	Bis(2ethylhexyl)phthalate (DEHP)				
		~~Indicator Bacteria~~		Y	Y	
4	Sea Level Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Sepulveda Canyon	~~Ammonia~~		Y	Y	
		Copper				
		Indicator Bacteria				
		Lead				
		Selenium				
		Zinc				
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	Chloride				
		pH				
4	Solstice Canyon Creek	Invasive Species				
4	South San Jose Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
		pH	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Stokes Creek	Indicator Bacteria			Y	
4	Surfers Point at Seaside	Indicator Bacteria				
4	Tapo Canyon	Chlordane	Y			
		Chloride	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		Malathion	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxicity	Y			
4	Timber Canyon	Chlorpyrifos	Y			
4	Topanga Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Topanga Canyon Creek	Lead				
4	Torrance Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Torrance Carson Channel	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Torrey Canyon Creek	Nitrate and Nitrite				
4	Trancas Beach (Broad Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Triunfo Canyon Creek Reach 1	Benthic Community Effects	Y			
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Triunfo Canyon Creek Reach 2	Benthic Community Effects				
		Lead				
		Mercury				
		Sedimentation/Siltation				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Tujunga Wash (LA River to Hansen Dam)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Venice Beach	Indicator Bacteria			Y	
4	Ventura Harbor: Ventura Keys	Arsenic	Y			
		Cadmium	Y			
		Chlordane	Y			
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Indicator Bacteria	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Ventura Marina Jetties	DDT (Dichlorodiphenyltrichloroethane)				
		PCBs (Polychlorinated biphenyls)				
4	Ventura River Estuary	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Trash				
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Algae				
		Benthic Community Effects	Y			
		Temperature, water	Y			
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Benthic Community Effects	Y			
		Indicator Bacteria				
		Mercury	Y			
		Pumping				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
		Water Diversion				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	Benthic Community Effects	Y			
		Pumping				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Temperature, water	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Water Diversion				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Verdugo Wash Reach 2 (Above Verdugo Road)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Walnut Creek Wash (Drains from Puddingstone Res)	Benthic Community Effects			Y	
		~~Indicator Bacteria~~		Y		
		Toxicity				
		pH				
4	Westlake Lake	Algae				
		Ammonia				
		Eutrophic				
		Lead				
		Organic Enrichment/Low Dissolved Oxygen				
4	Wheeler Canyon/Todd Barranca	Chlordane	Y			
		Cypermethrin	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Specific Conductivity	Y			
		Sulfates				
		Total Dissolved Solids				
		Toxaphene	Y			
		Toxicity	Y			
4	Whites Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Wildlife Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
4	Will Rogers Beach	Indicator Bacteria			Y	
4	Wilmington Drain	Ammonia				
		Copper				
		Indicator Bacteria			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		~~Lead~~		Y		
		Zinc	Y			
4	Zuma Beach (Westward Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

** Additional listings and delistings can be an artifact created from mapping changes such as the splitting of a water body into additional segments or the merging of water bodies into one single water body. Original 303(d) listings are copied to new segments and then delisted from the old segment. This generates listings and delistings that should not be included in important counts of new listings and delistings.*

303(d) Comment Letters CD

CD Contains:

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Numbered Individual Letters

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Comment Deadline: March 30, 2017

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30. TECS Environmental Compliance Services, March 30, 2017
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Response to Comments on the Draft 2016 303(d) List
Comment Deadline: March 30, 2017

No.	Comment	Response
1.	Wishtoyo Foundation and Ventura Coastkeeper (VCK), March 24, 2017	
1.1	In reviewing the Draft 303(d)/305(b) List and in corresponding with Los Angeles Regional Water Quality Control Board ("Los Angeles Regional Board") staff, it has come to our attention that almost all of the proposed 303(d)/305(b) listings (See Attachment A) and accompanying supporting data timely submitted on August 30, 2010 by Wishtoyo Foundation's Ventura Coastkeeper Program ("VCK") were not assessed for inclusion in the Draft 303(d)/305(b) List. Attachment A and Attachment B **<u>Nicholas Canyon Creek (San Nicolas Canyon Creek)</u>** Trash. Five out of 7 Nicholas Canyon Creek monitoring events showed the presence of trash.	Inadvertently, the data submitted by Wishtoyo was not entered into the CalWQA database for assessment. Los Angeles Water Board Staff is working with State Board staff to assess all the data from Wishtoyo that were submitted by August 30, 2010. These data will be assessed and used in decision-making either as the State Board staff prepares the 303(d) list for approval by the State Board in the fall, or prior to the next listing cycle that includes the Los Angeles Region.
1.2	**<u>San Jon Barranca / Creek (Sanjon Barranca Creek)</u>** Trash. Eight out of 8 San Jon Barranca / Creek monitoring events showed the presence of trash. E. Coli. Five out of 8 San Jon Barranca / Creek monitoring events showed exceedance of E coli.	See response to comment 1.1.
1.3	**<u>Ormond Beach Lagoon (Ormond Beach Wetlands)</u>** Trash. Nine out of 9 Ormond Beach Lagoon monitoring events showed the presence of trash. E. Coli. Six out of 32 monitoring events showed exceedance of E coli. pH. Six out of 8 monitoring events showed exceedance of pH. Nitrate. Eleven out of 14 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.

No.	Comment	Response
1.4	**Bubbling Springs (Hueneme Drain)** Trash. Nine out of 9 monitoring events showed presence of trash. VCK's Data not assessed E. coli. Five out of 11 monitoring events showed exceedance of E coli. VCK's Data not assessed	See response to comment 1.1.
1.5	**J-Street Drain** Trash. Nine out of 9 monitoring events showed presence of trash.	See response to comment 1.1.
1.6	**Oxnard Industrial Drain (Oxnard Drain)** Trash. Eight out of 8 monitoring events showed presence of trash. E. Coli. Five out of 11 monitoring events showed exceedance of E coli. pH. Six out of 7 monitoring events showed exceedance of pH. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.
1.7	**Santa Clara River Estuary** Trash. Eight out of 8 monitoring events showed presence of trash. Dissolved Oxygen. The City's sondes, violated the Basin Plan numeric water quality standard for Dissolved Oxygen of 5 mg/l for surface waters designated as WARM and 6mg/l for surface waters designated as COLD on over 40 days between 2009 and 2010. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate. Phosphate. Ten out of 10 monitoring events showed exceedance of Phosphate.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.

No.	Comment	Response
	pH. E recordings taken on separate days in the Santa Clara River Estuary via the City's North and South Sondes, pH levels in the Santa Clara River Estuary water column exceeded Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults	
1.8	**<u>Santa Clara River Reach 1</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults. Trash. Nine out of 9 monitoring events showed presence of trash.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.
1.9	**<u>Santa Clara River Reach 2</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.
1.10	**<u>Santa Clara River Reach 3</u>** E Coli. Five out of 27 monitoring events showed exceedance of E coli. Trash. Trash. Twenty-six out of 31 monitoring events showed presence of trash. Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1 21.11 for a detailed discussion of flow.
1.11	**<u>Santa Clara River Reach 4a</u>**	See response to comment 1.1.

No.	Comment	Response
	Trash. Seven out of 8 monitoring events showed presence of trash.	
1.12	**<u>Santa Clara River Reach 5 or 6</u>** Trash. Five out of 7 monitoring events showed presence of trash.	See response to comment 1.1.
1.13	We thus respectfully request the Los Angeles Regional Board assess all of VCK's proposed 303(d)/305(b) listings and accompanying data submitted in 2010, and ensure VCK's proposed listings are included in the 2016 303(d)/305(b) List. All of VCK's proposed listings meet the requirements for listing in the State Water Resources Control Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Notably, as demonstrated by VCK August 30, 2010 proposed listing submission, VCK's watershed monitoring data supporting the proposed listings were collected and analyzed in accordance with VCK's Quality Assurance Project Plan (QAPP) approved by the Los Angeles Regional Water Quality Control Board.	See response to comment 1.1.
1.14	Furthermore, we ask the Board to include on the list, the dissolved oxygen ("DO") data submitted by VCK that supports the Santa Clara River Estuary ("Estuary") being included on the 2016 Draft 303(d)/305(b) list for DO impairment. Even one event where DO levels drops below Basin Plan thresholds can be catastrophic for native and endangered aquatic life, including the Southern California Steelhead and Tidewater Goby that use the Estuary as habitat and that need healthy and suitable water quality in the Estuary to survive and recover. It only takes one event of low DO for these species to perish, and the Los Angeles Regional Board was provided over 200 separate data entries indicating that DO fell in the Estuary below Basin Plan thresholds and non-harmful levels for aquatic life. Attached to this letter is are two studies by a Regional Board Scientist (Carter 2005 and 2008) that further details the harms of low DO on aquatic life and native and endangered species, including Southern California Steelhead.	See responses to comments 1.1 and 1.7.
1.15	VCK's mission is to protect, preserve, and restore the ecological integrity and water quality of Ventura County's inland and coastal waterways. In 2009 and 2010, VCK, in coordination with the Los Angeles Regional Water Quality Control Board and State Water Resources Control Board Clean Water Team, dedicated a	See response to comment 1.1.

No.	Comment	Response
	tremendous amount of resources to its watershed monitoring program that resulted in VCK's proposed 303(d)/305(b) listings. These resources include VCK running volunteer stream teams, utilizing staff time to collect and analyze water quality data, purchasing and maintaining field equipment, and running a laboratory. It would be a shame, and detrimental to Ventura County's inland and coastal waterways and their beneficial uses, if the water quality impairments discovered, rigorously documented by VCK, and provided to the state did not result in 2016 303(d)/305(b) listings, especially on the account that they were not assessed. It is without second thought that the Los Angeles Regional Board assessing our proposed 303(d)/305(b) listings and accompanying data from August 30, 2010, and ensuring these proposed listings are included in the 2016 303(d)/305(b) List, is critical to the protection of Ventura County's waters for all the people, wildlife, communities, and the Chumash Native American Peoples that depend upon clean and healthy waters to sustain their health, wellbeing, and life ways.	
2.	City of Rolling Hills Estates, March 28, 2017	
2.1	The City is pleased that that Palos Verdes Peninsula beaches are being proposed for delisting for indicator bacteria. This is also consistent with Regional Board Resolution No. 2006-008 reviewing the Implementation Plan submitted by Jurisdictional Group 7 for the Santa Monica Bay Beaches Bacteria Wet Weather TMDL which noted that "Palos Verdes Peninsula have had historically fewer exceedances than the reference beach". and " .... existing water quality is equivalent to compliance with the Santa Monica Bay Beaches Wet Weather TMDL."	Comment noted.
2.2	**City of Rolling Hills Estates Comments on Proposed Revisions to 303(d) List** **Water Body/Pollutant: Los Angeles-Long Beach Inner Harbor/Zinc** **Comment:** We are in agreement with Decision ID 33644 LARWCB staff recommendation to delist the water body both due to flaws in the original listing and because applicable water quality standards are not being exceeded this recommendation, however Appendix A does not reflect this proposed change. **Recommendation:** Add a "Y" in the New Delistings column in Appendix A for	The Los Angeles-Long Beach Inner Harbor recommendation for Zinc is DO NOT DELIST. This is unchanged from 2006. The Water Board recommendation in 2006 was to delist, however EPA decided to not delist based on information in the LOEs indicating sediment toxicity.

No.	Comment	Response
	Zinc in Los Angeles-Long Beach Inner Harbor.	The factsheet has been edited for clarity and to update that the listing is being addressed by the Dominguez Channel Los Angeles and Long Beach Greater Harbor Waters Toxic Pollutants TMDL.
2.3	**Wilmington Drain/Lead** **Comment:** We are in agreement with Appendix G Decision ID 35085 to delist the Wilmington Drain for lead based on the weight of evidence. Additionally, the weight of evidence is stronger than indicated because data was included in this fact sheet from Compton Creek. LOE 90133 included in Fact Sheet 35085 describes data collected in Compton Creek which is unrelated to the Wilmington Drain. **Recommendation:** Remove LOE 90133 from Fact Sheet 35085 and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that "0 of 33 samples exceeded the CRITERIA."	As noted by the commenter, the current decision is to delist Wilmington Drain for lead. Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, if necessary, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.
2.4	**Wilmington Drain/Copper** **Comment:** The Appendix G Decision ID 44676 regarding copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation:** Remove LOE ID data set 90473 from Decision ID 44676 and revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.
2.5	**Machado Lake/Algae, Ammonia, ChemA, Eutrophic, Odor, Trash** **Comment:** These listings for Machado Lake are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these pollutant listings are being addressed by USEPA approved TMDLs.	The Machado Lake listings for Algae, Ammonia, Eutrophic, Odor and Trash were assigned to category 4a in 2010 and that assessment has not changed. ChemA was reassigned to 4a in this listing cycle.

No.	Comment	Response
	Recommendation: These listings should be moved to Category 4a in Appendix C. An explanation that "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" should be included in Appendix A under the "Other Revisions" column for each of these pollutants in Machado Lake.	Because all the individual Machado Lake listings were categorized as 5B (category 5B is for listings "being addressed by a TMDL"), the waterbody as a whole should have been in the Category 4 Appendix, not the Category 5 Appendix. The Category Appendices have been updated to make this correction.
2.6	**Los Angeles-Long Beach Outer Harbor (inside breakwater)/DDT, PCBs and Toxicity; Los Angeles Harbor Inner Cabrillo Beach/DDT, PCBs; San Pedro Bay Near-Off Shore/Chlordane, PCBs, Total DDT, and Toxicity** **Comment:** These are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these listings are being addressed by the USEPA approved TMDL for Dominguez Channel and Greater Los Angeles and Long Beach Harbors. These changes are explained in Appendix A summary under "other revisions". **Recommendation:** These listings for DDT, PCBs and Toxicity should be moved to Category 4a in Appendix C.	Although the Los Angeles-Long Beach Outer Harbor (inside breakwater) DDT and PCBs listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a. Los Angeles Harbor Inner Cabrillo Beach DDT and PCBs listings have been reassigned to "being addressed by a TMDL" and the waterbody as a whole will move to category 4a. Although the San Pedro Bay Near-Off Shore Chlordane, PCBs, and Total DDT listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a.

No.	Comment	Response
2.7	**San Pedro Bay Near-Off Shore Zones/Zinc** **Comment:** Appendix G Decision ID 42798 to Delist San Pedro Bay Near/Off Shore Zones for Zinc because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for zinc.	Zinc was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.8	**San Pedro Bay Near-Off Shore Zones/Chromium** **Comment:** Appendix G Decision ID 42525 restates and does not revise the original recommendation to delist San Pedro Bay Near/Off Shore Zones for Chromium, however delisting does not seem to have occurred since the pollutant-waterbody combination still appears in Appendix A. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs and remove the "Y" from the Pollutant Name Changes column since there does not appear to have been any name change made for this pollutant.	Chromium was delisted in the 2010 303(d) list. This is not a New Delisting. The name has been changed. In the 2010 list it was "chromium (sediment)" and now it is "chromium". Chromium is included in Appendix A to show the recommended name change. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.9	**San Pedro Bay Near-Off Shore Zones/Copper** **Comment:** Appendix G Decision ID 44434 to Delist San Pedro Bay Near/Off Shore Zones for Copper based on flaws in the original listing. This recommendation is not reflected in Appendix A summary of recommended changes.	Copper was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. The name has been changed. In the 2010 list it was "Copper (sediment)" and now it is "copper". Copper is included in Appendix A to

No.	Comment	Response
	Recommendation: Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for copper.	show the recommended name change. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.10	**San Pedro Bay Near-Off Shore Zones/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Decision ID 43259 to Delist San Pedro Bay Near/Off Shore Zones for PAHs because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs.	PAHs (Polycyclic Aromatic Hydrocarbons) was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. The name has been changed. In the 2010 list it was "PAHs (Polycyclic Aromatic Hydrocarbons) (sediment)" and now it is "PAHs (Polycyclic Aromatic Hydrocarbons)". PAHs (Polycyclic Aromatic Hydrocarbons) is included in Appendix A to show the recommended name change.
2.11	**Santa Monica Bay Offshore- Nearshore/Chlordane** **Comment:** The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.12	**Santa Monica Bay Offshore- Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment:** The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for	PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is

No.	Comment	Response
	PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.13	**Santa Monica Bay Offshore- Nearshore/ Arsenic** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5—these sampling areas are north of Redondo Beach Pier. **Recommendation:** This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet (Decision ID 67208) should be revised to discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. However, the fact sheet does state where the fish were collected. At the time a TMDL is developed, or other regulatory program is developed, for arsenic in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement. However, a review of this decision is in process at this time in order to review the data included in the analysis and the applicable evaluation guideline.
2.14	**Santa Monica Bay Offshore- Nearshore/Mercury** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation:** This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. The fact sheet does state where the fish were collected. At the time a TMDL is developed, or other regulatory program is developed, for mercury in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement.

No.	Comment	Response
	Wastewater Treatment Plant discharge on these waters. The fact sheet should be revised to (Decision ID 67209) discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	However, a review of this decision is in process at this time in order to review the data included in the analysis.
3.	City of Rosemead, March 28, 2017	
3.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because: 1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.	Comments on TMDLs and MS4 permits are outside the scope of this action. Pollutants, including metals, are assessed as "de-list," "do not list," "list," and “do not delist” based on available data, not on the status of TMDLs. See also, response to comment 3.2, 3.3, and 3.4.

No.	Comment	Response
3.2	**California Toxic Rule** CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by	Comments on TMDLs are outside the scope of this proposed action.

No.	Comment	Response
	CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
3.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	The Los Angeles Water Board disagrees. While the current and past 303(d) lists of impaired waterbodies pre-date the State's Listing Policy, this does not invalidate previous listing decisions. The Listing Policy does not support delisting a waterbody pollutant combination simply because it was listed prior to adoption of the Listing Policy and, as such, a different data assessment method may have been used. The 303(d) list includes assessments of readily available data and uses data assessment guidelines available at the time of preparation. The list is periodically updated based on newer readily available data and, if newer assessment guidelines or methods are available, these are used. Accordingly, several of the existing waterbody pollutant combinations originally listed in the TMDL are recommended for delisting, while several are not recommended for delisting. Additionally, several new waterbody pollutant combinations for metals are recommended for listing based on new readily available data since the last update of the list for the Los Angeles Region.

No.	Comment	Response
		Finally, comments on the LA River Metals TMDL are outside the scope of this proposed action.
3.4	MS4 Permittees located in Reach 2 of the Rio Hondo will be pleased to know that the 2016 303(d) list does not propose to list it for any of the metals covered by the LARMTDL. This makes sense given that this reach was not listed for metals impairment on the 2010 303(d) list. Further, LAR-MTMDL makes no mention of Reach 2 of the Rio Hondo. As result, the following cities should not be subject to this TMDL: Alhambra (partially); Arcadia; Bradbury; Duarte; El Monte; Irwindale (partially); Montebello (partially); Monterey Park; Pasadena (partially); Rosemead; San Gabriel; San Marino; South El Monte; Irwindale (partially); and South Pasadena (partially). However, it is noted that Reaches 1 and 2 of the Arroyo Seco was not placed on the "do not list" for metals. It should have been for the same reason Reach 2 of the Rio Hondo was. Neither Reach 1 nor Reach 2 of the Arroyo Seco appears on the 2010, 2006, or 2002 303(d) list for metals. The Regional Board may wish to update the 2016 303(d) list to place the Arroyo Seco on the "do not list" category.	Comments on the applicability of TMDLs are outside the scope of this action. The Integrated Report and the 303(d) list do not include any decisions for metals in the Arroyo Seco because no metals data were available or assessed for the Arroyo Seco. The decision "do not list" is only made when there are data in the CalWQA database that support a "do not list" decision.
4.	City of Compton, March 29, 2017	
4.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).	See response to comment 3.1.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:

1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and
2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.</td><td></td></tr>
<tr><td>4.2</td><td>California Toxic Rule

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: This final rule establishes ambient water quality for priority toxic pollutants. USEPA defines ambient as:

Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water</td><td>See comment 3.2.</td></tr>
</table>

No.	Comment	Response
	Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
4.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	See comment 3.3.

No.	Comment	Response
4.4	**II. Los Angeles River Reach/Tributary Specific Comments** Presented below are specific justifications for removing metals that fall under either the “list” or “do not list” categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories. **1. Compton Creek** Of the 4 subject LAR-MTMDL metals, the 2016 303(d) list only places selenium on the “do not list” for the Creek. According to the fact sheet, copper is placed on the “do not de-list” based on 1 of 15 samples that exceeded dissolved copper. This result, however, does not meet the 3.1 Listing Policy’s binomial test requirement. The policy explains that the application of the binomial test requires a minimum sample size between 2 and 24, with at least 2 exceedances required for 303(d) listing placement. But, the Listing Policy also mentions that a sample size less than 16 is insufficient to meet the listing test. Lead is also placed under the “do not de-list” category. <u>This appears to be in error</u>. According to the fact sheet, 1 of 15 samples and 0 of 3 samples exceeded the criteria for this sample size to determine the applicable beneficial use. However, 1 exceedance out of 15 and 0 out of 3 samples do not meet the Listing Policy for 303(d) list placement. Not only is the exceedance frequency insufficient, but the sample size is too small. The same is true of zinc, which was placed on the “list” category because 2 of the 15 samples exceeded the allowable frequency. That cannot be. Once again, a sample size of 15 is too small. Further, it is not clear whether the samples were taken from the Creek during a storm event or during an ambient water body condition. It should also be noted that according Regional Board SWAMP data taken in June of 2005, no exceedances were reported for copper, lead, or zinc.	“DO NOT DELIST” is the appropriate recommendation for copper and lead. Section 3.1 and Table 3.1 of the Listing Policy include a *minimum* sample size to *list* a pollutant, while Section 4.1 of the Listing Policy states, “[t]he binomial distribution cannot be used to support a delisting with sample sizes less than 28.” Listed waterbodies are evaluated and delisting decisions are made based on Section 4 of Listing Policy, not Section 3. Based on Section 4, there are insufficient samples to delist based on the binomial distribution. The SWAMP line of evidence has also been considered in the decision recommendation. The LOEs that support the copper and lead listings are “placeholder” LOEs to show a finding of impairment made prior to 2006. The lead recommendation also includes a third LOE, which is a “placeholder” LOE to show a finding of impairment made prior to 2006. The “placeholder” LOEs are valid LOEs; however, the data for these are not in the CalWQA database. However, Section 4.1 of the Listing Policy still requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. See response to comment 3.3 for additional discussion on listing prior to the adoption of the Listing Policy.

No.	Comment	Response
	Based on the foregoing, it is recommended that copper, lead, and zinc be placed on the "do not list" category. Table I Compton Creek **[See the posted letter for Table I]**	
4.5	**2. Los Angeles River Reach 1 (Estuary to Carson)** Copper, lead, and zinc were listed, while selenium was not. The justification for their listing is questionable. The listing fact sheet indicates 7 out of 18 samples exceeded CTR criteria. Because the LAR-MTMDL asserts that CTR limitations can be based on both wet weather and dry weather (ambient) sampling, the Regional Board needs to provide data that shows which samples were based on wet weather and dry weather. As mentioned above, CTR limitations are exclusively expressed as ambient standards. Wet weather samples should be excluded. If the number of excluded samples does not meet the Listing Policy requirement for minimum sample size, then the sampling data is invalid. Further, it is not clear when the samples were taken, nor whether the actual hardness value was applied. Based on this information, copper, lead, and zinc should be de-listed. Table II LAR Reach 1. **[See the posted letter for Table II]**	The decisions for copper, lead, and zinc are previous listing decisions. No new data were assessed by the Board for the current cycle. See response to comment 4.4 regarding "placeholder" LOEs. The Listing Policy neither indicates that wet weather data should be excluded from the assessment nor that data from wet and dry weather must be assessed separately. While Section 6.1.5.3 of the Listing Policy states "… *If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision*", it does not state that wet weather samples should be excluded from the assessment. Comments on the TMDL are outside the scope of this action.
4.6	**3. Los Angeles River Reach 2 (Carson to Figueroa)** Copper and lead are carried-over from the 2010 303(d) list and placed in the "do not delist" category. Selenium and zinc were not listed. Copper and lead should be	The LOEs which support the copper and lead listings are "placeholder" LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include the "placeholder" LOE

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<tr><td></td><td>de-listed because according to the 303(d) listing fact sheet, 0 samples were taken.

Based on this information copper and lead should be should be de-listed.

Table III LAR Reach 2. [See the posted letter for Table III]</td><td>data from decisions made prior to 2006.

There is no additional data in the CalWQA database that would support delisting.

See, also, response to comment 4.4.</td></tr>
<tr><td>5.</td><td colspan="2">City of Redondo Beach, March 29, 2017</td></tr>
<tr><td>5.1</td><td>However, after reviewing the proposed changes to the 303(d) List, the City remains concerned about a number of specific issues, which are detailed below. The City's comments are generally grouped within two categories:

• Segment specific comments on the proposed 303(d) List; and
• Inconsistencies within the 303(d) List.

I. Segment Specific Comments on the Proposed 303(d) List

A. Dominguez Channel (lined portion above Vermont)
<u>Comment 1: The benthic community effects listing (Decision ID 66165) appears to be flawed and should be removed.</u>
The listing for benthic community effects should be removed because it is based on flawed data and/or analyses. The basis for this comment is as follows:
The sample size did not meet the minimum criteria pursuant to the Listing Policy. According to Section 3.9 Degradation of Biological Populations and Communities of the Listing Policy, The analysis should rely on measurements from at least two stations. The Appendix G Fact Sheets list only one sample site, however it treats the data from the one site as three separate samples, which is incorrect. As a result, there are not enough data to justify a listing.
The benthic community effects listing for the lined portion of Dominguez Channel lacks a sufficient reference site. Since this section of the Dominguez channel is lined, it does not have a traditional bed structure or substrates found in a typical stream. The classic Index of Biotic Integrity (181) stream assessment score does not take into consideration that lined channels naturally have lower IBI scores as noted in the recently released</td><td>Listings related to benthic community impairment in the Dominguez Channel and other channels that are lined entirely with concrete have been reassigned to Category 3 (i.e., insufficient information to assess beneficial use support, but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels.

See response to comments 11.19 and 11.24.</td></tr>
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No.	Comment	Response
	SCCWRP Special Study on Engineered Channels. In order to make a robust assessment, the reference site should also be a lined channel that has not been subject to anthropogenic influences, however such a reference site was not used in the analysis. • The IBI is not the assessment tool that should be used to determine benthic community effects. As acknowledged in the Appendix G Fact Sheets: *The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).* We agree with this statement and also note that some IBI scores are especially skewed when utilized for hardened channels since they heavily rely on macroinvertebrates, which are inherently more common in natural bottom stream beds. Other assessment tools such as the diatom IBI may also be used to assess the benthic community of a hardened channel as demonstrated by the SCCWRP Study on Engineered Channels referenced earlier. Therefore, the IBI assessment tool should not be used as the sole basis for a listing in this lined channel. • The benthic community effects exceedance should not be linked to diazinon as a way to establish a causal effect since this pollutant has been delisted with respect to the Dominguez Channel (lined portion above Vermont) (Decision ID 33061). *Requested Action*: • *Remove the benthic community effects listing/or Dominguez Channel since the sample size does not meet the minimum criteria, this section of channel lacks a proper reference site, and is based on an inappropriate assessment tool.* • *If the listing is not removed, the diazinon linkage to benthic community effects should be removed since this pollutant has been delisted.*	
5.2	<u>Comment 2: The ammonia listing (Decision ID 35134) should be updated to consider all readily available data.</u>	See response to comment 11.6.

No.	Comment	Response
	Ammonia was not de listed based on the existence of 2 exceedances out of 21 samples collected from 7/1/2009 to 8/13/2009 at Western Ave., Manhattan Beach Blvd, and El Segundo Blvd. Additional samples were also collected at a sample site just across Vermont Ave. (33° 52' 16" N, 118° 17' 23" W), however these samples were not included in the analysis. The Basin Plan lists Vermont Ave. as the reach break between the Dominguez Channel and Dominguez Channel Estuary and, therefore, it appears a decision was made to include the Vermont Ave. samples in the downstream segment - the Dominguez Channel Estuary (unlined portion below Vermont Ave.) The City maintains that the Vermont Ave. samples should be considered in the Dominguez Channel (lined portion above Vermont) based on their direct proximity to the end of the reach, offering optimal spatial representation of the water body segment. Furthermore, the sample site is located less than 100 meters from the lined portion of Dominguez Channel and according to the Listing Policy, a sample collected 200 meters upstream, in the lined portion of the Channel, would be considered the same station location. If the additional 8 samples from the Vermont Ave. station are included in the Dominguez Channel (lined portion above Vermont) analysis, the total samples in exceedance would be 2 out of 29. These data would then meet the requirement to delist ammonia as stated in Section 4.1 of the California Delisting Factors set in the Listing Policy - i.e., these samples support rejection of the null hypothesis using the binomial distribution and the sample size is greater than 28. Specifically, Table 4.1 at page 14 of the Listing Policy demonstrates that where 2 or less exceedances are identified in a sample size of 28-36 samples, such as here, then the water segment shall be removed from the 303(d) List. Therefore, based on the updated and appropriate sample size, which includes Vermont Ave. samples, and number of exceedances, ammonia should be delisted for this reach. *Requested Action*: • *Include the Vermont Ave. sampling data in the analysis of the ammonia listing for Dominguez Channel (lined portion above Vermont).* • *Delist ammonia based on the updated analysis.*	

No.	Comment	Response
5.3	**B. Dominguez Channel Estuary (unlined portion below Vermont Ave)** Comment 3: Delist Ammonia (unionized) due to lack of exceedances. A listing for ammonia was shown in the Appendix G Fact Sheets, however none of the cited lines of evidence (LOE) shows evidence of an exceedance. One LOE is an unspecified placeholder for a listing decision made prior to 2006, however the other two LOE show 0 out of 28 and 0 out of 7 exceedances. Based on the data, this pollutant meets the Section 4 California Delisting Factors set in the Listing Policy. *Requested Action*: • *Delist ammonia (unionized) (Decision ID 34669) based on lack of evidence and exceedances*.	The decision has been updated to "DELIST."
5.4	**C. Santa Monica Bay Offshore/Nearshore** Comment 4: The arsenic and mercury fish tissue listings are not based on all readily available data, are not spatially representative of the water body, and samples were not treated as temporally independent. The samples used for the proposed 5A Arsenic and Mercury fish tissue listings (Decision ID: 67208 and 67209) are not spatially representative of the water body. Samples used for these listings were collected for the City of Los Angeles Hyperion Treatment Plant NPDES Permit (NO. CA0109991). The permit designates 5 different sampling zones along the coast of the Santa Monica Bay of which the City falls along the border of zones 4 and 3 (see map in Attachment B). All of the samples used for these listings were collected from zones 4 and 5 - no representative samples were collected from zone 3, which includes the southern end of Santa Monica Bay and a substantial portion of the City's drainage area. Therefore, using current samples to list the entire Santa Monica Bay Offshore/Nearshore would incorrectly list zone 3 of the bay despite a lack of representative samples from this area. This would contradict the Listing Policy which states that "*samples should represent statistically or in a consistent targeted manner the segment of the water body*". The spatial coverage of the samples should be considered and the listing reassessed by either segmenting the water	See response to comment 2.13 for Arsenic and 2.14 for Mercury and spatial representativeness. See response to comment 32.3 for a discussion of readily available data. See response to comment 11.21 and 11.22 for fish temporal independence.

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	body or using samples from all representative zones of Santa Monica Bay. In addition, sampling data beyond the 19 samples collected in 2006-2007 should be available from the City of Los Angeles' Hyperion Treatment Plant NPDES permit. It is unclear why only the 2006-2007 samples were used when there are presumably more samples available from the Hyperion Treatment Plant NPDES monitoring program. The City requests that the Water Board review all available data for fish tissue before making a listing for Arsenic and/or Mercury. Finally, the fish tissue assessment for arsenic and mercury did not properly categorize the data in a way that is temporally independent. The Listing Policy states that samples should be temporally independent; however, in some cases fish collected on the same day were treated as unique data points. In addition, the samples collected were from August 2006, October 2007- November 2007, and August - September 2007. Because both arsenic and mercury bioaccumulate over the lifetime of the individual species an averaging period of at least a year should be considered. Therefore, instead of considering 19 individual samples these data should only be considered representative of 2 years thus supporting the need for additional data as previously requested. *Requested Action*: • *Either (1) segment the Santa Monica Bay listing since the data used to list arsenic and mercury are not representative of the entire water body as required by the Listing Policy, or (2) seek additional data from all zones<~(Santa Monica Bay to ensure proper spatial representation of the data prior to listing.* • *Seek and reanalyze additional sample data from the City of Los Angeles beyond the 19 samples from 2006 and 2007 that were originally used/or the analysis*. • *The mercury and arsenic fish tissue data should be aggregated based on a more reasonable temporal resolution*.	
5.5	<u>Comment 5: Sediment toxicity should be delisted; no justification was provided for the name change in the Fact Sheets</u>.	The decision recommendation has been updated to "DELIST."

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	The Santa Monica Bay Offshore/Nearshore toxicity listing (Decision ID 34120) was marked only as a name change in Appendix A. However, a TMDL for DDTs and PCBs was developed and approved by USEPA in 201210 which evaluated sediment toxicity resulting in a recommendation for delisting: *"Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list."* Based on the statement above and data summarized on pages 19 and 20 of the TMDL there is sufficient evidence to delist sediment toxicity for Santa Monica Bay Offshore/Nearshore. The listed name change appears to be a change from "sediment toxicity" to "toxicity" based on the Appendix G Fact Sheets. We assume that this name change is the result of the Water Board's acknowledged systems and clerical errors in Appendix A. In the event that it is not a mere error that will be corrected by the Water Board, the City requests that justification be provided to support the name change. This name change should only occur if new data is used to support the observation of toxicity in the water column as outlined in section 3.6 of the Listing Policy, however no new data was presented and a reason for this name change was not discussed in the staff report. *Requested Action*: • *Delist sediment toxicity for Santa Monica Bay based on the data analysis performed in the 2012 DDTs and PCBs TMDL.* • *Correct the name change error*	The name change is not in error. The 303(d) list no longer includes separate listings for different environmental media, that is, data for sediment toxicity and data for water toxicity are both considered in an assessment of toxicity. In fact, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.
5.6	**II. Inconsistencies within the 303(d) List** As noted by Water Board staff, the Appendices of the proposed 303(d) List have a number of inconsistencies. The inconsistencies listed below are a few examples	Diazinon is recommended for delisting for the Dominguez Channel above Vermont.

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	and should not be considered an exhaustive list. We request that the Water Board do a thorough review of all of the Appendices to ensure that they are internally consistent with the changes listed in the Appendix G Fact Sheets. Table 1. Inconsistencies in the Proposed 303(d) List Appendices **Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Diazinon **Comment/Requested Action**: This pollutant is shown as "delisted" in Appendix A with a note "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL ". In Appendix G the same pollutant is listed as "Delist from 303(d) list (being addressed by USEPA approved TMDL)". **The City would like clarification that this listing will be entirely removed from the 303(d) list and not categorized as 4A as indicated by the note in Appendix A.**	Los Angles Water Board staff found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with the fact sheets in Appendix G.
5.7	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s):** Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs **Comment/Requested Action**: These pollutants are shown as delisted in the Appendix G factsheets, however they are not listed as changed in Appendix A. **All of these pollutants should be delisted due to flaws in the original listing (as noted within the factsheets).**	Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.8	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Chromium and Dieldrin **Comment/Requested Action**: These pollutants are shown as “name changes” in Appendix A, however we could find no evidence of a name change throughout the	In prior 303(d) lists, “Chromium” was ”Chromium (total)” and “Dieldrin” was “Dieldrin (tissue).”

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	rest of the document. **Any name change should be supported by a reason detailing the need for the change in the Fact Sheets. Furthermore both of these listing should be delisted based on the comment above.**	
5.9	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Aldrin, Chem A, Chromium (total), and PAHs **Comment/Requested Action**: These pollutants are not listed as a change in Appendix A, but shown as "delisted" in Appendix G. **All listings should be delisted either because of flaws in the original listing or lack of an exceedance.**	Aldrin, Chem A, Chromium (total), and PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.10	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: DDT **Comment/Requested Action**: This listing is missing from Appendix B or C and has not been listed as changed in Appendix A, however the Appendix G factsheets lists DDT as being addressed with a USEPA approved TMDL and therefore **should be categorized as 5B or 4A**.	The waterbody pollutant combination, Dominguez Channel Estuary/DDT, is categorized 5B because it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.
5.11	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Dieldrin **Comment/Requested Action**: Listed in Appendix A as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*", however the pollutant does not appear in Appendix B or C and is listed as "*List on 303(d) list (being addressed by USEPA approved TMDL*)" in Appendix G. **This pollutant should be listed as 4A or delisted.**	The waterbody pollutant combination, Dominguez Channel Estuary/Dieldrin is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.

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5.12	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Chlordane (tissue) **Comment/Requested Action**: Listed in Appendix A as unchanged but not found in Appendix B or C. The Appendix G Fact Sheets list this pollutant as "*Do not delist (being addressed with USEPA approved TMDL)*". **The City would like clarification if this pollutant has been delisted or recategorized as 5B.**	The waterbody pollutant combination, Dominguez Channel Estuary/Chlordane is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. The pollutant was recategorized as 5B.
5.13	**Waterbody Segment: The Santa Monica Bay Offshore/Nearshore** **Pollutant(s)**: Chlordane and PAHs **Comment/Requested Action**: Not listed as a change in Appendix A but shown as "delisted" in Appendix G. **These pollutants should be delisted.**	Chlordane and PAHs were recommended for delisting in the 2010 303(d) list. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.14	**Waterbody Segment: Redondo Beach** **Pollutant(s)**: DDT **Comment/Requested Action**: Listed in Appendix A only as a "name change", however Appendix G lists this as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*". The 2010 303(d) list shows Redondo Beach DDT listing was Category SA however in the newly proposed 303(d) list the pollutant is listed as 4A in Appendix C. Category 4A is the correct category for this pollutant since a USEPA-approved TMDL does exist to manage DDT which is expected to result in full attainment of the water quality standard within a specified time frame. **The City would like Appendix A edited to reflect new 4A listing**. Furthermore if this is in fact a name change, as stated in Appendix A, **an explanation including supporting data for the name change should be**	Redondo Beach DDT is both a name change and a TMDL status change. Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with it. In prior 303(d) lists, "DDT" was "DDT (Dichlorodiphenyltrichloroethane)."

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	included in the Appendix G Fact Sheets.	
6.	City of Santa Clarita, March 29, 2017	
6.1	**Change All Listings to "*Being Addressed by Action Other Than a TMDL*"** Due to the extensive studies and long term implementation efforts contained in the EWMP, the City requests all pollutants remaining on the 303(d) list without a developed TMDL should be changed to the Category 4B for the Clean Water Act as "Being Addressed by Action Other Than a TMDL." More specifically, the pollutants will be addressed through the long-term implementation of the EWMP. In addition, the City requests a focus be placed on "Delisting" pollutants by the Regional Board so that limited resources can be better applied to applying long-term strategies of the approved EWMP.	The implementation of the EWMPs is likely to make a significant improvement in water quality in the affected watersheds. However, MS4 discharges may not be the only source of pollutants causing the impairment of these waterbodies; therefore, the actions identified in the EWMPs may not be the only implementation required. A source assessment and linkage analysis, during development of a TMDL, or during development of another regulatory program, or as a special study would be necessary to determine the relative contribution of all the sources and all the actions necessary to restore affected waterbodies to a condition of full water quality standards attainment.
6.2	The City requests the following amendments for the 2017 303(d) List. The affected water quality objectives are listed below. **Affected Waterbodies, Water Quality Objectives, and Suggested Revisions** <u>*Santa Clara River Reach 5 (Blue Cut Gauging Station to West Pier Highway 99 Bridge)*</u> Ammonia should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was completed in 2004. The Los Angeles County Sanitation Districts revised their operations at the Saugus Water Reclamation Plant and the Valencia Water Reclamation Plant and installed a Nitrification-Denitrification (NDN) process in 2004. The applicable water quality standards for nitrate, nitrite, and ammonia are not being exceeded. Decision ID 34352 states that no discharges exceeded limits.	Because the applicable water quality standard for ammonia is not being exceeded, Santa Clara River Reach 5 Ammonia is proposed to be delisted (CalWQA Decision 34352). The listing decision is "Delist from 303(d) list (being addressed by USEPA approved TMDL)."

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6.3	Benthic Community Effects should be revised to "Being Addressed by Action Other Than a TMDL." Decision ID 44468 states that the water body is impaired with multiple pollutants, including zinc, iron, bacteria, and chloride. However, Line of Evidence 88732 states that 0 out of 153 samples had any exceedance for zinc. Although iron is naturally occurring in the Santa Clara River watershed, Line of Evidence 88656 found 6 of 81 samples exceeded and Line of Evidence 88648 found 0 of 2 samples exceeding water quality limits. There were no samples taken for coliform bacteria, and therefore, no exceedances recorded as per Line of Evidence 4156. Line of Evidence 88792 states that none of the two samples taken exceeded the criterion for chloride. Further, the listing was based on the Southern Coastal California Index of Biotic Integrity (SCIBI). However, the SCIBI-based analysis is inadequate for use in low-gradient and low-elevation waters, such as the Upper Santa Clara River. Through the implementation of the EWMP, the benthic community should rebound to its natural populations as the EWMP addresses toxicity, metals, pesticides, and other metrics that affect benthic communities.	See response to comment 6.1. For a discussion of low elevation and benthic macroinvertebrate impairments, see response to comment 26.13.
6.4	Chloride should be revised to "Being Addressed by Completed TMDL." The Santa Clara River chloride TMDL was approved by the United States Environmental Protection Agency (USEPA) on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	The listing decision (Decision 32396) is, in fact, "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" and so does not require revision.
6.5	Indicator bacteria should be revised to "Being Addressed by Action Other Than a TMDL." Through the implementation of the EWMP, indicator bacteria should fall to levels found in ambient waters.	The listing decision (Decision 34306) is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed

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		by the TMDL for Indicator Bacteria in Santa Clara River Estuary and Reaches 3, 5, 6, and 7 (approved by USEPA on Jan. 31, 2012). The listing decision does not require revision.
6.6	Iron should be revised to "Being Addressed by Action Other Than a TMDL." Iron was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.
6.7	Nitrate and nitrite should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32484 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.	The listing decision for Decision 32484 is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Santa Clara River Nitrogen Compounds TMDL. The listing decision does not require revision.
6.8	Toxicity should be revised to "Being Addressed by Action Other Than a TMDL." Toxicity was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.
6.9	*Santa Clara River Reach 6 (West Pier Highway 99 to Bouquet Canyon Road)* Ammonia should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations, including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32462 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.	Santa Clara River Reach 6 Ammonia is proposed to be delisted. The listing decision (Decision 32462) is "Delist from 303(d) list (being addressed by USEPA approved TMDL)" and does not require revision.

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6.10	Chloride should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Santa Clara River chloride TMDL was approved by the USEPA on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	Decision 32397 is a “carryover” decision. No new data was assessed or LOE created, so the listing remains what it was on the last 303(d) list. The listing decision is "List on 303(d) list (being addressed by USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Upper Santa Clara River Chloride TMDL. The listing decision does not require revision.
6.11	For chlorpyrifos, Decision ID 33024 states samples were collected from August 2002 through April 2003. It should be noted that USEPA phased out all residential use of chlorpyrifos products since 2004. Since the samples were taken prior to being phased out and no further positive results are presented, this information is no longer relevant. Due to the long term implementation efforts contained in the EWMP, this pollutant should be changed to “Being Addressed by Action Other Than a TMDL.”	Decision 33024 was made based on LOE 2134, where 10 of 39 samples were found to exceed the evaluation guidelines. While USEPA phased out all residential use of chlorpyrifos products since 2004 and the data used in LOE 2134 were collected from August 2002 to April 2003, there is no new evidence/data in CalWQA to support a delisting decision. Therefore, the listing decision remains as "Do Not Delist". See, also, response to comment 6.1.
6.12	Copper was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Copper should be revised to “Being Addressed by Action Other Than a TMDL.”	See response to comment 6.1.
6.13	Decision ID 44805 states samples for diazinon were collected from August 2002 through April 2003. It should be noted that USEP A phased out all residential use of diazinon products since 2004. Only data generated from after the ban should be considered. For a sample size of 28-36, Table 4.1 of the State's Listing Policy recommends delisting a previously listed pollutant if the numbers of exceedances	Decision 44805 was made based on LOE 2135, where 28 of 29 samples were found to exceed the evaluation guideline. While USEPA phased out all residential use of diazinon products since 2004 and the data used in LOE 2135 were collected

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	are less than two. Since no other samples show an exceedance, diazinon should be delisted. In addition, due to the implementation of the EWMP, this pollutant could also be changed to “Being Addressed by Action Other Than a TMDL.”	from August 2002 to April 2003, there is no new evidence/data indicating that the waterbody is not impaired by diazinon. Therefore, the listing decision should remain as "Do Not Delist". See, also, response to comment 6.1.
6.14	Iron is abundant in the natural soils in the Santa Clarita Valley. In addition, iron was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Iron should be revised to “Being Addressed by Action Other Than a TMDL.”	Regional board staff reassessed the LOEs associated with this decision. The listing decision has been changed to "Delist from 303(d) list".
6.15	According to the National Weather Service, ambient air temperature for Santa Clarita during the summer months regularly exceeds 100 degrees Fahrenheit due to a semi-arid climate. The Santa Clara River is an ephemeral stream with water flow quickly subsiding into the natural sandy, soft- bottom riverbed. It is noted that all samples registering over 80 degrees Fahrenheit occurred between the months of May and August. It is reasonable that hot and dry air temperatures correlate to warmer water temperatures in shallow, sandy soils. Receiving waters in the Santa Clara River registering above 80 degrees Fahrenheit are the result of natural, ambient conditions and should not be considered as a result of storm drain or treatment discharge.	See response to comment 17.4.
6.16	In Line of Evidence 88683, it is noted that toxicity data was not reported with a control, and therefore anything reported as < 100% (chronic) or < 100% survival (acute) was considered an exceedance. In addition, toxicity was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Toxicity should be revised to “Being Addressed by Action Other Than a TMDL.”	Decision 33550 is supported by two LOEs. 4 of 4 samples were in exceedance in LOE 2137 and 4 of 40 samples were in exceedance in LOE 88683. Even though there was lack of control data for LOE 88683, the original listing decision was justified by LOE 2137 and there is no new evidence/data supporting a delisting decision. Therefore, the listing decision will remain as "Do Not Delist". A review of LOE 88683 is in process at this time.

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		For a more detailed discussion of toxicity, see response to comment 26.7. See, also, response to comment 6.1.
7.	Farm Bureau of Ventura County (FBVC), March 29, 2017	
7.1	Approximately 98 of the new 303(d) listings being proposed by the Los Angeles Regional Water Quality Control Board (Regional Board) are in Ventura County, and many are apparently driven by data collected through VCAILG's Conditional Waiver monitoring program. We have reviewed these proposed listings, and found numerous factual and legal errors that must be corrected. In some cases, the errors or ambiguities in the proposed listings are such that we and our technical consultants found it impossible to properly analyze them.	See response to comment 7.4 -7.102 for specific responses.
7.2	The development and implementation of TMDLs represents a significant investment of our members' resources, and compliance imposes a significant burden on agricultural operators, so it is critical that the 303(d) list be based on sound science and methodologies. We therefore ask that the issues identified in this letter be addressed, and that the proposed 303(d) list be revised and released for another 60-day comment period before adoption.	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend exclusively on the 303(d) list or the data contained therein (currently only through 2010). See response to comment 32.1 for additional discussion of additional comment periods.
7.3	The requested modifications fall into four general categories: 1. New Category 4 and 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g. mismatched units, incorrectly assigned sample locations). This comment category also addresses the issue of agricultural drains and ditches — which are	See response to comment 7.4 -7.102 for specific responses. Los Angeles Water Board staff will make the necessary corrections in the CalWQA database and make the appropriate listing/delisting

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<tr><td></td><td>not legally recognized as waterbodies — being inappropriately included in the listings.
2. Potential delistings that may be justified if all watershed data were evaluated (e.g. TMDL monitoring program and all wastewater treatment plant NPDES monitoring).
3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants.
4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.</td><td>decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or during the next Listing Cycle that includes the Los Angeles Region.</td></tr>
<tr><td>7.4</td><td>The remaining sections of this letter provide the detailed list of requested changes to the 303(d) list and the rationale for the requests. In summary, FBVC requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, that waterbody pollutant combinations in Table 3 and Table 4 be designated as being addressed by a TMDL if they remain on the 303(d) list after the reassessment, and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies. Furthermore, FBVC supports the 303(d) list comment letter submitted by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed.</td><td>See response to comment 7.4 -7.102 for specific responses.</td></tr>
<tr><td>7.5</td><td>I. REQUESTED MODIFICATIONS TO THE LISTING STATUS
Based on a review of the proposed Category 4 and 5 waterbody pollutant combinations, FBVC has identified a number of waterbodies that we feel should either be delisted based on available data, or which should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.

Table 1. Waterbody-pollutant combinations that should not be listed</td><td>The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83044 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles</td></tr>
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	Waterbody segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).	Region. J-flagged data was incorrectly used in the original assessment. LOE 83043 will be modified. Decision 60531 will be changed to "Do Not List" due to insufficient information. Los Angeles Water Board staff's intention will be to enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.
7.6	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83048 and Decision 60506 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
7.7	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83138 and Decision 60539 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the

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		Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
7.8	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification: • Listed based on toxicity observed during a single sampling event (6/4/07). According to the Listing Policy, a larger number of samples is required to justify this listing.	Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site. However, a review of the decision is in process at this time in order to confirm the number of toxicity tests completed.
7.9	Waterbody segment: **McGrath Lake Agricultural Drain** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the McGrath Lake Agricultural Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.10	**McGrath Lake Agricultural Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, as noted by the commenter, should McGrath Lake Agricultural Drain be included in the region's water quality assessment, chlordane would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.

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7.11	**McGrath Lake Agricultural Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.9.
7.12	**McGrath Lake Agricultural Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, as noted by the commenter, should McGrath Lake Agricultural Drain be included in the region's water quality assessment, DDT would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
7.13	**McGrath Lake Agricultural Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, note that toxaphene as an individual pollutant was not addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
7.14	Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The decisions for Calleguas Creek Reach 2 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site at Broome Ranch Road (02D_BROOM). This site is not located in Calleguas Creek Reach 2. If the Los Angeles Water Board determines that this monitoring site should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d)

No.	Comment	Response
		of the Clean Water Act, staff will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s). Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83361 will be modified. These changes are in process at this time.
7.15	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83362 will be modified. These changes are in process at this time.
7.16	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. The LOE will be modified. These changes are in process at this time.
7.17	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83204 and Decision 61025 will be retired. These changes are in process at this time.

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7.18	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83257 and Decision 61028 will be retired. These changes are in process at this time.
7.19	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Salts criteria do not apply below Potrero Rd.	See response to comment 7.14. Additionally, there is no water quality objective applied to this waterbody segment, since this reach is tidally influenced. LOE 83270 and Decision 61035 will be retired. These changes are in process at this time.
7.20	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83210 will be modified. Decision 61085 will be changed to "Do Not List". These changes are in process at this time.
7.21	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.	The decisions for Calleguas Creek Reach 4 have been revised to not use the data from the VCAILG monitoring sites at Etting Road (04D_ETTG) and S. Las Posas Road (04D_LAS). These sites are not located in Calleguas Creek Reach 4. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff

No.	Comment	Response
		will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s). For a discussion of readily available data see response to comment 32.3
7.22	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.23	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83171 will be retired. These changes are in process at this time.
7.24	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.25	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.26	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)**	See response to comment 7.21.

No.	Comment	Response
	Pollutant: Malathion Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.27	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83434 will be modified. Decision 61211 will be changed to "Do Not List". These changes are in process at this time.
7.28	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83450 and Decision 61212 will be retired. These changes are in process at this time.
7.29	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.21. Permethrin is not addressed in the Calleguas Creek Toxicity TMDL.
7.30	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83410 and Decision 61214 will be retired. These changes are in process at this time.

No.	Comment	Response
7.31	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83411 will be retired. Decision 42845 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.
7.32	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83416 will be retired. Decision 42771 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.
7.33	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	A review of the Calleguas Creek Reach 12 decisions are in process at this time. This requested change may require a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues where they exist, and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
7.34	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.33.
7.35	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)**	See response to comment 7.33.

No.	Comment	Response
	Pollutant: Malathion Justification: • Data does not appear to be from a station in Reach 12.	
7.36	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	LOE 83538 was based on the correct criteria/objective, which states "For waters designated WARM, water temperature shall not be altered by more than 5 deg. F above the natural temperature. At no time shall these WARM-designated waters be raised above 80 deg. F as a result of waste discharges." The decision (#61523) does not require revision. See, also, response to comment 17.4.
7.37	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2 are tributaries to Mugu Lagoon; therefore, they will be assessed for the same beneficial uses and objectives as the downstream Mugu Lagoon. The MUN beneficial use does not apply and a review of the decision is in process at this time.
7.38	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.39	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification:	See response to comment 7.37.

No.	Comment	Response
	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
7.40	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.41	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.42	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.	J-flagged data was incorrectly used in the assessment. LOE 84178, LOE 84179 and LOE 84180, which include J-flagged data will be modified. Additionally, see response to comment 7.37. A review of the decision is in process at this time. Decision 33913, however, will remain as "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as LOE 2030, which was established in 2006, supports the listing decision.
7.43	Waterbody segment: **Ellsworth Barranca** Pollutant: DDE Justification:	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation.

No.	Comment	Response
	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84304 will be modified. These changes are in process at this time. Additionally, staff is reviewing the data to ensure that J-flagged data were not incorrectly used in the original assessment.
7.44	Waterbody segment: **Fox Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84487 will be modified.
7.45	Waterbody segment: **Honda Barranca** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE84752 will be modified.
7.46	**Honda Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84758 will be modified.
7.47	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is

No.	Comment	Response
	Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	tributary to Mugu Lagoon and the MUN beneficial use does not apply. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
7.48	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.47.
7.49	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.
7.50	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.
7.51	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is

No.	Comment	Response
	Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	tributary to Mugu Lagoon and the MUN beneficial use does not apply..
7.52	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	The “DO NOT DELIST” decision was based on LOE 4382, which is a ‘placeholder’ LOE to support a 303(d) listing decision made prior to 2006. There is insufficient information to support a delisting decision.
7.53	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	The decision for this waterbody-pollutant combination has been changed to “do not list,” due to insufficient information at this time to determine whether the La Vista Drain should be included in the region’s water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region’s water quality assessment, the LOE would be reassessed to remove J-flagged data.
7.54	**La Vista Drain (Ventura County)**	See response to comment 7.53.

No.	Comment	Response
	Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.55	**La Vista Drain (Ventura County)** Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.
7.56	**La Vista Drain (Ventura County)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.57	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.58	**La Vista Drain (Ventura County)** Pollutant: DDT Justification:	See response to comment 7.53.

No.	Comment	Response
	• Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.59	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.
7.60	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	See response to comment 7.53. This notwithstanding, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE 85332 would be modified.
7.61	Waterbody segment: **Santa Clara Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the Santa Clara Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.62	**Santa Clara Drain** Pollutant: Chlorpyrifos	See response to comment 7.61.

No.	Comment	Response
	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.63	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.64	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61. This notwithstanding, should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the COMM beneficial use. Santa Clara Drain drains to Calleguas Creek Reach 4 and COMM is not a beneficial use for Calleguas Creek Reach 4. Beneficial Use Assessed would be changed to "Warm Freshwater Habitat" for LOE 88067.
7.65	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61 and 7.64.
7.66	**Santa Clara Drain** Pollutant: DDT Justification:	See response to comment 7.61 and 7.64.

No.	Comment	Response
	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	
7.67	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.68	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.69	**Santa Clara Drain** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.70	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification:	See response to comment 7.61. This notwithstanding, the Los Angeles Water

No.	Comment	Response
	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.71	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.72	Waterbody segment: **Santa Clara River Reach 3** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decisions for Santa Clara River Reach 3 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site S03D_BARDS or from the Ventura County Stormwater Monitoring Program site, 11th Street Drain. These sites are not located in Santa Clara River Reach 3. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s).
7.73	**Santa Clara River Reach 3** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.

No.	Comment	Response
7.74	**Santa Clara River Reach 3** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Criterion listed is for 2,4,5-TP, not cyfluthrin.	See response to comment 7.72. This notwithstanding, should a waterbody including the monitoring sites be included in the region's water quality assessment, LOE 88712 will be modified to reflect the correct evaluation guideline - "UC Davis Aquatic Life Criteria: Aquatic life should not be affected unacceptably if the 4-day average concentration of cyfluthrin does not exceed 0.00005 ug/L and if the 1-h average concentration does not exceed 0.0003 ug/L. For this assessment, the 4-day average concentration was used. Mixtures of cyfluthrin and other pyrethroids should be considered in an additive manner. (Fojut et al. 2012) ". These changes are in process at this time.
7.75	**Santa Clara River Reach 3** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
7.76	**Santa Clara River Reach 3** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.72. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. These changes are in process at this time.
7.77	**Santa Clara River Reach 3** Pollutant: DDE	See response to comment 7.72.

No.	Comment	Response
	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88736 will be modified. These changes are in process at this time.
7.78	**Santa Clara River Reach 3** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
7.79	**Santa Clara River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.72. This notwithstanding, the data did not exceed the objectives. LOE 88761 will be modified. These changes are in process at this time.
7.80	Waterbody segment: **Tapo Canyon** Pollutant: Chlordane Justification: • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	Toxicity LOE 89343 will be removed from Decision 64350. The listing decision for Decision 64350, however, will not be affected and will remain the same. These changes are in process at this time.
7.81	**Tapo Canyon** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89233, the “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used.

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		Decision 64445 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64445, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64445, however, will not be affected and will remain the same. These changes are in process at this time.
7.82	**Tapo Canyon** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89247, the "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 89247 will be modified. Decision 64446 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64446, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64446, however, will not be affected and will remain the same. These changes are in process at this time.
7.83	**Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification:	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 89235 and

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	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Decision 67273 will be retired. These changes are in process at this time.
7.84	**Tapo Canyon** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88296 and Decision 64538 will be retired. These changes are in process at this time.
7.85	Waterbody segment: **Wheeler Canyon/Todd Barranca** Pollutant: Chlordane Justification: • J-flagged data incorrectly used in assessment. • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The LOEs for this waterbody pollutant combination will be modified to remove J-flagged data. However, chlordane data is a sum of cis- and trans- chlordane, cis- and trans- nonachlor, and oxychlordane. Disregarding the j-flagged data, the remaining valid data still show chlordane having 2 of 2 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision for Decision 63509, therefore will remain the same. Toxicity LOE 90290 will be removed from Decision 63509. The listing decision for Decision 63509, however, will not be affected and will remain the same. These changes are in process at this time.
7.86	**Wheeler Canyon/Todd Barranca** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 90237 and Decision 63585 will be retired. These changes are

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	applicable to waterbody.	in process at this time.
7.87	Waterbody segment: **Ventura River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 89901 will be modified. Decision 63958 will be changed to "Do Not List". Use rating will be changed to "Fully Supporting". These changes are in process at this time.
7.88	**1. *Agricultural Drain monitoring data incorrectly used as basis for listing decisions.*** There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in	See response to comments 7.9, 7.14, 7.21, 7.53, 7.61, and 7.72.

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	the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. McGrath Lake Agricultural Drain is also an agricultural drain comprised of a small open ditch that conveys water from surrounding agricultural lands. A monitoring site was selected on this drain for VCAILG Conditional Waiver monitoring to represent agricultural discharges and was not designed to characterize receiving waters. Moreover, discharges from this drain are already being addressed under the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL, which has identified this drain as the "Central Ditch" (the Monitoring Program for the Conditional Waiver also identifies this monitoring site as the Central Ditch). Implementation activities that reduce loadings of chlorinated pesticides and PCBs will also reduce loadings of toxaphene, bifenthrin and chlorpyrifos. For the foregoing reasons, McGrath Lake Agricultural Drain should be removed from the Draft Category 5 list. **Requested Action:** **• Remove all listings shown in Table 1 that were based on VCAILG Conditional Waiver monitoring data from agricultural drains not representative of the listed waterbody, and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.**	

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	• Remove La Vista Drain and Santa Clara drain from the list as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) list. **• Remove the McGrath Lake Agricultural Drain because it is not a waterbody that falls under the jurisdiction of the 303(d) list, and because there is an effective TMDL that addresses discharges from this agricultural drain ("Central Ditch") to McGrath Lake.**	
7.89	2. ***Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply***. Numerous listings were based on water quality objectives for the protection of municipal drinking water for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated, or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans) state, "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards… (with certain exceptions which must be adopted by the Regional Board)." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan, except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the	As stated in previous responses, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. See response to comments 7.5- 7.7, 7.14 - 7.19, 7.28, 7.30-7.32, 7.37-7.41, 7.43-7.51, 7.56, 7.57, 7.67, 7.68, 7.70, 7.76, 7.77, 7.81-7.84, and 7.86.

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	County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."* In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified, "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision fact sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1: *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential"*	

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	beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty." Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate, as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3", where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in Table 1 should be removed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence, which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that	

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	shows an exceedance is based on the potential (P*) MUN, which, as described above, cannot be used to justify a listing. Furthermore, the fact sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process, and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** **• Revise all of the new listings in the fact sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** **• Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) list.**	
7.90	**3. *Reassess mercury listings using correct objective and correct units*.** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, La Vista Drain, Santa Clara Reach 3, and Ventura River Reach 3 are in ng/L and the objective is in µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. Our consultants believe that after this calculation has been performed, the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. Regional Board staff should explain why they used a recommended criterion instead of an established water quality objective. **Requested Action:** **• Repeat the mercury analysis after correcting the units error.**	As indicated in previous responses, the corrections are in process at this time. . See response to comments 7.20, 7.27, 7.60, 7.79, and 7.87.
7.91	**4. *Remove toxicity Lines of Evidence (LOE) from pollutant fact sheets when an LOE specifically for toxicity already exists*.** Numerous pollutants listed for Calleguas Creek Reach 3, Tapo Canyon and Wheeler Canyon/Todd Barranca include an LOE to support the pollutant listing,	As indicated in previous responses, Toxicity LOEs are being removed as LOEs from pollutant specific factsheets where a Decision for Toxicity already exists (and those LOEs are associated with that decision). See response to comments 7.80,

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	when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the fact sheet. The toxicity LOE listed for the waterbody is sufficient as it is intended to identify the cause of observed toxicity through established and accepted methodologies.	7.81, 7.82, and 7.85.
7.92	**5. Incorrect location and data were used for listings in Reach 12.** The name of the monitoring site presented in the fact sheet for chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12, and TO1 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, TO1 should not be used for a 303(d) listing decision, and University data are not from Reach 12. A review of the datasets provided in the link on the fact sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the fact sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, FBVC requests that only data collected after applicable pesticide-use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrate a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide-use restrictions, monitoring data collected prior to 2009 are not representative of current waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates continued impairment. **Requested Action:** **• Remove listings for Reach 12 that are not based on receiving water data from that reach.** **• Remove listings for chlorpyrifos, diazinon, and malathion based on historic**	See response to comments 7.33, 7.34, and 7.35. In addition, for a discussion of the readily available data assessed in this listing cycle see response to comment 32.3. The next listing cycle which includes the Los Angeles Region will assess more recent data and, should the information on pesticide use restrictions and the data support not considering data collected before a use restriction, a decision to assess only data collected after the use restriction may be appropriate.

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<tr><td></td><td>data that are not representative of conditions after implementation of pesticide-use restrictions.</td><td></td></tr>
<tr><td>7.93</td><td>6. Ensure no J-flagged data were used in the assessment.

The listing policy specifically prohibits the use of J-flagged (“estimated”) data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

“When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.”

All listings based on the use of J-flagged data should therefore be removed from the draft 303(d) list. Specific instances are included in Table 1 and further explained in Table 2 below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

Table 2. Incorrect use of J-flagged data
• Waterbody segment: Boulder Creek (Ventura County)
Pollutant: Chlordane
Comment: The LOE for Chlordane erroneously states that three out of five samples exceed the objectives. A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) “estimated” (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy.

• Waterbody segment: Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2
Pollutant: Toxaphene</td><td>For J-flagged data, see response to comments 7.5, and 7.42, 7.43, 7.53, and 7.85.

For Boulder Creek, chlordane, see response to comment 7.5.

For Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, toxaphene, see response to comment 7.42.

For La Vista Drain, chlordane, see response to comment 7.53.

In regards to chlordane in the Rio de Santa Clara, chlordane data are a sum of cis- and trans- chlordane, cis- and trans- nonachlor, and oxychlordane. Disregarding the j-flagged data, the reaming valid data still shows Chlordane having 4 of 5 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision (Decision 33192), therefore, will remain the same. These changes are in process at this time.</td></tr>
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	Comment: The Lines of Evidence (LOE) for Toxaphene lists the number of exceedances incorrectly at two. However, only one of six samples exceeded the indicated criterion. The other sample was reported by the laboratory as "estimated" (J-flagged). Because only one of six samples showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. • Waterbody segment: **Rio de Santa Clara/Oxnard Drain No. 3** Pollutant: Chlordane Comment: The LOE for Chlordane erroneously states that four out of five samples exceed the objectives. A review of the data shows that only 3 out of 5 samples exceed indicated criteria. The remaining 2 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. • Waterbody segment: **La Vista Drain** Pollutant: Chlordane Comment: The LOE for chlordane shows that one of the samples used to justify the listing is based solely on estimated (J-flagged) data because results were below the reporting limit. Because Chlordane has only one detected value for two sampling events, more monitoring data are needed to justify the listing and the proposed listing should be removed. Additionally, refer to comment 1 regarding the inappropriateness of this drain being a listed waterbody. **Requested Action:** **• Review all fact sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** **• Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain (though we also disagree with the listing of this as a waterbody to begin with), and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**	
7.94	**7.** ***Remove listings where a waterbody assessment does not meet listing***	See response to comment 7.52.

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	***thresholds based on data provided*.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) list. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) list. **Requested Action:** **• Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3, based on failure to meet listing threshold requirements in the Listing Policy.**	
7.95	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** As manager of the VCAILG program, FBVC is a stakeholder in the Calleguas Creek Watershed TMDL monitoring program and represents the agricultural responsible parties listed in the TMDLs. As such, FBVC supports the comments made by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed regarding the use of all appropriate monitoring data for the 303(d) listing process. The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. Please refer to the letter submitted by the Calleguas Creek Watershed Stakeholders for details regarding the waterbody/pollutant combinations eligible for delisting. While this comment is specific to knowledge regarding monitoring programs in the Calleguas Creek	See response to comment 32.3.

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<tr><td></td><td>Watershed, it should be applied to the other watersheds in Ventura County.

Requested Action:
• Reassess all Ventura County waterbodies using all available data.</td><td></td></tr>
<tr><td>7.96</td><td>III. REQUESTED CATEGORY ASSIGNMENT CHANGES

8. Correct pollutants listed as Category 5A that should be 5B based on coverage by an existing TMDL.

There are number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. Although we contend that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B as applicable.

Because discharges from the McGrath Lake Agricultural Drain (i.e., “Central Ditch”) are already being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL (effective June 30, 2011), toxaphene should be changed from Category 5A to Category 5B. A Calleguas Creek nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DDE, DDD, dieldrin, PCBs, sediment toxicity, and toxaphene.

The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), and although we oppose the inclusion of these listings on the grounds that they are not waterbodies, the actual receiving waters are already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, the Nitrogen TMDL, and the Metals TMDL, and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for chlorpyrifos – Honda Barranca and Duck Pond Agricultural Drains – but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL.</td><td>For the McGrath Lake Agricultural Drain toxaphene, see response to comment 7.13.

For the La Vista Drain and Santa Clara Drain, see responses to comments 7.53- 7.71.

The list and the factsheets have been updated to reflect the nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed by the Santa Clara River Nitrogen TMDL.

The Calleguas Creek Toxicity TMDL specifically addresses the organophosphate pesticides, chlorpyrifos and diazinon, and does not apply to pyrethroids. The Toxicity TMDL would need to be revised to identify pyrethroid targets, and include the other required elements of a TMDL for pyrethroids specifically.

For Calleguas Creek Reach 2 listings see response to comments 7.18 and 7.19

The list and the factsheets have been updated to reflect the Calleguas Creek Reach 3 mercury listing is being addressed by a TMDL.

The list and the factsheets have been updated to reflect the Calleguas Creek Reach 4 mercury has been updated to being addressed by a TMDL.</td></tr>
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	The nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed under the Santa Clara River TMDL, in effect since 2004. • We request that any listings in Table 3 and Table 4 that are maintained after addressing the issues in Comment I also be corrected to be designated in Category 5B. Table 3. 303(d) Category 5A listings which should be changed to 5B listings (see comment letter) In addition, we believe the Calleguas Creek Watershed Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion), if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity, and the Conditional Waiver includes a bifenthrin water quality benchmark triggering management practice implementation in response to exceedances, in addition to the organophosphate pesticides included in the TMDL. Additionally, the structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. As a result, if the waterbodies are placed on the 303(d) list as new listings, we request that the waterbodies in Table 4 be moved from 5A to 5B. Table 4. Pyrethroid and Organophosphate listings covered by the existing Toxicity TMDL (see comment letter) **Requested Action:** **• Change all pollutant-waterbody segment combinations in Table 3 and Table 4 from 5A to 5B or 4A based on coverage by an existing USEPA approved TMDL.**	Also see responses to comments 7.30, 7.31, and 7.32. The list and the factsheets have been updated to reflect the Calleguas Creek Reach 9A nitrate listing is being addressed by a TMDL The list and the factsheets have been updated to reflect the Calleguas Creek Reach 12 Chlorpyrifos and diazinon listing are being addressed by a TMDL. The list and the factsheets have been updated to reflect the Honda Barranca DDT listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the Fox Barranca DDE listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the La Vista Drain and Santa Clara Drain listings which are being addressed.
7.97	***9. Remove waterbody-pollutant combinations for agricultural drains listed***	The decisions for the waterbody-pollutant

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	as Category 2. Two new agricultural drains were included inappropriately on the Category 2 list (i.e., assessed for listing) and should be removed: Drain Along Gerry Road to Calleguas Creek Reach 9, and Oxnard Drain. The Gerry Road agricultural drain is a small drainage ditch with intermittent flows that exists solely to collect non-potable water from the adjacent agricultural lands before it drains into Calleguas Creek Reach 9; it is not a tributary to Calleguas Creek Reach 9. A VCAILG monitoring site was selected on this drain to be representative of agricultural discharges to Calleguas Creek Reach 9 and is not representative of receiving water conditions. Accordingly, neither the MUN beneficial use nor the MAR beneficial uses apply to this agricultural drain. The new listing for Oxnard Drain also should be removed from the Draft Category 2 list. The monitoring site indicated for this drain is located in the Ormond Beach Wetlands area where flows from the Hueneme Drain, the J St. Drain (now "Chumash Creek"), and the Oxnard Industrial Drain (formerly known as the Oxnard Drain but now known as the "Ormond Lagoon Waterway") commingle. In order to list the "Ormond Lagoon Waterway" (formerly the Oxnard Industrial Drain), a monitoring station would have to be established on that channel upstream of the wetlands area to ascertain water quality in that waterbody.	combinations associated with "Drain along Gerry Road" and "Oxnard Drain" have been changed to "do not list" due to insufficient information at this time to determine whether the Drain along Gerry Road and Oxnard Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.98	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** FBVC's staff and consultants have identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified. The list is not comprehensive, because in many cases the information provided made it difficult or impossible to conduct a proper analysis. **10.** ***Correct Appendix G fact sheets.*** The Appendix G fact sheets often include incorrect information and discussion.	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.

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	While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include: • Incorrect Evaluation Guideline and Guideline Reference. For example, the Evaluation Guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200 and 88712 actually is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited Guideline Reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final fact sheets and 303(d) list. • Incorrect beneficial uses assigned to objectives. For example, MUN beneficial uses listed when aquatic life objectives are presented in the fact sheet. • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally influenced waterbody (e.g., Duck Ponds Agricultural Drain), and MAR and EST beneficial uses assigned to a waterbody that is too far upstream to be tidally influenced (e.g., Wheeler Canyon/Todd Barranca). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 and on Wheeler Canyon/Todd Barranca is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in fact sheets, including 3 samples with results of “ND”. Stating in fact sheets that a pollutant exceeds criteria in 100% of samples, instead of the true figure of 40%, conveys an inflated impression of the degree of impairment by that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.	

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	Requested Action: **• Correct the Appendix G fact sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples / number of exceedances.**	
7.99	**11.** ***Correct the Appendices and Fact Sheet Categories*****.** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent, which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow FBVC to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are no associated fact sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The fact sheets for the following name changes should provide justification or explanation for the name change, as many appear to be switching tissue or sediment listings to water listings. If this is in fact the change being made, justification for the water listing needs to be provided in the fact sheet. It is not appropriate to characterize changing the medium that is the basis for the listing as a name change. Table 5. Listed as Name Changes in Appendix A (see comment letter) There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies. Table 6. Incorrectly listed waterbody segment-pollutant combinations (see comment letter)	Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data. The 303(d) list is being revised to no longer include separate listings for different environmental media, that is, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.

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	There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) list were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. We request clarification as to whether these waterbody-pollutant combinations are, in fact, being delisted, as some align with the assessment provided by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed. Table 7. Not described as delisted in Appendix A but not found Appendix B or C (see comment letter) **Requested Action:** **• Correct the numerous inconsistencies described above in Table 5, Table 6, and Table 7 and ensure that all of the proposed 303(d) list appendices are internally consistent.**	
7.100	12. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Calwater numbers to reflect those listed in the Basin Plan*.** There are multiple instances of what appear to be incorrect Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) list to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **• Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues including HUCs for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

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7.101	**13.** ***Correct or clarify inconsistencies in the staff report.*** There is inconsistent discussion about some proposed listings in the staff report, which should be clarified to avoid confusion. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants: "*For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 … are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL … and would then be in Category 4A.*" However, we could find no listings of DDE and DDD for Reach 3 in any Appendix of the report including Appendix C – Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that DDE and DDD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement, and clarify any other inconsistencies between the staff report and the list. **Requested Action:** **• Correct or remove language cited on page 10 of the staff report regarding DDE and DDD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**	The Staff Report has been corrected.
7.102	**14.** ***Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy.*** In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment. This is inconsistent with the Listing Policy, which states that it must be demonstrated that an evaluation guideline is "applicable to the beneficial use, protective of the beneficial use, scientifically based and peer reviewed, and well described." Because it has not been demonstrated that the individual species' response to these pollutants is applicable and protective of the beneficial use, these guidelines should not be used to make a listing. The Regional Board should review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin), as well as applicability to the beneficial use	As the State Water Board staff and Los Angeles Water Board staff review waterbody pollutant data for this and future listing cycles, they will continue to review the appropriateness of the guidelines and thresholds.

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	as described in the listing policy. Table 8. 303(d) Pollutants Using Thresholds for Interpreting Narrative Objectives (See comment letter) The 303(d) list includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in Ventura County watersheds. Currently no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 μg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 and Santa Clara River Reach 3 is inappropriate. LC50s do not meet the standard set forth in the listing policy as stated on page 20: *" the evaluation guideline… identifies a range above which impacts occur and below which no or few impacts are predicted.*" By definition an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002μg/L based on the UC Davis criteria. However, upon reviewing the UC Davis source, we found the listed chronic standard for permethrin is 2 ng/L (page 92), which is 0.002μg/L not 0.0002μg/L as listed in the 303(d) list. **Requested Action:** **• Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.** **• Remove all guidelines that do not comply with the stated listing policy as**	

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	described above.	
8.	Castaic Lake Water Agency, March 30, 2017	
8.1	One of the subject proposed revisions would add polychlorinated biphenyls (PCBs) to the 303(d) listing for Castaic Lake and Lagoon. The data referenced in the proposed PCB listing is from a relatively small number of fish tissue samples analyzed in 2007. The Agency samples and analyzes water from the lake prior to treatment. Our data does not indicate that PCBs are present in the lake water. Because of this, and the limited data described above, we believe additional study should be conducted to look at longer term trends in PCB concentrations in fish tissue, and PCB source determination.	As indicated by the commenter, Castaic Lake is proposed for inclusion on 303(d) list for PCBs. This listing decision is based on 3 LOEs and supported by LOE 94733. In LOE 94733, a total of 4 fish tissue composites were generated from largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) from 2 sampling locations (20 fish, total). All four composite samples were found in exceedance of the criterion for PCB. The commenter is encouraged to submit the additional PCB water column data into CEDEN so that it can be assessed during future listing cycles. The longer-term trends in PCB concentrations in fish tissue, and PCB source determination are important determinations, which would take place if a TMDL or other regulatory program is developed to address PCBs in the Lake.
9.	City of Azusa, March 30, 2017	
9.1	**Summary** Of the 22 metals reported for all San Gabriel River water quality segments, 19 (84.3%) of them fall under the "de-list" and "do not list" categories. The City believes that 3 additional metals (15.7%) should be de-listed, which would raise the total to 22 (100%), for reasons more particularly described below. Based on the de-listing of these metals, the City contends that the Regional Board should remove the San Gabriel Metals TMDL from the Los Angeles Basin Plan.	Specific comments on the 303(d) list are addressed below; comments on the San Gabriel Metals and Selenium TMDL are outside the scope of this action. Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. The listing for copper in the San Gabriel River

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	I. San Gabriel River: Estuary As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. Whether or not this was an oversight on the part of the Regional Board, there is ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/I for hardness is only intended to be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998.	Estuary is carried over to the 2016 303(d) list. See Appendix A as well as Appendix G. The decision to “do not delist” copper is supported by data in CalWQA. Copper was first listed for the San Gabriel River Estuary in 2006 and has remained on the list in 2010, 2012 and 2016. For the 2016 303(d) list, the copper listing was “carried over” and new LOEs were added with new data for this listing cycle. The LOEs in the factsheet for the San Gabriel River Estuary copper listing do not support delisting copper. The decisions to “do not list” lead, selenium and zinc are supported by the data in CalWQA. The commenter may be assuming that a default hardness value was used, but the factsheet states, “***If no hardness data were available***, a value of 100 mg/L was used” (emphasis added). In this case, site-specific hardness data were available and were used as indicated in the data set “Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010.” See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Comments on TMDL and the Los Angeles County MS4 Permit and the provisions therein are outside

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	3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the comment letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3.7 ug/1 (see Table I(a) below). Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	the scope of this action.
9.2	**II. San Gabriel River: Reach 1 (Estuary to Firestone)** Metals for San Gabriel River, Reach 1 from the Estuary to Firestone were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table I(a), despite the fact that copper was not listed on the 2010 303(d) list in the first place. Table II. San Gabriel River: Reach 1 (Estuary to Firestone) **[See the comment letter for Table II]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list	The decisions to "do not list" copper, lead, selenium and zinc are supported by the data in CalWQA. Comments on MS4 permit requirements and the San Gabriel River Metals and Selenium TMDL are outside the scope of this action.

No.	Comment	Response
	justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
9.3	**III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)** As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons: 1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced). 2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above. 3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in zero exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement. 4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected. Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the comment letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals	The decisions to "do not delist" lead is supported by the data in CalWQA. Lead is not a "legacy" pollutant; there are current uses and sources of lead in the watershed. Comments on the TMDLs and the MS4 permits are outside the scope of this action. There are three LOEs for lead in the San Gabriel River Estuary Reach 2 including data collected under the MS4 permit and a County of Sanitation District of Los Angeles County permit.

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	to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
9.4	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit Attachment P: TMDLs in San Gabriel River Watershed Management Area. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table l(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81.34 ug/1; and (2) Coyote Creek lists copper target of 24. 71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the comment letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	The decisions to "do not list" copper, lead, and zinc are supported by the data in CalWQA. Comments on TMDLs and MS4 permits are outside the scope of this action.
9.5	**V. San Gabriel River: Coyote Creek**	

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	The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons: 1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2. 2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees. Table V. Coyote Creek **[See the comment letter for Table V]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	The decision to "do not delist" for copper is supported by data in CalWQA. Comments on the TMDLs and the MS4 permits are outside the scope of this action. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, CTR criteria apply to water quality in both dry and wet weather.
9.6	**VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)** Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below). Table VI: San Jose Creek Reach 1 **[See the comment letter for Table VI]** **Recommendation to Regional Board**: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not	Comments on the TMDLs and the MS4 permits are outside the scope of this action.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td></tr>
<tr><td>9.7</td><td>VII. South San Jose Creek (Los Angeles County)

This is Reach is a new listing under the 2016 303(d) List.

VII. South San Jose Creek (Los Angeles County) [See the posted letter for Table VII]

Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td>Comments on the TMDLs and the MS4 permits are outside the scope of this action.</td></tr>
<tr><td>10.</td><td colspan="2">City of Gardena, March 30, 2017</td></tr>
<tr><td>10.1</td><td>The City of Gardena (City) appreciates the opportunity to comment on the revised 2016 303(d) Integrated Report for the Dominguez Channel. The City also welcomes the proposed "de-list" and "do not list" of pollutants, particularly metals and toxics. These pollutants are the basis for the Dominguez Channel Harbor Toxics TMDL (DCHT-TMDL), which is derived from the 2010 303(d) list. The elimination of these pollutants should effectively eliminate the need for the DCHT-TMDL, which the Dominguez Channel Watershed Management Program was created to comply with.

I. 2010 303(d)/2016 303(d) List Dominguez Channel, Reaches 1 and 2

This list, on which the DCHT-TMDL was developed, contains the following toxics for Reach 1 and 2 as shown in the tables presented below. The tables also show the status of toxic pollutants, including metals, which the 2016 303(d) list revises in terms of the following categories: (1) list; (2) de-list; and (3) don't de-list.

II. Reach 1 Dominguez Channel (unlined portion below Vermont)</td><td>Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action.

In regards to PAHs, while PAHs is delisted, the data in CalWQA support the listing of the individual PAHs of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene.
The fact sheet for the PAH delisting states:
Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing the PAH sediment-pollutant combination and replacing this general PAH listing with the individually listings of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene on the section 303(d) list in the Water Quality</td></tr>
</table>

Response to Comments on the Draft 2016 303(d) List
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	[See the posted letter for Table] In sum, the 2016 303(d) list for toxics and metals proposes to de-list PAHs and zinc (in sediment) and not list Methylnaphthalene 2. However, because PAHs are to be de-listed, Chryslene, Phenanthrene, and Pyrene must also be de-listed because they are specific types of PAHs. Thus, the total number of toxics to be eliminated from the 2016 303(d) list is 8. Copper should be delisted as well because: (1) it was not listed on the 2010 303(d) Integrated Report for toxics and metals for Reach 1 of the Dominguez Channel; (2) the 2012 303(d) list recommended that copper not be listed;" and (4) SWAMP data (2003) for all reaches of the Dominguez Channel resulted in only a few slight exceedances for dissolved copper (but not for total recoverable copper, which is the California Toxics Rule (CTR) compliance standard). Should the Regional Board insist on retaining copper on the 2016 303(d) list, it should provide sampling data based on the CTR for establishing ambient water quality standards. Excluding the aforementioned metals and toxics from the 2016 303(d) list eliminates 9 of them - 56% of the total. On this basis alone, the DCHT-TMDL should be voided.	*Limited Segments category.* The decision to "do not list" Naphthalene is based on one LOE in the CalWQA database that shows no exceedances of 15 samples. The decision to "de-list" zinc is based on three LOEs in the CalWQA database that show no exceedances. In regards to copper, the decision to "list' copper is supported by the data in CalWQA. This is a new "list" decision based on data added to the CalWQA database this listing cycle from both water and sediment. Both dissolved and total water column data (and sediment data) are used for metals assessments. See response to 3.3 regarding assessments based on readily available data.
10.2	As discussed below the metals and toxics on the proposed 2016 303(d) list that have not been de-listed for Reach 1 of the Dominguez Channel should be de-listed. **1. *Chlordane*** This toxic should be de-listed for the following reasons: (1) no justification to list chlordane was provided in Decision ID 20199 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) the 2016 303(d) list proposes that chlordane be de-listed for Reach 2 of the Dominguez Channel ();	Chlordane was listed for the Dominguez Channel Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database. There is insufficient data in the CalWQA database to justify a decision to "delist." Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle

No.	Comment	Response
	and (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for chlordane.	that includes the Los Angeles Region.
10.3	**2. *DDT (tissue/sediment)*** This toxic should be de-listed for the following reasons: (1) no justification was provided in Decision ID 19790 of the proposed 2016 303(d) list to list DDT in keeping with 303(d) Listing Policy; (2) DDT is de-listed for Reach 2 of the Dominguez Channel; (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for DDT; and (4) DDT is a legacy pollutant that has been banned for several decades.	Decision ID 19790 is the reference to the 2012 303(d) list which did not consider new data for the Los Angeles Region (the 2012 303(d) list considered data from Regions 1, 6 and 7); the decision simply "carried over" a previous decision. Decision ID 34076 is the relevant 2016 decision. Decision ID 34076 includes six LOEs and supports a decision to "do not delist." The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is not a consideration in the data analysis. Reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7.
10.4	**3. *Dieldrin (tissue)*** Dieldrin (tissue) should be de-listed for the following reasons: (1) no 303(d) listing policy justification for was provided in Decision ID 34645 of the proposed 2016 303(d) list to list dieldrin; (2) the proposed 2016 303(d) list recommends that dieldrin be de-listed for Reach 2 of the Dominguez Channel (despite the fact that the two reaches are connected); (3) dieldrin is a legacy pollutant; and (4) SWAMP data (2003) based on multiple grab samples for both Dominguez Channel reaches resulted in non-detects for dieldrin.	Dieldrin was listed for the Dominguez Channel Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database. There is insufficient data in the CalWQA database to justify a decision to "delist." The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is

No.	Comment	Response
		not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to “legacy” pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.
10.5	**4. *Lead (including tissue)*** Lead (tissue) should be de-listed for the following reasons: (1) no justification to list lead was provided in Decision ID 34645 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in no exceedances for dissolved lead in Reach 1 of the Dominguez Channel; (3) according to the DCHT-TMDL, the samples taken for lead do not comply with the federal California Toxic Rule (CTR), in that they were not based exclusively on ambient samples and incorrectly used a hardness default value of 49 mg/13); and (4) lead as legacy pollutant has been significantly reduced in the environment as a result of de-leaded fuels).	It is clear from the context of the comment that commenter is actually referring to Decision ID 34613 for lead and not Decision ID 34645 which is for dieldrin. Decision ID 34613 includes six LOEs and supports a decision to “do not delist.” Comments on the Dominguez Channel and Greater Harbor Waters Toxic Pollutants TMDL are outside the scope of this action. Lead is not a “legacy” pollutant; there are current uses and sources of lead in the watershed.
10.6	**5. *Polychlorinated Bi-phenyls (PCBs)*** PCBs should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 33063 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy); (2) PCBs are de-listed for	Decision ID 33063 includes five LOEs, which were all analyzed with respect to the binomial distribution per the Listing Policy. The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that

No.	Comment	Response
	Reach 2 of the Dominguez Channel; (3) PCBs are legacy pollutants that have been banned for decades; and (4) SWAMP data (2003) based on multiple grab samples for both reaches resulted in non-detects for PCBs.	reach. Whether or not another reach is listed is not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.
10.7	**6. *Toxicity*** Toxicity should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 43000 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy)4 ; (2) SWAMP data (2003) based on multiple grab samples for both reaches resulted in nondetects for most toxics (both Dominguez Channel reaches); and a few detects but no exceedances; and a very few exceedances for metals; and (3) the 2016 303(d) list proposes to de-list toxics affecting Dominguez Channel R1 and R2 that contribute to toxicity5 (there can be no toxicity if many of the toxics are to be de-listed).	Decision ID 43000 includes two LOEs both of which assessed data using the binomial distribution per the Listing Policy. Decision ID 43000 refers to Dominguez Channel (lined portion above Vermont). Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region. There can be toxicity even when the cause of the toxicity is undetermined. Section 3.6 of the Listing Policy states, *"Waters may also be placed on the section 303(d) list for toxicity alone."*
10.8	**7. *Sediment Toxicity*** Sediment toxicity cannot be commented on because it is not addressed in the 2016 303(d) listing report, although it is listed in both the 2010 and 2012 303(d) reports.	Sediment toxicity data for Dominguez Channel Estuary (unlined portion below Vermont) is included as part of the toxicity listing. The decision to "do not delist" toxicity include two

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>It is not certain if the Regional Board intended to de-list sediment toxicity or to carry it over. Against this background it is recommended the all of following toxics and metals be eliminated from the proposed 2016 303(d) Integrated Report for Reach 1 of the Dominguez Channel:

1. Benzo(a)pyrene (PAH)
2. Benzo(a)anthracene (PAH)
3. Chlordane (tissue)
4. Chryslene (PAH)
5. Copper
6. DDT(tissue and sediment)
7. Dieldrin (tissue)
8. Lead (tissue)
9. Methylnaphthlene 2
10. Polychlorinated Bi-phenyls (PCBs)
11. Polyaromatic-Hydrocarbons (PAHs)
12. Phenanthrene (PAH)
13. Pyrene (PAH)
14. Sediment Toxicity
15. Toxicity
16.Zinc (sediment)

Eliminating all of these toxics/metals should be sufficient justification for eliminating or significantly revising the DCHT-TMDL.</td><td>LOEs.

For PAHs, see response to comment 10.1.
For chlordane, see response to comment 10.2.
For copper, see response to comment 10.1.
For DDT, see response to comment 10.3.
For Dieldrin, see response to comment 10.4.
For lead, see response to comment 10.5.
For Methylnaphthlene 2, see response to comment 10.1.
For PCBs, see response to comment 10.6.
For toxicity, also see response to comment 10.6 and 10.7.
For zinc, see response to comment 10.1.</td></tr>
<tr><td>10.9</td><td>III. Reach 2 Dominguez Channel (lined portion above Vermont)

[See the posted letter for Table]

The 2016 303(d) list proposes to carry-over from the 2010 303(d) all of the toxics except diazinon, which is de-listed. Copper, lead, zinc, and toxicity should be de-listed for the same reasons for de-listing Dominguez Channel R1 metals and toxics.</td><td>See response to comment 10.1 to 10.7 regarding to metals and toxics listings.

The Benthic Community Effects listings are associated with other pollutant listings so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a. See response to comment 11.19.</td></tr>
</table>

No.	Comment	Response
	The 2016 (303d) list also adds "Benthic-Macroinvertebrate Bioassessment" (8MB), which should not be listed for the following reasons: • BMB is not a pollutant. • BMB is used to evaluate the health of wadeable streams using a scoring system. Reach 1 of the Dominguez Channel is not wadeable. The Los Angeles County Flood Control District forbids entry into this and other flood control channels. • The Index of Biotic Integrity (IBI) score of 40, on which the BMB is justified, is considered to be on the edge of "poor" to "fair." But it was based only on 3 samples, taken in 2006, 2007, and 2008. Not only is the sample size not statistically significant, and therefore not in keeping with the 303(d) Listing Policy, but the data is not current. • BMB decision ID, 83960, also uses as lines of evidence toxicity, which is associated with copper, lead, zinc, and diazinon. However, copper, lead, zinc, and toxicity should not be listed on the proposed 2016 303(d) list for the same reasons they should not be listed for Reach 2 of the Dominguez Channel. Further, the 2016 303(d) list proposes to de-list diazinon, a toxic. • According to the Southern California Coastal Water Research Project (SCCWRP), Technical Report 88, which is a bioassessment study concluded in 2015, metals, toxicity, and pyrethroids were only weakly or rarely associated with poor stream health in the Southern region. • Biota, including fish, located in Reach 1 or Reach 2 of the Dominguez Channel has not been specifically identified as being impaired by metals or toxics. The Regional Board has not been able to demonstrate that fish and other wildlife have been impaired. Admittedly, this would be difficult given that Dominguez Channel is a non-perennial stream; it only flows when it rains. There are no studies that have identified the number and species of fish in the Dominguez Channel during storm events. If there were any fish in the channel traveling from up-stream they would probably perish when moving from a freshwater to a saltwater	Benthic Community Listings for channels that are lined entirely with concrete, which includes Dominguez Channel (above Vermont), have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24. For sample size, see response to comment 11.24. For copper, lead and zinc see response to comment 10.3, 10.5 and 10.1. Commenter may mean Technical Report 844 *"Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey."* Dominguez Channel was not assessed in this Report. Fish are not part of a Benthic Macroinvertebrate bioassessment.

No.	Comment	Response
	environment.	
10.10	**III. Conclusions** In the final analysis, each of the metals and toxic pollutants on the proposed 2016 303(d) list for Reaches 1 and 2 of the Dominguez Channel should be de-listed. The bases for the delistings are, in the aggregate, defective because: 1. The data supporting the listings are out-dated (in some cases by almost 15 years). It is unclear why more current water quality data is not available, especially given that each MS4 in the State is required to pay an annual SWAMP surcharge along with its regular annual MS4 Permit fee to the State. Unlike most non-SWAMP monitoring (sampling and analysis), the Regional Board's SWAMP unit conducts monitoring in accordance with USEPA guidance and State policy. The data SWAMP generates is accurate, objective, and extremely useful. Had SWAMP been allowed to conduct monitoring on a regular basis, the DCHT-TMDL may not have been necessary. 2. Over the past two decades, water quality undoubtedly has improved. Many toxic pollutants are no longer in the environment (e.g., DDT, various pesticides, cleaning solvents, lead in gasoline, etc.). Substantial credit should also be given to municipalities. Since the Los Angeles County MS4 program began in the nineties, cities have dutifully implemented best management practices (BMPs) that have been effective in source-controlling pollutants and reducing them from outfalls through post-construction runoff pollution mitigation controls. Community sensitivity to mitigating runoff pollution is another factor attributable to MS4 public education and outreach programs. 3. The pollutant listings claim to be based on water quality standards developed in conformance with CTR, but they are not. CTR standards for metals and toxics are intended to be ambient standards, derived from dry weather sampling and analysis from receiving water. Instead, they were derived from wet weather conditions. Further, CTR requires an actual hardness value to calculate water quality standards. Many of the 303(d) pollutants were CTR calculated using average	For a discussion of readily available data, see response to comment 32.3. The Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL was based on a thorough review of data that confirmed impairments for the pollutants addressed by the TMDL; it did not solely rely on past 303(d) listings. As noted earlier, adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. Additionally, while the Los Angeles Water Board acknowledges the efforts of MS4 permittees, comments on MS4 permits are outside the scope of this action. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately; additionally, CTR criteria apply to water quality in both dry and wet weather. For these data assessments, when hardness data was available, the hardness was used in the calculation of the criterion, per CTR. When hardness was not available, the default value of

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	hardness values or in some cases the hardness factor of 100 mg/L. According to CTR, this factor was intended only to be used for illustrative purposes when calculating ambient standards for metals and toxics. 4. The pollutant listings, with the exception of those based on the Regional Board's Surface Water Ambient Monitoring Program (SWAMP), do not comply with the State's 303(d) Listing Policy's requirement of meeting the statistical frequency test using a binomial distribution in accordance with a null hypothesis. It should be noted that the DCHT-TMDL was based on faulty 303(d) metals and toxic pollutant listings. What is regrettable is that the costly Dominguez Channel EWMP is based on the DCHT-TMDL.	100 mg/L was used, per CTR. In regards to the binomial distribution see response to comments 10.6 and 10.7.
11.	City of Los Angeles, Bureau of Sanitation (LASAN), March 30, 2017	
11.1	It is crucial that the 303(d) List be revised based on sound science and methodologies following the requirements of the State's Listing Policy. Revisions to the 303(d) List may result in changes to our Enhanced Watershed Management Programs, Coordinated Integrated Monitoring Programs, as well as affecting requirements for the four Water Reclamation Plants operated by LASAN. As such, we feel it is imperative that the listings reflect our understanding of the watersheds to the best of our abilities given the available data.	Comment noted.
11.2	Attachment 1: Detailed Technical Comments on the 2016 Revisions to the Los Angeles Region 303(d) List **Water Body / Pollutant**: Wilmington Drain / Zinc **Technical Comment:** The Fact Sheet for Decision ID 63330 states that one line of evidence is available to assess zinc in Wilmington Drain (90159). LOE 90159 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 3 of 5 samples exceeded the evaluation guideline (i.e., the CTR). However, data collected by Heal the Bay's, "Compton Creek Monitoring Program", were collected from Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90159 consists of data that should not be included when assessing whether or not a zinc impairment exists in Wilmington Drain. Excluding LOE 90159 results in no data available to assess the waterbody pollutant combination. ***Requested Action: Remove Decision ID 63330 for the zinc listing for Wilmington Drain as there are no data to assess the waterbody pollutant combination.***	
11.3	Wilmington Drain / Copper Although the Fact Sheet for Decision ID 44676 states that only two lines of evidence are available in the administrative record to assess the pollutant, Appendix G shows three distinct lines of evidence (4280, 90131, and 90473). LOE 4280 is a placeholder LOE to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 90131 includes data collected by the City of Los Angeles where 2 of 33 samples exceeded the evaluation guideline (i.e., the CTR). LOE 90473 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 2 of 5 samples exceeded the evaluation guideline (i.e., the CTR). The Fact Sheet for Decision ID 44676 combines these three LOEs to state that 4 of 38 samples exceed the CRITERIA and this exceeds the allowable frequency listed in Table 4.1 of the Listing Policy. However, as previously noted, the third LOE includes data collected by Heal the Bay's, "Compton Creek Monitoring Program", which was focused on Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90473 consists of data that should not be included when assessing whether or not a copper impairment exists in Wilmington Drain. Excluding LOE 90473 results in the sample exceedance frequency being 2 of 33 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy.	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	Requested Action: Revise Decision ID 44676 for the copper listing for Wilmington Drain to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.	
11.4	Los Angeles River Estuary (Queensway Bay) / Copper The Fact Sheet for Decision ID 64264 presents one line of evidence related to copper in the Los Angeles River Estuary (85965). LOE 85965 presents information from a State of California program that sampled marinas throughout California and assess the data provided as follows: *"A total of six grab samples were collected during each sampling event. Four separate grab samples were collected from inside the marina basin (Sites 1, 2, 3, & 4) and two separate grab samples were collected from outside the marina basin (Sites 5 & 6). Sample results for sites inside the marina basin and sites outside the marina basin were averaged per sample event, resulting in two sample results per sampling event."* Per the LOE, the Regional Board utilized data collected from inside the Downtown Shoreline Marina (Sites 1, 2, 3, & 4) and data collected outside the marina basin (Sites 5 & 6) to make a determination that 3 of 6 samples exceeded the copper criterion. No site location information is provided specific to these sites (GPS locations are provided in the associated documents, but no sites are specifically named Sites 1, 2, 3, 4, 5, & 6) so it is not possible to verify the locations. Regardless, data from inside the Marina should not be combined with data from the Estuary to assess the Estuary. These are two distinct bodies of water with differing inputs and water quality conditions. Dissolved copper data collected inside the Marina shows an average concentration of 7 ug/L and represents three of the three exceedances identified in the Fact Sheet. Dissolved copper data collected outside of the Marina (presumably in the Estuary) shows an average concentration of 0.72 ug/L and represents zero of three exceedances. The dissolved copper data collected from inside and outside of the Marina are	Site locations in longitude, latitude are given in the "LocationsSamplesDetails" file included in the Data Reference link on the factsheet *"Data for Various Pollutants in California Marinas, 2006."* However, the sites 1, 2, 3, and 4 are within the Marina and should be included with the "San Pedro Bay Near/Off Shore Zones." Los Angeles Water Board staff intend to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	significantly different from one another, as is to be expected, given that they are separate waterbodies and one is a marina and the other is an estuary. ***Requested Action: Either 1) remove Decision ID 64264 and the corresponding 303(d) listing in Attachment B or 2) revise Decision ID 64264 to reflect the waterbody is the Downtown Shoreline Marina rather than the Los Angeles River Estuary and remove the copper listing for the Los Angeles River Estuary from the 303(d) list (Attachment B).***	
11.5	Ballona Creek / Toxicity The Fact Sheet for Decision ID 34253 presents two lines of evidence that indicate the presence of sediment toxicity (83019 and 83020). LOE 83019 references a Statewide Stream Pollution Trends Study 2008 and LOE 83020 references Statewide Project Urban Pyrethroid Status Monitoring. When reviewing the station locations (404SUP093 and 404BLNAxx) associated with these two LOEs in an August 2012 Surface Water Ambient Monitoring (SWAMP) report titled "Toxicity in California Waters: Los Angeles Region", the sampling locations are identified as (page 11) "approximately one kilometer downstream from the confluence with Sepulveda Channel." In a 2014 SWAMP report titled "Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program Third Report - Five-Year Trends 2008-2012", the site 404BLNAxx is identified as Ballona Creek Downstream of Centinela (33.986 -118.417). In the Ballona Creek Toxics TMDL Staff Report, Ballona Creek Reach 2 and Estuary are defined as follows (page 5): Ballona Creek to Estuary (Reach 2) is the longest segment of the creek (approximately 4 miles) continuing on from National Boulevard and ending at Centinela Avenue where the Estuary begins. As such, the sites identified in LOEs 83019 and 83020 are in the Ballona Creek Estuary rather than in Ballona Creek and the Estuary already has a toxics TMDL. ***Requested Action: Remove Decision ID 34253 for toxicity for Ballona Creek as there are no data to assess the waterbody pollutant combination.***	The Ballona Creek Estuary Toxics TMDL Staff Report identifies the downstream end of Ballona Creek Reach 2 correctly when it states, *"Centinela Creek drains directly to "Ballona Creek Estuary" just below the boundary with Reach 2"*; however, Ballona Creek Reach 2 does not end at Centinela Ave., as stated. Ballona Creek Reach 2 ends just above the confluence with Centinela Creek as shown in the Los Angeles Region Basin Plan. However, a review of the sampling location is in process at this time.

No.	Comment	Response
11.6	Dominguez Channel (lined portion above Vermont Ave) / Ammonia The Fact Sheet for Decision ID 35134 states that two lines of evidence are available in the administrative record to assess pollutant (4098 and 83962). LOE 4098 is a placeholder to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 83962 includes data collected by the City of Los Angeles (City) and states that samples were collected at 3 locations: Artesia Blvd. @ Western Ave., Manhattan Beach Blvd., and El Segundo Blvd. where 2 of the 21 samples exceeded the Water Quality Objective/Criterion. However, the data included within the Data Reference for LOE 83962 includes eight additional results that did not exceed the Water Quality Objective/Criterion (including samples collected at Vermont Ave., which was not identified within the LOE Spatial Representation). Given that the Basin Plan indicates that Vermont Ave. represents the reach break between Dominguez Channel and the Dominguez Channel Estuary, samples collected at Vermont Ave. are representative of the upstream water body (i.e., Dominguez Channel lined portion above Vermont Ave). Including all of the applicable data included within the Data Reference for LOE 83962 results in the sample exceedance frequency being 2 of 29 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy. ***Requested Action: Revise Decision ID 35134 for the ammonia listing for Dominguez Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.***	The sample collected at Vermont Ave. was collected just downstream of the Vermont Ave. reach break, so it was not included in the listing decision. That sampling location represents water quality of the downstream reach.
11.7	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Ammonia As presented in LOE 83995, ammonia, pH, and temperature data were collected by the City of Los Angeles at four stations in Dominguez Channel Estuary during July 2009 and August 2009. The following table summarizes the number of samples and exceedances.	The decision has been updated to “DELIST.”

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Summary of data for Dominguez Channel Estuary (unlined portion below Vermont Ave)

Waterbody	# of Samples	# of Exceedances of 4-Day Criteria	Delist if the # of exceedances equal or is less than[1]
Dominguez Channel Estuary (unlined portion below Vermont Ave)	28	0	2

1 For toxicants, the maximum number of exceedances allowed for delisting is shown in Table 4.1 (Page 14) of the Listing Policy.

COMPARISON OF EXCEEDANCES TO LISTING POLICY

As shown in the table above, the total number of exceedances is below the maximum number of exceedances allowed to delist per the Listing Policy. As a result, the available data demonstrates that Dominguez Channel Estuary meets the water quality objectives for ammonia (un-ionized) and should be delisted from the 303(d) list. This decision would be consistent with Decision ID 62240 (which treated the listing as a new listing despite an existing listing being present), which finds that ammonia in the Dominguez Channel Estuary should not be listed and states the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification against placing this water segment-pollutant combination on the CWA section 303(d) List in the Water Quality Limited Segments category*. This conclusion is based on the staff findings that:

1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.

2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.

3. 0 of 28 samples exceeded the CRITERIA and this does not exceed the allowable frequency listed in Table 3.1 of the Listing Policy.

4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

Regional Board Staff Decision Recommendation: After review of the available data and information, *RWQCB staff concludes that the water body-pollutant combination should not be placed on the section 303(d) list* because applicable water quality standards are not being exceeded."

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<tr><td></td><td>Requested Action: Revise Decision ID 34669 for the ammonia listing for Dominguez Channel Estuary to Delist from 303(d) list and remove from Category 5 (Appendix B) based on Decision ID 62240 (for the ammonia [un-ionized] listing for Dominguez Channel Estuary) and the data reference provided in LOE 83995.</td><td></td></tr>
<tr><td>11.8</td><td>Compton Creek / Iron

The Fact Sheet for Decision ID 62052 states that one LOE (83798) is available in the administrative record to assess iron in Compton Creek. LOE 83798 lists the following as the Evaluation Guideline used as the basis for the listing: “National Recommended Water Quality Criteria Continuous Concentrations are intended to protect freshwater aquatic organisms from chronic exposures and are expressed as 4-day average concentrations. The City has several concerns with this listing:
The only two exceedances are associated with wet-weather samples collected on October 13, 2009. The Evaluation Guideline used as the basis is Criteria Continuous Concentrations (i.e., chronic criterion). It is inappropriate to use a chronic criterion as it is meant to protect aquatic life against chronic exposure and the samples were taken during a wet-weather event not representative of chronic conditions. USEPA does not recommend a Criteria Maximum Concentration (acute criterion) for iron within its National Recommended Water Quality Criteria.
The National Recommended Water Quality Criteria Continuous Concentration for iron does not specify whether the criterion applies to the total recoverable or dissolved fraction. None of the dissolved iron results associated with the samples used to assess the water body exceeded the criterion.
Section 6.1.5.3 of the Listing Policy states that “Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision.” However, multiple samples were collected on the same day during the same storms and each was considered separately.</td><td>The review of the decision for Compton Creek iron is in process at this time.</td></tr>
</table>

No.	Comment	Response
	Samples collected on the same day during the same storm (as was the case with the two exceedances) should not be considered independently from one another as they are clearly not temporally independent and do not meet the Listing Policy requirements. Averaging samples collected on the same day results in 1 of 5 exceedances, which does not meet the requirements of the Listing Policy for placing a water body segment on the 303(d) list. ***Requested Action: Revise the decision for Decision ID 62052 for the iron listing for Compton Creek to Do Not List on 303(d) list (TMDL required list) and remove from Category 5 (Appendix B) due to an inappropriate evaluation guideline being used as the basis for the listing, the observed exceedances were not temporally independent, and none of the dissolved results exceeded the evaluation guideline.***	
11.9	Ballona Creek Estuary / Silver The Fact Sheet for Decision ID 34520 states "Silver has not been specifically listed on the 303(d) list." Furthermore, the single Line of Evidence (LOE) does not indicate that any data were analyzed (i.e., the number of samples listed is zero). As such, the listing should be removed. ***Requested Action: Revise Decision ID 34520 for the silver listing for Ballona Creek Estuary to Delist from 303(d) list and remove from Category 4 (Appendix C) to be consistent with the Fact Sheet.***	During the development of the Ballona Creek Estuary Toxics TMDL, USEPA and the Los Angeles Region found that the Ballona Creek listings for sediments (cadmium, copper, lead and silver) were made in error and should be applied to the Estuary. The original listing (for Ballona Creek) was made in 1998 or prior; LOE 2408 is a "placeholder" to support a previous listing decision. Data for these "placeholder" LOEs are not included in the CalWQA database. The factsheet has been revised for clarity.
11.10	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Copper The Fact Sheet for Decision ID 33751 states that five LOEs are available to assess copper in the Dominguez Channel Estuary, four of which correspond to sediment and one of which corresponds to water. The sole LOE that presents water data	The review of the decision for Dominguez Channel Estuary (unlined portion below Vermont Ave) Copper is in process at this time. In addition, copper is included on the list as "being addressed by a TMDL," the Dominguez Channel

No.	Comment	Response
	states that 3 of 3 samples exceeded the dissolved California Toxics Rule (CTR) saltwater chronic criterion. However, these sample results were all collected on the same day and appear to be for total copper associated with a wet-weather event. When using the total copper CTR acute criterion (rather than the dissolved CTR chronic criterion), the samples do not exceed. As such, all LOEs that support a listing correspond to the sediment matrix. ***Requested Action: Revise the pollutant for Decision ID 33751 for the copper listing for Dominguez Channel Estuary to "Copper <u>(sediment)</u>" given that the LOEs supporting a listing correspond to the sediment matrix and move the listing to Category 4a (Appendix C).***	and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL.
11.11	Various waterbodies / Various pollutants For a number of existing listings, it appears as if a significant number of readily available data were not considered when making the Final Listing Decision. These data are from NPDES Permit monitoring programs (both wastewater and stormwater). When these data are considered, the number of measured exceedances supports rejection of the null hypothesis as presented in Table 4.1 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy). As such, these listings should be removed from the section 303(d) list. Furthermore, with regards to the cyanide listing for Ballona Creek, it appears as if Los Angeles (LA) Regional Water Quality Control Board (Regional Board or LARWQCB) staff applied the chronic CTR criterion to the entire dataset instead of applying the chronic CTR criterion during dry-weather and the acute CTR criterion during wet-weather.	See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list. While, in TMDLs, targets and allocations may be developed separately for dry weather and wet weather and may apply chronic criteria to dry weather and acute criteria to wet weather, that is not the procedure used in 303(d) listing decisions. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, and the more conservative chronic criteria from CTR applies, appropriately, to water quality assessments.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>
<table>
<tr><th rowspan="2">Water Body</th><th rowspan="2">Pollutant</th><th rowspan="2">Listing Category</th><th colspan="2">Date Range</th><th rowspan="2"># of Samples</th><th rowspan="2"># of Exceedances</th><th rowspan="2">Max # of Exceedances to Delist</th></tr>
<tr><th>Start</th><th>End</th></tr>
<tr><td>Ballona Creek</td><td>Cyanide</td><td>5</td><td>10/2000</td><td>12/2010</td><td>66</td><td>5</td><td>5</td></tr>
<tr><td>Burbank Western Channel</td><td>Selenium</td><td>5</td><td>10/2003</td><td>12/2010</td><td>201</td><td>15</td><td>17</td></tr>
<tr><td rowspan="2">Los Angeles River Reach 1 (Estuary to Carson Street)</td><td>Diazinon</td><td>5</td><td>10/2002</td><td>12/2010</td><td>56</td><td>1</td><td>4</td></tr>
<tr><td>Lead</td><td>5</td><td>02/2001</td><td>12/2010</td><td>173</td><td>4</td><td>14</td></tr>
<tr><td>Los Angeles River Reach 2 (Carson to Figueroa Street)</td><td>Lead</td><td>5</td><td>01/2001</td><td>12/2010</td><td>241</td><td>4</td><td>20</td></tr>
<tr><td>Los Angeles River Reach 5 (within Sepulveda Basin)</td><td>Lead</td><td>5</td><td>02/2002</td><td>11/2010</td><td>78</td><td>0</td><td>6</td></tr>
<tr><td rowspan="2">Sepulveda Canyon</td><td>Lead</td><td>4</td><td>10/2004</td><td>12/2010</td><td>98</td><td>4</td><td>8</td></tr>
<tr><td>Selenium</td><td>4</td><td>10/2004</td><td>12/2010</td><td>98</td><td>4</td><td>8</td></tr>
</table>

Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list and remove from Category 5 (Appendix B) or Category 4 (Appendix C), whichever is applicable.
</td><td></td></tr>
<tr><td>11.12</td><td>Burbank Western Channel / Lead

The Fact Sheet for Decision ID 32882 finds that lead in the Burbank Western Channel should not be listed and states (emphasis added): “One line of evidence is available in the administrative record to assess this pollutant. None of the samples exceed the water quality objective. Based on the readily available data and information, the weight of evidence indicates that <u>there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category</u>.” In addition, the analysis conducted as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) did not identify any exceedances from October 2003 through December 2010.

Requested Action: Revise Decision ID 32882 for the lead listing for Burbank Western Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2003.</td><td>USEPA added lead to the 303(d) list (on the “being addressed by a TMDL” portion of the list) in 2006 because of the data review and the targets and allocations for lead included in the Los Angeles River metals TMDL.

The factsheet has been revised for clarity.</td></tr>
</table>

No.	Comment	Response
11.13	Los Angeles River Reach 1 (Estuary to Carson Street) / Cadmium The Fact Sheet for Decision ID 32639 finds that cadmium in the Los Angeles River Reach 1 should not be listed and states (emphasis added): "Three lines of evidence are available in the administrative record to assess this pollutant. The CTR criterion for cadmium for the protection of aquatic life was exceeded three out of forty-two samples from data collected between 1996 and 2002 and no samples exceeded CCR Title 22 MCL guidelines for the protection of MUN beneficial uses in data collected between 2000 and 2003. Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification for removing this water segment pollutant combination from the section 303(d) list.*" In addition, the analysis conducted as part of the ULAR EWMP did not identify any exceedances from February 2001 through December 2010. ***Requested Action: Revise Decision ID 32639 for the cadmium listing for Los Angeles River Reach 1 to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2001.***	In the 2002 303(d) list, a cadmium listing was added for Reach 1 of the Los Angeles River based on stormwater data. Data for listings prior to 2006 are not included in the CalWQA database. In addition, the USEPA final decision for the 2006 303(d) list added this listing to the 'being addressed by USEPA approved TMDL' portion of the 303(d) List on this basis of the data review and the targets and allocations for cadmium included in the Los Angeles River Metals TMDL. The factsheet has been revised for clarity.
11.14	Echo Park Lake / Ammonia Decision ID 34696 proposes to change the ammonia listing for Echo Park Lake from List on 303(d) list (TMDL required list) to list on the 303(d) list (being addressed by United States Environmental Protection Agency [USEPA] approved TMDL). However, the TMDL report made a finding of nonimpairment for ammonia, as outlined in the following excerpt from Section 6.2.3.2 of the TMDL report (emphasis added): "Echo Park Lake was listed as impaired for ammonia in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and	The 303(d) list and the factsheet has been updated to "DELIST."

No.	Comment	Response
	local agencies collected 35 additional samples (7 wet-weather) between May 2003 and February 2010 to evaluate current water quality conditions. There was one ammonia exceedance in 35 samples (Appendix G, Monitoring Data). Therefore, Echo Park Lake meets ammonia water quality standards and USEPA concludes that preparing a TMDL for ammonia is unwarranted at this time. *USEPA recommends that Echo Park Lake not be identified as impaired for ammonia in California's next 303(d) listing*."[1] ***Requested Action: Revise Decision ID 34696 for the ammonia listing for Echo Park Lake to Delist from 303(d) list and remove from Category 4 (Appendix C) based on USEPA's recommendation.*** 1 U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 6.2.3.2 Summary of Ammonia Non-Impairment, March 2012, p.6-13.	
11.15	Lincoln Park Lake / Lead Decision ID 34817 proposes to change the lead listing for Lincoln Park Lake from List on 303(d) list (TMDL-required list) to list on the 303(d) list (being addressed by USEPA approved TMDL). However, the TMDL report made a finding of nonimpairment for lead, as outlined in the following excerpt from Section 5.3 of the TMDL report (emphasis added): "Lincoln Park Lake was listed as impaired for lead in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 40 additional samples (11 wet-weather) between October 2008 and December 2010 to evaluate current water quality conditions. There were zero dissolved lead exceedances in 40 samples (Appendix G, Monitoring Data). USEPA also collected one sediment sample in September 2010 to further evaluate lake conditions. There were zero sediment lead exceedances of the 128 ppm freshwater (Probable Effect Concentrations) sediment target (Appendix G, Monitoring Data). Therefore, Lincoln Park Lake meets lead water quality standards and USEPA concludes that preparing a TMDL for lead is unwarranted	The 303(d) list and the factsheet has been updated to "DELIST."

No.	Comment	Response
	at this time. *USEPA recommends that Lincoln Park Lake not be identified as impaired by lead in California's next 303(d) list*." ***Requested Action: Revise Decision ID 34817 for the lead listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B) based on USEPA's recommendation.*** U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 5.3 Lead Impairment, March 2012, p.5-18	
11.16	Lincoln Park Lake / Ammonia The data utilized to develop the original listing in 1998 are not available (these data were requested from USEPA and the Regional Board during development of the TMDL in 2010. Based on USEPA's TMDL report, data collected prior to 2009 were reported as ammonium, without corresponding ammonia, pH, or temperature measurements making it impossible to compare these data to ammonia criteria. Only ammonia data collected with corresponding pH and temperature data can be used to determine if criteria were exceeded. In 2008, the Regional Board collected eight ammonia samples all of which were below the reporting limit of 0.1 mg/L and chronic criterion. In 2009, the City of Los Angeles and USEPA/Regional Board conducted monitoring and collected 15 and three samples, respectively, all of which were below the chronic criterion. As stated in the TMDL report (pg. 5-10): *"There were no exceedances of the acute or chronic ammonia criteria during any recent sampling events with associated pH and temperature measurements."* In summary, there are no ammonia data with corresponding pH and temperature measurements available to support the original listing and all available recent data demonstrate there are no exceedances. ***Requested Action: Revise Decision ID 35004 for the ammonia listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B).***	The Water Quality Assessment Report (LARWQCB, 1996) includes ammonia as not supporting beneficial uses. Twenty-eight ammonium samples were reported ranging from non-detect to 1.14 mg-N /L which is less than the acute target, but greater than the chronic target for total ammonia N (assuming the analytical method converted all ammonia to ammonium). Data from lines of evidence developed prior to 2006 are not included in the CalWQA database. While the EPA TMDL for the Los Angeles Area Lakes did review data from 2008 and 2009, which did not exceed criteria, unlike for lead, the EPA TMDL for the Los Angeles Area Lakes did not make a finding of non-impairment for ammonia and instead established targets.

No.	Comment	Response
11.17	Los Angeles River Reach 2 (Carson to Figueroa Street) and Los Angeles River Reach 5 (within Sepulveda Basin) / Oil The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized as follows: An investigation was conducted following seeps of petroleum hydrocarbons into the LA River in June 2001. Based on lab results and borings, it was concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands. Oil was visible in Puente formation seams, partings and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts with younger, less permeable units or layers. The USEPA On-Scene Coordinator (OSC) conducted subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge as a result of a spill, leak, or discharge from any facility and that the oil has been discharging to the river since at least 1943 and there is no practical means of preventing this oil seep from discharging to the River. On April 19, 2002, an email was sent to Steven Pedersen of City of Los Angeles /Watershed Protection Division (WPD) by Steven Poole of the US Coast Guard/National Pollution Funds Center (USGC/NPFC). Mr. Poole stated that City of Los Angeles cannot submit to USGC/NPFC a claim for reimbursement for cost incurred by the City associated with May 2001 oil clean-up efforts in the LA River because Title 1 of the Oil Pollution Act does not allow for reimbursement for **naturally-occurring oil** (natural seepage). In summary, the reports and correspondence discussed herein, indicate that multiple agencies believe that the oil found in the listed reaches of the LA River is associated with naturally-occurring seepage suggesting that a 303(d) listing is not	The State and Regional Water Boards are currently exploring options to address pollutants that may be naturally elevated in water bodies. Until the natural sources of pollutants are addressed by either an exclusion policy as adopted by the State Water Board or a natural sources exclusion (or other site-specific objective) is developed by the Los Angeles Water Board, oil in the Los Angeles River is an impairment and appropriately on the 303(d) list. There is no alternative regulatory program identified that will reduce oil in the Los Angeles River so the category cannot be 4b. However, the factsheet has been updated to include “natural sources” as the source.

No.	Comment	Response
	warranted. **Studies Used in the Analysis** The following studies/correspondences were used in the analysis: • Pollution Report (2002), USEPA Region IX • Correspondence (2002) from Michael P. Brown, Manager, Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles • Correspondence (2002) from Steven Poole, Claims Manager, USGC/NPFC Despite repeated efforts by WPD to obtain the historical information utilized to develop the original listing, the Regional Board has not provided the information for inclusion in the analysis. Therefore, the analysis is based solely on recent information available to WPD. **Summary of Findings** The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized below. **Investigations of the Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles – June 2001** An investigation was conducted following seeps of petroleum hydrocarbons into the engineered channel of the LA River across from the Piper Technical Center in June 2001. This study concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands, based on lab results and borings. The samples of the oil seeps and associated bacterial-growth scums revealed that the seeps were predominantly in the oil or heavy-hydrocarbon range. This supports the conclusion that the LA River oil seeps are natural crude oil as opposed to fuel leaks.	

No.	Comment	Response
	Drilling of wells along Mission St. (east of the river channel) confirmed that oil-bearing Puente formation sands and fractures are the source of crude oil and gases that migrate into the shallow alluvial soils. The hydrocarbons, visible oil and PID readings generally increased with depth toward the Puente formation. Oil was visible in Puente formation seams, partings, and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts younger, less permeable units or layers. **Pollution Report, EPA – January 2002** The USEPA OSC conducted extensive subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge to the River as a result of a spill, leak, or discharge from any facility based on the investigation. The oil has been discharging to the river since the least 1943 and there is no practical means of preventing this oil seep from discharging to the LA River. The OSC also evaluated the use of epoxy or urethane sealants on the seeps to reduce the flow of oil. However, it was concluded that the use of sealants on the seeps would cause the oil to get into the subdrain system and eventually enter the LA River. In summary, WPD attempted to evaluate the original listing information in light of the currently available information. Although the Regional Board did not provide the information, the reports and correspondence discussed herein, and attached to this letter, indicate that multiple agencies believe that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. ***Requested Action: Revise Decision IDs 34118 and 34203 for the oil listings for Los Angeles River Reaches 2 and 5 to Delist from 303(d) list and remove from Category 5 (Appendix B) given that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. Alternatively, move the listing to Category 4b as other regulatory programs are reasonably***	

<table>
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<tr><td></td><td>expected to result in attainment of the water quality standard.</td><td></td></tr>
<tr><td>11.18</td><td>Various waterbodies Various / pollutants

Section 2 of the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) states (pg. 3): "At a minimum, the California section 303(d) list shall identify waters where standards are not met, pollutants or toxicity contributing to standards exceedance, and the TMDL completion schedule." In addition, Section 2.1 of the Listing Policy titled "Water Quality Limited Segments" states (pg. 3): "Waters shall be placed in this category of the section 303(d) list if it is determined, in accordance with the California Listing Factors that the water quality standard is not attained; the standards nonattainment is due to toxicity, a pollutant, or pollutants; and remediation of the standards attainment problem requires one or more TMDLs." As such, all listings that do not identify either toxicity or a pollutant as the impairment do not meet the requirements for being placed in the water quality-limited segments category. This is supported by current listing decisions made by the Los Angeles Regional Water Quality Control Board (Regional Board) in Burbank Western Channel for excess algal growth, scum/foam-unnatural, and taste and odor and Calleguas Creek Reach 13 for excess algal growth that state the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing these listing from the 303(d) Water Quality Limited Segment list because the segment pollutant combinations is not a pollutant." The following table presents water body segments and listings that correspond to instances where there is not a pollutant.

<table>
<tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr>
<tr><td>44553</td><td>Arroyo Seco Reach 1 (LA River to West Holly Ave.)</td><td>Benthic Community Effects</td></tr>
<tr><td>65656</td><td>Ballona Creek</td><td>Benthic Community Effects</td></tr>
</table>
</td><td>The Benthic Community Effects listings are associated with other pollutant or toxicity listings and, therefore, will require a TMDL (or other regulatory program) to attain standards.

The Ballona Creek Wetlands listings were addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation. The impairments identified are associated with sedimentation in addition to metals, trash and other pollutants. The hydromodification listing has been deleted.

While pH exceedances may be associated with algae impairment, excessively high pH is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, "The pH of all inland surface waters shall not be depressed below 6.5 or raised above 8.5…"

Algae, Eutrophic, Odor, Organic Enrichment, Nutrients (Algae) are discussed in the Listing Policy section 3.7.1: An acceptable nutrient-related evaluation guideline is exceeded using the binomial distribution as described in section 3.1 for excessive algae growth, unnatural foam, odor, and taste. Waters may also be placed on the section 303(d) list when a significant nuisance condition exists as compared to reference conditions, or when nutrient concentrations cause or contribute to excessive algae growth.</td></tr>
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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
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<table>
<tr><td>44746</td><td>Ballona Creek Wetlands</td><td>Exotic Vegetation</td></tr>
<tr><td>34697</td><td>Ballona Creek Wetlands</td><td>Habitat alterations</td></tr>
<tr><td>34699</td><td>Ballona Creek Wetlands</td><td>Hydromodification</td></tr>
<tr><td>44747</td><td>Ballona Creek Wetlands</td><td>Reduced Tidal Flushing</td></tr>
<tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr>
<tr><td>32967</td><td>Compton Creek</td><td>pH</td></tr>
<tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>34030</td><td>Echo Park Lake</td><td>Algae</td></tr>
<tr><td>34698</td><td>Echo Park Lake</td><td>Eutrophic</td></tr>
<tr><td>34756</td><td>Echo Park Lake</td><td>Odor</td></tr>
<tr><td>44748</td><td>Echo Park Lake</td><td>pH</td></tr>
<tr><td>35180</td><td>Lincoln Park Lake</td><td>Eutrophic</td></tr>
<tr><td>44641</td><td>Lincoln Park Lake</td><td>Odor</td></tr>
<tr><td>35223</td><td>Lincoln Park Lake</td><td>Organic Enrichment/Low Dissolved Oxygen</td></tr>
<tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr>
<tr><td>33456</td><td>Los Angeles River Reach 1 (Estuary to Carson Street)</td><td>Nutrients (Algae)</td></tr>
<tr><td>32959</td><td>Los Angeles River Reach 2 (Carson to Figueroa Street)</td><td>Nutrients (Algae)</td></tr>
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<td>
The Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs addresses the Algae, Eutrophic, Odor and Organic Enrichment impairments in both Echo Park Lake and Lincoln Park Lake by developing TMDL targets for ammonia, chlorophyll a, dissolved oxygen, pH, Total Nitrogen and Total Phosphorus.

The Los Angeles River Nutrients (Algae) listings are being addressed by the Los Angeles River Nitrogen Compounds and Related Effects TMDL. Attaining the nitrogen compound objectives is intended to address impairments caused by pH, scum/foam, and algae as these effects are related to the presence of nitrogen in the waterbody.

While temperature exceedances may be associated with “pollution” such as hydromodification or lack of riparian cover, excessively high temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At no time shall these WARM designated waters be raised above 80 degrees F…” See also response to comment 17.4 for additional discussion of temperature as a pollutant.

The Beach Closures listing for the Los Angeles/Long Beach Inner Harbor is being addressed by the Los Angeles Harbor, Inner Cabrillo Beach and Main Ship Channel Bacteria TMDL, which established targets and allocations for bacterial indicators.
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66229	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Benthic Community Effects
34204	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Nutrients (Algae)
64386	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Temperature, water
66232	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Benthic Community Effects
44326	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Nutrients (Algae)
35160	Los Angeles River Reach 5 (within Sepulveda Basin)	Nutrients (Algae)
34207	Los Angeles/Long Beach Inner Harbor	Beach Closures
34208	Los Angeles/Long Beach Inner Harbor	Benthic Community Effects
34305	Machado Lake (Harbor Park Lake)	Algae
42417	Machado Lake (Harbor Park Lake)	Eutrophic
42262	Machado Lake (Harbor Park Lake)	Odor
61605	Marina del Rey Harbor - Back Basins	Oxygen, Dissolved

</td><td>
The Machado Lake Algae, Eutrophic, and Odor listings are being addressed by the Machado Lake Nutrients TMDL, which sets targets and allocations for phosphorus, nitrogen and chlorophyll *a*.

While Dissolved Oxygen exceedances may be associated with other factors such as algae, depressed dissolved oxygen is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*At a minimum (see specifics below), the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 m g/L…*"

Burbank Western Channel listings for excess algal growth, scum/foam-unnatural, and taste and odor and the Calleguas Creek Reach 13 listing for excess algal growth were delisted in 2010.

Benthic Macroinvertebrate listings are discussed also in response to comment 11.19 and 11.24.
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<tr><td></td><td>Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, and remove from Category 5 (Appendix B) or Category 4 (Appendix C).</td><td></td></tr>
<tr><td>11.19</td><td>Various waterbodies / Various pollutants

There are numerous listings that include waterbody segments which are in nonattainment due to pollution that is not caused by a pollutant. The 2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region Staff Report states the following (pg. 9): “Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant, but rather caused by pollution, such as flow alteration or habitat alteration.” Impairments for benthic community effects, exotic vegetation, habitat alterations, hydromodification, reduced tidal flushing, and temperature are caused by either flow and/or habitat alteration (not by a pollutant or combination of pollutants) and; therefore, waterbody segments under these listings should instead be moved to Category 4c.
<table>
<tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr>
<tr><td>44553</td><td>Arroyo Seco Reach 1 (LA River to West Holly Ave.)</td><td>Benthic Community Effects</td></tr>
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<tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr>
</table></td><td>The Benthic Community Effects listings are associated by with other pollutant listings, so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a.

The Ballona Creek Wetlands listings are addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation; therefore, the appropriate waterbody category is 4a, “A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.”

Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore, Category 5 is the appropriate category. Temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At no time shall these WARM designated waters be raised above 80 degrees F…” See also response to comment 17.4 for additional discussion of temperature as a pollutant.</td></tr>
</table>

No.	Comment	Response
	<table><tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr><tr><td>66229</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Benthic Community Effects</td></tr><tr><td>64386</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Temperature, water</td></tr><tr><td>66232</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Benthic Community Effects</td></tr><tr><td>34207</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr></table> ***Requested Action: Notwithstanding the previous comment that supports revising the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, move all segments listed in the preceding table with impairments caused by pollution to Category 4c and revise Appendix B or C as appropriate.***	
11.20	Lincoln Park Lake / PCBs Decision ID 64083 proposes to list PCBs in fish tissue for Lincoln Lake Park. However, this Lake is annually stocked with fish and therefore the lake population	The minimum requirement to justify a listing is exceedances of the relevant criteria or guideline per the Listing Policy. Fish in Lincoln Park Lake exceeded the relevant guideline, the OEHHA fish contaminant goal for PCBs. The identification of

No.	Comment	Response
	does not spend its lifespan in Lincoln Park Lake and may have accumulated PCBs from another waterbody. A number of studies have indicated that farmed salmon accumulate PCBs from the fish meal they are fed. In order to determine the source of the exceedance, fish from the State's stocking system need to be tested prior to introduction and the duration of time they spend in the Lake needs to be determined by a tagging program. The current analysis makes the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments. In addition, the Lake is restocked every year in April which suggests that all fish stocked are immediately removed and consumed. Both of these assumptions need to be fully evaluated prior to determining the source of the exceedance and therefore Lincoln Park Lake does not meet the minimum requirements to justify a listing. ***Requested Action: Remove Decision ID 64083 from Category 5 (Appendix B) or revise from Category 5 to Category 3 so that further evaluation of whether or not the lake itself is actually impaired.***	fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list. The analysis did not make the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments, because a source analysis has not been completed.
11.21	Santa Monica Bay Offshore/ Nearshore / Arsenic The Fact Sheet for Decision ID 67208 presents two lines of evidence related to arsenic in Santa Monica Bay (88949 and 88950). LOE 88949 presents information related to sediment and found that 0 of 32 samples exceeded the sediment goals utilized in the assessment. LOE 88950 presents information related to fish tissue and indicates that 19 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis and 10% of the total arsenic result represented the amount of inorganic arsenic in the sample for comparison to the guideline. In reviewing LOE 88950, no information/citation can be found supporting the assumption that 10% of the total arsenic result represented the amount of inorganic arsenic in the sample. It is appropriate to utilize inorganic arsenic in assessing potential risk; however, either measured inorganic arsenic or a conversion factor developed from actual measured ratios from Santa Monica Bay should be utilized. In USEPA's 2000 Guidance for Assessing Chemical	A review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic. 10% is a conservative assumption for amount of inorganic arsenic in the sample, though a locally developed conversion factor could be better and could be used in future assessment. Note, the San Diego listing only used 2 samples of shellfish leading to greater uncertainty than this assessment which used 19 samples and all 19 samples exceeded the guideline by a wide margin. The data were collected on several different days in several different zones. Data from different species cannot be aggregated from different species. Composites of different species will have different age profiles, different species occupy different trophic levels and will accumulate

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<tr><td></td><td>Contaminant Data for Use in Fish Advisories Volume 1 Fish Sampling and Analysis Third Edition (EPA 823-B-00-007), USEPA recommends that, in both screening and intensive studies, total inorganic arsenic tissue concentrations be determined for comparison with the recommended screening value for chronic oral exposure. Scientific literature demonstrates that a range of total to inorganic arsenic ratios exist. For example, a 2008 study specifically looking at arsenic speciation in 383 samples of marine fish and shellfish, showed that the inorganic fraction of arsenic is typically <0.5% with a few of the highest samples ranging from 1-5% The City's concern with the approach has been expressed in other regions of California as well. The Port of San Diego in an August 11, 2016 comment letter to the San Diego Regional Water Quality Control Board regarding a 303(d) arsenic listing, noted the high level of variability of the proportion of inorganic arsenic across species (typically <10%) as measured in a number of other studies, as well as a methodology that could be used to ground truth the applied proportion through actual sample data. In response to the Port of San Diego's comment the San Diego Regional Board removed an arsenic listing from their draft 303(d) list and stated:

"… there is a high level of uncertainty in the levels of inorganic arsenic in shellfish tissue. The assumption regarding the percent of total arsenic in shellfish tissue is likely conservative, and the San Diego Water Board agrees that a listing based on those assumptions has a high probability of mischaracterizing the results as an impairment. The San Diego Water Board supports the Port's suggestion that future monitoring of shellfish incorporate a measurement of both total and inorganic arsenic."

The City also has concerns with the approach to utilizing the data in comparison to the guidelines. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years</td><td>pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point.

In addition, while the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.</td></tr>
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	and the risk endpoint relates to a carcinogenic effect over a 30-year period, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes, which should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns. In summary, the lack of inorganic arsenic data and use of an unsupported conversion factor in combination with the approach to comparing tissue data that does not appropriately meet the requirements of temporal independence or reflect actual exposure conditions does support listing arsenic in Santa Monica Bay. The City welcomes the opportunity to discuss approaches to develop inorganic arsenic data for use in future evaluations, as well as an approach to consider tissue data to properly evaluate arsenic in Santa Monica Bay. ***Requested Action: Remove Decision ID 67208 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.*** [3]Peshut, P.J. et al., 2008. Arsenic speciation in marine fish and shellfish from American Samoa. Chemosphere 71 488-492. doi:10.1016/j.chemosphere.2007.10.014 [4]Port of San Diego comment letter to California Water Quality Control Board – San Diego Region. "*Comment – CWA Section 305(b)/303(d) Integrated Report.*" Letter Dated August 11, 2016.	

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	[5]Page 47 of San Diego Region Response to Comment on 2014 303(d) list. http://www.swrcb.ca.gov/sandiego/water_issues/programs/303d_list/docs/Response_To_Comments.pdf	
11.22	Santa Monica Bay Offshore/ Nearshore / Mercury The Fact Sheet for Decision ID 67209 presents three lines of evidence related to mercury in Santa Monica Bay (4165, 88894, and 88891). LOE 4165 and 88891 presents information related to sediment toxicity and sediment chemistry, respectively. LOE 88894 presents information related to fish tissue and indicates that 2 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes that should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns.	Fish collected on the same day, in the same zone, and of the same species, could be aggregated, but this data set represents fish collected on different days or in different zones or they are different species and therefore cannot be aggregated.. In addition, the fact that tissue concentrations represent the accumulation of pollutants over a time period of years, and each fish is a different age and will have moved differently through the environment, provides independence of the tissue sample. However, a review of this decision is in process at this time to confirm the number of exceedances.

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	The City welcomes the opportunity to discuss an approach to appropriately consider tissue data to properly evaluate mercury in Santa Monica Bay. ***Requested Action: Remove Decision ID 67209 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.***	
11.23	Echo Park Lake and Machado Lake (Harbor Park Lake) / Various pollutants Echo Park Lake and Machado Lake (Harbor Park Lake) are two waterbodies located in Los Angeles County which have both been included on the 303(d) impaired waters list since 2006. Because of their water quality impairments, the City invested significant resources to rehabilitate the water quality of the lakes. The $45 million Echo Park Lake Rehabilitation Project was completed in 2015 and included extensive changes to the lake hydrology (e.g., storm drain upgrades, inlet and outlet upgrades, removal of contaminated lake sediments, and installation of lake aeration system) and immediately surrounding areas, including best management practices (BMPs) to reduce the loads of targeted pollutants including trash, metals, coliform, pesticides, and nutrients. The Machado Lake Ecosystem Rehabilitation Project involved dredging and capping the lake bottom, constructing an oxygenation system, adding new storm drain systems, as well as a number of other BMPs to improve water quality. These award-winning projects have been very successful and produced significant water quality improvements; however, these improvements are not reflected in the Regional Board's proposed 303(d) list. The proposed changes for Echo Park Lake includes two delistings for copper and lead, which the City supports; however, two new listings were added for chlordane (tissue) and dieldrin. The other legacy listings for Echo Park Lake and Machado Lakes remain on the proposed 303(d) list (see following table). The City maintains that these legacy listings are inappropriately categorized and should	Echo Park Lake: Chlordane and Dieldrin in Echo Park Lake are addressed by the Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs. The Los Angeles Area Lakes TMDL included chlordane and reviewed chlordane data from several sources. The Chlordane data included as the LOE in the CalWQA database is from a SWAMP study, *"Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study"* (SWAMP, 2009). Inclusion of this listing is in accordance with the Listing Policy. The Los Angeles Area Lakes TMDL included dieldrin and reviewed dieldrin data from an organics study by UCLA. The dieldrin data included as the LOE in the CalWQA database is from a SWAMP study, "*Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study"* (SWAMP, 2009). Inclusion of this listing is

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<tr><td></td><td>instead be listed as Category 3 based on the significant restoration efforts conducted since the last update to the 303(d) list. The USEPA 2010 Integrated Report Guidance uses the following definition for Category 3 listings:

“The existing and readily available data and information is not representative of current conditions of the water body. This rationale might include a determination that: significant land use changes have occurred in the watershed changing the hydrology and nonpoint source loadings; point source discharges were removed; new discharges are now operating; or the locations of sampling stations did not reflect the character of the segment (e.g., limited to locations near discharge outfalls).”

The extensive restoration projects have entirely changed not only the chemical and physical conditions of the lakes themselves, but have also completely transformed the nonpoint source loadings, and hydrology of the system. Any data collected prior to the restoration efforts (i.e., all of the data used for the current listings) are not representative of the current condition of the lakes; therefore, both of these waterbodies are excellent candidates for a Category 3 listing and should be categorized as such until enough data exists to establish their current condition. It is likely that as a result of both of these restoration efforts, the lakes could be entirely delisted. However, until that time, a Category 3 listing would represent the most conservative listing on the part of the Regional Board.

The City appreciates the time and effort that goes into maintaining the 303(d) list and notes that these award-winning restoration projects were facilitated in part by the Regional Board’s historical listing actions. The City hopes that the extensive resources put into restoring the beneficial use of these waterbodies can be recognized by assigning the proper Category 3 listing to Echo Park and Machado Lake pollutants.

<table><tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr><tr><td>34030</td><td>Echo Park Lake</td><td>Algae</td></tr><tr><td>34696</td><td>Echo Park Lake</td><td>Ammonia</td></tr></table></td><td>in accordance with the Listing Policy.

The data available supports listing chlordane and dieldrin for Echo Park Lake in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data is speculative. See response to comment 32.3 for a discussion of “readily available” data for this listing cycle.

Machado Park Lake:
The Machado Park Lake impairments due to Algae, Ammonia, Eutrophic Conditions and Odor are being addressed by the Machado Lake Nutrient TMDL. The Machado Lake impairments due to Chem A, DDT, Chlordane and Dieldrin are being addressed by the Machado Lake Toxics TMDL. The data available supports listing all these listings in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data (and a movement to Category 3) is speculative.

The inconsistences noted by the commenter for Echo Park Lake and Machado Lake in the 303(d) list have been addressed and all the listings are in category 4a.

The significant restoration efforts are expected to be reflected in new data collected after the restoration efforts and submitted to CEDEN to</td></tr>
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	<table><tr><td>62679</td><td>Echo Park Lake</td><td>Chlordane</td></tr><tr><td>62680</td><td>Echo Park Lake</td><td>Dieldrin</td></tr><tr><td>34698</td><td>Echo Park Lake</td><td>Eutrophic</td></tr><tr><td>34756</td><td>Echo Park Lake</td><td>Odor</td></tr><tr><td>33999</td><td>Echo Park Lake</td><td>PCBs (Polychlorinated biphenyls)</td></tr><tr><td>44748</td><td>Echo Park Lake</td><td>pH</td></tr><tr><td>32435</td><td>Echo Park Lake</td><td>Trash</td></tr><tr><td>34305</td><td>Machado Lake (Harbor Park Lake)</td><td>Algae</td></tr><tr><td>42416</td><td>Machado Lake (Harbor Park Lake)</td><td>Ammonia</td></tr><tr><td>34362</td><td>Machado Lake (Harbor Park Lake)</td><td>ChemA (tissue)</td></tr><tr><td>42417</td><td>Machado Lake (Harbor Park Lake)</td><td>Eutrophic</td></tr><tr><td>42262</td><td>Machado Lake (Harbor Park Lake)</td><td>Odor</td></tr><tr><td>35181</td><td>Machado Lake (Harbor Park Lake)</td><td>Trash</td></tr></table> In reviewing the proposed listings for the 303(d) list for Echo Park and Machado Lakes a number of inconsistencies were noted. They have been identified below: • Echo Park Lake PCB (tissue) (Decision ID 33999) is listed as a new 4A listing in Appendix C, but the change is not noted in Appendix A. • Machado Lake Chlordane (tissue) (Decision ID 33013), Dieldrin (tissue) (Decision ID 33643), and PCBs (tissue) (Decision ID 33285) are not listed	support the next listing cycle for the Los Angeles Region. The Los Angeles Water Board looks forward to the review of that data.

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	as changes in Appendix A, do not appear in Appendix B or C, but are listed in Appendix G. • Machado Lake DDT (tissue) (Decision ID 33211) is not listed as a change in Appendix A and does not appear in Appendix B or C, but is listed in Appendix G, although incorrectly, as requiring a TMDL despite the fact that DDT is covered by an existing TMDL. • Machado Lake algae, ammonia, ChemA (tissue), eutrophication, odor and trash are included in Appendix G Fact Sheets as already being addressed by a USEPA-approved TMDL, which is expected to result in attainment of the standard; however, they are all listed as Category 5B in Appendix B and as unchanged in Appendix A in the proposed 303(d) List. The Regional Board should clarify if these omissions and inconsistencies equate to a delisting of the pollutants. As explained above, the City supports the delisting of the pollutants due to the extensive restoration projects that have been completed. If, for some reason, these listing were omitted in error and the RWQCB disagrees with the City's comment to include them as Category 3, then all of the listings should, at a minimum, be included as Category 4A. Category 4A is defined as "*A TMDL has been developed and approved by USEPA and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame."* Category 4A is supported by the approved TMDLs covering Echo Lake Chlordane and PCB listings, as well as the Machado Lake Chlordane, DDT, Dieldrin, PCB, algae, ammonia, ChemA(tissue), eutrophication, odor, and trash listings. ***Requested Actions:*** ***(1) Move all segments listed in the preceding table to Category 3 based on the completion of extensive restoration projects, and include the following text to explain the category change: "Due to recent extensive restoration efforts, data from 2010 and prior is not representative of current conditions of the water body. Available data are insufficient to determine attainment status."***	

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	(2) If Category 3 listing of suggested pollutants does not occur, ensure that all pollutants listed in the preceding table are correctly categorized as Category 4A based on the existence of USEPA approved TMDLs. ***(3) Correct and/or clarify inconsistent listings in Appendices for consistency throughout the entire proposed 303(d) document.***	
11.24	Various waterbodies / Benthic Community Effects Notwithstanding the City's comments related to removing all listings that do not identify either toxicity or a pollutant as the impairment, the City identified the following listings for Benthic Community Effects (summarized in the following table) that are inappropriate: • Ballona Creek: Decision ID 65656 • Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165 • LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229 • LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232 • Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553 • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548 • Compton Creek: Decision ID 44498 The City believes the listings are inappropriate, based on the following issues that are described in more detail below: • <u>Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.</u> The listing decisions were based on Southern California Coastal Index of Biotic Integrity (SCIBI). The State Water Board has rejected use of the SCIBI in favor of the California Stream Condition Index (CSCI). The Regional Board Staff Conclusions	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Benthic Community Listings for waterbodies that are lined entirely with concrete have been assessed as "insufficient information" until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. The **Ballona Creek** samples were taken from a fully concrete-lined section and now Ballona Creek benthic community condition has been assessed as "insufficient information". The **Dominguez Channel above Vermont** samples were taken from a fully concrete-lined section and now Dominguez Channel above Vermont benthic community condition has been assessed as "insufficient information".

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	(Staff Conclusions) for the listing decisions do not acknowledge that the data used to support the decisions were SCIBI scores, not CSCI scores. Instead, the Staff Conclusions imply that the decisions are based on CSCI scores. • <u>There is no established water quality criteria for benthic community condition.</u> Use of a SCIBI score of 40 (or other "cutoffs" promulgated by the authors of the SCIBI) as a listing threshold is not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. The Regional Board use of a CSCI score of 0.79 in other listing decisions (and implied to be appropriate for Ballona Creek) is also not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. • <u>Listings for concrete-lined channels using current metrics are inappropriate.</u> Reference reaches for concrete-lined channels in highly urbanized catchments are lacking. Physical habitat conditions were apparently not considered during data evaluation. The State Board is planning to develop expectations for benthic community condition for developed landscapes using the CSCI and a new Algal Stream Condition Index (ASCI). TMDL development for benthic community effects in concrete-lined channels based on unofficial IBI thresholds is premature. • <u>Insufficient data are available to meet the listing requirements.</u> Notwithstanding the previous issues, several of the listings rely on a single site for data as a basis of the listing inconsistent with the Listing Policy.	**LA River Reach 3** samples were taken from a fully concrete-lined section and now LA River Reach 3 benthic community condition has been assessed as "insufficient information". Benthic Community Listings which were based on samples taken from un-lined sections of reaches were appropriately assessed. **Arroyo Seco Reach 1** was listed in 2010 for benthic macroinvertebrate assessment (2 out of 2 samples not meeting the standard) in an *unlined* section of the channel. The additional assessment added this listing cycle appears to be from a lined section of the Arroyo Seco and that LOE is classified as "insufficient information." **Compton Creek** was listed in 2010 for benthic macroinvertebrate assessment in an *unlined* section of Compton Creek. Additional assessments were added for this listing cycle also in the unlined section of Compton Creek. **Arroyo Seco Reach 2** is not fully lined; three out of three IBI scores from 2006, 2007 and 2008 exceeded the standard. The Benthic Macroinvertebrate data included in the CalWQA database for LA River Reach 4 should be associated with Reach 5. Additionally, this section is not fully-lined. Los Angeles Water Board staff's intention will be to correct the reach in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.

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Type of Decision	Segment / Station	Cited Benthic Community Data				
		Line of Evidence (LOE) ID	Data Source	Metric used in Data Source	Time Frame	Scores[a]
New Listing	Ballona Creek (Station 14)	82971	Bioassessment Monitoring Report in LA County, 2006-2008	SCIBI	2006, 07, 08	3/3 scores were below 40
New Listing	Dominguez Channel (Station 19)	83960		SCIBI	2006, 07, 08	3/3 scores were below 40
New Listing	LA River Reach 3 (Stations 11 and 12)	85994		SCIBI	2006, 07	4/4 scores were below 40
New Listing	LA River Reach 4 (Station 13)	86097		SCIBI	2006, 07	2/2 scores were below 40
Do Not Delist	Compton Creek (Station 8)	83829		SCIBI	2006, 07, 08	3/3 scores were below 40
		30224	LA County 1994-2005 Integrated Receiving Water Impacts Report. Section 5, LA River Watershed Management Area, pp 5.1 - 5.40	SCIBI	2003, 04	2/2 scores were "very poor"
Previous Listing	Arroyo Seco Reach 1 (Station LALT501)	30223		SCIBI	2003, 04	2/2 scores were below 13
		82895	Bioassessment Monitoring Report in LA County, 2006-2008	SCIBI	2008	1/1 score was below 40
New Listing	Arroyo Seco Reach (Station 7)	82896		SCIBI	2006, 07, 08	3/3 scores were below 40

[a] Per Staff Conclusions, SCIBI scores were binned as very good (80-56), good (41-55), fair (27-40), poor (14-26) and very poor (0-13) habitat conditions; sites with scores below 26 are considered to have impaired conditions.

Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.

SCIBI-based datasets should not be considered for listing decisions. Section 3.9 of the Listing Policy states:

> *"A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities* ***as compared to reference site(s)*** *and is associated with water or sediment concentrations of pollutants including, but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]*

While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low-elevation/low-gradient streams commonly found in the alluvial plains of the Los Angeles Region. It was developed using data from 275 sites, ranging from Monterey County to the Mexican border, but not a single reference location represented low-elevation and low-gradient streams. The reaches listed in the table above are extremely low gradient, low-elevation water

Response:

There are sufficient data in the waterbody segments listed to be representative of the water body segment in accordance with the Listing Policy Section 6.1.5.2 and 6.1.5.3. When single stations were re-sampled, they were sampled on different years.

See response to comments 26.4, 26.13 and 26.14 for a discussion of low elevation segments and the benthic community scores.

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	bodies, and thus the SCIBI does not adequately define relevant reference conditions. Furthermore, the reference conditions used in the SCIBI represent a less restrictive definition of the reference condition than that which was deemed adequate as part of the State's Reference Condition Management Program[15]. The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a recently published paper regarding a study examining the SCIBI relative to other benthic macroinvertebrate bioassessments, he concluded that the SCIBI did not adequately address reference conditions in low-elevation sites, stating that the SCIBI was "not completely effective at controlling for an elevation gradient." Dr. Ode was also the coauthor of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams. This report describes recommendations made by a technical panel of experts on bioassessment, including experts from the California Department of Fish and Wildlife, Southern California Coastal Water Research Project (SCCWRP), US EPA Region 9, and various universities. The technical panel laid out a number of steps that would be necessary to develop a network of adequate reference sites for implementation of criteria for bioassessments. They note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity." In 2010, as part of its project to develop a statewide Biointegrity Policy, the State Board abandoned use of the SCIBI and other regional IBIs, and funded development of the statewide CSCI (Mazor et al., 2016). The CSCI addressed at least some of the problems with the SCIBI through its use of a modeled reference condition as opposed to a regional reference pool. Starting in late 2016, the State Board began funding the development of a "companion" Algal Stream Condition Index (ASCI). The State Board is developing expectations for benthic community condition using both the CSCI and the ASCI which will be incorporated in a statewide Biointegrity Assessment Implementation Plan.	

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	The Staff Conclusions associated with the new listings in the preceding table do not acknowledge that the data used to support the new listings were SCIBI scores. Further, the Staff Conclusions for all of the new listings imply that Regional Board staff based the listing decision on CSCI scores. The source of the BMI data for each of the new listings, and the new LOE for Compton Creek, ("Bioassessment Monitoring Report in Los Angeles County, 2006-2008") were appendices (Appendix H) of the Los Angeles County Stormwater Monitoring Reports for 2006, 2007, and 2008. *In these reports, BMI data were scored using the SCIBI (Ode et al. 2005), not the CSCI*. In two cases (Ballona Creek and Arroyo Seco Reach 2), the Staff Conclusions explicitly, but erroneously, state that the underlying BMI data were CSCI scores. In the other cases, the ambiguous acronym "IBI" is used where scores are cited, and then the narrative ends with a passage implying that the "IBI" scores were CSCI scores. The misleading information in the Staff Conclusion for each new listing recommendation is provided below. • Ballona Creek: "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing Benthic Community Effects on the CWA section 303(d) List. .... "**3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**, indicating poor water quality and that pollutant concentration and toxic effects are impacting aquatic life in this waterbody segment" ... "**The CSCI** is available statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity." (Regional Board Staff Conclusion for Decision ID 65656, emphasis added) • Dominguez Channel (lined portion above Vermont Ave.): "Three of the three samples collected had IBI scores below 40 there are several other pollutants in this water body that are listed for impairment including ammonia, copper, diazinon, nitrogen, toxicity, and zinc." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment	

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	purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 66165, emphasis added) • Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.): “Four of the four samples collected had IBI scores below 40.” ... “**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 66299, emphasis added) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam): “Both of the two samples collected had IBI scores below 40.... Two of the two samples collected had IBI scores below 40. ... “**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 66232, emphasis added) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): “3 of 3 samples exceeded the GUIDELINE... **3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**. ... “**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).” (Regional Board Staff Conclusion for Decision ID 65548, emphasis added) ***There is no established water quality criteria.*** Regional Board staff utilized a SCIBI score of 40 as a listing threshold. However, this value is not an established water quality criteria, nor does it represent the type of threshold the State Board intends to use to identify community condition or levels of impairment in its Biointegrity Assessment Implementation Plan. A SCIBI	

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	score of 39 was originally promulgated by the authors of the SCIBI (Ode et al. 2005) as an "impairment threshold" because it was equal to an arbitrary statistical criterion (two standard deviations below the mean reference site score). Although it was not used for the listings in the table above, Regional Board staff have also used a CSCI score of 0.79 as a listing threshold for other reaches (see also the statement regarding this threshold in the Staff Conclusions excerpt for Ballona Creek above). However, a CSCI threshold of 0.79 is also based on an arbitrary statistical criterion (10th percentile of the reference calibration site scores; Mazor et al. 2016), and is not an adopted water quality criteria. The State Board is not pursuing use of arbitrary statistical cutoffs, such as reference population percentiles, to identify benthic community impairment going forward. As outlined in the November 2016 Work Plan, the State Board is using a Biological Condition Gradient Expert Synthesis approach to relate ranges of biological condition scores to community condition. Using this approach, a team of experts uses taxonomic metrics to assign degrees of biological condition to test sites while being blind to the degree of anthropogenic stressors present at the sites. In addition, the analysis is blind to the relationship between site scores and statistical distributions of overall datasets or reference datasets. **Listings for concrete-lined channels using currently available metrics are inappropriate.** Application of the SCIBI to concrete-lined channels is especially inappropriate given the lack of a reference population for low-gradient streams in coastal southern California, in general, much less for modified channels, in specific. Section 6.1.5.8 of the listing policy states: *"When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall evaluate bioassessment data from other sites, and compare to reference condition. Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."* EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303(d) lists and recommends that, in all cases where	

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	physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[19] Physical habitat conditions are not referenced in the Lines of Evidence for the benthic community effects listings in the preceding table, although physical habitat data collection is a standard part of bioassessment monitoring and reporting. Ultimately, benthic community impairments in concrete-lined channels should be evaluated for potential listing in Category 4c of the 305(b) integrated report, instead of on the 303(d) list of segments requiring a TMDL. The USEPA Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (IRG) states: *"Circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization."* As part of its statewide Biostimulatory-Biointegrity Project, in recognition that it may not be appropriate or productive to apply a single set of benthic community condition expectations to streams in pristine and developed landscapes, the State Board is currently employing SCCWRP and CDFW to developing expectations for benthic community condition for developed landscapes using the CSCI and the Algal Stream Condition Index (ASCI).[20] The probability that concrete-lined channels in highly urbanized settings will be candidates for alternative benthic community endpoints is illustrated by language from the Work Plan: *"**In some streams, direct channel modifications (e.g., bank armoring) may also limit opportunities to sustain high-quality ecological conditions for aquatic life**. In these highly developed settings, the large number of linked stressors may prevent a stream from supporting its beneficial uses or attaining high scores on indices of biological condition. **Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards**. In these circumstances, the range of CSCI and/or ASCI scores may be constrained, but targeted restoration could improve conditions. Key technical questions underpinning*	

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	the range of options and prioritization of management actions for wadeable streams along the continuum from undeveloped to highly developed landscapes found within California are: For which streams is biological integrity constrained by development in the catchment? How can they be identified and mapped? What are the ranges of biological conditions these developed landscapes can support?" (Mazor et al. 2017; emphasis added) Triggering TMDL development for benthic community effects in concrete-lined channels using unofficial impairment thresholds derived from statistical distributions of IBIs from unarmored reference reaches is unwarranted. **Insufficient data are available to meet the listing requirements** Notwithstanding the previous issues, several of the listings rely on a single site for bioassessment data, which is inconsistent with the Listing Policy. Per section 3.9 (Degradation of Biological Populations and Communities) of the Listing Policy, "The analysis should rely on measurements from at least two stations." Only one site is referenced in the Fact Sheets for the following listing decisions: • Ballona Creek • Dominguez Channel (lined portion above Vermont Ave) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) [Also, note that the data associated with Los Angeles River Reach 4 was actually collected in Los Angeles River Reach 5.] • Arroyo Seco Reach 1 (LA River to West Holly Ave.) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam) • Compton Creek Because data were only collected at one site within these waterbodies, the requirements of the Listing Policy are not met. ***Summary*** As described in detail above, the approach utilized to establish benthic community effects impairments are not demonstrated using an appropriate metric for benthic community condition. The listings rely on an unestablished water quality criteria based on metrics that are not appropriate for concrete-lined channels. Lastly, in all but one listing, there are not sufficient data to meet the listing requirements per the	

<table>
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<tr><td></td><td>Listing Policy as the data were only collected at a single site within a waterbody.

Requested Action: Remove the following Decision IDs from the 303(d) list:
Ballona Creek: Decision ID 65656
Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165
LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229
LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232
Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553
Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548
Compton Creek: Decision ID 44498</td><td></td></tr>
<tr><td>11.25</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) / Temperature, water

The temperature listing for Los Angeles River Reach 3 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Los Angeles River Reach 3 is WARM. Only the COLD beneficial use uses the rainbow trout growth range as a listing criteria. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM.

Notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body’s beneficial uses, the manner in which the evaluation guideline is applied is also inappropriate. Line of Evidence (LOE) 85933 references Moyle 1976 as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002. Moyle 2002 states: “Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures.” As such, while temperatures above 21°C may not be optimal according to Moyle 1976,</td><td>A review of the Los Angeles River Reach 3 temperature decision is in process at this time.</td></tr>
</table>

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	Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline as used in the proposed listing. When utilizing 23°C, only 40 of the 542 samples exceed the guideline, which does not meet the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants (a minimum of 90 exceedances would be required). As such, even if the Los Angeles River Reach 3 was designated with a COLD beneficial use, applying the appropriate "not-to-exceed" guideline of 23°C results in a finding of nonimpairment for temperature in Los Angeles River Reach 3. Lastly, notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses and that 23°C is the more appropriate "not-to-exceed" guideline, when the average water temperature across Los Angeles River Reach 3 was above 21°C (69.8°F), with only one exception out of 33, the air temperature was also above 21°C (69.8°F). As such, ambient air temperature above 21°C is most likely cause of exceedances of the 21°C evaluation guideline. ***Requested Action: Revise Decision ID 64386 for the temperature water listing for Los Angeles River Reach 3 to Do Not List on 303(d) list and remove from Category 5 (Appendix B) because the beneficial use protected by the evaluation guideline is not an existing or potential beneficial use within Los Angeles River Reach 3; the number of measured exceedances does not meet the minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants if an appropriate evaluation guideline is applied; and ambient air temperature is the most likely cause of exceedances of the evaluation guideline.***	
11.26	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 5 (within Sepulveda Basin), Bull Creek, Wildlife Lake, and Balboa Lake / Ammonia	Los Angeles River Reach 3 includes three LOEs (85894, 86019, and 2507); 85894 and 86019 were grouped to make the assessment that there were 33

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	The Fact Sheet for Decision ID 32974 corresponds to the ammonia listing for Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (85894, 86019, and 2507). LOE 2507 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 85894 and 86019 each state that all of the exceedances in each dataset occurred prior to and in 2007. The City found that the last exceedance was July 2007, which is to be expected given that 2007 was the year that the nitrification/denitrification (NDN) treatment process as completed at both the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) and Donald C. Tillman Water Reclamation Plant (DCTWRP). Both the LAGWRP and DCTWRP discharges travel through Los Angeles River Reach 3, and since the NDN processes to remove ammonia were completed in July 2007, no exceedances in this waterbody have been observed. The Fact Sheet for Decision ID 32567 corresponds to the ammonia listing for Los Angeles River Reach 5 (within Sepulveda Basin) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (86205, 86204, and 2520). LOE 2520 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 86205 and 86204 each state that all of the exceedances in each dataset occurred prior to March and August 2007, respectively. The DCTWRP discharge flows through part of Reach 5 and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60597 corresponds to the ammonia listing for Bull Creek and states that two lines of evidence are available in the administrative record to assess the pollutant (83158 and 83154). LOE 83154 presents one data point collected in May 2008 that does not show an exceedance. LOE 83158 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Bull Creek and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 66374 corresponds to the ammonia listing for Wildlife Lake and states that one line of evidence is available in the administrative record to assess the pollutant (90174). LOE 90174 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows	exceedances out of 111 samples total. Los Angeles River Reach 3 and Los Angeles River Reach 5 are being addressed by the Los Angeles River Nutrient TMDL. Bull Creek, Wildlife Lake, and Balboa Lake have been updated in the CalWQA database to reflect that they are being addressed by the Los Angeles River Nutrient TMDL. Los Angeles River Reach 4 is meeting the criteria based on the available data. Data collected after the NDN processes were put in place may show that the water quality in these reaches has improved; this update to the 303(d) list is only considering data submitted by August 30, 2010. For a discussion of readily available data see response to comment 32.3. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.

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	through Wildlife Lake and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60378 corresponds to the ammonia listing for Balboa Lake and states that one line of evidence is available in the administrative record to assess the pollutant (82930). LOE 82930 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Balboa Lake and the NDN processes to remove ammonia were completed in 2007. Furthermore, the Fact Sheet for Decision ID 32913 corresponds to the ammonia listing for Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) and includes the decision to Delist from 303(d) list (being addressed by USEPA approved TMDL) based on the following Regional Board Staff Decision Recommendation: “RWQCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not being exceeded.” This decision is based on two LOEs (2513 and 86136). LOE 2513 states “A TMDL and implementation plan have been approved for this water segment-pollutant combination. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004.” LOE 86136 finds that 0 of 152 samples exceeded the site-specific basin plan objective for total ammonia as nitrogen and only includes samples collected from 2008 to 2010 (which is after the date when the WRPs added the NDN treatment process and is inconsistent with the dates used in the assessments conducted for Los Angeles River Reaches 3 and 5, Bull Creek, and Wildlife Lake). Through the installation and implementation of NDN treatment facilities and process optimization by the City of Los Angeles (and City of Burbank), which has spent approximately $75 million to construct advanced treatment facilities to address ammonia, and approximately $6 million per year to operate those facilities, the quality of the water in the Los Angeles River watershed has been demonstrated to be fully attaining the applicable water quality objectives for ammonia. The message from the City and the Regional Board should be that the cooperative process worked, and that the applicable water quality standards are now being attained. Instead, the 303(d) list does not reflect the water quality	

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	improvement. Given that the addition of the NDN treatment process to the WRPs has eliminated exceedances, the timeframe used to evaluate impairments due to ammonia should be made consistent with the timeframe used in Los Angeles River Reach 4 which would result in the same listing decision for each water body (i.e., Delist from 303(d) list [being addressed by USEPA approved TMDL]). ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 3 Decision ID 32947*** - ***Los Angeles River Reach 5 Decision ID 32567*** - ***Bull Creek Decision ID 60597*** - ***Wildlife Lake Decision ID 66374*** - ***Balboa Lake Decision ID 60378*** -	
11.27	Los Angeles River Reach 1 (Estuary to Carson Street) and Los Angeles River Reach 2 (Carson to Figueroa Street) / Ammonia The Fact Sheet for Decision ID 32973 corresponds to the ammonia listing for Los Angeles River Reach 1 (Estuary to Carson Street) and is based on one LOE (2319), which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. The Fact Sheet for Decision ID 32911 corresponds to the ammonia listing for Los Angeles River Reach 2 (Carson to Figueroa Street) and is based on one LOE (2465) which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. In light of the information presented in the previous comment, it can be expected that conditions in Los Angeles River Reaches 1 and 2 since NDN was fully	Each of those LOEs are “placeholder” LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006. There is no additional data in the CalWQA database that would support delisting. Los Angeles Water Board staff encourages the commenter to enter into CEDEN the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) development prior to the next Listing Cycle that includes the Los Angeles Region.

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	implemented (mid-2007) are consistent with what has been observed in Los Angeles River Reaches 3, 4, and 5 (i.e., no exceedances). A review of the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) do not show any exceedances. ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 1 Decision ID 32973*** - ***Los Angeles River Reach 2 Decision ID 3291*** -	
11.28	Tujunga Wash (LA River to Hansen Dam) / Ammonia The Fact Sheet for Decision ID 32873 corresponds to the ammonia listing for Tujunga Wash (LA River to Hansen Dam) and is based on one LOE (2554) which does not contain any data. Rather, the Fact Sheet states that “One line of evidence is available in the administrative record to assess this pollutant. A TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004. This listing will substitute for the previous listings for foam, floc, scum, and taste and odor.” As there are no data to support the listing, the ammonia listing for Tujunga Wash should be removed. Also, substituting the listing for foam, scum, and taste and odor is not necessary because the Regional Board removed those listings from the section 303(d) list because they are not pollutants or toxicity. ***Requested Action: Revise Decision ID 32873 for the ammonia listing for Tujunga Wash to Delist from 303(d) list and remove from Category 5 (Appendix B).***	This LOEs is a “placeholder” LOE to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006. There is no additional data in the CalWQA database that would support delisting. The listings for foam, scum, and taste and odor were removed even though they showed impairment of beneficial uses because the listing for ammonia could “substitute” or stand in for those non-pollutant impairments and the Los Angeles River Nitrogen TMDL addresses those impairments.

<table>
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<tr><td>11.29</td><td>Bull Creek, Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam), Los Angeles River Reach 5 (within Sepulveda Basin), Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin), and Los Angeles/Long Beach Outer Harbor (inside breakwater) / Toxicity

The Fact Sheets for the following Decision IDs relate to toxicity in the water column:
- Decision ID 39159 Bull Creek
- Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
- Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
- Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin)
- Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)
- Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater)

The City has several concerns with the proposed listings:

1. Section 6.1.5.3 of the Listing Policy states that “Samples used in the assessment must be temporally independent.” However, data collected on the same day within the same waterbody are considered as independent samples without consideration of the fact they represent the same condition. These samples should be evaluated as representative of a single day.
2. In developing the number of samples analyzed and exceeded, the Regional Board appears to count a sample collected as one sample, but count acute and chronic results separately. In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic</td><td>Decision ID 39159 Bull Creek is DO NOT LIST for toxicity because Bull Creek is meeting the criteria based on the available data. Bull Creek, the waterbody, is on the list under 4a due to the indicator bacteria listing, which is being addressed by a TMDL.

Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) is a decision to LIST for toxicity with 29 out of 75 samples exceeding.

Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) is a decision to LIST for toxicity with 21 out of 48 samples exceeding.

Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin) is a decision to LIST for toxicity with 21 out of 53 samples exceeding.

Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin) is a decision to LIST for toxicity with 13 out of 19 samples exceeding.

Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater) is a decision to LIST for toxicity with two LOEs, 9 out of 37 and 32 out of 112 samples exceeding.

1. It is in accordance with the Listing Policy to collect samples on the same day if the samples are from different locations although the Listing</td></tr>
</table>

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	end points there is only one sample that is identified as not exceeded. One sample should result in only one nonexceedance or one exceedance. 3. For Decision IDs associated with the Los Angeles River watershed, data are included that do not represent current conditions. As described previously, the LAGWRP and DCTWRP upgraded their treatment processes to remove ammonia. Since the NDN processes to remove ammonia were completed, no exceedances for ammonia have been observed since August 2007. All toxicity data prior to August 2007 should be removed from the analysis. 4. A number of the results are based on testing with *Ceriodaphnia dubia* (*C. dubia*). As discussed in the Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document (SCCWRP Technical Report 956 December 2016), the report states (page 18) that during the intercalibration study, multiple laboratories observed *C. dubia* toxicity in laboratory dilution water (which should be non-toxic). Additionally, the report (page 16) found testing variability observed during the intercalibration study for *C. dubia* which had a response that ranged from 16 to 27% effect, and a standard deviation of 19 to 27% effect. The report further indicated that this large variability is not uncharacteristic of the variability observed by others. 5. Toxicity testing results were developed with a statistical approach that is no longer utilized in the NPDES monitoring programs. The LAGWRP, DCTWRP, HWRP and TIWRP NPDES permits require that toxicity endpoints be calculated using the Test of Significant Toxicity (TST) statistical approach. Future data will not be comparable to the listing data. As such, data used for listings should be assessed in a manner consistent with current regulations prior to making a determination of impairment. Given the issues associated with the data analysis and testing methods used as well as the implications of the listings, the City believes that additional efforts are needed to validate and assess whether or not an impairment exists. The City welcomes the opportunity to discuss an approach to properly evaluate toxicity in the affected waterbodies.	Policy does require consideration if the samples represent an unusual condition (see Listing Policy 6.1.5.3 "*If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set*.") These samples were collected over several years. 2. The commenter states: *In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic end points there is only one sample that is identified as not exceeded.* Los Angeles Water Board staff do not find where this happened. 3. See response to comment 32.6, and for a discussion of readily available data see response to comment 32.3. 4. See response to comment 17.3 5. Future data using the different method will be considered in separate LOEs. Water Board staff are open to discussions on approaches to properly evaluate toxicity in the affected waterbodies in order to ensure the most appropriate data is entered into CEDEN prior to the next Listing Cycle that includes the Los Angeles Region.

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	Requested Action: Revise Decision IDs 39159, 64389, 64465, 64489, 64536, and 33930 for toxicity listings from Category 5 to Category 3.	
12.	City of Manhattan Beach, March 30, 2017	
12.1	The City of Manhattan Beach is gratified that its beaches meet the criteria for delisting for indicator bacteria. However, the staff report states that even though the delisting is being proposed, "it is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved." Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to *Category 4a - TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.* The City is concerned that delisting during all weather conditions may adversely affect our ability to compete for grant funding for multi-benefit regional and green street projects identified in the Beach Cities EWMP to address the Santa Monica Bay Beaches Bacteria TMDL (SMBBB TMDL) during wet weather within the high priority 28th Street Storm Drain System. Since the SMBBB TMDL targets are set differently for wet and dry weather, it would seem logical for the Regional Board to distinguish these conditions in the 303d listing and we ask that the Board revise the proposed delisting Manhattan Beach for indicator bacteria to be specific to dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the beach at the SMB 5-2 28th Street monitoring location remain on the list in Category 4a for wet weather conditions. This will enable the City to be more competitive when applying for grant funding to complete its implementation of the wet weather SMBBB TMDL. The Regional Board Notice of Extension of Comment Deadline notes that Regional Board staff are aware that "in several instances, Appendix A, the Proposed Updates to the 303(d) List has not fully captured all of the new listing and delisting decisions that are detailed in Appendix G, the Fact Sheets due to system and clerical errors". This has made review of the proposed listing changes quite challenging but we have done our best given the limited time available. The City of Manhattan Beach respectfully provides the attached comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report.	The beach meets the requirements for delisting per the Listing Policy. No provision of the Listing Policy allows for decisions to "list" or to "do not delist" based on funding considerations. However, as noted, the TMDL and the requirements of the TMDL contained in the Los Angeles County MS4 Permit remain in effect. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.

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12.2	City of Manhattan Beach Comments on Proposed Revisions to 303(d) List **Water Body/Pollutant: Manhattan Beach/Indicator Bacteria** **Comment**: The staff report states that even though Manhattan Beach is being proposed for delisting for indicator bacteria, the Santa Monica Bay Bacteria TMDL remains in effect. Likewise, Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to Category 4a (A TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.) The City is concerned that delisting may adversely impact our ability to compete for grant funding for multi-benefit regional and green street projects to address the Santa Monica Bay Beaches Bacteria TMDL during wet weather. **Recommendation**: Consider delisting of Manhattan Beach for indicator bacteria only during dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the SMB 5-2 28th Street beach remain on the list in Category 4a Street beach remain on the list in Category 4a Manhattan Beach for wet weather indicator bacteria should be considered once the final wet weather SMBBB TMDL compliance deadline has passed.	See response to comment 12.1.
12.3	**Santa Monica Bay Offshore - Nearshore/Arsenic and Mercury** **Comment**: Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic and Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007. This data predates the last listing cycle and no data collected within the past decade is presented to support the listing. The SWRCB Listing Policy Section 1.1.2.1 states that “data and information previously submitted to the Regional Water Boards, such as Discharge Monitoring Reports, need not be solicited if the data and information remain available to the	See response to comment 32.3 for a discussion of readily available data. See also response to comments 11.21 and 11.22.

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	Regional Boards." **Recommendation**: Before making such important new listings Regional Board staff should review all readily available data including data collected within the past decade from the Hyperion Wastewater Treatment Plant NPDES Permit.	
12.4	**Santa Monica Bay Offshore - Nearshore/ Sediment Toxicity** **Comment**: On March 26, 2012 USEPA issued a final TMDL for Santa Monica Bay DDT and PCBs which found that "Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list." Contrary to this recommendation the Regional Board has not proposed delisting sediment in Santa Monica Bay for toxicity. **Recommendation**: Appendix G Decision ID 34120 should be revised to delist Santa Monica Bay for sediment toxicity based on the review and recommendation by USEPA in developing the Santa Monica Bay DDT and PCBs TMDL. Appendix A should be revised to place a "Y" in the New Delistings column and the "Y" eliminated from the Pollutant Name Change column since there does not appear to be any name change being proposed.	The 303(d) list and the factsheet has been updated to "DELIST."
12.5	**Santa Monica Bay Offshore - Nearshore/ DDT and PCBs** **Comment**: The listing for Santa Monica Bay Offshore- Nearshore/DDT and PCBs is included in Attachment B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in Attachment A summary under "other revisions".	The 303(d) list has been updated to show the listing is "being addressed by a TMDL."

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	Recommendation: The listings for DDT and PCBs should be moved to Category 4a in Attachment C.	
12.6	**Santa Monica Bay Offshore - Nearshore/ Chlordane** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.
12.7	**Santa Monica Bay Offshore - Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.
12.8	**Dominguez Channel (lined portion above Vermont)/Benthic Community Effects** **Comment**: Appendix G Decision ID 66165 is proposing to list the Dominguez Channel concrete-lined section above Vermont Avenue due to degradation of biological populations and communities (Benthic Community Effects) as evidenced by IBI scores below 40, however use of IBI scoring methodologies does not provide a reference that takes into account that concrete lined channels do not typically provide benthic habitat that will support biological populations and communities. The listing policy states that to make this determination the water body must "exhibit significant degradation in biological populations and/or communities <u>as compared to reference sites</u>" .... "This condition requires diminished numbers of species or individuals of a single species or other metrics	See response to comment 11.19 and 11.24 for Benthic Macroinvertebrate listings.

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	<u>when compared to reference sites</u>." Additionally the listing policy states that "The analysis should rely on measurements from at least two stations." Whereas the data presented to support Decision ID 66165 came from a single station. **Recommendation**: Do not list Dominguez Channel lined portion above Vermont for Benthic Community Effects because the analysis is not supported by data consistent with the SWRCB listing policy.	
12.9	**Dominguez Channel (lined portion above Vermont)/Lead** **Comment**: The quality of the data set used to support the original listing does not meet the data quality standards of the SWRCB's listing policy. The listing policy states that "when the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis." This listing was based on a data set more than a decade old with no actual detections of lead but where exceedances were presumed to have potentially occurred because the quantitation limit of 5 ug/L was not in all instances sufficiently low to determine compliance with the CTR dissolved lead criterion for continuous concentration in water (where the CTR value ranged from 0.23 to 7.27 ug/L, depending on the associated hardness of the water sample). The data set reviewed was for samples collected between January 2002 and April 2007 at the LACFCD Mass Emission Station S28 where Artesia Boulevard crosses Dominguez Channel and between 2000 and 2001 at S23 near LAX. Lead was not apparently detected in any of the samples above the quantitation limits, rather the identified exceedances of the lead standard were nondetections where the positive quantification limits 5 ug/L were too high to determine compliance with the standard when hardness caused depression of the standard below 5 ug/L. No measured exceedances of the standard were observed in the data set which is more than a decade old and for which more recent data sets exist. **Recommendation**: Decision Recommendation ID 37347 should be revised to state that the water body should be delisted due to inadequate data and because the data reviewed did not demonstrate that applicable water quality standards are	A review of the Dominguez Channel (lined portion above Vermont) lead decision is in process at this time.

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	being exceeded. Alternatively, Regional Board staff could review the more recent readily available data collected at these same Mass Emission stations as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 and the listing decision revised based on data of quality consistent with the SWRCB's listing policy.	
12.10	**Dominguez Channel (lined portion above Vermont)/ Copper and Zinc** **Comment**: Are listed in Appendix B as Category 5 needing a TMDL, when the Dominguez Channel Toxics TMDL is in affect and is addressing these pollutants. **Recommendation**: Recategorize Copper and Zinc as Category 4a being addressed by a TMDL and move to Appendix C.	The 303(d) list has been updated to show that copper and zinc are "being addressed by a TMDL."
12.11	**Dominguez Channel (lined portion above Vermont)/ Diazinon** **Comment**: We are supportive of the proposed delisting for Diazinon. **Recommendation**: Consider eliminating the statement in Attachment A under Other Revisions which states "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" since this pollutant is being proposed for delisting.	Appendix A wording is automatically generated by the CalWQA database. We are exploring ways to better display this data.
12.12	**Dominguez Channel (lined portion above Vermont)/ Nitrogen, ammonia (Total Ammonia)** **Comment**: The Appendix G Fact Sheet Decision ID 35134 continues to support a listing for ammonia. This listing does not appear to be based on all readily available data since Los Angeles County Mass Emissions Station Data on the Dominguez Channel is not included in the data set. Monitoring data from 55 samples collected between November 2006 and July 2013 at LACFCD mass emission station S28 located where the Dominguez Channel crosses Artesia Boulevard in the City of Torrance, show that all 55 samples met the freshwater Basin Plan objective for ammonia. An additional 24 samples collected at	See response to comment 32.3 for a discussion of readily available data.

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	LACFCD mass emission station TS19 between November 2008 and April 2011 also met the freshwater Basin Plan objective in every instance. These data were readily available to Regional Board staff since they were reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001. **Recommendation**: Delist Dominguez Channel lined portion above Vermont for ammonia and include readily available data reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 into Decision ID 35134 to support this delisting.	
12.13	**Dominguez Channel (lined portion above Vermont)/ Aldrin** **Comment**: Appendix G Fact Sheet Decision ID 34620 for Aldrin recommends delisting due to flaws in the original listing. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Aldrin.	Aldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.14	**Dominguez Channel (lined portion above Vermont)/ ChemA** **Comment**: Appendix G Fact Sheet Decision ID 34426 for ChemA recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for ChemA.	ChemA was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.15	**Dominguez Channel (lined portion above Vermont)/ Chlordane** **Comment**: Appendix G Fact Sheet Decision ID 34427 for Chlordane recommends	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes

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	delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chlordane.	and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.16	**Dominguez Channel (lined portion above Vermont)/ Chromium** **Comment**: Appendix G Fact Sheet Decision ID 34430 for Chromium recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chromium and remove the "Y" from the Pollutant Name Change column.	Chromium was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.17	**Dominguez Channel (lined portion above Vermont)/ DDT** **Comment**: Appendix G Fact Sheet Decision ID 36720 for DDT recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for DDT.	DDT was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.18	**Dominguez Channel (lined portion above Vermont)/ Dieldrin** Comment: Appendix G Fact Sheet Decision ID 42330 for Dieldrin recommends delisting due to flaws in the original listing because the data used for the original listing was from fish tissue collected in the soft-bottom estuary below Vermont and was incorrectly applied to the lined portion of Dominguez Channel above Vermont.	Dieldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.

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	Recommendation: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Dieldrin and remove the "Y" from the Pollutant Name Change column.	
12.19	**Dominguez Channel (lined portion above Vermont)/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Fact Sheet Decision ID 34431 for PAHs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PAHs.	PAHs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.20	**Dominguez Channel (lined portion above Vermont)/ Polychlorinated Biphenyls (PCBs)** **Comment**: Appendix G Fact Sheet Decision ID 34429 for PCBs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PCBs.	PCBs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.	City of Palos Verdes Estates, March 30, 2017	
13.1	Please see the City of Palos Verdes Estates’ specific comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report, included herewith as Attachment A. Appendix A – City of Palos Verdes Estates Comments on Proposed Revisions to 303(d) List	See response to comment 2.13.

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	Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Arsenic) **Comment**: Decision No. 67208 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of arsenic. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67208 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.	
13.2	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Mercury)** **Comment**: Decision No. 67209(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of mercury. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67209 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.	See response to comment 2.14.

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13.3	**Water Body/Pollutant: Malaga Cove Beach/Indicator Bacteria** **Comment**: Decision No. 32565 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes delisting Malaga Cove Beach from the section 303(d) list for indicator bacteria due to the fact that applicable water quality standards for this pollutant are not being exceeded. The City agrees with the Regional Board Staff Decision Recommendation in Decision No. 32565. However, while Decision No. 32565 has been modified since the last listing cycle in order to make the recommendation to delist, it continues to appear in the list of “original fact sheets” in Appendix G of the February 2017 integrated staff report for the Los Angeles region. Additionally, it is unclear why there is a “Y” in the Pollutant Name Change column in Appendix A since the original fact sheet relating to Decision No. 32565 shows the pollutant name as “indicator bacteria”. **Recommendation**: Modify the Revision Status entry in Fact Sheet 32565 from “original” to “revised” and move the fact sheet into the revised fact sheet group.	The CalWQA database has been corrected to show the decision as “revised” and not to show that the name has been revised.
13.4	**Water Body/Pollutant: Lunada Bay Beach (Indicator Bacteria and Beach Closures)** **Comment**: The fact sheet for Decision No. 34394 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends that the original “beach closures” listing for Lunada Bay Beach should be revised to an “indicator bacteria” listing. No data is available to support a listing at this location as this is not an accessible beach but is in fact a rocky cove with steep bluff faces that cannot be safely accessed for monitoring. The original listing was for beach closures and Decision ID 34394 changed the pollutant name to indicator bacteria without any providing indicator bacteria data for evidence. **Recommendation**: Like the rest of the shoreline areas on the Palos Verdes Peninsula, Lunada Bay should be delisted for indicator bacteria and beach closures due to faulty listing by revising the recommendation in the Fact Sheet for Decision No. 34394 and place a “Y” in the New Delistings column of Appendix A to the February 2017 integrated staff report for the Los Angeles region. Also please eliminate the word “beach” from the waterbody because this is not an accessible beach, but rather a rocky cove with a steep bluff face that is not readily accessible to the public.	All indicator bacteria-related listings in the State of California’s 303(d) list including “beach closures,” “coliform,” “pathogens,” have or will be revised to “indicator bacteria” for statewide consistency. Lunada Bay Beach was listed in 1996 and data from prior to 2006 are not included in the CalWQA database and staff have no information that the original listing was faulty.

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13.5	**Water Body/Pollutant: Flat Rock Point Beach Area (Indicator Bacteria and Beach Closures)** **Comment**: Flat Rock Point forms the northern point of Bluff Cove and is part of the same "beach" as Bluff Cove. The fact sheet for Decision ID No. 34628 (located in Appendix G to the February integrated staff report for the Los Angeles Region) is proposing to revise the listing for Flat Rock Point from "beach closures" to "indicator bacteria" however no data to support the listing is provided. Since there is no separate monitoring data set for Flat Rock Point and Flat Rock Point is contiguous with Bluff Cove, Decision ID 32848 and supporting lines of evidence for Bluff Cove should also be applied to Flat Rock Point. **Recommendation**: Flat Rock Point Beach Area should be included with Bluff Cove Beach in the fact sheet for Decision ID No. 32848 and delisted along with Bluff Cove Beach. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky point that is not safely accessible for monitoring.	All indicator bacteria-related listings in the State of California's 303(d) list including "beach closures," "coliform," "pathogens," have or will be revised to "indicator bacteria" for statewide consistency. Flat Rock Point Beach was listed in 1996 and data from prior to 2006 are not included in the CalWQA database and staff have no information that the original listing was faulty. The requested change to combine Flat Rock Point with the adjacent Bluff Cove requires a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
13.6	**Water Body/Pollutant: Malaga Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Malaga Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay. **Recommendation**: Change "source unknown" to "source – Palos Verdes Shelf Superfund Site" for both DDT and PCBs.	The sources for DDT and PCBs have been changed to "See TMDL documentation." The Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.
13.7	**Water Body/Pollutant: Bluff Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los	The sources for DDT and PCBs have been changed to "See TMDL documentation." The

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	Angeles region states that Bluff Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay. **Recommendation**: Change "source unknown" to "source – Palos Verdes Shelf Superfund Site Palos Verdes Shelf Superfund Site" for DDT and PCBs.	Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.
13.8	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (DDT and PCBs)** **Comment**: Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes DDT and PCBs in the listing for Santa Monica Bay Offshore/Nearshore (a water segment where standards are not met and a TMDL is required but not yet completed); however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in the "other revisions" summary in Appendix A to the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: The listings for DDT and PCBs should be moved to Category 4a in Appendix C since there is a USEPA approved TMDL in effect addressing the listings.	The Santa Monica Bay Offshore/Nearshore listing for DDT and PCBs have been revised to show "being addressed by a TMDL."
13.9	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Chlordane)** **Comment**: Decision No. 37492(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for chlordane; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for Chlordane.	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.10	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore(Polycyclic Aromatic Hydrocarbons (PAHs))** **Comment**: Decision No. 32656 (located in Appendix G of the February 2017	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new

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	integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for PAHs; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for PAHs.	listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.11	**Water Body/Pollutant: Wilmington Drain (Lead)** **Comment**: Decision No. 35085 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends delisting the Wilmington Drain for lead based on the weight of evidence. The City agrees with this recommendation due to the fact that LOE No. 90133 describes data collected in Compton Creek, which is unrelated to the Wilmington Drain. **Recommendation**: Remove LOE No. 90133 from the Fact Sheet for Decision No. 35085, and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that: "0 of 33 samples exceeded the CRITERIA."	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
13.12	**Water Body/Pollutant: Wilmington Drain/Copper** **Comment**: Decision ID 44676 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) for copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation**: Remove LOE No. 90473 from the Fact Sheet for Decision ID 44676 and revise the supporting evidence statement "2 of 33 samples exceeded the CRITERIA." Also revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
13.13	**Water Body/Pollutant: Machado Lake (Algae, Ammonia, ChemA, Eutrophic, Odor, Trash)** **Comment**: Category 5 of Appendix B to the February 2017 integrated staff report	Machado Lake listings for Algae, Ammonia Eutrophic, Odor, and Trash were assessed as "being addressed by a TMDL" in 2010. The

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	for the Los Angeles region includes listings for algae, ammonia, ChemA, eutrophic, odor and trash for Machado Lake (a water segment where standards are not met and a TMDL is required but not yet completed); however all of these pollutant listings are being addressed by USEPA-approved TMDLs. **Recommendation**: These listings should be moved to Category 4a in Appendix C to the February 2017 integrated staff report for the Los Angeles region. Additionally, Appendix A should include language under the column for "Other Revisions" for each of these pollutants explaining that: "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL."	Machado Lake listings for**,** ChemA, Chlordane, DDT, Dieldrin, and PCBs were assessed as "being addressed by a TMDL" in this listing cycle. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
14.	City of Pomona , March 30, 2017	
14.1	**Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the San Gabriel River propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals and Selenium for the San Gabriel River and Impaired Tributaries (San Gabriel Metals TMDL) adopted by USEPA Region IX (USEPA) and the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with its waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). The City is appreciative of the several metals pollutants that Regional Board is proposing to de-list and not to list. A total of 22 metals are reported for all San Gabriel River water quality segments. 19 (84.3%) of them fall under the "de-list" and "do not list" categories. This result should be sufficient to void the San Gabriel River Metals TMDL. 3 additional metals (15.7%) should be de-listed,	Comments on the San Gabriel Metals and Selenium TMDL and the LA County MS4 Permit are outside the scope of this action. See response to comments 14.2 as well as 9.2 – 9.7 for detailed responses regarding individual listing decisions raised by the commenter.

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	which would raise the total to 22 (100%), for reasons more particularly described below. The data here strongly demonstrates that that the San Gabriel Metals TMDL should be removed from the Los Angeles Basin Plan.	
14.2	**I. San Gabriel River: Estuary** As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. If this is an oversight on the part of the Regional Board there is, nevertheless, ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/l for hardness is only intended be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303{d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically	See response to comment 9.1 for the history of copper on the 303(d) list in the San Gabriel River Estuary as well as for a discussion of the CTR and the use of "real time" hardness in calculating limitations. Comments on the San Gabriel River Metals and Selenium TMDL and the provisions of the LA County MS4 Permit are outside the scope of this proposed action. See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.

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	sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried-over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998. 3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the posted letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3. 7 ug/1 (see Table I(a) below). Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.3	**II. San Gabriel River: Estuary to Firestone** Metals for San Gabriel River from the Estuary to Reach 1 were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table 1 (a), despite the fact that copper was not listed on the 2010 303(d) list in the first place.	See response to comment 9.2.

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	Table II. San Gabriel River: Estuary to Reach 1 **[See the posted letter for Table II]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.4	**III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)** As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons: 1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced). 2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above. 3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in no exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement. 4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected.	See response to comment 9.3.

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	Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the posted letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.5	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit *Attachment P: TMDLs in San Gabriel River Watershed Management Area*. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table I(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81 /34 ug/1; and (2) Coyote Creek lists copper target of 24.71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the posted letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to	See response to comment 9.4.

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	list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.6	**V. San Gabriel River: Coyote Creek** The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons: 1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2. 2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees. Table V. Coyote Creek**[See the posted letter for Table V]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	See response to comment 9.5.
14.7	**VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)** Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below).	See response to comment 9.6.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Table VI: San Jose Creek Reach 1 [See the posted letter for Table VI]

Recommendation to Regional Board: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td></tr>
<tr><td>14.8</td><td>VII. South San Jose Creek (Los Angeles County)

This is Reach is a new listing under the 2016 303(d) List.

<table><tr><th colspan="2">2010 303 (d) List</th><th colspan="5">2016 303 (d) List</th><th>MS4 Permit Requirement</th></tr><tr><td>Pollutant</td><td>List</td><td>List</td><td>De-List</td><td>Don't List</td><td>Don't De-list</td><td>Should De-List</td><td>Yes/No</td></tr><tr><td>Copper</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr><tr><td>Lead</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr><tr><td>Selenium</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr><tr><td>Zinc</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr></table>
Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td>See response to comment 9.7.</td></tr>
<tr><td>15.</td><td colspan="2">City of San Fernando, March 30, 2017</td></tr>
<tr><td>15.1</td><td>I. Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-MTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs)</td><td>See response to comment 3.1, 3.2 and 3.3.</td></tr>
</table>

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	which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because: 1. although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. the LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.	
15.2	• **California Toxic Rule** CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient*	See response to comment 3.2.

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	concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health. In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
15.3	• **California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the	See response to comment 3.3.

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	LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	
15.4	II. Los Angeles River Reach/Tributary Specific Comments Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories. **1. Los Angeles River Reach 4** Copper and lead are placed on the "do not de-list" category. Selenium and zinc are placed on the "do not list." As noted on the table below there are no listing issues here. Table I. LAR Reach 4 **[See the posted letter for Table I]**	For comments related to the CTR, see response to comment 3.2, for those pertaining to the Listing Policy see response to comment 3.3. For Los Angeles River Reach 4, comment noted. Copper and lead, in fact, are on the on the "de-list" category.
15.5	**2. Los Angeles River Reach 5** Selenium and zinc are recommended for placement on the "do not list" category. Copper and lead, on the other hand, are recommended for placement on the "list" category. However, they should not. The justification reported on the fact sheet for both copper and lead is that *0 of the 12 samples and exceeded the criteria*. This must be in error. How can zero or "none" of the 12 samples have exceeded the criteria? Based on this information, copper and lead should be on the do not list category. Table II. LAR Reach 5 **[See the posted letter for Table II]**	The copper "DO NOT DELIST" decision was based on LOE 2527, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86184 (0 out of 12 sediment samples exceeding) is insufficient to make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. The lead "DO NOT DELIST" decision was based on LOE 2528, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86197 (0 out of 12 sediment samples exceeding) is insufficient to

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		make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist.
15.6	**3. Tujunga Wash (Los Angeles River to Hansen Dam)** The Tujunga Wash is only listed (in the "do not list" category) for copper, carried-over from the previous 303(d) list (2010). According to the 303(d) list fact sheet, no samples were taken to justify placement (viz., 0 of the 12 samples exceeded the criteria). Based on this information copper should be de-listed. Table III. Tujunga Wash **[See the posted letter for Table III]**	The copper "LIST" decision is a "carryover" decision (no new data was assessed) and was based on LOE 2558, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision.
16.	City of Ventura, March 30, 2017	
16.1	The City has several concerns regarding the Regional Board's proposed 303(d) list and feels that it requires significant review and modifications before adoption. The City requests that the issues identified in this letter be addressed and the revised, proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed by the affected parties. The requested modifications fall into two general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and/or incorrect interpretation of the data (e.g., lack of temporal representation). 2. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include challenges in identifying the data sets and analysis methods used, inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.	It is the intent of Los Angeles Water Board staff to work to resolve issues identified by commenters, as appropriate, as the State Water Board staff prepares to bring the 2016 Integrated Report to the State Water Board for its consideration later this year. See response to comment 16.2-16.20 for specific responses.

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	The remaining sections of this letter provide the detailed list of requested changes to the proposed 303(d) list and the rationale for the requests. In summary, the City requests that all waterbody pollutant combinations in Table 1 below not be listed on the 303(d) list and the errors and inconsistencies identified in the other letters cited above be addressed.	
16.2	l. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody pollutant combinations, the City has identified several waterbodies that should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table. Table 1. Waterbody-pollutant combinations that should not be listed **Waterbody Segment: Santa Clara River Estuary** **Pollutant**: pH **Justification**: "No demonstration high pH is a result of waste discharge. A listing is not warranted in light of reference conditions for pH within estuaries.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88249 was developed using 493 samples collected at dozens of sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See, also, response to comment 32.5.
16.3	**Waterbody Segment: Santa Clara River Estuary** **Pollutant**: Ammonia **Justification**: Appropriate data not considered and current data does not meet Listing Policy criteria.	LOE 88237 shows 4 of the 42 samples exceeded the one-hour average contraction of un-ionized ammonia. Even though 18 of the 42 samples were reported as non-detects, there is enough evidence that supports a listing decision. See, also, response to comment 32.4.
16.4	**Waterbody Segment: Santa Clara River Estuary**	The “Nitrogen, Nitrate” “LIST” decision is a

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	Pollutant: Nitrogen, Nitrate **Justification**: Appropriate data not considered and current data does not meet Listing Policy criteria.	"carryover" decision (no new data was assessed) and was based on LOE 7819, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision. See, also, response to comment 23.6.
16.5	**Waterbody Segment: Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** **Pollutant**: pH **Justification**: No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88328 was developed using 60 samples collected at three sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed.
16.6	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Arsenic **Justification**: Data does not include proper temporal representation.	Fish were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected is spatially independent, it is still appropriate to assess the data as individual samples even though they were

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		collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static and move throughout a waterbody, accumulating pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. However, a review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic and the applicable evaluation guideline. See, also, response to comment 11.21.
16.7	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Cadmium **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.8	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Chlordane **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.9	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: DDT **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.10	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Dieldrin **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.

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16.11	**Waterbody Segment: S Ventura Harbor: Ventura Keys** **Pollutant**: PCBs (Polychlorinated biphenyls) **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.12	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Benthic Community Effects **Justification**: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. See, also, response to comment 16.17.
16.13	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Temperature, water **Justification**: Analysis does not demonstrate temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.
16.14	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Indicator Bacteria **Justification**: Data from mouth of Arundell Barranca used in listing assessment.	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

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16.15	***1. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan).[3] The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheets and according to the Basin Plan, "*The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5* ***as a result of waste discharges***."[4] However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if no such evidence exists, the Regional Board should remove this proposed listing.[5] **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as these high pH values are not the· result of waste discharge.**	See response to comment 16.2 and 16.5. Also see response to comment 32.5.
16.16	***2. Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5 .3 of the Listing Policy states that: *"Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision."* Many of the pollutants listed in Table 1 included data collected from a single sampling date, which violates the Listing Policy. For instance, all of the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day - February 28,	See response to comment 16.6-16.11.

No.	Comment	Response
	2007. These pollutants should not be listed because there is no temporal resolution provided. **Requested Action:** **Remove all listings shown in Table 1 that were based on a single sample collection date.**	
16.17	***3. Benthic Community Effects listing is based on flawed analyses and should be removed.*** The benthic community effects listing is based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects where the threshold used to distinguish an impaired reach was identified as a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value in the originating study. The State has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets for numerous other benthic community effects listings (e.g., Decision ID 66264)v, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the fi1ture for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).*" Despite this, the newly listed benthic community effects for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) utilizes the IBI to assess the waterbody. Therefore, the City requests that this flawed listing be removed until the waterbody can be assessed with a more representative metric such as the CSCI. In addition to use of an arbitrary metric, the proposed listing for benthic community effects for the Ventura River Reach 1 and 2 lacks proper spatial representation since only two samples were collected from the same sample site ("Station O Main Street Bridge, Mainstem Ventura River" according to the Fact Sheets). In addition, temperature is used as a line of evidence to support the benthic community effects listing, however, the temperature listing for this same waterbody segment is also flawed and should be removed as discussed in the	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected is temporally independent, it is still appropriate to assess the data as individual samples even though they were collected at the same site. See, also, response to comment 16.13 for temperature.

No.	Comment	Response
	comment below. **Requested Action:** **Remove the benthic community effects listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) due to use of an outdated metric, lack of spatial resolution, and lack of supporting evidence from the temperature listing.**	
16.18	***4. Correct the proposed temperature listings which are based on incorrect criteria.*** The temperature listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) uses an evaluation guideline of 13-21 °C as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as COLD is, "*For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature."* The fact sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the way the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002.[7] Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures."[8] As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C, which indicates that the evaluation guideline of 21 °C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing.	See response to comment 16.13.

No.	Comment	Response
	Using the threshold of 23°C, only 2 samples would exceed the threshold in Ventura River Reach 1 and 2, which would not be enough to meet the listing threshold. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 based on lack of exceedances.**	
16.19	***5. Data from Arundell Barranca mouth is inappropriate to assess Ventura Harbor.*** Based on a review of the data provided in the spreadsheet entitled: Peninsula Beach, Ventura Harbor-Keys, and Arundell Barranca Data, site K5 appears to have been included in the analysis of the Ventura Harbor: Ventura Keys assessment. Site K5 is located in the mouth of the Arundell Barranca and is not within Ventura Harbor. A review of the data shows that the indicator bacteria concentrations at this site are much more similar to Arundell Barranca and not representative of the data for the rest of Ventura Harbor. In 2009, as part of the review of the proposed Harbor Cove TMDL, the City conducted an analysis of indicator bacteria data from Ventura Harbor using what appears to be the same dataset as used in the Regional Board's assessment. While the dataset appears to be the same, the number of samples and exceedances did not match completely (e.g., 103 exceedances of the enterococcus geomean with 510 samples in the City's analysis as compared to 104 exceedances and 537 samples in the Regional Board's analysis). The City could not easily determine what the differences in the calculations were and requests that the Regional Board review the exceedance calculations to ensure that all geomeans were calculated using a minimum of 5 samples and that duplicate samples in the dataset were correctly handled in accordance with the Listing Policy. Regardless of the potential differences in the calculations, the clear majority of the exceedances are from site K5 (64 of the 103 exceedances in the City's analysis). If	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

No.	Comment	Response
	site KS is removed from the Ventura Harbor analysis (and added to the Arundell Barranca analysis so it is in the correct waterbody), based on the City's calculations, insufficient samples exist to list Ventura Harbor: Ventura Keys for fecal coliform or enterococcus. A summary of the City's analysis is shown in Table 2. Table 2. Summary of City's Analysis Ventura Harbor Indicator Bacteria **[See the posted letter for Table 2]** **Requested Action:** **Revise the calculations for Ventura Harbor: Ventura Keys by removing site K-5 which is not located in the Harbor. Revise any Lines of Evidence that no longer support a listing for indicator bacteria and remove the listing if appropriate.**	
16.20	**II. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations are new listings. Additionally, in many cases, data and Quality Assurance Project Plan (QAPP) references in the fact sheets are inconsistent with the data provided for review and it is not always clear what data were used in the analysis presented in the fact sheets. Examples of these inconsistencies and errors are detailed in the Calleguas Creek Watershed Stakeholders, VCAILG, and County of Ventura comment letter. The City requests that the Regional Board do a thorough review of all appendices to ensure that the proposed 303(d) list is internally consistent, the correct data were used for the assessment, and the errors identified in the other comment letters are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**	See response to comment 7.98 and 7.99.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>17.</td><td colspan="2">County of Los Angeles (LAC) and Los Angeles County Flood Control District (LACFCD) , March 30, 2017</td></tr>
<tr><td>17.1</td><td>
I. Waterbodies With Water Quality Attainment Should Be Delisted As Requested By The Los Angeles County Flood Control District During The 2010 Data Solicitation Period And Pursuant to the 303d Listing Policy

In August 2010 in response to the State Water Resources Control Board's (State Water Board's) data solicitation for the 2012 Integrated Report for Clean Water Act Sections 303(d) and 305(b), the Los Angeles County Flood Control District (LACFCD) submitted all the data and information that it collected since the State’s previous data solicitation in 2007. As part of the 2010 data submission, the LACFCD conducted a detailed analysis of the new data and found 15 listed waterbody-pollutant combinations that had attained their water quality standards and met the delisting criteria set forth in Section 4 of the Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List (303(d) Listing Policy). To this end, LACFCD provided a detailed analysis of this data and identified those waterbodies that should be delisted pursuant to the State's 303(d) Listing Policy. Those waterbody-pollutant combinations are listed below.

<table>
<tr><th>WATERBODY</th><th>POLLUTANT</th><th>Addressed in Current Proposed Revisions?</th></tr>
<tr><td>Coyote Creek</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Dominguez Channel (lined portion)</td><td>Diazinon</td><td>Yes</td></tr>
<tr><td>Legg Lake</td><td>Ammonia
Copper
Lead</td><td>No</td></tr>
<tr><td>Los Angeles River Reach 1</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Peck Road Park Lake</td><td>Lead
Dissolved Oxygen</td><td>No</td></tr>
<tr><td>Santa Clara River Reach 6</td><td>Chlorphyrifos
Diazinon
Copper
Iron</td><td>No</td></tr>
<tr><td>Santa Fe Dam Park Lake</td><td>Copper
Lead
pH</td><td>No</td></tr>
</table>
</td><td>The post-2007 data and analysis submitted by the LACFCD by the August 2010 deadline was not entered into the CalWQA database for use in the Integrated Report. Los Angeles Water Board staff will enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.</td></tr>
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No.	Comment	Response
	As set forth in the above table, none of the identified waterbody-pollutant combinations are currently proposed for delisting as part of the 2016 303(d) list, except for the Dominguez Channel Diazinon, despite meeting the delisting criteria under the *State's Listing Policy*. Based on a review of the fact sheets for these waterbodies in Appendix G, it appears that the post-2007 data and analysis submitted by the LACFCD was not taken into consideration by the Los Angeles Regional Water Quality Control Board (Regional Board). The County and the LACFCD request that the Regional Board consider the data set forth in the LACFCD's 2010 submission. Attached is a copy of the LACFCD comment letter and technical report from the 2010 data solicitation for your review and consideration. The County and the LACFCD further request that the Regional Board delist these waterbodies as requested.	
17.2	**II. The Regional Board Should Wait For The Completion Of The State's Biointegrity Policy Development Before Listing Waterbodies For Benthic Community Effects** Currently, there is no officially established California water quality objective or guideline for listing waterbodies for benthic community effects. As such, the State Water Board is currently developing statewide biological objectives to assist in addressing this gap. The 2010 State Water Board's initial notice letter[1] for development of these biological objectives states the following: *"State and Regional Water Board plans and policies do not contain numeric objectives or guidance for using biological data in regulatory decision-making. Therefore, biological objectives are needed to provide the narrative or numeric benchmarks that describe conditions necessary to protect aquatic life beneficial uses. The initial effort will focus on wadeable perennial streams and rivers."* Similarly, the CEQA public scoping document[2] released in 2012 for this project states the following:	There are established California water quality guidelines for listing waterbodies for benthic community effects, the SCIBI and the CSCI, which are both appropriate for 303(d) listing. These evaluation guidelines meet the requirements in Section 6.1.3 of the Listing Policy and both are in use throughout the State. Use of the guidelines is not premature; per the Listing Policy, the guidelines are "scientifically based and peer reviewed" and have been used in previous Integrated Reports. With respect to the use of IBI and CSCI for 303(d) listing, see response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition and response to comment 26.5 for a discussion of the established water quality criteria. At this time, the CSCI and IBI are the best

No.	Comment	Response
	"Benchmarks for identifying biological impairments and interpreting narrative water quality objectives are not formally adopted in Water Board plans or policies and, therefore, not readily used as enforceable requirements …" [Page 6 of the scoping document] "The State Water Board will develop [biological objectives and] program of implementation that describes how biological objectives will be incorporated into permits and other regulatory actions, such as assessing attainment of aquatic life beneficial uses for 303(d) listing." [Page 8 of the scoping document] Thus, there is no established objective in California for assessing biological data, such as benthic macroinvertebrate data, for regulatory decision-making. This includes 303(d) listings. The State Water Board is currently making progress on compiling available information and conducting necessary scientific studies to develop applicable objectives and implementation policy (also known as Biointegrity Policy). The State Water Board has hired the Southern California Coastal Water Research Project (SCCWRP) and the California Department of Fish and Wildlife to develop technical information to aid development of the policy. To ensure that a range of public interests are represented during the development process, the State Water Board has reached out to interested stakeholders. The County and LACFCD is actively participating in these meetings. Although the State Water Board is currently developing biological objectives for benthic communities, the Regional Board has listed multiple waterbodies for benthic community impairment prior to the development of those objectives and its implementation guideline. The following table summarizes the waterbodies being proposed for benthic community listings by the Regional Board in the County.	measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the State Board continues the development of the science and policy, new methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. As with any water quality objective, new science or policy may make necessary revisions to the 303(d) list, but this possibility is not a justification to delay making 303(d) listing decisions when appropriate guidelines are available. Benthic Community Listings for waterbodies that are lined entirely with concrete have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24, for more detail.

No.	Comment	Response
	(see table and text below)	

WATERSHED	WATERBODY SEGMENT	CONCRETE CHANNEL?
Ballona Creek	Ballona Creek	Yes
Dominguez Channel	Dominguez Channel	Yes
Los Angeles River	Alhambra Wash	Yes
	Arroyo Seco Reach 3	No
	Los Angeles River Reach 3	Yes
	Los Angeles River Reach 4	Yes
Malibu Creek	Medea Creek Reach 1	No
	Triunfo Creek Reach 1	No
San Gabriel River	San Gabriel River – East Fork	No
Santa Clara River	Santa Clara River Reach 5	No

Adopting these benthic community impairment listings without first awaiting the State Water Board's development of water quality objectives and implementation guidance is premature. First, in assessing biological data and justifying the proposed listings, the Regional Board used the Index of Biological Integrity (IBI) and the California Stream Condition Index (CSCI). The benchmarks/thresholds used are 40 for IBI and 0.79 for CSCI. While IBI and CSCI are available tools for evaluating the relative biological condition of perennial wadeable streams, the associated benchmarks/thresholds used by Regional Board staff for justifying the listings have not been officially adopted by the State Water Board or the Regional Board for purposes of determining 303(d) listings. Thus, to ensure statewide consistency, the appropriate benchmarks should be set by the Biointegrity Policy being developed by the State Water Board.

Second, the CSCI was developed to replace the IBI and is expected to be used in the Biointegrity Policy. Thus, the IBI and its associated benchmark should not be used for assessing stream conditions for purposes of regulatory decisions, such as 303(d) listing.

Third, many of the listings set forth in the table above are for concrete/modified

No.	Comment	Response
	channels, which are being treated the same as natural channels. This is inconsistent with the approach that the State Water Board has been taking in developing the Biointegrity Policy, which provides that in highly altered conditions, the standard should be based on "best attainable conditions". In this regard, the State Water Board's 2012 CEQA Scoping document[3] for biological objectives states the following: *"One of the difficulties of defining reference conditions in California is that many waterbodies in the State have been severely altered from their natural condition. Some of these alterations are not a result of the controllable environmental factors…. In highly altered systems where biological conditions are limited by uncontrollable factors, the focus is on expectations for the 'best attainable' conditions."* Concrete/engineered flood control channels in urban environments are among the systems that the State Water Board considers highly altered. For those systems, the State's goal is to establish standards that are reasonably expected to be attainable, which is different than standards for natural channels. The State Water Board is using a gradient approach where the biological expectations for altered stream channels are based on the level of alteration. Since altered stream channels have limited habitat, it is improbable to expect a thriving benthic community in these channels the same way as in natural stream channels. This conclusion is well demonstrated in the stream survey report published in 2016 by the Southern California Stormwater Monitoring Coalition (SMC) – the *2015 Report on the SMC Regional Stream Survey4, with Special Study on Engineered Channels.* For the reasons described above, the Regional Board should not list waterbodies, and particularly those with concrete or engineered channels, for benthic impairments until the State Biointegrity Policy is developed and adopted. However, if the Regional Board lists any waterbody for benthic impairment, then the listings should be listed under Category 4c, and not under Category 5, since it is uncertain that these impairments are caused by pollutants.	
17.3	**III. Toxicity Listings Are Based On Unreliable Data and Should Be Removed**	All the toxicity data assessed met the required

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Ten County waterbodies are newly listed for toxicity, nine of which are streams or rivers, and one is an estuary. The majority of toxicity data used in the listings are from water toxicity tests conducted using the *Ceriodaphnia dubia* or other species.

WATERSHED	WATERBODY SEGMENT	TEST SPECIES
Los Angeles River	Bull Creek	C. dubia, Fathead
	LA River Reach 4	
	LA River Reach 5	
	LA River Reach 6	C. dubia, Fathead, Hyalella
San Gabriel River	SG River Estuary	Topsmelt, Fathead
	SG River Reach 3	C. dubia, Fathead
	San Jose Creek Reach 2	
Santa Clara River	South San Jose Creek	
	Piru Creek	C. dubia
	SC River Reach 5	C. dubia

These toxicity tests, however, have recently been found to be unreliable by a laboratory intercalibration study conducted by SMC[5]. The study utilized 10 laboratories in Southern California that are certified by the State of California for toxicity testing. (Almost all toxicity tests in Southern California are conducted by these laboratories.) Although standard methods and protocols were followed by all the laboratories, the test results for the same sample varied significantly between laboratories.

The below chart summarizes the results of the study. Each symbol in the chart represents the result from a single laboratory. **[See the posted letter for chart]**

As can be seen from the chart, there is high variability in the toxicity results between different laboratories for all the test species despite the fact that analytical procedures were performed on identical samples. For example, the results for

</td><td>

quality assurance.

The SMC Toxicity Testing Laboratory Guidance study, 2016, conducted a laboratory intercalibration study focusing on four species *C. dubia*, *Hyalella*, *Strongylocentrus* and *Mytilus*. Fathead and topsmelt were not a part of the study. The study did not conclude or recommend that previously analyzed data should be disregarded. The study authors recommended all four species for future use as part of the Stormwater Monitoring Coalition monitoring programs. The authors also provided specific guidance for stormwater testing for potential variability-inducing steps including hardness of dilution water, feeding, sample handling and water renewals, and aging of organisms. The authors further concluded:

> *"Based on the scoring system developed for this study, the participating laboratories were comparable for most of the test endpoints (Table 10). Virtually all laboratories were able to meet test acceptability requirements, including internal positive and negative controls. Most laboratories tended to produce internally consistent results when given blind duplicate samples. Finally, most laboratories produced data consistent with non - toxic samples when exposed to laboratory dilution water."*

WATERBODY SEGMENT	Source of data	Number of exceedances/ number of samples

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<tr><td></td><td>Ceriodaphnia survival vary between 0 percent and 100 percent for the same sample depending on the laboratory used. Also, a sample of lab dilution water, which is expected to be non-toxic was found to be toxic by many labs. Such high magnitudes of inconsistency and incomparability between the labs makes the existing toxicity data invalid or not useful. It is thus very probable that the proposed 303(d) listings for toxicity are the result of false positive toxicity tests, resulting in unimpaired waterbodies being wrongly listed for toxicity.

It is incumbent upon the State to ensure that the laboratories it certifies produce consistent and accurate toxicity test results. The uncertainties and variability reflected in testing results between laboratories, as shown in the SMC study, can have a profound effect on the regulatory actions placed on a waterbody.

For these reasons the proposed water toxicity listings are not supported by reliable data. The County and the LACFCD therefore request that all toxicity listing based off of water toxicity testing be removed from the list. We also request that the State continue to re-evaluate its laboratory certification protocols and address the problems identified by SMC.</td><td>
<table>
<tr><td>Bull Creek</td><td>Tillman WRP, NPDES permit CA0056227.</td><td>12 / 29</td></tr>
<tr><td>LA River Reach 4</td><td>Tillman WRP, NPDES permit CA0056227.</td><td>21 / 48</td></tr>
<tr><td>LA River Reach 5</td><td>Tillman WRP, NPDES permit CA0056227</td><td>21 / 53</td></tr>
<tr><td>LA River Reach 6</td><td>Tillman WRP, NPDES permit CA0056227</td><td>13 / 19</td></tr>
<tr><td>SG River Estuary</td><td>Los Angeles Sanitation District NPDES permits</td><td>14 / 113</td></tr>
<tr><td>SG River Reach 3</td><td>Los Angeles Sanitation District NPDES permits</td><td>13 / 75</td></tr>
<tr><td>San Jose Creek Reach 2</td><td>Los Angeles Sanitation District NPDES permits</td><td>8 / 24</td></tr>
<tr><td>South San Jose Creek</td><td>Los Angeles Sanitation District NPDES permits</td><td>5 / 18</td></tr>
<tr><td>Piru Creek</td><td>Stormwater Monitoring Council, recorded in SWAMP database</td><td>2 / 3</td></tr>
<tr><td>SC River</td><td>Stormwater Monitoring</td><td>2 / 2</td></tr>
</table>
</td></tr>
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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td><table><tr><td>Reach 5</td><td>Council, recorded in SWAMP database</td><td></td></tr></table></td></tr>
<tr><td>17.4</td><td>IV. The Proposed Temperature Listings Are Based On An Inapplicable Standard And Therefore Should Be Removed

The following four waterbodies in the County are proposed listings for temperature-related impairment: Los Angeles River Reach 3, San Gabriel River Reaches 1 and 2, and Santa Clara River Reach 6. These listings should not be adopted for the following reasons:

First, natural temperatures for waterbodies in the Los Angeles Region are not known. Chapter 3 of the Los Angeles Region Basin Plan states the following for temperature:

“For waters designated WARM, water temperature shall not be altered by more than 5ºF above the natural temperature. At no time shall these WARM-designated waters be raised above 80ºF as a result of waste discharges.”

“For waters designated as COLD, water temperature shall not be altered by more than 5ºF above the natural temperature.”

The current Basin Plan does not have an established "natural temperature" baseline for waterbodies, nor does it have guidance for estimating natural temperatures. This precludes the use of alteration of natural temperature as a basis for assessing waterbodies in the region.

The Regional Board therefore appears to have used the 80°F objective as the basis for the proposed temperature listings. This standard, however, is not appropriate for two reasons: (1) Under the Basin Plan, the 80°F threshold is to be used only when there is evidence that the temperature rise was "as a result of waste</td><td>The 303(d) list appropriately identifies the temperature impairments. Analysis of sources and causes are not completed as part of the Integrated Report or 303(d) listing process.

The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have different objectives for different seasons.

The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority Project. Los Angles Water Board staff may consider the development of numeric temperature objectives for various waterbody classes and aquatic life beneficial uses in the future.

Temperature is also discussed in response to comment 11.18.</td></tr>
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No.	Comment	Response
	discharges." The Regional Board did not provide evidence that any of the temperatures above 80°F were caused by waste discharges. (2) The 80°F threshold was applied to all waterbodies without considering the physical attributes or the historical ambient air temperatures of the waterbodies, which are uncontrollable. In the Los Angeles Region, ambient air temperatures can vary drastically, which would easily alter or raise the temperature above 80°F, especially in concrete channels during warmer months. Concrete channels are very susceptible to fluctuations in temperature due the material's ability to absorb heat. Even if the water is at a reasonable temperature when it enters a concrete channel, the water temperature may naturally rise as it travels through the channel, and not as the result of waste discharges. Second, Basin Plans of other Southern California Regions, which have similar habitats as in the Los Angeles Region, do not use 80°F as a water quality objective for WARM-designated waters. For example, the Santa Ana Region Basin Plan[6] uses 90˚F during warmer months of the year (June through October) and 78˚F during the rest of the year. The San Diego Region does not have any temperature water quality objectives for WARM-designated waters. Therefore, the use of 80˚F for purposes of assessing temperature-related impairments and listing waterbodies is unreasonable and unsupported, especially in concrete channels during dry seasons. The Regional Board should not list waterbodies for temperature until applicable standards are established for the Region.	
17.5	**V. Alondra Park Lake Is Not A Water of the United States And Therefore Should Be Removed From The Proposed 303(d) List** Alondra Park Lake is a man-made lake that was created in the late 1940s as part of County's plan to establish Alondra Park. The lake does not receive any runoff discharge from areas outside of the park and is not connected to the Dominguez Channel or any other surface waterbody. The lake's source of water is entirely groundwater that is pumped from the West Coast Groundwater Basin. This water is used to irrigate the park and the nearby golf course.	Alondra Park Lake is an approximately 7.3 acre lake. Waterbodies not explicitly identified in the Basin Plan Chapter 2 may still be subject to the “tributary rule.” The Los Angeles Basin Plan, Chapter 2, states: *Under federal law, all surface waters must have water quality standards designated in the Basin Plans. Most of the inland surface waters*

No.	Comment	Response
	In addition, Alondra Lake is not identified in the Basin Plan and, thus, does not have any beneficial use designation assigned to it. This confirms that the lake is not a receiving waterbody. The Section 303(d) list applies only to waters of the United States. Alondra Park Lake is a man-made enclosed lake not connected to any other waterbody. Any listings associated with Alondra Park Lake should therefore be removed from the proposed 2016 303(d) list.	*in the Region have beneficial uses specifically designated for them. Those waters not specifically listed (generally smaller tributaries) are designated with the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary. This is commonly referred to as the "tributary rule."* Alondra Park Lake overflows to the Dominguez Channel in large storm events. Therefore, a hydrologic connection exists between Alondra Park Lake and the Dominguez Channel, a water of the United States. In addition, because such intermittent flow is capable of moving pollutants from the Alondra Park Lake to Dominguez Channel, a significant nexus exists between Alondra Park Lake and the Dominguez Channel. The Dominguez Channel travels through a number of municipalities in Los Angeles County before emptying into the Los Angeles Harbor. In addition, fishing takes place at Alondra Lake. The California Department of Fish and Wildlife plants trout at the Lake. Tissue mercury data from fish from Alondra Lake are part of the Statewide dataset used in the OEHHA statewide advisory, *Statewide Health Advisory and Guidelines for Eating Fish from California's Lakes and Reservoirs, July 2013.* The identification of fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list.

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>17.6</td><td>VI. Data Being Used For Legacy Pollutant Listings Do Not Satisfy The Temporal Representativeness Requirements of The State's Listing Policy

The data being used to support proposed listings of waterbody-pollutant combinations for legacy pollutants does not satisfy the temporal requirements of the State's 303(d) Listing Policy as described below. Thus, these proposed listings should be removed.

Section 6.1.5.3 of the State's 303(d) Listing Policy states:

“Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision. Samples should be available from two or more seasons or from two or more events . . .”

Section 6.1.5.6 of the Listing Policy states:

“To be considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value.”

Section 3.1 of the Listing Policy requires a minimum of two exceedances to place a waterbody on the 303(d) list for toxic pollutants.

The data used to support some of the new listings was collected only on a single day. Therefore, pursuant to Sections 6.1.5.3 and 6.1.5.6 of the Listing Policy, these samples are not temporally independent and should be combined and considered as a single data point. Moreover, under Section 3.1 of the Listing Policy, a minimum of two exceedances are needed to place a waterbody on a 303(d) list. Thus, the following listings do not meet these Listing Policy guidelines:</td><td>The data used to support the listings identified by the commenter were collected on a single day but from two species per waterbody. Multiple composites from each unique species were averaged, but it would be inappropriate to average composites from different species. Composites of different species will have different age profiles and different species occupy different trophic levels and will accumulate pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point.

Most of the averaged composite samples supporting theses listings represent 10 individual fish.

In addition, fish are not static; they move throughout a lake or stream and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent even though they were collected at the same site on the same day.

<table><tr><th>WATER BODY SEGMENT</th><th>POLLUTANT</th><th>Number of fish in composites</th></tr><tr><td>Alondra Park Lake</td><td>PCBs</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr><tr><td>Malibou Lake</td><td>Dieldrin</td><td>Composites were largemouth bass (2 composites - 5 fish per</td></tr></table></td></tr>
</table>

No.	Comment	Response

WATERSHED	WATERBODY SEGMENT	POLLUTANT(S)
Dominguez Channel	Alondra Park Lake	PCBs
Malibu Creek	Malibou Lake	Dieldrin
Los Angeles River	Echo Park Lake	Chlordane, Dieldrin
	Lincoln Park Lake	PCBs
San Gabriel River	Legg Lakes	DDT, PCBs
	Santa Fe Dam Park Lake	PCBs
Santa Clara River	Castaic Lagoon	PCBs
	Castaic Lake	PCBs
	Elderberry Forebay	Dieldrin, PCBs
	Pyramid Lake	Chlordane, DDT, Dieldrin, PCBs

The County and the LACFCD request that these listings be removed until more samples are collected to satisfy the temporal representativeness of data of the State's Listing Policy.

Response:

		composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Echo Park Lake	Chlordane, Dieldrin	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Lincoln Park Lake	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species
Legg Lakes	DDT, PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Santa Fe Dam Park Lake	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Castaic Lagoon	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite), rainbow trout (1 composite - 5 fish per composite) and redear sunfish (2 composites - 5 fish per composite). Composites were

<table>
<tr><th>No.</th><th>Comment</th><th colspan="3">Response</th></tr>
<tr><td rowspan="4"></td><td rowspan="4"></td><td></td><td></td><td>averaged by species.</td></tr>
<tr><td>Castaic Lake</td><td>PCBs</td><td>Composites were largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites. Composites were averaged by species.</td></tr>
<tr><td>Elderberry Forebay</td><td>Dieldrin, PCBs</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and channel catfish (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr>
<tr><td>Pyramid Lake</td><td>Chlordane, DDT,

Dieldrin, PCBs</td><td>Chlordane and DDT - Composites were largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites.

Dieldrin- A composite was generated from largemouth bass (5 fish per composite) for 2 locations. A composite was generated from brown bullhead (5 fish per composite) for 1 location.

PCBs - Composites were generated from largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations</td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td><table><tr><td></td><td></td><td>for a total of 4 composites.</td></tr></table></td></tr>
<tr><td>17.7</td><td>

VII. Legacy Pollutants (PCBs, DDT, Dieldrin, Chlordane) Should be Listed As a Category 4b, Not as Category 5

Many of the pollutants that are being considered for incorporation into the 303(d) list are legacy pollutants that have been banned by the U.S. Environmental Protection Agency (EPA) decades ago and are no longer manufactured or used in the United States. These pollutants include PCBs, DDT, Dieldrin, and Chlordane. PCBs were banned in 1979, DDT in 1980, Dieldrin in 1987, and Chlordane in 1988.

The newly proposed listing includes several waterbodies in the County that are listed for impairments associated with these pollutants:

<table>
<tr><th>WATERSHED</th><th>WATERBODY SEGMENT</th><th>POLLUTANT(S)</th></tr>
<tr><td>Dominguez Channel</td><td>Alondra Park Lake</td><td>PCBs</td></tr>
<tr><td>Malibu Creek</td><td>Malibou Lake</td><td>Dieldrin</td></tr>
<tr><td rowspan="2">Los Angeles River</td><td>Echo Park Lake</td><td>Chlordane, Dieldrin</td></tr>
<tr><td>Lincoln Park Lake</td><td>PCBs</td></tr>
<tr><td rowspan="2">San Gabriel River</td><td>Legg Lakes</td><td>DDT, PCBs</td></tr>
<tr><td>Santa Fe Dam Park Lake</td><td>PCBs</td></tr>
<tr><td rowspan="4">Santa Clara River</td><td>Castaic Lagoon</td><td>PCBs</td></tr>
<tr><td>Castaic Lake</td><td>PCBs</td></tr>
<tr><td>Elderberry Forebay</td><td>Dieldrin, PCBs</td></tr>
<tr><td>Pyramid Lake</td><td>Chlordane, DDT, Dieldrin, PCBs</td></tr>
</table>

The complete ban on these pollutants three decades ago, which is the strongest regulatory action an agency can take, has effectively addressed the true sources of these pollutants in the environment. Since these chemicals are no longer

</td><td>

The definition of 4b is "*Evidence shows at least one use is not supported, but a TMDL is not needed as an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame*."

A ban, in and of itself, is not a regulatory program and no time frame has been specified by any authority for waterbodies impaired by DDT, PCBs, Chlordane, or Dieldrin to attain the water quality standard under the ban, therefore the appropriate category for these waterbodies is 4a or 5.

Several TMDLs address these legacy pollutants; these TMDLs have timeframes for attainment of the standard and identify potential implementation actions such as non-structural and structural BMPs, and/or diversion and treatment to reduce sediment transport from the watershed to the waterbody. Implementation may, in some cases, require the removal of 'hotspots' of high sediment contamination. When an approved TMDL is in place the waterbody may be placed in category 4a (or may remain in category 5 if there are additional pollutants that are not yet addressed by a TMDL or other regulatory program).

The Echo Park Lake waterbody pollutant combinations are already addressed by a TMDL,

</td></tr>
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No.	Comment	Response
	manufactured or used, the regulatory program already in place by the U.S. EPA is reasonably expected to result in the attainment of the water quality standard for these pollutants over time. As indicated in comment VI, waterbodies that contain legacy pollutants should not be listed because the data used for their listing does not satisfy the Listing Policy. However, if the Regional Board does list these waterbodies, we request that they be listed as Category 4b, not Category 5, because a regulatory program is already in place to address them.	the Los Angeles Area Lakes Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs TMDL. Other TMDL for legacy pollutants include: Dominguez Channel and the Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL; Colorado Lagoon Organochlorine Pesticides, PCBs, sediment toxicity, PAHs and metals TMDL; McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL; Ballona Creek Estuary Toxic Pollutants TMDL (including Chlordane, DDT and PCBs); Machado Lake Pesticides and PCBs TMDL; Marina del Rey Harbor Toxics TMDL (including Chlordane and PCBs); and Calleguas Creek OC Pesticides and PCBs TMDL.
17.8	**VIII. The State Should Rely On The Most Updated Guideline to List Waterbodies Based On Fish Tissue Contamination** In assessing waterbodies for fish tissue contamination, the Regional Board used the following two guidelines: a. The 2008 Office of Environmental Health Hazard Assessment (OEHHA) fish contaminant goal, and b. The 1972 National Academy of Sciences (NAS) guidelines. The OEHHA guideline, developed in 2008 is not only up-to-date but also specific to California and, thus, reasonable to use for this particular assessment. On the other hand, the NAS guideline is half a century old and out of date. In the absence of an up-to-date NAS guideline, the assessment should be based exclusively on the OEHHA standard's line of evidence.	The use of both guidelines is appropriate, each supports a different beneficial use. Two or three lines of evidence were developed for the evaluation of the data for each of these waterbody pollutant pairs. One or two LOEs were developed for each of these waterbody pollutant pairs in support of an aquatic life beneficial use (WARM, COLD or both), which compared the data to the NAS evaluation guideline developed to protect aquatic life from the accumulation of toxic substances. In only one case this guideline was exceeded. One LOE was developed for each of these waterbody pollutant pairs in support of the fishing

No.	Comment	Response
	Based on the OEHHA guideline, the following waterbodies meet water quality standards and, therefore, should be removed from the proposed listing: • Castaic Lagoon for PCBs • Elderberry Forebay for Dieldrin • Pyramid Lake for Chlordane, DDT, Dieldrin, PCBs • Alondra Park Lake for PCBs Echo Park Lake for Chlordane and Dieldrin • Legg Lakes for DDT and PCBs.	beneficial use, COMM, which compared the data to the OEHHA guideline developed to protect human health from consumption of toxic substances. For all of these waterbody pollutant pairs, this guideline was exceeded frequently enough to place the waterbody pollutant pair on the 303(d) list.
17.9	**IX. ADDITIONAL COMMENTS** **A. Wilmington Drain-Copper should be delisted** Per Appendix G fact sheets, two lines of evidences (LOE) were used to support the listing for copper in Wilmington Drain. However, the information used for the second LOE is data collected in Compton Creek, which is a different waterbody. This data should not be used to evaluate Wilmington Drain. Removal of this LOE would lead to only 2 exceedances out of 33 data points. This would satisfy the delisting criteria of the State's Listing Policy. Therefore, copper should be delisted for Wilmington Drain.	Los Angeles Water Board staff will correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.
17.10	**B. The listings in Appendix A should be corrected to reflect the listing and delisting decisions in Appendix G** As already acknowledged in the February 24 Regional Board notice letter, Appendix A does not accurately capture all the listing and delisting decisions detailed in the fact sheets in Appendix G. For example, for Ballona Creek, Chlordane, DDT, Dieldrin, and PCBs were delisted during the previous listing cycle. However, these listings continue to be identified in Appendix A as part of the 2016 303(d) list. This is true for many of the waterbodies summarized in Appendix A. This error should be corrected to avoid any confusion and misinterpretation of the information by the general public.	Los Angeles Water Board staff is aware of the inconsistencies and Appendix A has been revised.
17.11	**C. Waterbodies that are on the 303(d) list and being addressed by a USEPA approved TMDL should be moved to Category 4a from Category 5**	Each of these waterbody pollutant pairs are included in the 303(d) list as “being addressed by

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Many of 303(d)-listed waterbodies from the previous listing cycle now have TMDLs. This requires a change in their status from Category 5 (TMDL required list) to Category 4a (being addressed by US EPA approved TMDL). Some of these status changes are not reflected in the revised list and need correction.

Similarly, some of the newly proposed listings are already being addressed by an existing TMDL for that watershed. In those cases, it is appropriate to put them also under Category 4a as opposed to Category 5. Examples, include:

• LA River Reach 3 and Rio Hondo Reach 2 for Indicator Bacteria, which are being addressed by the Los Angeles River Watershed Bacteria TMDL
• LA River Reach 6 for Copper and Compton Creek for Zinc, which are being addressed by the Los Angeles River Metals TMDL.</td><td>USEPA approved TMDL.” However, each of these waterbodies remains on the list in Category 5 because there are other pollutants impairing those waterbodies that have yet to be addressed by a TMDL or other regulatory program.

For example, Rio Hondo Reach 2 has a TMDL for indicator bacteria (the Los Angeles River Watershed Bacteria TMDL); however, Rio Hondo Reach 2 also is listed for dissolved oxygen and toxicity, which are not being addressed by a TMDL. Therefore, the water body, as a whole, is in Category 5.

Nonetheless, in the Appendix for Category 5, waterbody pollutant combinations for which a TMDL is complete are shown as 5B and waterbody pollutant combinations for which there is no TMDL are shown as 5A.</td></tr>
<tr><td>18.</td><td colspan="2">County of Ventura Public Works Agency, March 30, 2017</td></tr>
<tr><td>18.1</td><td>The County has a number of concerns regarding the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waterbodies and believes that it requires significant review and modification before adoption. The County requests that the issues identified in this letter be addressed and the proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed.</td><td>See response to comment 32.1 for additional discussion of additional comment periods.</td></tr>
<tr><td>18.2</td><td>Requested modifications fall into three broad categories:

1. New Category 5 listings should not be listed due to incorrect thresholds applied to the beneficial use, incorrect sample locations, and incorrect interpretation of the data (e.g., mismatched units or lack of temporal representation).</td><td>See response to comment 18.3-18.61 for specific responses.</td></tr>
</table>

No.	Comment	Response
	2. Delistings requested previously by the County that have not been incorporated. 3. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives <WQOs), and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide a detailed summary of requested changes to the 303(d) list and the rationale for the requested actions. In summary, the County requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, nitrogen compounds in Santa Clara River Reach 3 be delisted, and the errors and inconsistencies identified in the CCW TMDL Stakeholders Letter be addressed.	
18.3	**I. REQUESTED MODIFICATIONS TO THE LISTING STATUS** Based on a review of the proposed Category 5 waterbody segment-pollutant combinations, the County has identified a number of waterbodies that should be either delisted based on available data or for which proposed new listings should not be listed based on errors in the data evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested changes. A detailed discussion of each of the justifications follows the table. **Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody Segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.5.

No.	Comment	Response
	• J-flagged data incorrectly used in assessment (WARM).	
18.4	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.6.
18.5	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.7.
18.6	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 7.8.
18.7	Waterbody Segment: **Ellsworth Barranca** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	See response to comment 7.43.
18.8	Waterbody Segment: **Javon Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition.

No.	Comment	Response
		See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.
18.9	Waterbody Segment: **Javon Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected is spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.10	Waterbody Segment: **Los Sauces Creek** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move

No.	Comment	Response
		throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.11	Waterbody Segment: **Madranio Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.12	Waterbody Segment: **Madranio Canyon** Pollutant: Copper Justification: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.13	Waterbody Segment: **Madranio Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.14	Waterbody Segment: **Medea Creek Reach 1 (Lake to Confl. with Lindero)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comments 26.4 and 26.15.

No.	Comment	Response
	• Data does not include proper temporal representation.	
18.15	Waterbody Segment: **Padre Juan Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Benthic Community Effects data do not support listing. • Data does not include proper temporal representation.	See response to comments 26.4 and 26.15. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.16	Waterbody Segment: **Padre Juan Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.17	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.18	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants

No.	Comment	Response
		in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.19	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Dieldrin Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.20	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: PAHs (Polycyclic Aromatic Hydrocarbons) Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.21	Water Segment: **Santa Clara River Estuary** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	See response to comments 16.2 and 32.5.

No.	Comment	Response
18.22	Water Segment: **Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Reach 1 including “waste discharge” from sources such as wastewater treatment plants and the MS4. Exceedances in pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. See, also, response to comment 16.5.
18.23	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlordane Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
18.24	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlorpyrifos Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.73.
18.25	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cyfluthrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.74.

No.	Comment	Response
18.26	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cypermethrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.75.
18.27	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDD Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.76.
18.28	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDE Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.77.
18.29	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDT Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.78.
18.30	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.79.

No.	Comment	Response
18.31	Waterbody Segment: **Tapo Canyon** Pollutant: DDD Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	See response to comment 7.81.
18.32	Waterbody Segment: **Tapo Canyon** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	See response to comment 7.82.
18.33	Waterbody Segment: **Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.83.
18.34	Waterbody Segment: **Tapo Canyon** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.84.
18.35	Waterbody Segment: **Triunfo Canyon Creek Reach 1** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	Two LOEs with five bioassessment scores supported a listing decision. Though IBI scores will be replaced by CSCI in the future for water quality assessment purposes, it remains appropriate to use data on IBI scores for listing

No.	Comment	Response
		purposes. The waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See response to comments 26.4 and 26.15.
18.36	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.37	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.38	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Chlordane Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.39	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: DDT Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.40	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Dieldrin Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.41	Waterbody Segment: **Ventura Harbor: Ventura Keys**	See response to comment 16.6

No.	Comment	Response
	Pollutant: PCBs (Polychlorinated biphenyls) Justification for Not Listing: • Data does not include proper temporal representation.	
18.42	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.
18.43	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	See response to comment 16.13.
18.44	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.
18.45	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.87.
18.46	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Toxicity Justification for Not Listing:	Of the 43 samples evaluated, eight samples were in exceedance, which supported a listing decision. The waterbody pollutant combination should be listed until more data supporting a delisting

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	• Toxicity data from prior to pesticide use restrictions used for listings. More recent data does not show toxicity.	decision become available. Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.
18.47	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.
18.48	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.
18.49	Waterbody Segment: **Wheeler Canyon/Todd Barranca** Pollutant: Benthic Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.87.

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	applicable to waterbody.	
18.50	***Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5.3 of the State Water Resources Control Board (SWRCB) Listing Policy1 states that: "*Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision.*" Many of the pollutants listed in **Table 1** included data collected from a single sampling date. This violates the Listing Policy. For instance, all the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day- February 28, 2007. Because there is no temporal resolution provided for these pollutants they should not be listed. **Requested Action:** **Remove all listings shown in Table 1 that were based on a single sample collection date.**	See response to comment 18.3-18.49 for specific responses.
18.51	***1. Benthic Community Effects Listing are based on flawed analyses and should be removed.*** The benthic community effects listings are based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects. The threshold used to distinguish an impaired reach was a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value. The state has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets, "*The CSCI is applicable*	See response to comment 18.8, 18.11, 18.14, 18.15, 18.35, 18.42, 18.44, and 18.47

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	statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." Despite this, all of the newly listed benthic community effects in Table 1 utilize the IBI to assess the waterbodies. Therefore, the County is requesting that these flawed listings be removed until the waterbodies can be assessed with a more representative metric such as the CSCI. In addition, a number of water segments are listed as an exceedance for benthic community effects citing a low CSCI score, however, the original data shows only IBI scores. The Water Board should clearly note whether a CSCI or IBI assessment was performed. For instance, the Fact Sheets show that Padre Juan Canyon has 2/2 samples which exceed for benthic community effects using a CSCI score of 0.35 and 0.52 which is below the 0. 79 CSCI threshold. However, the raw data shows that an IBI was performed resulting in scores of 40 and 39, which would only represent one exceedance which would not support listing the water body. The Water Board should clearly state where the CSCI scores are that they are referring to. This issue applies to all new benthic community effects listings. More detailed information can be provided upon request. In addition, many of the benthic community effects listings rely on a single day of sampling which does not provide proper temporal representation as discussed in the previous comment. **Requested Action:** **• Update the Appendix G Fact Sheets to clearly state that an IBI metric was used not the CSCI for all pollutants noted in Table 1.** **• Remove all listings shown in Table 1 for benthic community effect that use the IBI listing.**	
18.52	***2. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Basin Plan. The Santa Clara	See response to comment 16.15.

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	River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheet and according to the Los Angeles Region Basin Plan "*The pH of inland surface waters shall not be depressed below 6. 5 or raised above 8. 5* ***as a result of waste discharges***" [emphasis added]. However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Los Angeles Water Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets, or, if no such evidence exists, the Los Angeles Water Board should remove these proposed listings. **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as there is no data provided in the Fact Sheet that demonstrate that these high pH values are the result of waste discharge.**	
18.53	***3. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using WQOs for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles	See response to comment 7.89, 18.3, 18.4, 18.5, 18.7, 18.27, 18.28, 18.31, 18.32, 18.33, 18.34, and 18.49.

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	Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U. S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*') in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*) for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*') in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S. C. § 1313(c)(3)."*[3] In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that WQOs applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable WQOs in waterbodies designated with an asterisk("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a	

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	listing decision for Los Angeles River Reach 1 : *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty. "* Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), WQOs specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to WQOs applicable to the MUN beneficial use. **Requested Action:** **Revise all the new listings in the Fact Sheets to ensure none are based on municipal drinking water objectives when the MUN beneficial use does not apply.**	
18.54	***4. Agricultural Drain and MS4 outfall monitoring data incorrectly used as basis for listing decisions.*** There are some instances where listing decisions are based on data from the Agricultural VCAILG Monitoring Program which include monitoring data from agricultural drains. Santa Clara River Reach 3 (Freeman Diversion to A Street) listings (i.e., chlordane, chlorpyrifos, cyfluthrin, cypermethrin, ODD, ODE, and DDT) were based on multiple lines of evidence, but were primarily listed based on exceedances at VCAILG sample site "S03D_Bards" which is an agricultural drain that drains to Santa Clara River Reach 3. This site was selected to be representative of agricultural discharges to Reach 3 and it is not representative of receiving water conditions. Therefore, any data collected from "S03D_Bard" and other agricultural drain sites cannot be used to list the downstream reach. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains.	See response to comments 7.72 and 7.88.

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	In some cases, other lines of evidence cite location "Santa Clara River at Freeman Diversion at 11th Street Drain (tributary to Santa Clara River) at sample location Santa Paula-1" ("Santa Paula-1"). This location is an MS4 outfall location that is designed to characterize urban discharges from City of Santa Paula and is not located in the Santa Clara River's receiving waters. As a result, the data from "Santa Paula-1" location should not be used for listing receiving waters. However, it should be noted that the data linked to the Fact Sheet did not include any data from "Santa Paula-1" so it is unclear what data were evaluated for these listings. Unless receiving water data contain exceedances, none of the constituents for Santa Clara River Reach 3 should be listed. **Requested Action:** **Remove all listings shown in Table 1 that were based on Agricultural and MS4 discharge monitoring data not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain or MS4 outfall monitoring rather than receiving water monitoring.**	
18.55	***5. Remove toxicity Lines of Evidence (LOE) from pollutant Fact Sheets when a LOE specifically for toxicity already exists.*** Numerous pollutants listed for Tapo Canyon (chlordane, DDD, and DDE) include a toxicity LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the Fact Sheet. **Requested Action:** **Remove the Lines of Evidence for toxicity for Tapo Canyon in Table because no evidence was provided that these constituents were the cause of toxicity.**	See response to comment 18.31 and 18.32.
18.56	***6. Reassess mercury listings using correct objective and correct units.*** The data used to assess mercury for Santa Clara River Reach 3 and Ventura River Reach 3 are in ng/L (nanograms per liter) and the objective is µg/L (micrograms per liter). The data need to be converted into the same units as the objective before	See response to comment 7.90.

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	an exceedance can be determined. The County expects that after this calculation has been performed the waterbodies will no longer meet the listing guidelines. Additionally, although a California Toxics Rule objective exists for mercury, an USEPA nationally recommended criteria was used for the assessment. An explanation for the use of a recommended criteria when an established WQO exists should be provided. **Requested Action:** **Repeat the mercury analysis after correcting the unit error and clarify the objective used.**	
18.57	***7. Correct the proposed temperature listings which are based on incorrect criteria.*** The temperature listing for Ventura River Reaches 1 and 2 (Estuary to Weldon Canyon) and Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd) uses an evaluation guideline of 13-21 degrees Celsius (°C) as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as *COLD* is "For waters designated as COLD, water temperature shall not be altered by more than 5 degrees F above the natural temperature." The Fact Sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the manner in which the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 20024. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer", although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures (25, 26). " As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater	See response to comment 18.43 and 18.48.

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	than 23°C which indicates that the evaluation guideline of 21 °C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing. Using the threshold of 23°C, no samples would exceed the threshold in Ventura River Reach 4 and only 2 samples would exceed the threshold in Ventura River Reaches 1 and 2. Neither of these number of exceedances would meet the listing thresholds. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 as well as Ventura River Reach 4.**	
18.58	***8. The toxicity listing for Ventura River Reach 3 (Weldon Canyon to Confl. With Coyote Cr) relies on outdated data*** Based on a review of the available data, all the observed toxic samples occurred prior to 2009. Of the 8 exceedances, 3 occurred in 2000/2001 and the rest were in 2006, 2007 and 2008. In the 2006-2008 time period, toxicity was commonly observed due to chlorpyrifos and diazinon which were subsequently restricted. Toxicity in many watersheds has been significantly reduced as a result of these use modifications. The available data shows that no samples exceeded after 2008, indicating that those pesticides or another cause that is no longer present, were the cause of the toxicity. Because of the transient nature of toxicity and the potential that the causes of the toxicity are no longer present, exceedances from prior to the pesticide use bans should not be used as the basis for a listing. The more recent samples since the pesticide use restrictions should be used as a basis for evaluation. **Requested Action:** **Do not list Ventura River Reach 3 for toxicity based on exceedances from outdated data.**	See response to comment 18.46.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>18.59</td><td>9. Ensure no J-flagged data were used in the assessment.
The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit. "

All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) list. Specific instances are included in Table 1, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

For example, the line of evidence for the Boulder Creek chlordane listing erroneously states that three out of five samples exceed the objectives. . A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. A similar situation also occurred in the Ellsworth Barranca DOE listing.

Both the Boulder Creek and Ellsworth Barranca listings should be removed based on the incorrect assignment of the beneficial use MUN (as discussed earlier) in addition to the use of J-flagged data.

Requested Action:
• Review all Fact Sheets and Lines of Evidence for the use of J-flagged data and remove any instances where J-flagged data were used.
• Delist chlordane for Boulder Creek and DDE for Ellsworth Barranca as</td><td>See response to comment 7.5.</td></tr>
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	well as any other pollutants that lack the minimum number of exceedances required to justify a listing.	
18.60	**II. REQUESTED DELISTINGS** In June 2015, the County and the Cities of Fillmore and Santa Paula submitted a letter with data and analysis that supported delisting of the Santa Clara River for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded with plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report. The letter is provided as an attachment to this letter. The County requests that the delistings provided in the attached letter be included in the 303(d) list scheduled for adoption on May 4, 2017. **Requested Action:** **Delist Ammonia in Santa Clara River Reach 3.**	As stated in the November 10, 2016 letter, the Regional Board staff recommended delisting of Santa Clara River Reach 3 Ammonia from the 2016 California Integrated Report. Decision 32846 was revised to "Delist from 303(d) list (being addressed by USEPA approved TMDL)".
18.61	**III. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. As a result, there is concern that not all changes to the 303(d) list that may be considered for adoption were identified in the review. The lack of clarity comes from the following inconsistencies: • Not all new listings are summarized in Appendix A. • Appendix B was found to be missing some new and old listings based on a comparison to Appendix G. • Appendix G has fact sheets for some listings noted as new in Appendix A or B identified as old fact sheets from the last listing cycle (e. g. benthic community listings in Javon Canyon). This indicates they were old listings, but a comparison to the 2010 303(d) list identified that they were in fact new listings and the fact sheets were incorrect or located in the wrong location.	See response to comment 7.98 and 7.99.

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	Additionally, in many cases, data and Quality Assurance Project Plan references in the Fact Sheets are inconsistent with the data provided for review. Examples of these inconsistencies and errors were detailed in the CCW TMDL Stakeholders' comment letter. The County asks that the Los Angeles Water Board do a thorough review of all appendices to ensure that the Proposed 303(d) List is internally consistent, the correct data were used for the assessment, and the other errors identified in the CCW TMDL Stakeholders' comment letter are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**	
19.	County of Ventura and the Cities of Fillmore and Santa Paula, March 30, 2017	
19.1	The proposed updates to the 303(d) list did not include delisting of the Santa Clara River Reach 3 for ammonia as recommended by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) in the letter dated November 10, 2016 provided as an attachment to this letter. In June 2015, the County and the Cities submitted a letter with data and analysis that supported delisting of the Santa Clara River Reach 3 for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded: "Based on the findings described above, the requirements for delisting have been met. Therefore, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report." (page 2 of the attached November 10, 2016 letter). The County and the Cities request that the ammonia delistings be included in the 303(d) list scheduled for adoption on May 4, 2017. Requested Action: Delist Ammonia in Santa Clara River Reach 3.	See response to comment 18.60.

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20.	California Department of Water Resources (DWR), March 30, 2017	
20.1	The updates to the 303(d) list propose to add the following pollutants to the following State Water Project (SWP) affiliated locations: • Dieldrin, chlordane, DDT, and polychlorinated biphenyls (PCB) to Pyramid Lake • PCBs to Castaic Lake and Castaic Lagoon, and • Dieldrin and PCBs to Elderberry Forebay. DWR has the following comments: 1) The proposed pollutant listings lack a clear rationale that supports the recommended listings. A clear rationale, such as recommended food (i.e. fish) exposure levels (Food and Drug Administration for example), Fish Contaminant Goal (FCG), or Advisory Tissue Levels (ATL) for each pollutant should be provided so a clear comparison can be made. Some of the levels for these contaminants are above the FCG, they have not reached the ATL, and in fact, the report labels these contaminants as very low, as compared to the other higher priority contaminants. Absent such comparison, it is difficult to assess the appropriateness for such listings.	The Basin Plans contains narrative objectives for toxics pollutants that bioaccumulate within the biotic and result in adverse impacts to aquatic life or human health. Section 6.1.3 of the Listing Policy states that evaluation guidelines shall be used to interpret those objectives. Each LOE identifies the water quality objective/criterion and the evaluation guideline that was used in the assessment. Depending on the beneficial use being assessed, these evaluation guidelines are the National Academy of Science (NAS) guidelines for protection of aquatic life from bioaccumulation and Fish Contaminant Goals (FCGs). The policy allows for the use of evaluation guidelines published by the Office of Environmental Health Hazard Assessment (OEHHA) for the purposes of protection of human health from fish consumption. Water Board staff chose to use the FCGs values because they were the most protective values for fish consumption. There is no need to list a comparison of all three values rather than just selecting the most appropriate, protective, value. Furthermore, OEHHA screening values have been used as numeric targets in TMDLs within the Los Angeles region.
20.2	2) The PCB data in Table 11 (Summary Report) for Elderberry Forebay does not seem to match that of the proposed listing status. Elderberry Forebay is absent	Staff assumes the commenter is referring to Staff Report Appendix A: Summary of Regional Board

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	from this Table.	Recommended Changes to the 2012 303(d) List. Elderberry Forebay dieldrin and PCBs are appropriately listed as new listings, which also matches the listing in Appendix B (Category 5).
20.3	3) Insufficient details are provided for dieldrin, chlordane and DDT. A more comprehensive effort that specifically focuses on these contaminants should be conducted before they are proposed for Pyramid Lake additions to the 303(d) list.	"LIST" is the appropriate recommendation for dieldrin, chlordane and DDT. Listed waterbodies are evaluated and listing decisions are made based on Section 3 of Listing Policy. Based on readily available data and Section 3.5 and Table 3.1 of the Listing Policy and there are sufficient samples to list based on the binomial distribution. Greater detail regarding those listings is provided in Decision 62840, 62841, and 65950 in Appendix G. Also see response to comment 32.3 regarding readily available data.
20.4	4) Further analysis, including statistical analysis, should be conducted to support this proposed listing. Given the proposed listing recommendations are based on sample analytical data, a statistical analysis to show that sufficient sample size has been obtained for each lake should be provided. Additional considerations for analysis should also include: • Increasing sampling locations. Were the samples obtained truly representative of the entirety of the lakes, especially those that are the subject of this letter? • Do the composite samples truly represent averages of the fish caught, or are they additive? Can composites identify anomalies? Can a lake-wide composite be skewed, as a result of one very high data point? • One-time study involving one year seems insufficient. Studies with longer duration are more appropriate to accurately determine the pollutant levels.	While the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. At the time a TMDL is developed, or other regulatory program is developed, a more refined geographic scope can be identified considering collection sites and fish movement. See response to comment 32.3 regarding readily available data.

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21.	Earth Law Center (ELC) , March 30, 2017	
21.1	**<u>1. Full Compliance with Clean Water Act Sections 305(b) and 303(d) Requires Identification of All Hydrologically Impaired Waterways</u>** *a. CWA Section 303(d)* Clean Water Act (CWA) Section 303(d)(1)(A) requires California to "identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters." This must be a robust listing, with sufficient details about the waterways (including flow) to allow the state to "establish a priority ranking" for the waterways, also required by Section 303(d)(1)(A). In other words, California's 303(d) list must provide a comprehensive list of all impairments. The state's Listing Policy provides some mixed direction, stating on the one hand that 303(d) list only covers impairments by "pollutants" (rather than also by "pollution," such as flow),[2] but on the other hand stating that Regional Water Board Fact Sheets supporting Section 303(d) listings "shall contain...Pollutant or *type of pollution* that appears to be responsible for standards exceedance."[3] The latter path is the appropriate course. No objection, further, can be made to including flow-impaired waterways on the Section 303(d) list on the basis that the state is not required to prepare TMDLs to address "pollution." First, Section 303(d)(1)(A) makes no mention of limiting the 303(d) list to those waterways requiring Total Maximum Daily Loads (TMDLs). In fact, no mention of TMDLs is made until Section 303(d)(1)(C), which sets requirements on how to manage impaired waterways. Moreover, the state itself does not take this position for waterways impaired by pollutants. Instead, the state lists in Category 5 (what it deems its Section 303(d) list) pollutant-impaired waterways that do, and do not, require TMDLs by state evaluation.[4] Accordingly, the state must include hydrologically impaired waterways, including those impaired by altered flow, on its 303(d) list. This is the path the Los Angeles RWQCB correctly took in listing the Ventura River (Reaches 3 & 4) for "pumping" and "water diversion" impairments.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with State Board's response to *American Rivers*. The State Water Board response is provided below: *Sufficient flow is necessary to protect water quality and beneficial uses of water. "Pollution," such as lack of adequate flow, may cause impairments to water quality standards. Specifically, reduced flows can cause or contribute to impaired water quality conditions, such as elevated water temperatures, increased pollutant concentrations, degraded recreational opportunities, and reduced habitat area and/or volumes.* *State law recognizes the connection between flow and water quality. The Legislature specifically identified its intention to "combine the water rights and water pollution and water quality functions of state government to provide for consideration of water pollution and water quality, and availability of unappropriated water whenever applications for appropriation of water are granted or waste discharge requirements or*

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	However, rather than continuing to follow the clear intent of CWA Section 303(d), the Los Angeles RWQCB instead proposes to delist the Ventura River (Reach 3) for "pumping,"[5] despite this listing having been properly included on the 303(d) list since 1998. The primary reason given is that "[t]he listing is for a non-pollutant and therefore should be delisted."[6] However, as established above, the CWA requires the listing of both pollutants and pollution on the 303(d) list, regardless of whether a TMDL is required. Therefore, we ask that the Ventura River (Reach 3) remain on the 303(d) list.	*water quality objectives are established" when it created the State Water Resources Control Board. (Wat. Code, § 174.)* *The State Water Board has broad authority to consider water quality and pollution when it makes water allocation determinations. (Wat. Code, §1258.) The State Water Board has significant experience both setting and implementing flow criteria through water right actions, including its Bay-Delta Program and its Policy for Maintaining Instream Flows in Northern California Coastal Streams. The State Water Board also has experience setting flow requirements as part of its responsibility to certify that the operation of hydropower facilities subject to Federal Power Act licensing meet water quality standards. Those actions are always controversial and frequently involve differences of opinion among scientists, who testify under oath, as to appropriate flow criteria in those proceedings. The State Water Board has previously recognized that its major rivers are over-allocated and adversely impacted by flow alterations (see for instance Strategic Plan Update 2008-2012, State Water Resources Control Board, September 2, 2008, p.10). However, the extent of the impact on instream beneficial uses of a stream depends on the unique circumstances of each situation and requires knowledge of other factors impacting the physical and biological integrity of the watercourse, including physical impediments to fish passage and sediment recruitment (dams and culverts, in addition to natural impediments such*

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		as waterfalls and landslides), the source of the water accreting to the stream (is it cool groundwater or is it warm runoff from open lands), the location and physical effect of diversions relative to habitat, and other factors that affect pollution. *Pursuant to the above-cited state law, the State Water Board is expressly required to consider water quality and pollution when making water rights determinations. The converse is not true, however, with regard to the federal law directly applicable to developing the Integrated Report. The federal statutory directives pursuant to CWA 303(d) and 305(b) require states to report on the water quality necessary to provide for fish, wildlife, and recreational opportunities and other beneficial uses. In fulfilling its reporting obligations pursuant to CWA 303(d) and 305(b), the federal statutes do not expressly require the states to consider flow, pollution, or allocation of water rights, when reporting on standards attainment. Clean Water Act (CWA) section 305(b), combined with the section 303(d) reporting requirements, comprises the California Integrated Report (Integrated Report). Those reporting requirements establish a process for states to use to develop information on the quality of their state's waters.* *CWA section 305(b) is the principle [sic] means by which U.S. EPA and the public assess whether waters meet water quality standards. The report is used by U.S. EPA to inform Congress on the*

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		quality of navigable waters and their tributaries nationwide. *CWA section 305b requires states to report on:* *"[A] description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be required to take into account seasonal, tidal, and other variations, correlated with the quality of water […]."[A]n analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water."* *"[A]n analysis of the extent to which the elimination of the discharge of pollutants and a level of water quality which provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreations activities in and on the water, have been or will be achieved by the requirements of this chapter, together with recommendations as to additional action necessary to achieve such objectives and for what waters such additional action is necessary."*

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		(CWA § 305(b)(1)(A)-(C); see id. at § 305(b)(1)(D) & (E) (describing economic and environmental reporting requirements).) U.S. EPA describes the section 305(b) reporting goals at: http://water.epa.gov/type/watersheds/monitoring/upload/2003_07_24_monitoring_305bguide_v1ch1.pdf , *and provides 2006 Integrated Report Guidance here:* *http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2006IRG_index.cfm.* *As provided in the above U.S. EPA reference material, the primary purpose of the 305(b) and 303(d) reporting requirements is to determine the extent waters are attaining standards, identify waters that are impaired and need to be added to the 303(d) list and placed in Category 5 for the development of a total maximum daily load (TMDL), and identify waters that can be removed from the list when standards are attained.* *The guidance U.S. EPA developed for states to implement the Integrated Report consistently provides that segments should be placed in Category 4c when "the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution" such as lack of adequate flow. (See Guidance for 2006 Assessment, Listing and Reporting Requirements*

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		Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005). *In making decisions concerning standards assessment, it is imperative that the State Water Board undertakes a structured framework regarding its assessment and listing methodology and also provides information on the content of such methodologies.* *It may be appropriate to assess flow alteration pursuant to section 305(b) to the extent it could be used to support water quality decision-making. However, without a defined methodology for assessing non-pollutant related pollution, Water Board staff does not have a consistent and transparent approach to analyzing the extent to which flow-related alterations cause or impact water quality standards. The decisions made by the State and Regional Water Boards must be based on a methodology that provides all stakeholders with the opportunity to understand exactly how assessment decisions are made. The State Water Board's listing determinations must be supported by documentation that explains the analytical approaches used to infer true segment conditions. (See U.S. EPA's 2006 Guidance for Assessment and Listing, p. 29 (explaining what constitutes an assessment methodology and U.S. EPA's review of a state's methodology for consistency with the CWA and a state's water quality standards).) In addition to recognizing U.S. EPA's recommendation that segments be placed in Category 4c when the cause is solely*

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		due to pollution, and given the uncertainties associated with determining appropriate flow criteria to be used as a threshold for determining impairment, the State Water Board does not believe that placing segments in Category 4c of the Integrated Report results is warranted. Neither is such a reporting format an appropriate use of its limited resources, particularly considering the State Water Board's broad authority to address flow issues through its other legal authorities, which unlike information provided in the Integrated Report, have the potential to result in flow improvements through voluntary or regulatory action. However, in this 303(d) list, the Los Angeles Water Board has assigned the Ventura watershed pumping and water diversions to "being addressed by a TMDL" (Category 4a). In EPA's approval letter for the Ventura River Algae, Eutrophic Conditions and Nutrients TMDL, EPA stated "Based on EPA's approval of the State' s TMDLs addressing the algae, eutrophic conditions and nutrient impairments, together with other available information regarding Reaches 3 and 4 of the Ventura River, EPA has determined that it is unnecessary at this time to establish separate actions for the pumping and water diversion in Reaches 3 and 4 of the Ventura River." Decision ID 33817 Ventura Reach 3, water diversion Decision ID 44534 Ventura Reach 4, water diversion

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		Decision ID 34271 Ventura River Reach 3, pumping Decision ID 44793 Ventura Reach 4, pumping
21.2	*b. CWA Section 305(b)* The state must also include hydrologically impaired waters in its broader, CWA Section 305(b) report. Section 305(b) requires states to submit biennial reports[7] that "shall" describe the "water quality of all navigable waters," including an analysis of the extent to which the waters protect fish and wildlife, for compilation and submission to Congress.[8] Federal regulations describe this requirement and its purpose, stating that **the Section 305(b) report "serves as the primary assessment of State water quality" and the basis of states' water quality management plan elements, which "help direct all subsequent control activities."**[9] States must use the Section 305(b) report to develop their annual work program under Sections 106 and 205(j).[10] California's Integrated Report accordingly must include an adequate Section 305(b) report if the state is to develop meaningful water quality plans that appropriately direct staff and resources to the most important control activities. The Section 305(b) report must particularly include information regarding waterway flows to ensure that the fundamental purpose of Section 305(b) in guiding workplanning is met. The provision of information regarding waterway flow is also called for by CWA Section 101, which sets **the national objective of restoring and maintaining the "chemical, *physical*, and biological integrity of the Nation's waters."** (Emphasis added.) The U.S. Supreme Court itself explicitly affirmed the importance of addressing physical elements of waterway health such as flow, stating **that the distinction between water quality and quantity under the CWA is "artificial."**[11] The Staff Report runs afoul of the CWA by ignoring Category 4C entirely for inclusion in either its 303(d) list or its 305(b) report, reporting that *zero* water bodies in the Los Angeles Region are impaired due to altered hydrology under Category 4C.[12] As with other regional water boards, the Los Angeles RWQCB	The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board staff concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *It is State Water Board staff's interpretation that waterbodies currently listed for pollutant based impairments should not be included for pollution based impairments as well. The pollution based impairments should be addressed via the TMDL or other regulatory process. If all pollutant based impairments are eventually addressed and the pollution impairments still exist, then placement into Category 4c could be appropriate.* In addition, the State Water Board states: *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address nonpollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes*

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	appears to rely on the Listing Policy for this decision, which states that the 303(d) list only includes those water segments that require the development of a TMDL.[13] Here, again, the Staff Report assumes an illegally narrow definition of its requirements under the CWA. The Integrated Report is supposed to include *both* a robust and legally adequate 303(d) list *as well as* a robust and legally adequate 305(b) report. These requirements are combined; they are not the same (*see also* sec. 8). If the State Water Board and Regional Water Boards take the position that pollution-impaired waterways (including flow-impaired waters) cannot be included in the Section 303(d) list, then the Listing Policy – which by definition applies *only* to the Section 303(d) list – is irrelevant. It cannot be used as an excuse to ignore flow impairments entirely. The state in that case must then turn to its requirements under Section 305(b), which broadly require it to report on water quality, including as impacted by altered flow. Indeed, the Staff Report recognizes that it must consider flow-impaired waterways in its assessment, describing Category 4C as being applicable if "[t]he non-attainment of any applicable water quality standard for the waterbody is the result of pollution and is not caused by a pollutant."[14] No legitimate reason is given for failing to comply with this requirement, however. A legally adequate Section 305(b) report must include waterways impaired by pollution, including hydrologically impaired waterways, whether or not the waterways are also impaired by a pollutant. This information is also critical for the state to set waterway protection priorities properly. Proper identification of hydrologically impaired waterways is also important if the state is to fully comply not only with Section 305(b), but with CWA Section 303(d) as well. This section not only calls for identification of impaired and threatened waterways, but also requires the state to prepare a "*priority ranking*" of such waters, "taking into account the severity of the pollution" and waterway uses.[15] Flow and other hydrologic alteration data and information are critical to proper prioritization of impaired waters for further staff and resource attention. Specifically in regards to the Ventura River (Reach 3), in addition to misguidedly delisting this water segment from the 303(d) list for its impairment due to	*into account the flow impairments as a causative factor*. While these listings are not strictly flow-related, in this 303(d) list, the Los Angeles Water Board has assigned the Malibu Creek and the Matilija Creek fish barriers listing to Category 4c. However, the Los Angeles Water Board recognizes that the issue of Statewide consistency may become more important as the State Water Board approves the Los Angeles Region 303(d) list combined with lists for other Regions. See: Decision ID 34814 Malibu Creek fish barriers Decision ID 35724 Matilija Creek reach 1 Fish Barriers Decision ID 34162 Matilija Creek reach 2 Fish Barriers Decision ID 34241 Matilija Creek reservoir Fish Barriers Also, see response to comment 21.1.

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	"pumping," the Los Angeles RWQCB staff also fails to reclassify this water segment under Category 4C, finding that "[t]here is no established method for determining impairment due to pollution like pumping so a Category 4C finding is also inappropriate."[16] Once again, this response is misguided, as the state must at minimum include hydrologically impaired waters in its broader, CWA Section 305(b) report, as described above, whether or not there are flow standards or a formal methodology to do so. See Sec. 6, below. Finally, we reiterate that because Section 303(d)(1)(A) broadly requires identification of impairments *regardless* of whether TMDLs are needed, the state's Section 303(d) list should include a robust Category 4C set of listings. State law cannot weaken the requirements of the CWA by artificially limiting the scope of this list.	
21.3	**2. U.S. EPA Guidance and Reports, and the State Water Board Itself, Have Called for Identification of Hydrologically Impaired Waterways in Category 4C of the Integrated Report** U.S. EPA issued formal Integrated Report Guidance (i.e., for the combined Sections 303(d) and 305(b) reports) to states and territories in August 2015; in it, EPA specifically addresses the topic of hydrological impairment.[17] The U.S. EPA Guidance clearly states that: > If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life[18] use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C.[19] The Guidance specifically references hydrologic alteration as an example of a Category 4C listing.[20] It further references EPA Guidance going back at least to 2006, which similarly said that flow-impaired waters should be identified in the Integrated Report under Category 4C (the 2010 CCKA et al. Letter references this 2006 Guidance in support of flow listings; see attachment 3).	There is not clear evidence supporting the fact that beneficial uses are impaired solely due to the lack of or excess of perennial or ephemeral flows. The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The State Water Board and North Coast Regional Water Board (North Coast Water Board) staff could not clearly determine if the beneficial uses*

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	U.S. EPA and USGS reinforced this mandate in a joint report in February 2016 on flow, stating in part that "EPA recommends reporting impairments due to hydrologic alteration in Category 4c, which are those impairments due to pollution not requiring a TMDL."[21] Even more specifically, U.S. EPA Region 9 has directly told the State Water Board that the Board is "well aware of [EPA's] interest toward listing selected streams for 'flow impairments' (at least under 305(b)) where lines of evidence are strong."[22] Further, the State Water Board Executive Director himself decided that the state should identify flow-impaired waters in its Integrated Reports, stating that California "would now list for flow alterations" and that "[l]istings would be made under category 4C for impaired [sic] by pollution not a pollutant, and be based on staff's professional judgment as well as the evidence submitted by the data."[23] Again, no reason is given in the Staff Report for ignoring the clear flow impairments throughout the region in light of the CWA, guidance, and state direction.	*of a water quality segment were impaired solely due to stream flow or lack thereof. In many water segments, flow is seasonal resulting in dry periods during the summer months. If interpretive guidance or a clear methodology was developed to examine flow and other forms on non-pollutant related pollution, Water Board staff would have a transparent and consistent way to characterize beneficial use impairments caused by such pollution.* Also see response to comment to comment 21.1 and 21.2.
21.4	**<u>3. The San Diego RWQCB Has Adopted Numerous Listings for Hydrologic Impairment for Its Current Integrated Report</u>** The SD RWQCB recently adopted an Integrated Report and Staff Report[24] that **identified 30 waterway segments for listing in Category 4C, either with a Category 5 pollutant listing or alone**.[25] Consistent with U.S. EPA Guidance, the SD RWQCB recognized that identifying all pollutant and pollution impairments provides a far more accurate picture of the challenges before the state than ignoring key impairments. For example, the Staff Report found that "over 96 percent of streams that exhibited biological degradation had both an associated pollutant(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration (hydromodification, Table 3)." If the Regional Board had ignored such pollution impairments, then virtually all of the impaired streams in the San Diego Region would have been under-assessed, likely resulting in misallocation of limited	As the commenter states and the San Diego Regional Board mentioned in their staff report, "*…streams that exhibited biological degradation had both an **associated pollutant**(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration …*"

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	resources and attention. ELC commented to the San Diego Board in support of these listings; these comments are attached.[26]	
21.5	**4. <u>California Has Identified Hydrologically Impaired Waterways in the Past</u>** In California, "pumping" and "water diversion" are currently listed as causes of impairment for Ventura River Reaches 3 and 4, in the Los Angeles Region. Additionally, Ballona Creek Wetlands is currently listed as impaired by "Hydromodification," among other impairments. All three water body segments are currently listed for these specific flow-related impairments in Category 5.[27] California's history of identifying flow-related impairments under Section 303(d) should be considered precedential. And as explained herein and by Santa Barbara Channelkeeper in its comment letter, there is no basis for delisting Reach 3 of the Ventura River.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The Staff Report (at p. 9-10) states that the Water Boards have not considered the direct assessment of flow data since the adoption of the Listing Policy in 2004. The Staff Report acknowledges, however, that there were 4 listings on the existing 303(d) List related to flow-related alterations in the Ballona Creek and Ventura River watersheds (Region 4) but that those decisions were made prior to the adoption of the Listing Policy.* *The Listing Policy provides listing factors based solely on pollutant impairments. As a result, any section 303(d) listings related to flow alterations are contrary to the Listing Policy and U.S. EPA guidance and would be appropriate for reconsideration. Because the 4 segments were included on the 303(d) list due to pollution-related impairments, and not a pollutant, the Staff Report*

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		explains that the 4 listings for flow will likely be proposed for delisting in the next listing cycle. *However, it is important to note that the 4 segments were also listed on the 303(d) List for pollutant impairments for which TMDLs have been developed: Ventura River Reaches 3 and 4 – are identified as impaired due to pumping and water Diversion. The Regional Water Board and U.S. EPA have found that those flow related impairments were addressed via the Ventura River Algae TMDL. Regarding the listings for Ballona Creek Wetlands, identified as impaired due to hydromodification and reduced tidal flushing, the Regional Water Board and U.S. EPA have found that the Ballona Creek Sediment and Exotic Vegetation TMDL are addressing the stressors involved with the hydromodification and reduced tidal flushing.* *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address non-pollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes into account the flow impairments as a causative factor.* However, as noted in response to comment 21.1, the Los Angeles Water Board has assigned the Ventura River watershed pumping and water diversions to “being addressed by a TMDL” (Category 4a).

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21.6	**<u>5. Numerous Other States Have Identified Hydrologically Impaired Waterways in Categories 4C and 5</u>** Many states around the country have followed U.S. EPA Guidance and the CWA by properly identifying flow-impaired waterways in their Integrated Reports. These include, but are not limited to, Western states such as Idaho, Montana, Wyoming, Washington and New Mexico.[28] One listing methodology that may be of particular interest to the Los Angeles is that used by Ohio, which identifies waters impaired by flow alteration by linking biological community degradation with upstream dams. Notably, a number of these states regularly include flow-impaired waterways on their 303(d) list as well as their 305(b) Report. ELC has collected a significant amount of information on other states' hydrologic impairment listings and processes (and provided this to the State Water Board); this can be made readily available to the Los Angeles Board if desired.	See response to comment 21.1 and 21.2.
21.7	**<u>6. Flow Standards Are Not Required to Identify Hydrologically Impaired Waterways in Category 4C</u>** Most, if not all, of the states that identify hydrologic (including flow) impairments make those listing decisions based on best professional judgment and the information before them. Flow standards are not required to be developed first. Even the State Water Board has stated that flow listings could be done "based on staff's professional judgment as well as the evidence submitted by the data," and that they "would likely be mostly narrative...unless there are specific numeric targets for flow in place."[29] In other words, the state itself has recognized that flow criteria are not necessary for flow impairment listings. ELC has compiled significant information collected on various states' hydrologic impairment listing strategies and would be pleased to provide this additional information if desired. U.S. EPA addresses the process of identifying hydrologically impaired waters in its 2015 EPA Listing Guidance, stating that: If States have data and/or information that a water is impaired due to	See response to comment 21.1 to 21.4.

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	pollution not caused by a pollutant (e.g., aquatic life use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C. Examples of hydrologic alteration include: a perennial water is dry; no longer has flow; has low flow; has stand-alone pools; has extreme high flows; or has other significant alteration of the frequency, magnitude, duration or rate-of-change of natural flows in a water; or a water is characterized by entrenchment, bank destabilization, or channelization. Where circumstances such as unnatural low flow, no flow or stand-alone pools prevent sampling, it may be appropriate to place that water in Category 4C for impairment due to pollution not caused by a pollutant. In order to simplify and clarify the identification of waters impaired by pollution not caused by a pollutant, States may create further subcategories to distinguish such waters.[30] Note that this description of the process for identifying flow impairments does not require adoption of flow standards as a prerequisite for listing. The SD RWQCB Staff Report also addressed this topic in their just-approved Staff Report and Integrated Report, similarly stating that: where a water segment exhibited significant degradation in biological populations and/or communities as compared to reference site(s) the San Diego Water Board assessed the segment for inclusion in Category 4c using data and information as prescribed in USEPA's 2015 Guidance...Where in-stream data was lacking, stream segments were evaluated using desktop aerial reconnaissance for potential in-stream habitat and hydrologic alteration associated with channel modifications, stream diversion or augmentation, and to evaluate the level of associated development and use of best management practices to mitigate hydromodification.[31]	
21.8	**7. Sound Public Policy Dictates that Flow-Impaired Waterways Must Be Identified**	The Los Angeles Water Board agrees with the value of identifying waterbodies that are impacted

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	States, including California, have identified and are identifying flow-impaired waterways in their Integrated Reports not only because the Clean Water Act calls for it and U.S. EPA Guidance reinforces it. They also do so because it makes smart policy sense. Why would a state limit the amount of information it releases, information that could help it make better decisions about how to prioritize its resources? If the main problem with a waterway is not temperature or dissolved oxygen but flow, for example, then that information should be available so the best permitting and resource allocation decisions can be made to protect affected waterways. Identification of flow-impaired waterways is also important because those listings help the public exercise their own responsibility to help improve waterway health. U.S. EPA agreed in its Guidance, stating that "a variety of watershed restoration tools and approaches to address the source(s) of the impairment" exist even in the absence of TMDLs, increasing the importance of full and complete identification for impaired waterways.[32] Hydrologic impairment listings also can and should be used in CEQA analyses of proposed projects that could further impact the flow of identified waterways, thus preventing additional damage to already-impacted waterways and fish. ELC has prepared and submitted extensive comments to the state on the numerous policy benefits of properly identifying flow-impaired waterways.[33]	by pollution, including flow alteration, that are not otherwise impaired by other pollutants. Given the complex characteristics of climate and hydrology in the Los Angeles region, determining natural baseline flow conditions that are necessary to support aquatic habitat based on comparable reference conditions that resemble the conditions within our region and finding a defensible methodology for applying that information to determine impairment is a challenging endeavor that may be pursued in subsequent assessments.
21.9	**<u>8. Water Bodies Can and Should Be Placed in All Relevant Categories of Identification</u>** The Staff Report states that "[t]o meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment…."[34] This statement appears to limit the RWQCB to placing water bodies in only one category, an interpretation presumably reflected in the recommendation to include zero listings in Category 4C.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*.

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	This approach is simply incorrect. U.S. EPA has been quite clear that water bodies can be placed into multiple categories, and in fact should be in order to provide the best available information to U.S. EPA and Congress. As explained by the SD RWQCB in its Staff Report: It is important to note that USEPA recommended in its 2015 guidance that "States assign all of their surface water segments to ***<u>one or more of five reporting categories</u>***"....[35] U.S. EPA reiterated this point in its joint report with USGS, stating that "EPA's guidance has noted that **assessment categories *are not mutually exclusive*, and waters may be placed in more than one category (for example, categories 4C and 5)**."36 Accordingly, flow impairments should be reflected in Category 4C whether or not there is a pollutant present, the approach taken recently by the SD RWQCB. Otherwise, the state is conflating the Section 303(d) and 305(b) reports rather than combining them, ignoring its Section 305(b) responsibilities in the process.[37] Because the state must comply with both Sections 305(b) and 303(d), it must provide information relevant to all categories applicable to a single water body.[38] The Integrated Report does not meet these mandates.	The State Water Board response is provided below: *The State Water Board has not indicated that it is bound to U.S. EPA's guidance. Additionally, the State Water Board disagrees with the commenter's interpretation of U.S. EPA's <u>Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act</u>, which is excerpted in the Staff Report at page 10.* *U.S. EPA's guidance at section V.G.3 (pg. 56) states:* *Segments should be placed in Category 4c when the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is **not caused by a pollutant**, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is 'the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water' (section 502(19)). In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard*

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		and to support water quality management actions necessary to address the cause(s) of the impairment. Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired ***solely*** *due to lack of adequate flow or to stream channelization.* *(Page 56, emphasis added.) In California waterbody-pollutant combinations are assessed consistent with the Water Quality Control Policy for developing the California's Clean Water Act Section 303(d) List (Listing Policy) to determine the overall use support rating. That overall use support rating is used by the California Water Quality Assessment Database (CalWQA) to determine the overall Integrated Report Category for the waterbody as a whole.* *The State Water Board interprets the U.S.EPA guidance to indicate that a waterbody should not be placed into Category 4c if there is a pollutant based impairment identified to be impairing water quality that requires a TMDL. The waters for which flow information has been submitted for inclusion into Category 4c are all identified in the Integrated Report as impaired due to pollutants under Category 5, 4a, or 4b. Waterbodies impaired by pollutants, such as temperature, and also by flow modifications will be addressed by TMDLs for the pollutant. To the extent that the pollutant is affected by flow, the Regional Water Boards will work with the State Water Board through its Division of Water Rights to determine*

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		the extent to which a water right action can improve the pollution impairment and the appropriate implementation action. *Additionally, U.S. EPA submitted a comment letter regarding the State Water Board's consideration of the CWA 303(d) List stating:* *"EPA commends the Regional Board and State Board staff for the transparency of the process with respect to data used in the assessment and the applicable standards." U.S. EPA also explained that the purpose behind its substantive listing recommendations to the State Water Board was designed to ensure that U.S. EPA's approval of the CWA 303(d) list could occur without U.S. EPA making changes subsequent to the State Water Board's approval. Notably, while U.S. EPA noted disagreement with certain listings or delistings proposed in the Staff Report, U.S. EPA stated no disagreement with the Staff Report's assessment of flow related data and information. U.S. EPA has final review and approval authority of California's CWA 303(d) List before it becomes effective.* Also see response to comment 21.1 and 21.4.
21.10	**9. Readily Available Data Exist and Have Been Provided in Support of the Listing of Waterways as Hydrologically Impaired** As evident based on substantial, readily available information, the lines of evidence for hydrologic impairment are strong for numerous Los Angeles Region waterway segments, including but not limited to Reach 3 of the Ventura River	Also see response to comment 21.1, 21.2, and 32.3 regarding readily available data.

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	(specifically for "pumping," as currently listed) as well as the Santa Clara River (particularly Reaches 1 and 2).[39] Federal regulations state that states must evaluate "all existing and readily available information" in developing their 303(d) lists and prioritizations.[40] The SWRCB's Executive Director reinforced the breadth of this requirement in a memorandum on the scope of listing regulations at 40 CFR § 130.7(b)(5).41 This information must include flow, a position recently reinforced by U.S. EPA, who stated that the integrated reporting format is key to "acknowledge the important role of flow in contributing to water-body impairments."[42] <u>Data Supporting Listing of the Ventura River (Reaches 3 and 4)</u> Excessive pumping contributes to the severe dewatering of the Ventura River (Reach 3), imperiling endangered steelhead trout and other aquatic species. Therefore, the Los Angeles RWQCB must not delist this waterway for "pumping" as is currently proposed. As support, ELC incorporates by reference those comments prepared by Santa Barbara Channelkeeper on the Los Angeles Region's 2012 Integrated Report[43] and 2016 Integrated Report,[44] both of which summarize the extensive body of evidence establishing the link between pumping on Reach 3 (as well as Reach 4) of the Ventura River and resulting negative biological impacts, including to steelhead trout. ELC also incorporates by reference numerous additional documents that highlight the negative effects of excessive pumping on Reach 3 (as well as Reach 4) of the Ventura River, including from U.S. EPA Region 9 (finding in its Draft TMDL for Reaches 3 and 4 of the Ventura River that "low flows due to pumping and diversion activities likely exacerbate the flow and water quality conditions in Reaches 3 and 4"),[45] the National Marine Fisheries Service (NMFS) (finding in a 2007 Draft Biological Opinion that "[w]ater withdrawals from surface diversions and subsurface pumping have affected the timing and magnitude of the Ventura River flows ... and has decreased the quantity and quality of critical habitat for steelhead")[46], and the Los Padres National Forest Ojai Ranger District (describing the historic impacts low flows have upon steelhead trout populations in the Ventura River watershed in a report on steelhead	

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	restoration).[47] Together, this data demonstrates that pumping impairs beneficial uses in Reach 3 of the Ventura River, particularly those beneficial uses related to aquatic life and habitat. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. Reach 3 of the Ventura River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based on the readily available data and information, the evidence is sufficient to support the continued listing of Reach 3 of the Ventura River on the 303(d) list due to "pumping." Thus, the proposed delisting of the "pumping" impairment on Reach 3 must not proceed. The Los Angeles RWQCB staff has not provided sufficient information to justify this delisting, nor have they addressed the above evidence that clearly validates the "pumping" listing as it originally occurred. Similarly, this evidence supports the continued listing (as currently proposed) of Reach 3 as impaired due to "water diversion," and of Reach 4 as impaired due to both "water diversion" and "pumping." **<u>Data Supporting Listing of the Santa Clara River</u>** Since at least 2013, ELC and partners have submitted detailed information establishing a clear impairment due to altered flows on the Santa Clara River (in particular Reaches 1 and 2, located downstream of the Vern Freeman Diversion Dam). In May 2013, we submitted a "shortlist" of ten California waterways being drained dry for inclusion on the 303(d) list, along with supporting evidence (see Attachment 2). The Santa Clara River was one of those waterways.	

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	As described in the submitted evidence: The Santa Clara River is Southern California's last major free flowing waterway and is home to 17 species listed as threatened or endangered under the state and federal Endangered Species Acts. At River mile 10.5, United Water Conservation District (United) diverts almost all of the River's flows outside of large storm events. United, USGS, and local agency data show that water diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses, deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds.48 In addition to impacting beneficial uses associated with the provision of adequate steelhead habitat, surface water withdrawals also destroy downstream native riparian and endangered bird habitat, degrade the ecological integrity of the River's estuary, and impair a plethora of cultural and recreational beneficial uses downstream.[49] Additional readily available information further supports the imperative to list the Santa Clara River as impaired due to altered flows. This includes documents published by NMFS (describing in a Final Biological Opinion the negative biological impacts of the Vern Freeman Diversion Dam, which can deplete the Santa Clara River of all its flows and jeopardizes the existence of endangered Southern California steelhead trout),[50] the Santa Clara River Trustee Council and The Nature Conservancy (describing Santa Clara River flow reductions caused by water diversions and groundwater pumping and the resulting impact on steelhead trout),[51] the Los Angeles RWQCB (describing the historic decline of steelhead trout in the Santa Clara River, as well as flow impacts from water diversions and hydromodification in its "State of the Watershed" report),[52] and others. Together, this data demonstrates that reduced flows impair beneficial uses in the Santa Clara River, particularly those beneficial uses related to aquatic life and habitat. This is most clearly true in Reaches 1 and 2 of the Santa Clara River, where over-diversion and other flow impacts (due in large part to the Vern	

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	Freeman Diversion Dam) can cause the waterway to go completely dry. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. The Santa Clara River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based on the readily available data and information, the evidence is sufficient to support the listing of the Santa Clara River (particularly Reaches 1 and 2) on the 303(d) list for impairment caused by altered flow. This evidence also supports including Santa Clara River on the 305(b) report.	
21.11	In sum, we once again urge the Los Angles RWQCB to follow the lead of the SD RWQCB, as well as U.S. EPA and numerous other states, in identifying flow- and otherwise hydrologically-impaired waters in the region's Integrated Report. To do so, the staff report must be revised to support the continued listing of Reach 3 of the Ventura River as impaired due to pumping (as done in previous years), as well as by listing the Santa Clara River (particularly Reaches 1 and 2) as impaired due to altered flows.	See response to comment 21.1, 21.2, and 21.4.
22.	Heal the Bay (HtB) , March 30, 2017	
22.1	**Data/Information Collection and Timing Delay** In late 2014, Heal the Bay commented on the State Water Resources Control Board's (State Board's) *Proposed Amendment to the Water Quality Control Policy for Developing the Clean Water Act Section 303(d) List*. While we appreciated the chance to comment and the State Board's explanations in their Response to Comments, there are a few concerns that we continue to have regarding the new amendment and its effect on the Revised List. First, we understand that California is an expansive state and that the State	The State Water Board established what the commenter calls the "Rotating Basin Approach" in consideration of the large size of the State, the extensive amount of data to evaluate, and the increasing complexity of data analysis. Simply not delisting any waterbody ignores those areas where water quality may have improved albeit only as demonstrated with pre-2010 data. The Los Angeles Water Board anticipates that

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	Board's resources are limited in comparison. In this sense we understand but are disappointed that California must implement the "Rotating Basin Approach," when coming into compliance with requests for biennial updates for the federal Clean Water Act's Section 303(d). This will effectively reduce regional updates on impaired waters from every two to every six years. Compounded on this is the surprising discovery that the State Board is discussing either listing or delisting bodies of water in Region 4 with information and data collected prior to *August 30, 2010* – almost seven years ago. This would be on par with a college admissions officer selecting a prospective student for a university based on their academic performance in 5th Grade. It would have seemed wiser to have at least updated and appended further data and information and possibly re-solicited water quality data from regional stakeholders during the years long interim with respect to whether water bodies are placed on or removed from the Revised List. Considering this discrepancy in timing from data submittal to listing and delisting proposals, we ask that the State Board and Environmental Protection Agency (EPA) not delist any bodies of water that are currently on the *2010 Integrated Report* until more current data is received. This will eliminate the possibility of delisting a water body that is currently impaired, as there is no way to know the condition of the waters in question using data solely from 2010 or before. To err on the side of caution when dealing with our state waters will be in the best interest of our water quality standards and beneficial uses. This seems like a reasonable, precautionary request and is supported by the State Board during the adoption of the policy. Taken from the State Board Hearing Transcript from Sept. 30, 2004, Board Member Nancy H. Sutley states, "If it's on the list . . . then you have to have some information that says that they [fish] are not dying now and the waterbody is not currently impaired . . .." Though Board Member Sutley is referring to listings that were made by mistake, the principle behind it should still hold true. The intent was to say that information and data on waters should currently show that water quality standards are met and that the body of water is not currently impaired	there may be waterbodies that are listed one listing cycle and delisted the next, perhaps to be re-listed in a later cycle. The Integrated Report and the 303(d) list should remain the State's best assessment based on water quality data evaluated, even as we recognize the limitations to the 303(d) list. In addition, beginning with the 2018 303(d) list, all data to be evaluated by the Water Boards for the Integrated Report and 303(d) list must be submitted to the California Environmental Data Exchange Database (CEDEN). See, also, response to comment 32.3.

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	before being removed from the list. Board Member Sutley goes further to suggest that boards should affirm a lack of current impairment before delisting bodies of water by stating she was "Okay with not adding [additional] language [to the Listing Policy] as long as we're all in agreement and that's the direction of the regional boards that you have to look at the current conditions as well [before de-listing]." This very point is represented in the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (State Listing Policy)(Adopted Sept. 30, 2004 and Amended February 3, 2015) in Section 4.11, which states, "When making a delisting decision based on the situation-specific weight of evidence, the Regional Water Board must justify its recommendation by [Bullet 1] Providing any data or information including current conditions supporting the decision." We argue that there is no way to demonstrate current conditions with information and data that is aged seven years or more. Because of this it seems in line with State Listing Policy that no waterbodies be delisted for the current 303(d) List. During the next listing/delisting cycle, which will be in 2022, staff will be able to make a more accurate judgement on impairment simply because their information will be more up to date.	
22.2	**It is Misleading to Entitle this Current Edition the "2016" 303(d) List** It seems off-track and misleading to title this 303(d) list the *2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters* (Integrated Report) when it only contains information from 2010. Since the State Water Board's original 2010 solicitation for data was intended for the 2012 list we think it would be much more constructive and accurate to have the current list in question labeled exactly as such and be called the *2012 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters.* If any individual was filing their income taxes using tax information from a certain year, it would remain labeled as the tax return from the original time period, regardless of how long of an extension the individual received. Considering compliance with state and federal law, we could find no mention within the	The Los Angeles Water Board is complying with the naming convention as established by the State Water Board. The naming convention facilitates accounting of which Regions have updated listing decisions for that listing year. Also see response to comment 32.3.

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	Federal Clean Water Act or the State Listing Policy of how the Integrated Report should be named, only how often it should submitted. Since the EPA is well aware of the new "rotating basin approach," and due to the fact that California has successfully amended its own State Listing Policy, we believe there to be no compliance issues for the more accurate renaming. In addition, it was made clear in the Integrated Report's "Staff Report" (February 2017) that the 303(d) List for Regions from Group 2 (Regions 3, 5, and 9), which was intended to be passed in 2014, has yet to be approved by the State Board or the EPA. If the State Board were to rename the 2014 Integrated Report the 2012 Integrated Report as well because it has yet to be approved, this would make clear to everyone exactly where the listing's value lies—by titling both lists from Basin Group 2 and 3, the revised 2012 Integrated Report. This would file nicely with California's Basin Group 1 (Regions 1, 6, and 7), which would identically be called the 2012 Integrated Report. This is also consistent with the original notice and request for data, titled "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report—Surface Water Quality Assessment and List of Impaired Waters." Further advantages of this titling would be that future inspection researchers unfamiliar with past reports would know that the listings would correspond much closer to the data from 2010. Looking towards the future, this more accurate labeling will help in clarifying reporting methods. It signifies when agencies made a clean break from when small windows of data were analyzed in favor of the current California Environmental Data Exchange Network (CEDEN) system, which uses a constant, up-to-date stream of information and allows for a more thorough and accurate 303(d) list for Region 4 in 2022. This would also make it crystal clear when the State of California "changed over" to the new "Rotating Basin Approach" in regards to fulfilling their obligations to Section 305(b) of the Clean Water Act.	
22.3	**The Optimistic Possibilities of CEDEN in 303(d) Listings** As mentioned above, the State Board does have an opportunity going forward with	The Los Angeles Water Board agrees and will work with State Board to provide workshops or other CEDEN training materials for Los Angeles

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	CEDEN concerning water bodies in California. We are heartened to see that despite the fact that Region 4's 303(d) list will not be updated until 2022, that the list will be based on information up until 2021. This reduced lag time will only work to benefit the waters and beneficial uses of California's bodies of water. Further, as the State Board mentions in its *Comment Summary and Responses for the Proposed Amendment to the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* from January 26, 2015, "Requiring the use of CEDEN will ensure the data used for the 303(d) listing process is of a high quality and includes the necessary information for efficient assessments." It is true that the use of this database is likely to streamline the process for the staff of the Regional Boards, the State Board, the EPA, and any agency that wants to submit pertinent data. Heal the Bay noticed that the State Board scheduled CEDEN workshops in 2015 to "facilitate greater understanding of the needs of CEDEN users, develop tools to enhance the utility of CEDEN, and provide training on using the CEDEN system." We ask that the State Board provide more workshops now and in the coming years in anticipation of the current and future use of CEDEN by Region 4 Stakeholders. The people and water environment of California only stand to gain from thorough instruction given to invested stakeholders and the data they will provide.	Region stakeholders.
22.4	**Concerns with Individual Category 4a Delistings from the 303(d) List** *Delisting Hermosa Beach and Manhattan Beach for Indicator Bacteria* Beyond our concerns mentioned above with any impaired water delistings from the prior 2010 303(d) List, Heal the Bay feels strongly that both Hermosa and Manhattan Beach should remain on the 303(d) List and maintain their current TMDL for Indicator Bacteria. Looking at our past Beach Report Card data, even data solely from the supposed window ending on August 30, 2010 and before, we find it puzzling that either beach would be in consideration for delisting. In 2010 itself, our Hermosa Beach site by Herondo Street outfall was noted for single sample exceedances for *Enterococcus* for 17.6% of samples taken. Averaging	The delistings of Hermosa Beach and Manhattan Beach for Indicator Bacteria are in compliance with the Listing Policy. Although these beaches are being recommended for delisting, they are still subject to the Santa Monica Bay Beaches Bacteria TMDLs and 303(d) listing decisions do not change or eliminate effective TMDLs. The TMDL allocations that have been assigned to those beaches still apply and are incorporated into various NPDES permits/waste discharge requirements. In fact,

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	exceedances from 2008 to present 2016, the Herondo storm drain outfall has shown *Enterococcus* exceedances 12% of the time. Concerning Manhattan Beach, their 28th Street outfall has shown *Enterococcus* exceedances 10% of the time since 2008. Both of these beaches are popular swimming and recreation areas and eliminating the TMDL would create the potential for impacts on human health and aquatic life. We would highly recommend waiting to remove both beaches from the 303(d) list until data from the past decade can be assessed. Like we discussed above, where uncertainty exists with regards to delisting bodies of water, decisions should be made in favor of protecting water quality, human health and the environment.	both beaches are classified as 'anti-degradation' beaches, which are subject to more stringent requirements compared to the reference beach. Also see response to comment 32.3 regarding readily available data.
23.	Los Angeles Department of Water and Power (LADWP) , March 30, 2017	
23.1	LADWP's detailed comments can be found below. **1.** Elderberry Forebay should not be listed for dieldrin or PCBs**.** LADWP's largest hydroelectric facility is the Castaic Power Plant, which is critical to the reliability of the electrical grid in the Los Angeles Basin. This facility along with the Elderberry Forebay was built in 1960 as part of a Federal Energy Regulatory Commission (FERC) project with the Department of Water Resources, and is operated under a FERC license. The Elderberry Forebay was built strictly for the operation of the plant as a storage component for the water that passes through the plant to generate electricity. This hydroelectric plant is known as a pass-through facility. Water from Pyramid Lake flows down a gradient through the Los Angeles Tunnel and seven penstocks to turn seven turbines in order to produce electricity. The water enters Elderberry Forebay after the turbines where it is then either discharged to Castaic Lake or pumped back to Pyramid Lake. LADWP has noted that the LARWQCB has proposed to add Elderberry Forebay to the revised 303(d) list for dieldrin and PCBs. However, activities at the plant do not use or add products that would contribute dieldrin or PCBs to its discharges into Elderberry. In fact, Elderberry Forebay is not open to the public and therefore does not have any beneficial uses beyond being an operating body of water for the	Elderberry Forebay is surface waterbody which is identified in Table 1 of Chapter 2 in the Los Angeles Region Basin Plan as having the beneficial uses of MUN, IND, PROC, AGR, GWR, FRSH, POW, WARM, COLD, WILD, RARE, and SPWN. Restricted access does not preclude a waterbody from possessing beneficial uses. For the 303(d) list, readily available water quality data are assessed for all beneficial uses that may be impaired by excess amounts of pollutants. No source analysis has been conducted and the 303(d) list identifies the source as "unknown." Source analysis, linkage, and allocations are typically determined during TMDL development or during the development of another regulatory program. See response to comment 32.3 regarding readily

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	hydro plant. Its only use is for the pushing of the turbine blades to generate electricity. In 2008 the United States Environmental Protection Agency (USEPA) released its final version of its "National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule" (Water Transfer Rule) codifying (40 CFR 122.3(i)) that water transfers are excluded from the regulation of the Clean Water Act (CWA). The 40 CFR 122.3 (i) expressly states "Water transfers mean an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. USEPA's legal interpretation of the CWA concluded that Congress did not intend to subject water transfers where there is "no addition" of pollutants to the NPDES permit process because the pollutants were already in the waters being transferred and are not added. This ruling was put in place precisely for hydroelectric plants like the Castaic Power Plant that are considered pass-through facilities. Since this body of water is isolated from all public recreation and access and the water that passes through the Castaic Power Plant is used only to generate electricity, it seems inappropriate to include the Elderberry Forebay in the new 303(d) listing. With respect to Dieldrin, as stated in LADWP's Castaic Dieldrin Source Control Study sent to the LARWQCB in May 2010, LADWP contends that since the Castaic Power Plant has never used nor ever had a use for dieldrin, it cannot be the source of dieldrin in Elderberry Forebay. The source study points out that many of the tributaries that flow into the State Water Project, specifically those in the San Joaquin Valley, are agricultural areas where for years traditional pesticides (including dieldrin) have been used. Dieldrin was also an ingredient in several types of vector control measures used to mitigate vectors residing subsurface. These components, termed "legacy pesticides," primarily reside in the sediment/soil and are believed to be periodically liberated into the surrounding waterways. *Catskill Mountains Chapter of Trout Unlimited, Inc. v. EPA (Catskill III*) (2nd Cir. 2017), states that a water being transferred through a hydroelectric plant is not a discharge of a pollutant. In addition, as has been mentioned earlier, the Elderberry Forebay is only used for the operations of the plant, and therefore discharges from the Forebay would not be considered a discharge of a pollutant. Additionally, LADWP ceased the use of PCBs in the electrical equipment at	available data.

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	Castaic Power Plant in the 1980s, and thus the hydroelectric plant is not a source. Furthermore, the NPDES Annual Monitoring Reports for Castaic Power Plant have shown "non- detect" for all PCB sampling over the last 20 years. Since the Elderberry Forebay is used and was built solely for the operation of the Castaic Power Plant hydroelectric facility, and since it is a pass-through that transfers water without any addition of pollutants, it would seem appropriate to remove the Elderberry Forebay from this 303(d) list. Therefore, LADWP respectfully requests that the Elderberry Forebay be removed from the current 303(d) list.	
23.2	2. The 303(d) listing recommendations should be updated to include current data and information. The LARWQCB Staff Report supporting the current listing recommendations notes that "Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed.[...] Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021." (Staff Report at p. 6) LADWP is concerned that many of the data upon which proposed listings are based are more than ten (10) years old. However, some of the proposed listings are based on only two or three data points. Although LADWP understands and recognizes the resource limitations faced by the LARWQCB, we respectfully suggest that basing listings on datasets that do not include the most recent information, particularly when only a couple of samples are available to describe conditions in the region's water bodies, does not seem to be effective. Such limited data cannot be considered to describe current conditions appropriately.	See response to comment 32.3 regarding readily available data. Per the Listing Policy, waterbody-pollutant combinations are included on the 303(d) list with as few as two samples.
23.3	3. The proposed listings for "benthic community effects" are premature at this time, particularly for proposed listings in modified channels. LADWP notes that several of the proposed listings for "benthic community	See response to comment 11.19 and 11.24 regarding Benthic Macroinvertebrate listings.

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	effects" are based upon limited data (2 or 3 samples) that were collected nine or more years ago, and that some of the proposed listings are based upon "index of biotic integrity" (IBI) scores. More importantly, many of the water bodies proposed for listing for benthic community effects are engineered or modified channels, and it is not scientifically or technically appropriate to expect that modified channels will achieve the CSCI or IBI scores that are observed in reference channels. The proposed listings do not consistently or clearly establish a link between the biological condition and the pollutant(s) that may be responsible for the biological condition; in fact, it is not clear that the pollutant measurements (available only for some proposed listings) were collected at the same time as the biological data. Finally, some of the samples upon which the proposed listings are based were collected downstream of and shortly after major wildfires; these data are likely representative of temporary disturbed conditions and may not be representative of typical conditions. State Water Board staff are currently working on developing a statewide policy or plan for biological integrity. This process has moved away from using the 181 and is now developing metrics for the California Stream Condition Index (CSCI) and an Algae Stream Condition Index (ASCI). This process has not reached consensus on how engineered or modified channels should be assessed, or what appropriate expectations for these channels should be. In fact, the State Water Board is currently convening a Science Advisory Panel to address this issue and many others, and the State Water Board's "Wadeable Stream Biostimulatory and Biointegrity Science Plan," dated February 2017, acknowledges that "Developed landscapes are associated with an increase of many stressors in streams, such as elevated contaminant and nutrient concentrations, altered flow regimes , sedimentation, and habitat degradation. Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards. In these circumstances, the range of CSCI or ASCI scores may be constrained in channels in developed landscapes." Because the State's policy is in development, no longer uses the IBI, has not clearly established a link between the presence of pollutant(s) and the biological condition, and has not produced direction regarding how benthic integrity should	

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>be assessed in modified streams, LADWP respectfully suggests that it is premature to list the region's water bodies for “benthic community effects”. LADWP therefore requests that the LARWQCB decline to list the region's water bodies for benthic community effects at this time.</td><td></td></tr>
<tr><td>24.</td><td colspan="2">Lower Los Angeles River (LLAR) Watershed Committee, March 30, 2017</td></tr>
<tr><td>24.1</td><td>The LLAR Watershed Committee requests the Regional Board suspend the recommendation on Iron because of the following:

• Reliance on data gathered during 2006-2010 is not appropriate when more recent data collected as part of the extensive monitor programs of the CIMPs is now available.
• Dissolved concentrations of iron do not exceed the narrative objectives.</td><td>Under the Listing Policy, waterbodies are included on the 303(d) list where standards or guidelines are exceeded. The Los Angeles Region Basin Plan contains a narrative objective for “…chemical constituents in amounts that adversely affect any designated beneficial use…,” which may be used in assessments by relying upon numerical guidelines.

However, review of the decision for Coyote Creek iron is in process at this time.

Also see response to comment 32.3 regarding readily available data.</td></tr>
<tr><td>25.</td><td colspan="2">Lower San Gabriel River (LSGR) Watershed Committee , March 30, 2017</td></tr>
<tr><td>25.1</td><td>The LSGR Watershed Committee recognizes the recommendation regarding Temperature in Reach 1 and Reach 2 of the San Gabriel River and requests that the Regional Board take into consideration the characterization the of these Reaches of the San Gabriel River in its determination of temperature as a pollutant. As described as a Water Quality Objective:

“the natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.”</td><td>See response to comment 17.4.</td></tr>
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	Beginning upstream, Reach 2 is a 7-mile stretch from the outlet of the Whittier Narrows Dam and ends where the Sab Gabriel River crosses Firestone Blvd. Reach 2 is confined by engineered levees and rip-rap. The river remains a soft-bottom channel and during dry-weather has no measurable flow reaching Reach 1 due to having the most productive spreading grounds in Los Angeles County. Reach 1 is a 10-mile stretch beginning at Firestone Blvd in Downey and extends to the confluence of the San Gabriel River with Coyote Creek. It is a heavily urbanized reach with a concrete bottom. Two significant POTWs discharge into this Reach. During dry weather, these POTWs discharge vastly more water than enters the river channel though the combined MS4 outfalls. The volume of the POTW discharge will quickly render any potentially elevated temperature from discharges of MS4 outfalls as negligible. The Committee believes that a Water Quality Objective for Temperature in these Reaches is not applicable.	
25.2	In regards to Iron and Malathion in Coyote Creek; the LSGR Watershed Committee requests the Regional Board suspend the recommendation of Iron and Malathion due to monitoring data inconsistent with recent water body improvements. The LSGR Watershed has made a considerable effort in developing and implementing its Coordinated Integrated Monitoring Program (CIMP) and suggest monitoring data should reflect more recent and current outfall conditions and that any conclusions should be drawn from a more current and comprehensive data set. The LSGR believes this request is justified when considering that Iron and Malathion are derived from nationally Recommended Water Quality Standards and not based on an established EPA TMDL or conditions characteristic of Southern California waters.	See response to comment 24.1 and 32.3.
26.	Sanitation Districts of Los Angeles County (Sanitation Districts) , March 30, 2017	
26.1	The Sanitation Districts have concerns on some aspects of the Draft List, particularly where the listing thresholds used in the Staff Report appear to differ from receiving water quality objectives contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) or other regulatory	See responses to comments 26.2 – 26.19.

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	programs. Additionally, there appear to be data errors that impact some listing decisions. General comments relating to these concerns are provided below and detailed specific comments for each listing are provided in Attachment 1 and appendices to this letter.	
26.2	***1. Data Were Incorrectly Attributed to Some Reaches*** The Draft List contains a number of newly proposed listings based, in part, on data collected from incorrect reaches. Specific listings where this appears to have occurred include the benthic community and toxicity listings for Santa Clara River Reach 5; the temperature listing for Santa Clara River Reach 6; the toxicity, DO, and iron listings for Rio Hondo Reach 2; and the toxicity listing for San Jose Creek Reach 2.	Los Angeles Water Board and State Water Board staff are aware of these areas where the reach mapping that underlies the CalWQA database (which maps the 303(d) list) and the Los Angeles Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region. For additional specific responses, see response to comment 26.10 and 26.19.
26.3	***2. Not All of the Data Submitted for Listing Consideration Were Used in Making the Listing Decision*** The Draft List contains a number of newly proposed listings where only a subset of the data submitted for listing consideration were evaluated; these data are included in the data files appended to the Staff Report but were not used in the listing analysis. Specific listings where this appears to have occurred include the toxicity listing for Santa Clara River Reach 5 and the temperature listing for Santa Clara River Reach 6.	See response to comment 26.12 for the Santa Clara River Reach 5 toxicity listing and response to comment 26.19 for the Santa Clara River Reach 6 temperature listing.
26.4	***3. The Draft List Includes Inappropriate Impairment Listings for "Benthic-Macroinvertebrate Bioassessments"*** The Draft February 2017 version of the 2016 303(d) List contains a number of	Listings based on the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites.

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	newly proposed listings for "Benthic-Macroinvertebrate Bioassessments." The proposed listings are based on application of the Southern California Coastal Index of Biological Integrity (SCIBI) and, in some cases, the California Stream Condition Index (CSCI). These include listings for Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1. The Sanitation Districts believe these proposed listings should be removed, for the reasons listed below. <u>Listings Based on the SCIBI and CSCI Are Inconsistent With State Policy.</u> The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) indicates that water bodies should only be listed for degradation of biological populations if they have significant degradation **<u>relative to reference sites</u>** [emphasis added]. Although the scientists that developed the SCIBI attempted to incorporate reference conditions into the index itself, the reference conditions used to develop the index did not include any low elevation, low gradient locations in Los Angeles County similar to the Los Angeles River and the Santa Clara River reaches of concern. Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Section 6.1.5.8 of the Listing Policy also states that when "evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall…**<u>evaluate physical habitat data</u>** and other water quality data, when available, to support conclusions about the status of the water segment." [Emphasis added.] All of the reaches mentioned in this comment letter represent reaches that have undergone various levels of physical habitat modifications and there is no indication that an evaluation of the physical habitat was conducted. It is well recognized by the scientific community that a single standard or threshold is not applicable to all waterbodies of the State due to unmanageable non-pollutant physical habitat alterations that would preclude many streams from ever having biological assemblages similar to reference. The threshold used as the listing criterion for these reaches is therefore likely	Both the IBI and the CSCI assess benthic community relative to reference sites. The SCIBI was developed using data from 275 sites, ranging from Monterey County to the Mexican border. Eighty-eight sites were used as reference sites based on land use and local conditions. The CSCI employs a modeled reference condition as opposed to the regional reference pool used by the SCIBI. The proposed listings evaluate the physical habitat data in the determination of the reference and each listing decision includes associated water quality impairments. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the science progresses, improved methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. The discussion of the strengths and weaknesses of scoring methods and additional areas needing additional research, are appreciated, but are not a justification to delay making 303(d) listing decisions. The use of the SCIBI and CSCI for 303(d) listing was done in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy with biological data and impairment related to associated pollutants and/or pollution.

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	inappropriate for these modified waterbodies.	Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1 are discussed in more detail in response to comments 26.13, 26.14 and 26.15.
26.5	<u>Appropriate Thresholds for Interpretation of the CSCI Have Not Yet Been Determined</u>. The State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 used in the Draft List is the 10th percentile of the reference pool and was used as an arbitrary point of reference for a regional monitoring program with no regulatory vetting. Use of this threshold for impairment listings would result in 10% of the unimpaired reference streams being erroneously listed as impaired. Additionally, it is well recognized by the scientific community that a single standard or threshold will not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition/modifications are likely to preclude many streams from ever having biological assemblages similar to reference. The Sanitation Districts believe that it is inappropriate to make impairment decisions using the SCIBI and premature to rely on the improved, but still limited CSCI for making impairment decisions, particularly in reaches where surrounding development and instream physical habitat limitations are recognized. Therefore, the Sanitation Districts respectfully recommend that the Regional Board delay making decisions regarding benthic macroinvertebrate community impairments in this listing cycle, and instead continue to work with stakeholders, scientists, and the State Board that are currently engaged in efforts to address these and other issues as part of the Biointegrity/Bio-stimulatory Policy.	Selection of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. The selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be "reference" due to localized impacts not discernable on a desktop basis or by field crews when sampling. For example, known upstream illegal marijuana grow operations could remove a site from reference status due to impacts on water quality. However, accurately identifying active grow sites in the tributary watershed by desktop is largely infeasible. With the CSCI, any given test site gets matched to a subset of reference sites from the statewide pool that are most similar in terms of elevation, watershed size, annual precipitation, geology, etc., and those most-similar reference sites may come from other regions. The benthic macroinvertebrates that were observed in the most-similar group of reference sites are then used to predict what should be observed at the test site if it were in reference condition. Because the statewide reference pool adequately represents important environmental gradients, and because predictive modeling matches test sites to their most environmentally similar reference sites, the

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		CSCI is appropriate for use.
26.6	***4. The Draft List Includes Inappropriate Impairment Listings for Temperature*** The Draft List contains a number of newly proposed listings for temperature. The Sanitation Districts believe the proposed temperature listings for San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 should be removed because the impairment listings are inconsistent with the Basin Plan water quality objective for temperature, which states, "at no time shall these WARM-designated waters be raised above 80˚F **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80˚F standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80˚F are not caused by wastes discharged but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change. Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. Additionally, the Sanitation Districts believe that the proposed temperature listing for Santa Clara River Reach 6 is inappropriate. Measurements for this listing were taken immediately downstream of the Saugus Water Reclamation Plant (WRP), where tertiary treated effluent is discharged along one bank of the Santa Clara River bed. The flow remains isolated from the main channel of the Santa Clara River and percolates rapidly into the soil; groundwater resurfaces downstream near Reach 5 of the Santa Clara River. The predominant natural condition of this stretch of river is dry and would not be expected to support aquatic life without the Saugus WRP discharge; therefore, application of the 80˚F water quality objective is unnecessary and inappropriate. The only reasonable alternative for meeting the water quality objective would be to eliminate the discharge flows; however, the California Department of Fish and Wildlife would likely prohibit that option, due to the effluent's contribution to the groundwater and subsequent downstream flows. Upon resurfacing near Reach 5, the water temperature averages 69˚F,	The 303(d) list appropriately identifies temperature impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances in temperature may be caused in part by ambient temperatures or exacerbated by the lack of tree cover in some reaches; exceedances may also be caused in part by waste discharge. The relative contribution of the causes of temperature exceedances is largely speculative, at this time. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority Project. Los Angles Water Board staff may consider the development of more specific numeric temperature objectives for various waterbody classes and aquatic life beneficial uses

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	demonstrating that elevated temperatures in this isolated discharge area are not detrimental to beneficial uses in reaches where water occurs naturally in the river. Finally, elevated ambient temperatures regularly exceed 90˚F during the summer months, and heavily influence both the Saugus WRP discharge and the immediate downstream receiving water location. As indicated for the other temperature listings, the water quality objective for temperature in the Los Angeles Region Basin Plan clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. However, the Draft List does not contain any analysis to distinguish the relative contributions by the temperatures of the ambient air and wastes discharged on the receiving water.	in the future. See also responses to comments 26.16, 26.17, 26.18 and 26.19.
26.7	***5. Thresholds Used For Toxicity Impairment Listings Are Inconsistent With Basin Plan Objectives*** The Draft List contains a number of newly proposed listings for toxicity that include San Gabriel River Estuary, San Gabriel River Reach 3, Rio Hondo Reach 2, and Santa Clara River Reach 5. These listings should be removed for the reasons below. <u>The Acute Toxicity Impairment Criterion is Inconsistent With the Basin Plan Water Quality Objective for Acute Toxicity</u> The Staff Report fact sheets for the specific listings mentioned above state that "<100% survival (acute) was considered an exceedance." However, the Basin Plan states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. <u>The Chronic Toxicity Impairment Criterion is Inconsistent With Water Quality Objective Interpretations Provided in NPDES Permits</u>	The acute toxicity and chronic toxicity data was included in the original data submission to State Board by the August 30, 2010 deadline. However, the necessary control data were not included. Los Angeles Water Board staff agrees that the existing evaluation guideline, *"Toxicity data was not reported with a control, therefore anything reported as <100 (chronic) or <100% survival (acute) was considered an exceedance"* for LOE 87842, LOE87970, LOE88019, and LOE87452 is not appropriate. For acute toxicity, the Los Angeles Water Board agrees that the use of the specific numeric target included in the Los Angeles Regional Basin Plan is appropriate. More specifically, "*there shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less*

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	The Staff Report fact sheets for the specific listings mentioned above indicate that a single NOEC result of less than 100% receiving water represents an exceedance of the water quality objective. Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In a number of these permits, a footnote associated with the Receiving Water Monitoring Requirements Table of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail'."[2] [Emphasis added.] In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would eventually result in more and more non-toxic stream reaches being erroneously listed over time. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1 %.	*than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.*" For chronic toxicity, as stated in the Basin Plan, "*there shall be no chronic toxicity in ambient waters outside mixing zones. To determine compliance with this objective, critical life stage tests for at least three species with approved testing protocols shall be used to screen for the most sensitive species. The test species used for screening shall include a vertebrate, an invertebrate, and an aquatic plant. The most sensitive species shall then be used for routine monitoring. Typical endpoints for chronic toxicity tests include hatchability, gross morphological abnormalities, survival, growth, and reproduction.*" However, there is no specific numeric target for chronic toxicity in the Basin Plan. In light of this, it may also be that the use of the monthly median of chronic toxicity to assess the chronic toxicity is appropriate since this method is used in recently adopted Los Angeles Region NPDES permits. As data was reassessed per the discussion above, the decision recommendations have been changed to "do not list" due to insufficient information (poor QAQC).
26.8	***6. Specific Comments on Individual Reach/pollutant Listing Decisions*** In addition to these general comments, the Sanitation Districts have comments on some specific listing decisions. As stated above, detailed comments are provided	LOE 87842 and Decision 66269 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7.

<table>
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<tr><td></td><td>in the appendices to this letter. Because the implications of erroneous listings are substantial, the Sanitation Districts urge the Regional Board to consider this information in making the appropriate changes to the Draft List.

Fact Sheet #1
Water Body: San Gabriel River Estuary
Pollutant: Toxicity
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for toxicity be made to the 303(d) list for the San Gabriel River Estuary, based on one line of evidence: 14 of 113 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.

• Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Using the temporal range indicated (June 2006 through May 2010), only six of 120 samples failed the thresholds specified in the fact sheet. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 11 or more exceedances are observed when 120 samples are available.

• Although the Staff Report fact sheet states that “<100% survival (acute) was considered an exceedance,” the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that “the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State</td><td>The listing decision will be changed to “Do Not List” due to insufficient information as the control data was not submitted.

The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.</td></tr>
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	Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin Plan objective. Applying a 90% threshold, none of the 120 samples would have exceeded the water quality objective. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data appended to Appendix G of the Staff Report, including those that fell outside the indicated temporal range, contain a total 151 discrete toxicity tests. Sixteen failed the <100% acute survival threshold. Using a conservative 90% acute survival threshold, there are no toxicity exceedances, and the number of measured exceedances is insufficient to place this water segment on the section 303(d) list. • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.9	**Fact Sheet #2** **Water Body: San Gabriel River Reach 3** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved**	LOE 87970 and Decision 32521 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to "Do Not List" due to insufficient information as the control

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	The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 3 of the San Gabriel River, based on one line of evidence using two datasets: 2 of 38 samples exceeded the objective in a dataset related to a previously conducted TMDL study and 13 of 75 samples exceeded the objective in a second dataset comprised of routine receiving water tests conducted as part of an NPDES permit. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. No data related to the TMDL study were provided; therefore, the number of tests and exceedances reported (2 of 38) could not be independently verified and were assumed to be accurate. For the dates indicated (June 2006 through May 2010), 13 exceedances were associated with only 66 samples. Combining the two datasets resulted seven acute and eight chronic toxicity exceedances out of 104 samples. • Although the Staff Report fact sheet states that “<100% survival (acute) was considered an exceedance,” the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that “the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.” Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no acute toxicity samples in the dataset exceeded the water quality objective and 8 of 104 total samples exceeded the objective. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when	data was not submitted. The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.

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	104 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The Staff Report considered each chronic toxicity test result as an independent data point, even when multiple bioassays were conducted within a single month. However, the San Jose Creek (SJCWRP) and Whittier Narrows Water Reclamation Plant (WNWRP) permits state that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 6 toxicity exceedances out of a total of 96 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 96 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data (sets 1 and 2) appended to Appendix G of the Staff Report for all dates, including those outside the indicated temporal range, contain a total of 119 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 6 chronic exceedances out of 110 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. • *Use of a <100% Survival Effect Water Quality Objective Threshold Is Inappropriate and Unsupported for Acute Toxicity Testing.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.*	

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	• *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.10	**Fact Sheet #3** **Water Body: San Jose Creek Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Apply Data to Reach 1** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the San Jose Creek, based on one line of evidence: 8 of 24 samples exceeded the objective. The Sanitation Districts believe this proposed listing is inappropriate and should be moved to Reach 1. All cited toxicity data is from receiving water station RC (N 34° 01' 8.6" W 117° 50' 27.7") for the Pomona Water Reclamation Plant, which is located in Reach 1 of San Jose Creek (Figure 1). This reach is already listed for toxicity under section 303(d). *Figure 1. Station Pom-RC (Blue Symbol) and San Jose Creek Reach 1 (Aqua Line)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	Los Angeles Water Board and State Water Board staff are aware of several areas where the reach mapping that underlies the CalWQA database (which maps the 303(d) list) and the Los Angeles Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.
26.11	**Fact Sheet #4** **Water Body: Rio Hondo Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved**	LOE 87452 and Decision 66146 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to “Do Not List” due to insufficient information as the control data was not submitted.

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	The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the Rio Hondo, based on one line of evidence: 5 of 31 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. All cited toxicity data are from receiving water station RD1 for the Whittier Narrows Water Reclamation Plant (WNWRP). This sampling location (N 34° 02' 26.5" W 118° 04' 27") is in Reach 3 of the Rio Hondo, not Reach 2 (Figure 1). • Using the data for the temporal range indicated (June 2006 through May 2010), 7 of 33 samples failed the thresholds specified in the fact sheet. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no samples exceeded the acute toxicity water quality objective. • The Staff Report considered each chronic toxicity test result as independent data, even when multiple bioassays were conducted within a single month. However, the WNWRP permit states that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water	The review of the decision for Rio Hondo Reach 2 toxicity is in process at this time.

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	quality objective (and a 90% acute toxicity threshold), there were 2 toxicity exceedances out of 31 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 3 or more exceedances are observed when 31 samples are available. Therefore, Reach 2 of the Rio Hondo fails to meet the listing criteria for toxicity. • The full set of data appended to Attachment G of the Staff Report, including those that fell outside the indicated temporal range, contains a total 38 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 2 chronic exceedances out of 36 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Monitoring Station WN-RD1 (Blue Symbol) and Rio Hondo Reach 3 (Aqua Line)* • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.12	**Fact Sheet #5** **Water Body: Santa Clara River Reach 5**	Los Angeles Water Board staff will work with the State Board staff to address the issues related to

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	Pollutant: Toxicity **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 5 of the Santa Clara River, based on one line of evidence: 2 of 2 samples exceeded the objective. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Inappropriate data were utilized. Toxicity results were reported for sites SCR 1272 and SCR 14156. However, SCR 14156 is in Reach 6 of the Santa Clara River and should not be included in an evaluation of Reach 5 (Figure 1). • Incomplete data were utilized. The "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County 2005-2010" dataset should be included in this analysis as it was provided in response to the call for data, readily available, and used in other current listing recommendations. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. • The Los Angeles Region Basin Plan states, "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments. Applying this threshold (or even a more conservative 90% threshold) to the appropriate and complete dataset that excludes site SCR 14156 and includes Sanitation Districts data, there were five chronic toxicity exceedances out of 90 valid toxicity tests. This total does not	the spatial representation of samples. Los Angeles Water Board staff will also work with the State Board staff to address the missing data from the development of LOE 88730. LOE 88730 and Decision 67031 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

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	meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Santa Clara River Reach 5 and RWB4 Stormwater Monitoring Council CY2008 CY2009 Sampling Locations* • *The Los Angeles Region Basin Plan Establishes Acute Toxicity Thresholds* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.13	**Fact Sheet #6** **Water Body: Santa Clara River Reach 5** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 5 of the Santa Clara River, based on two lines of evidence: Southern Coastal California Index of Biotic integrity (SCIBI) and California Stream Condition Index (CSCI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to the reaches in the upper Santa Clara River. For this and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool.	For additional discussion on the use of IBI and/or CSCI in listing decisions see response to comment 26.4. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use both IBI and CSCI scores in 303(d) listing decisions. The State Water Board has not ‘rejected’ the use of the SCIBI. The State is transitioning into using the CSCI because it is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. While, eventually, the State may assess waterbodies only by CSCI scores, it will take time to replace IBI scores with CSCI scores and this does not in any way mean that IBI scores (and assessments using them) are no longer valid. The commenter has provided several documents

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	• Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Specifically, several Santa Clara River sites have been shown to fall outside the experience of the CSCI model. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • The CSCI analysis for this listing used data from both Reach 5 and Reach 6 of the Santa Clara River. The CSCI analysis of the data collected from the Reach 5 location actually met the 0.79 threshold proposed by the Regional Board. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • The proposed listing fails to associate the alleged impairment with other pollutants, namely toxicity and iron, which were listed as co-occurring. • *SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.* • *CSCI Improves on the SCIBI But Some Limitations Remain*	that review and discuss the development of, and challenges with, aquatic life bio-criteria including IBI, CSCI and TALU (tiered aquatic life criteria). However, it appears that the principal evidence for the commenter's "inadequate for low elevation/lack of an appropriate reference site" argument is the CSCI Reference Density Cloud from a presentation of the California Bioassessment Workshop from 2012. The text accompanying the Reference Density Cloud in the presentation states, "*Could be used to establish exceptions for truly unique environmental settings.*" Nonetheless, it does not appear that any "truly unique environmental settings" have been established or are recognized by the State Bioassessment workgroup or other authority. The development of alternative thresholds via State Water Board efforts does not have a firm schedule to provide more useful guidance in the near future. It is appropriate to make listing decisions based on the best available data and science at this time. For the CSCI, the 10th percentile of reference pool is an appropriate evaluation guideline. Selection of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. As previously noted, the selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be "reference" due to localized impacts not discernable on a desktop basis or by field crews

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	• *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *CSCI Data from Within Reach 5 of the Santa Clara River Show No Impairment* *Figure 1. CSCI Reference Density Cloud (Santa Clara River Sites Within Green Circle).* *Figure 2. Santa Clara River Reach 5 and Monitoring Stations Used in Listing* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	when sampling. The data considered in the LOE and for the listing decision for Reach 5 included IBI assessments from station Old Rd. on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding). The CSCI assessment was from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of one exceeding). The two sampling sites have now been "dis-aggregated" such that now, the data considered in the LOE and decision for Reach 5 includes IBI assessments from the Old Rd. station, on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding) and the CSCI assessments from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of two exceeding). Staff will review the inclusion of the second site (identified as SCR 14156) with State Water Board to determine whether it should be in Reach 5 or Reach 6, as part of resolving our mapping issues, see comment 26.2 The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. In addition, a Causal Assessment (Causal Assessment Evaluation and Guidance for California, K. Schiff,

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		D. Gillett, A. Rehn and M. Paul, Southern California Coastal Water Research Project Technical Report 750, April 2015) concluded that elevated conductivity was the likely cause of biological conditions at the site and not the physical features of habitat simplification or river discontinuity. The proposed listing is associated with the documented impairments of other pollutants, including iron, toxicity and zinc. Furthermore, the Causal Assessment demonstrated that the impairment is associated with chloride. In summary, at this time, we know that the reach is impaired and that it is appropriate to list it per the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).
26.14	**Fact Sheet #7** **Water Body: Los Angeles River Reach 3** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 3 of the Los Angeles River, based on a weight of	For the "inadequate for low elevation/lack of an appropriate reference site" argument, see response to comment 26.13. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. At this time, we know that the reach is impaired and that it is appropriate to list it per the Listing

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	evidence approach using Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to Los Angeles River Reach 3. For this, and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool. No CSCI results have been used for this listing, but a more detailed assessment of the CSCI can be found in Fact Sheet #6. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • *SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.* • *CSCI Improves on the SCIBI But Some Limitations Remain* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).
26.15	**Fact Sheet #8** **Water Body: Medea Creek Reach 1** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region	Appropriate water quality standards have been established, see response to comment 26.4. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. The impairments of both trash and selenium are associated with the benthic community effects

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	(Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 1 of the Medea Creek, based on a weight of evidence approach using California Stream Condition Index (CSCI) and Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • The proposed listing fails to associate the alleged impairment with other pollutants, namely trash and selenium, which were listed as co-occurring. • *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* *Figure 1. Medea Creek Channel Modifications* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants*	listing. The Medea Creek Reach 1 decision is supported by exceedances of both IBI and CSCI scores and is in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).

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	[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]	
26.16	**Fact Sheet #9** **Water Body: San Jose Creek Reach 1** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of San Jose Creek. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.	The water quality standard has been exceeded in 42 of 301 samples; even with the commenter's purported corrections to the database, 46 out of 339 or 32 out of 339 samples exceeded, in both cases, the data still exceed the allowable number of exceedances per the Listing Policy. Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore Category 5 is the appropriate category. Temperature is conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*At no time shall these WARM designated waters be raised above 80 degrees F…"* See also response to comment 17.4 for additional discussion of temperature as a pollutant.

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	The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 42 of 301 samples from Pom-RD, Pom-RC, SJC-C1, and SJC-C2 exceeded the objective from July 2005 to November 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Based on a review of the dataset utilized for the listing evaluation, the Sanitation Districts identified 339 discrete temperature measurements, not 301. The dataset contains 368 results (Appendix 1); however, 29 samples were duplicates. Of the 339 unique temperature measurements, 46 exhibited a temperature that exceeded 80 ºF, not 42. However, 14 of the 46 temperature exceedances were demonstrably caused by conduction and radiation (details below), not waste discharges. Conduction and radiative heating likely also caused the remaining 32 exceedances out of 339 measurements; this total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. ***Pom-RC and Pom-RD Excursions Above 80 ºF Are Demonstrably Not a Result of Waste Discharges*** Tertiary treated water from the Pomona Water Reclamation Plant is discharged to the south fork of San Jose Creek and flows into Reach 1. Receiving water stations Pom-RC, Pom-RD, and SJC-C1 are located approximately 3, 12, and 12.5 miles from the upstream border of Reach 1, respectively. Reach 1 is fully lined in concrete from the upstream border to just upstream of SJC-C1 (Figure 1). As observed by Sanitation Districts staff and corroborated by EPA staff, groundwater exudes from relief structures distributed throughout the concrete-lined bottom, even in mid-summer (August) after several years of drought (Figure 2).[1] In the absence of discharge from the Pomona Water Reclamation Plant or other observed discharges, flows in SJC between Pom-RC and Pom-RD increase by 200% to greater than 400% (Figure 3) due to the release of this	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>groundwater, which has a localized average temperature of approximately 67 ºF.[2] As this groundwater-dominated flow travels downstream, the temperature naturally rises (Figure 4) due to heat conduction through the warm concrete lining and solar radiation exposure in the unshaded channel (Figure 5 shows ambient air temperature as a proxy for solar radiation[3]). When the concrete channel ends upstream of SJC-C1, the water leaves the heat source (concrete channel) and mixes with additional groundwater, resulting in consistently cooler temperatures. The observed spatial and temporal temperature profile, coupled with no identifiable waste discharges and substantial groundwater contributions, clearly demonstrates that the temperature excursions in Reach 1 of San Jose Creek are not a result of waste discharges.

Figure 2. Manhole Exuding Groundwater into San Jose Creek
Figure 3. Measured Flow at Pom-RC and Pom-RD in the Absence of Discharge from Pomona WRP
Figure 4. Monthly Average Water Temperatures Between July 2005 and November 2010 in the Absence of Discharge from the Pomona WRP
Figure 5. 30-Year Normal Monthly Maximum Air Temperature at Pom-RD3

[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]</td><td></td></tr>
<tr><td>26.17</td><td>Fact Sheet #10
Water Body: San Gabriel River Reach 1
Pollutant: Temperature, Water
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Meets Water Quality Objective

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved.</td><td>The water quality standard has been exceeded in 93 of 234 samples; even with the commenter’s purported corrections to the database, 117 of 288 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy.

Exceedance do happen more frequently in the summer months when air temperatures, radiative heating and the temperature of waste discharges are greater. However, the Los Angeles Water Board does not have alternative maximum</td></tr>
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	Failure to Meet Water Quality Objectives Has Not Been Demonstrated The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 93 of 234 samples from LC-R4, R3-1, and R3-1b exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 288 discrete temperature measurements, 117 of which exhibited a temperature that exceeded 80ºF. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed. ***San Gabriel River Reach 1 Excursions Above 80 ºF Are a Result of Radiative***	temperature objectives for the different seasons. See, also, response to comment 17.4.

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	and Conductive Heating Tertiary treated water from the San Jose Creek and Los Coyotes Water Reclamation Plants (WRPs) is discharged to the main stem of the San Gabriel River. Reach 1 is a fully lined concrete channel from approximately 0.25 miles downstream of the San Jose Creek WRP discharge point 001 to the San Gabriel River estuary. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 1. This is supported by a significant correlation between ambient air temperature and receiving water temperature (R2 = 0.61) and the fact that 90% of excursions above 80ºF in the receiving water environment occurred during summer months, between June and September. The weight of evidence supports the contention that receiving water temperatures above 80ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.18	**Fact Sheet #11** **Water Body: San Gabriel River Reach 2** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 2 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality	The water quality standard has been exceeded in 81 of 224 samples; even given the commenter's purported corrections to the database, 81 of 232 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy. See, also, response to comment 17.4.

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	objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 81 of 224 samples from SJC-R2 and SJC-R12 exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 81 excursions above 80 ºF out of 232 discrete temperature measurements, not 224. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed.	

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	San Gabriel River Reach 2 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating Tertiary treated water from the San Jose Creek Water Reclamation Plant (WRP) is discharged to the main stem of the San Gabriel River. The uppermost ¼ mile of Reach 2 is a fully lined concrete channel, containing the R2 receiving water station. Data from this station represents 215 of 232 data points. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 2. This is supported the fact that 99% of excursions above 80 ºF in the receiving water environment occurred during summer months, between June and October. The weight of evidence supports the contention that receiving water temperatures above 80 ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.19	**Fact Sheet #12** **Water Body: Santa Clara River Reach 6** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 6 of Santa Clara River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing.	Staff will review the inclusion of the site identified as SCR-14 with State Water Board staff to determine whether it should be in Santa Clara Reach 6 or Bouquet Canyon Creek, as part of resolving our mapping issues; see also comment 26.2. With respect to the sites identified as SA-RA and SA-RB, only the temporally overlapping samples from these stations have been averaged such as during extreme rainfall events when the sites were hydrologically connected. The commenter does

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	Incorrect Datasets Were Used for Listing The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 40 of 152 samples from Sa-RA, Sa-RB, and SCR-14 exceeded the objective from June 2005 to October 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Temperature data from location SCR-14 (34.42833333N 118.5394444W) was evaluated as part of Reach 6 of the Santa Clara River. However, SCR-14 is located on Bouquet Canyon Creek, which is recognized as a distinct waterbody by the Region 4 Basin Plan. Figure 1 utilizes a reach delineation layer provided to the Sanitation Districts by Regional Board staff that clearly places SCR-14 in the Bouquet Canyon Creek Reach and not Reach 6. Therefore, temperature measurements from SCR-14 should not be included in the Reach 6 evaluation. *Figure 1. Stations Sa-RB (1), Sa-RA (2), SCR-14 (14), and Bouquet Canyon Creek (Aqua Line)* Locations Sa-RA and Sa-RB were correctly associated with Reach 6, but results were averaged in the listing evaluation based on the assessment that they were "not spatially independent." However, as highlighted in Figure 2, Sa-RA is located within the main channel of the Santa Clara River and is typically dry; all 25 temperature measurements at Sa-RA utilized in the Staff Report were associated with upstream dewatering activities or extreme storm events. Sa-RB is located in an isolated pool at the southern edge of the Reach 6 channel that receives recycled water discharges from the Saugus Water Reclamation Plant (WRP). Surface flows from this location travel less than a half-mile downstream in a disconnected side channel before percolating into the dry riverbed. Therefore, even though the two locations are relatively close to each other, Sa-RA is hydrologically isolated from Sa-RB except during extreme rainfall events. Consequently, the two locations would be expected to have very different temperature profiles and should therefore be considered spatially independent, with no averaging of results.	not adequately describe "upstream dewatering activities" for the Los Angeles Water Board staff to be able to discern the significance of these to the comment. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. See, also, response to comment 17.4.

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	Figure 2. Satellite Imagery of Saugus WRP Ambient Monitoring Stations ***The 80ºF Water Quality Temperature Objective Is Unnecessary and Inappropriate for Santa Clara River Reach 6*** The only dry weather surface flows within this stretch of Reach 6 are associated with recycled water discharges from the Saugus WRP, which percolate into the dry riverbed and eventually resurface downstream near the Reach 5 boundary. At the point of resurfacing, the water temperature averages 69ºF and this perennial surface flow supports a diverse aquatic life community in Reach 5.1 However, the predominant natural condition of Reach 6 is dry and would not be expected to support any aquatic life without the Saugus WRP discharge. In addition, the cool temperatures in the water that resurfaces near the Reach 5 boundary demonstrate that elevated temperatures in the isolated discharge area are not detrimental to beneficial uses. Therefore, application of the 80ºF water quality objective in Santa Clara Reach 6 is unnecessary and inappropriate, as the presence of water exceeding the 80ºF water quality objective would not result in any impairment to naturally occurring aquatic life. ***Mitigating the Elevated Temperature at Sa-RB Is Not Feasible*** The only reasonable alternative to address the temperature water quality objective below the Saugus WRP at location Sa-RB during dry weather would be to eliminate the discharge. However, it is highly unlikely that the California Department of Fish and Wildlife would support any discharge reductions or elimination, because this action would remove all dry weather surface flows in that stretch of Santa Clara Reach 6 and could potentially reduce the amount of resurfacing groundwater flows that actually support a diverse aquatic community in Santa Clara River Reach 5. ***An Evaluation of the Relative Contribution of Radiative and Convective Heating Was Not Conducted*** Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and	

No.	Comment	Response
	Ventura Counties (Basin Plan) states that: “At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**.” [Emphasis added.] This objective clearly distinguishes between temperature exceedances caused by “waste discharges” and those associated with other causes. Both the Saugus WRP discharge and the immediate downstream receiving water location (Sa-RB) are heavily influenced by ambient air temperature. Figure 3 includes a plot of the 15-day average values of the maximum air temperature along with the individual water temperature measurements collected at the Sa-RB location. Nearly all of the 80ºF temperature exceedances were associated with the higher summer time air temperatures and the two have a statistically significant correlation (R2 = 0.76). Because exceedances of the Basin Plan temperature objective are limited to those “as a result of waste discharges,” an evaluation of the contribution of ambient air temperature to the receiving water should have been conducted before identifying receiving water excursions above 80ºF as exceedances of the objective. *Figure 3. Sa-RB Temperature vs. Maximum Ambient Air Temperature (15-Day Average Value)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
27.	Santa Barbara Channelkeeper (SBC), March 30, 2017	
27.1	Please accept the following comments on the Los Angeles Regional Water Quality Control Board’s (Regional Board’s) 2016 Integrated Report, which are hereby submitted by Santa Barbara Channelkeeper. Santa Barbara Channelkeeper is a non-profit environmental organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement. We have been conducting water quality monitoring in watersheds from Gaviota to the Ventura River since 2001. We have engaged more than 1,200 volunteers in our monitoring	See response to comment 32.3.

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	efforts and represent over 750 members. Our comments address the following concerns: • Procedural issues related to data solicitation gaps • Category 4C and Hydrologically Impaired Waterways • Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment Generally, Channelkeeper supports the Regional Board's ongoing efforts to document water quality impairments on the 303(d) List. Specific concerns regarding the Draft 2016 Integrated Report are summarized below. **<u>Procedural Concerns Related to Data Solicitation Gaps</u>** Channelkeeper is troubled that the Regional Board has fallen so far behind on data solicitations and review of 303(d) listings. 40 C.F.R. § 130.7(d)(1) mandates that: Each State shall submit biennially to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section. The 2016 Integrated Report is based on data submitted in 2010 and will not be finalized until the middle of 2017. Based on EPA Guidance, the 2016 Integrated Report was due in April 2016. Clearly, the Regional Board has failed to achieve pertinent milestones and mandates related to the biennial review process. The lack of any recent data solicitation is particularly troubling as a fully accurate and current depiction of water quality is not available for the 2016 Integrated Report. The Regional Board has a mandate to "assemble and evaluate all existing and readily available water quality-related data and information to develop the list."[2] Accordingly, the Regional Board should base 2016 Integrated Report decisions based on "all existing and readily available" data, which includes data collected since the 2010 data solicitation. Six years of additional data is available	

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	to the Board and should be appropriately utilized for the Region's listing, de-listing and planning purposes. Channelkeeper questions how such determinations can reasonably or legally be made without consideration of the last six years of existing and readily available data. It is additionally concerning that due to the State's new staged approach to 303(d) List review, further data solicitation will be delayed until the Los Angeles Regional Board's 2022 report, which will include data submitted through 2021. This means that the Regional Board will not have reviewed existing water quality data for our region for more than a decade. This is clearly unacceptable from a legal standpoint.	
27.2	**<u>Category 4C and Hydrologically Impaired Waterways</u>** Channelkeeper echoes and supports comments submitted to the Regional Board on March 30, 2017 by *Earth Law Center* regarding the necessity for evaluation and listing for hydrologically impaired waterways to fully comply with Clean Water Act Sections 305(b) and 303(d). Such evaluation and listing is clearly called for under the Clean Water Act, is supported by EPA Guidance, and paves the way for sound public policy and planning. Many other states around the country follow such Guidance to properly identify flow impaired waterways in their Integrated Reports. Recently, the San Diego Regional Water Quality Control Board notably identified 30 waterway segments for listing in Category 4C. Channelkeeper notes with concern that the Los Angeles Region has apparently forgone assessment of Category 4C impairments altogether in the Draft 2016 Integrated Report. We question the legality of such an oversight.	See response to comment 21.1, 21.2, 21.3, and 21.4.
27.3	**<u>Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment</u>** The Los Angeles Regional Board currently proposes to delist Reach 3 of the Ventura River for "Pumping" impairment. Channelkeeper strongly opposes this delisting decision. On February 5, 2015 Channelkeeper submitted detailed comments (Attachment 1) and data to the State Water Resources Control Board regarding its stated intent to delist Reaches 3 and 4 of the Ventura River for	See response to comment 21.1, 21.2, 21.3, and 21.4.

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	pumping and diversion impairments. These comments were submitted in response to the State Water Board's Draft Staff Report for the 2012 Integrated Report dated December 31, 2014, which stated that the four listings on the existing 303(d) list due to flow related alterations in the Ballona Creek and Ventura River watersheds "will likely be proposed for delisting as part of the next Listing Cycle." Channelkeeper's submittal outlined in detail why Reaches 3 and 4 of the Ventura River may not be delisted from the 303(d) list as impaired for flow by pumping and diversion. The existing listings for Reaches 3 and 4 of the Ventura River accurately reflect the current diminished flows and resulting impairments to designated beneficial uses in those Reaches. The listings are legally valid, and consistent with the State Water Board's Listing Policy. In contrast, delisting Reaches 3 and 4 from the 303(d) list as impaired for flows due to excessive pumping and diversion is inconsistent with the Listing Policy, the Clean Water Act, and facts on the ground. We refer the Los Angeles Regional Board to our February 5, 2015 letter as its legal and technical merits remain unchanged. Channelkeeper additionally submitted multiple years of continuous monitoring data (submitted electronically via file "*MasterData_2013-2014.xls*") along with our 2015 comment letter. These data were summarized in tables as well as within an example "Listing Line of Evidence" provided with our 2015 letter. Lacking any formal data solicitation by the Los Angeles Regional Board since 2010, these submittals represent existing and readily available water quality-related data and information, which should have been used to develop the Draft 2016 Integrated Report. Since the submittal of our 2015 comment letter, Channelkeeper has collected additional water quality data that supports the existing listings for pumping and diversions in Reaches 3 and 4. We are submitting an updated data file ("*MasterData_2013-2016*") electronically along with this comment letter. **<u>Conclusion</u>** When Reaches 3 and 4 of the Ventura River were identified as flow-impaired by	

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	pumping and diversions on California's 1998 303(d) list, the State Water Board took an important first step towards restoring the chemical, physical, and biological integrity of these waters. However, there is ongoing documentation that flow alterations from pumping and diversions continue to degrade Reaches 3 and 4 such that these waters cannot support their designated beneficial uses and water quality standards are not attained. Reaches 3 and 4 of the Ventura River are impaired for pumping and diversions based on the "Numeric Water Quality Objectives for Conventional or Other Pollutants in Water" listing factor, the "Situation-Specific Weight of Evidence" listing factor, as well as the "Degradation of Biological Populations and Communities" listing factor. Removing the pumping impairment listing for Reach 3 is not only illegal but will also impede existing and future efforts to remedy the ongoing flow impairments in the Ventura River. Channelkeeper strongly urges the Los Angeles Regional Board to comply with the Clean Water Act by continuing to identify Reach 3 on the 303(d) list as flow- impaired by pumping.	
28.	Sherwood Valley Homeowners Association, March 30, 2017	
28.1	We thank you for this opportunity to comment on the proposed changes to the 303(d) list prior to the upcoming public hearing on May 4, 2017. Representatives from the Lake Sherwood Joint Lake Advisory Committee plan to attend this meeting to discuss these important issues. We appreciate the proposed removal of the two pollutants, Ammonia and Organic Enrichment/Low Dissolved Oxygen. This is gratifying and recognizes the positive results produced by the time, effort and expense the Association has put forth over many years to mitigate these concerns. Respectfully, however, we are troubled to see that Algae and Eutrophic remain on the list. To help understand why these are still considered pollutants in Lake Sherwood, we reviewed the Los Angeles Water Board's website of the Draft 2016 303(d) List, and specifically Appendix G – Fact Sheets of the Draft. Here we see that the listing of Algae and Eutrophic are noted as "placeholders" to support decisions made prior to the 2006 Clean Water Act, and further that no evidentiary data	Lake Sherwood was as listed impaired for algae, ammonia, eutrophic conditions and organic enrichment/low dissolved oxygen in the 2010 Integrated Report. On the 2016 303(d) list, the Los Angeles Water Board has recommended delisting "organic enrichment/low dissolved oxygen" and ammonia, based on data showing there is not an impairment. "Placeholder" LOEs are those LOEs derived prior to the 2006; they are 'placeholder" in the sense that the raw data is not included in the CalWQA database. Per the Listing Policy, section 4.71.1, impairments are delisted when, based on all the readily

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	samples were collected which could be used to assess these pollutants relative to the 2006 standards. Clearly there are zero measured exceedances of these standards at this point yet they remain on the list. It seems to us somewhat arbitrary to continue to consider these as "pollutants" in Lake Sherwood especially where there is a consistently good dissolved oxygen level, a continuous effort to remove excess plant growth via a special harvester with a full time crew, monthly monitoring of water chemistry, and special attention to and approved treatment of any algae that occurs as needed throughout the year. If sufficient justification does exist to continue to include these on the 303(d) list, we would appreciate having the reasons and rational detailed to us in writing so we may take any necessary actions to remove them in the future.	available data, there is sufficient evidence or data to justify a recommendation for delisting. The USEPA established a TMDL for the Malibu Creek watershed for nutrients to address these listings on March 21, 2003. The assessment of whether or not it is appropriate for the Lake to be removed from the 303(d) list for algae and eutrophic conditions must consider how those conditions interact with nitrogen and phosphorus levels, as discussed in the TMDL, and whether the TMDL targets are being met.
29.	Stakeholders Implementing TMDLs in the Calleguas Creek Watershed, March 30, 2017	
29.1	The development and implementation of TMDLs is a significant investment of resources and it is critical that the 303(d) List be based on sound science and methodologies. The Stakeholders understand that the Los Angeles Regional Water Board (Water Board) is proposing over 200 new waterbody-pollutant segment combination 303(d) listings, of which 95 changes fall within the Calleguas Creek Watershed (CCW). The Stakeholders have developed and implemented six effective TMDLs in the CCW and thus have extensive experience in the area. The Stakeholders have serious concerns with the Region's Proposed 303(d) List and feel that it requires significant review and modification before adoption. The Stakeholders request that the issues identified in this letter be addressed and the proposed 303(d) List be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) List to be fully vetted and reviewed by the Stakeholders. The requested modifications fall into four general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g., mismatched units, incorrectly assigned sample locations) 2. Potential delistings that may exist if all watershed data were evaluated (e.g.,	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and the readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend exclusively on the 303(d) list or the data contained therein (currently through 2010 only). Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and revise, as appropriate, listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region. See response to comment 29.2-29.67 for specific

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	TMDL monitoring program and all wastewater treatment plant NPDES monitoring). 3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants. 4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) List (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide the detailed list of requested changes to the 303(d) List and the rationale for the requests. In summary, the Stakeholders request that all waterbody-pollutant combinations in Table 1 not be listed on the 303(d) List, the waterbody-pollutant combinations in Table 3 be considered for delisting through analysis of all available watershed data, waterbody-pollutant combinations in Table 4 and Table 5 be designated as being addressed by a TMDL if they remain on the 303(d) List after the reassessment and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies.	responses.
29.2	1. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody-pollutant combinations, the Stakeholders have identified a number of waterbodies that we feel should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.	Comment noted. See detailed responses below and response to comment 29.1.
29.3	**Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification:	See response to comment 7.14

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.4	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.15.
29.5	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.16.
29.6	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.17.
29.7	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.18.

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	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.8	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.19.
29.9	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.20.
29.10	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.	See response to comment 7.21.
29.11	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.22.
29.12	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride	See response to comment 7.23.

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	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
29.13	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.24.
29.14	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.25.
29.15	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Malathion Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.26.
29.16	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	See response to comment 7.27.
29.17	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.28.

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	applicable to waterbody.	
29.18	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.29.
29.19	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.30.
29.20	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.31.
29.21	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.32.
29.22	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo**	See response to comment 7.33.

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	Conejo North Fork) Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	
29.23	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.34.
29.24	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Malathion Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.35.
29.25	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	See response to comment 7.36.
29.26	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.39.
29.27	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.40.

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	applicable to waterbody.	
29.28	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.41.
29.29	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.	See response to comment 7.42.
29.30	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.47.
29.31	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.49.
29.32	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.50.

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	applicable to waterbody.	
29.33	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.51.
29.34	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	See response to comment 7.52.
29.35	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	See response to comment 7.53.
29.36	**La Vista Drain (Ventura County)** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.54.
29.37	**La Vista Drain (Ventura County)** Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.55.
29.38	**La Vista Drain (Ventura County)**	See response to comment 7.56.

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	Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.39	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.57.
29.40	**La Vista Drain (Ventura County)** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.58.
29.41	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.59.
29.42	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.60.

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29.43	Waterbody segment: **Santa Clara Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
29.44	**Santa Clara Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.62.
29.45	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.63.
29.46	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.64.
29.47	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.65.

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29.48	**Santa Clara Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates,	See response to comment 7.66.
29.49	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.67.
29.50	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.68.
29.51	**Santa Clara Drain** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.69.
29.52	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification:	See response to comment 7.70.

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.53	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.71.
29.54	**1. Agricultural Drain monitoring data incorrectly used as basis for listing decisions.** There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been	See response to comment 7.88.

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	collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. **Requested Action:** • **Remove all listings shown in Table 1 that were based on Ag monitoring data from agricultural drains not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.** • **Remove the La Vista Drain and the Santa Clara Drain from the List as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) List.**	
29.55	***2. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using water quality objectives for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings.	See response to comment 7.89.

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	Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards... [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*'? in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."*[1]	

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	In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1: *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty."* Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment	

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	Toxicity for Oxnard Drain 3",[2] where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in **Table 1** should not be listed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which as described above, cannot be used to justify a listing. Furthermore, the Fact Sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** • **Revise all of the new listings in the Fact Sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** • **Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) List.**	
29.56	***3. Reassess mercury listings using correct objective and correct units*** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, and La Vista Drain are in ng/L and the objective is µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. The Stakeholders expect that after this calculation has been performed the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally	See response to comment 7.90.

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	recommended criterion was used for the assessment. An explanation for the use of a recommended criterion when an established water quality objective exists should be provided. **Requested Action:** • **Repeat the mercury analysis after correcting the units error.**	
29.57	***4. Incorrect location and data were used for listings in Reach 12*** The name of the monitoring site presented in the Fact Sheet for the chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12 and T01 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, T01 should not be used for a 303(d) listing decision and University data is not from Reach 12. A review of the datasets provided in the link on the Fact Sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the Fact Sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, the Stakeholders request that only data collected after the implementation of applicable pesticide use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrates a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide use restrictions, monitoring data collected prior to 2009 is not representative of waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates a continued impairment. **Requested Action:** • **Remove listings for Reach 12 that are not based on receiving water data from that reach.**	See response to comment 7.92

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	• **Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide use restrictions.**	
29.58	***5. Correct the proposed temperature listing for Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list) which is based on incorrect criteria.*** The temperature listing for Reach 12 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Reach 12 is WARM. The rainbow trout growth range threshold used for the listing is only applicable to the COLD beneficial use. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. The basin plan criteria for WARM beneficial uses states the following: "For waters designated as WARM, water temperature shall not be altered more than 5 degrees F above the natural temperature. At no time shall these WARM designated waters be raised above 80 degrees F as a result of waste discharges." The Fact Sheet states that of 567 samples there were 3 instances of the downstream sample exceeding 80°F and in some cases a 30°F difference between upstream and downstream reaches. The Fact Sheet statement is unclear because Reach 12 is the upstream location and is not downstream of a waste discharge. Reach 12 drains a portion of the City of Thousand Oaks and open space areas and is located upstream of the Thousand Oaks Wastewater Treatment Plant. Therefore, it is unclear if the exceedances discussed in the Fact Sheet actually occur in Reach 12 and if exceedances do occur, whether they are a result of waste discharge or are a natural condition. The data provided for review was not compiled in a way that made it possible to easily review the assessment to determine if the exceedances were observed in Reach 12 (upstream) or Reach 10 (downstream). Regardless of the location of the samples, if there were 3 instances of temperature above 80°F and if they can be confirmed to be a result of waste discharge and not natural temperature conditions, according to the SWRCB 2015 303(d) Listing Policy three samples out of 567 would not meet the minimum number of measured	A review of the Calleguas Creek Reach 12 decision for temperature is in process at this time.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>exceedances needed to place a water segment on the 303(d) List (see Listing Policy table 3.2). According to the binomial test, with a sample size of 500+ there would need to be well over 20 exceedances in order to be added to the 303(d) List, however, the Fact Sheet mentions only three exceedances of the Basin Plan criteria. According to the SWRCB's own guidance, this proposed listing should be removed.

Requested Action:
• Do not use the 13-21°C rainbow trout evaluation guideline which only applies to COLD beneficial use segments.
• Remove the temperature listing for Reach 12 as it does not meet the minimum listing requirements based on the binomial test described above and ensure that the analysis is applied to the correct reach.</td><td></td></tr>
<tr><td>29.59</td><td>6. Ensure no J-flagged data were used in the assessment.
The Listing Policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit."

All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) List. Specific instances are included in Table 1 and further explained in Table 2 below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

Table 2. Incorrect use of J-flagged data [See the posted letter for Table 2]

Requested Action:</td><td>See response to comment 7.93.</td></tr>
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	• **Review all Fact Sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** • **Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain, and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**	
29.60	***7.*** **Remove listings where a waterbody assessment does not meet listing thresholds based on data provided.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) List. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) List. **Requested Action:** **Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 based on meeting listing threshold requirements in the Listing Policy.**	See response to comment 7.52.
29.61	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. In 2013, the Stakeholders did an assessment of the watershed using all watershed	See response to comment 32.3.

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	data through 2012 and found that multiple waterbody-pollutant combinations could potentially be delisted as shown in Table 3. A summary of the assessment is included as an attachment to this letter and the datasets used in the analysis as well as all of the TMDL annual monitoring reports are available upon request. **[See the posted letter for Table 3]** While we recognize that this assessment uses two additional years of data than the current 303(d) listing analysis, a number of these waterbodies had many more samples than were necessary for delisting. As a result, we feel if all the watershed data were used in the assessment, a number of these waterbodies (particularly for metals) would be delisted. We also feel this assessment would demonstrate that several of the proposed listings, particularly for diazinon and chlorpyrifos and a number of organochlorine pesticides, are not warranted. A large number of new proposed listings are being added that are already covered by a TMDL. While the list acknowledges that a TMDL does not need to be developed by categorizing these new listings in Category 5B, in several cases, the watershed now has sufficient data to delist, whereas the listing is an artifact of old data being used to make the listing decision. These listings should not be added to the current list only to be removed during the next listing cycle as an artifact of the timing of the listing assessments. **Requested Action:** **Reassess all Calleguas Creek waterbodies using all available data.**	
29.62	**III. REQUESTED CATEGORY ASSIGNMENT CHANGES** ***8. Correct pollutants listed as Category 5A which should be 5B based on coverage by an existing TMDL.*** There are a number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. While the Stakeholders maintain that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B, as applicable.	See response to comment 7.96.

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	A nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DOE, ODD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), which is already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, and the Metals TMDL and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for Chlorpyrifos - Honda Barranca and Duck Pond Agricultural Drains - but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL. The Stakeholders request that any listings in **Table 4** and **Table 5** that are maintained after addressing the issues in Comment I should also be corrected to be designated as Category 5B. **[See the posted letter for Table 4]** In addition, we feel that the Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion) if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity and the Stakeholders have already begun actions to address these pesticides in addition to the organophosphate pesticides included in the TMDL. The structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. There are already sufficient controls in place through the agricultural waiver and MS4 permit. As a result, if the waterbodies are placed on the 303(d) List as new listings, we request that the waterbodies in Table 5 be changed from 5A to 5B. **[See the posted letter for Table 5]** **Requested Action:** • **Change all pollutant-waterbody segment combinations in Table 4 and**	

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	Table 5 from SA to 5B or 4A based on coverage by an existing USEPA approved TMDL.	
29.63	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** In reviewing the list the Stakeholders identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified and is not a comprehensive list as in many cases the information provided made it challenging to provide comprehensive comments. **9.** ***Correct Appendix G Fact Sheets.*** The Appendix G Fact Sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include: • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally-influenced waterbody (e.g., Duck Ponds Agricultural Drain). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in Fact Sheets, including 3 samples with results of "ND". Stating that a pollutant actually exceeds criteria in only 40% of samples, versus 100% exceedances as presented in Fact Sheets, provides a more accurate picture of the degree of impairment for that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.	See response to comment 7.98.

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	Requested Action: **Correct the Appendix G Fact Sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples/number of exceedances.**	
29.64	**10.** ***Correct the Appendices and Fact Sheet Categories.*** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow the Stakeholders to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are not associated Fact Sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The Fact Sheets for the following name changes should provide justification or explanation for the name change as many appear to be switching tissue or sediment listings to water listings. If this is, in fact, the change being made, the justification for the water listing needs to be provided in the Fact Sheet. It is not appropriate to modify the medium that is the basis for the listing as a name change. **[See the posted letter for Table 6]** There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies. **[See the posted letter for Table 7]** There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) List were not stated as delisted in Appendix A and do not	See response to comment 7.99.

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	appear in Appendix B, C, or G under the waterbodies to delist. The Stakeholders would like clarification if these listings are in fact being delisted as some align with the assessment shown in Table 3. **[See the posted letter for Table 8]** **Requested Action:** **Correct the numerous inconsistencies described above in Table 6, Table 7, and Table 8 and ensure that all of the proposed 303(d) List appendices are internally consistent.**	
29.65	**11**. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Ca/water numbers to reflect those listed in the Basin Plan.*** There are multiple instances of what appear to be incorrectly Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) List to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**	See response to comment 7.100.
29.66	**12**. ***Correct or clarify inconsistencies in the staff report.*** There is inconsistent discussion in the staff report about some proposed listings that should be clarified to avoid confusion about the listings. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants " For example, the proposed new listings for DOE and DOD in Calleguas Creek	See response to comment 7.101.

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	Reach 3 ... are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL ... and would then be in Category 4A." However , we could find no listings of ODE and ODD for Reach 3 in any Appendix of the report including Appendix C - Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that ODE and DOD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement and clarify any other inconsistencies between the staff report and the list. **Requested Action:** **Correct or remove language cited on page 10 of the staff report regarding DOE and ODD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**	
29.67	**13**. ***Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy*.** In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment, which is inconsistent with the Listing Policy which states that it must be demonstrated that an evaluation guideline is "applicable to the beneficial use, protective of the beneficial use, scientifically-based and peer reviewed, and well described". Because it has not been demonstrated that the individual species response to these pollutants is applicable and protective of the beneficial use these guidelines should not be used to make a listing. The Stakeholders ask that the Board review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin) as well as applicability to the beneficial use as described in the Listing Policy. **[See the posted letter for Table 9]** The 303(d) List includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in CCW. Currently, no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all	See response to comment 7.102.

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	listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 is inappropriate. LC50s do not meet the standard set forth in the Listing Policy as stated on page 20 *"the evaluation guideline ... identifies a range above which impacts occur and below which no or few impacts are predicted."* By definition, an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis[12] criteria. However, upon reviewing the UC Davis source the listed chronic standard for permethrin is 2 ng/L (page 92) which is 0.002µg/L, not 0.0002µg/L as listed in the 303(d) List. • In many instances the incorrect evaluation guideline and guideline reference are used. For example, the evaluation guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200, and 88712 is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited guideline reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final Fact Sheets and 303(d) List. **Requested Action:** • **Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit**	

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	conversions. • **Remove all guidelines that do not comply with the stated Listing Policy as described above.** **[See the posted letter for Attachment A]**	
30.	TECS Environmental Compliance Services, March 30, 2017	
30.1	TECS Environmental is pleased to comment on the Regional Board's proposed 2016 303(d) list revisions. Because there are almost 900 listing revisions for water quality segments in the Los Angeles County Basin, it would be impossible to address each one. Therefore, I will restrict my comments to general issues. To begin with, I am sure that a number of MS4 Permittees and industrial dischargers will be pleased to know that many of the pollutants proposed on the 303(d), which are current TMDLs or are scheduled to become ones, have been placed on the "de-list" or placed on the "do not list" category. Most conspicuous are metals for Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River. Although the 2010 303(d) list did not list any of these reaches for metals-related impairment, they were nevertheless required to comply with metals TMDLs (Los Angeles River Metals TMDL for Reach 2 of the Rio Hondo and the San Gabriel River Metals TMDL for Reach 3 of the San Gabriel River). The 2016 303(d) list proposes to rectify this mistake by placing both of these reaches under the "do not list" category for copper, lead, selenium and zinc, which form the basis for both of the TMDLs. However, the proposed 2016 303(d) list did not place any of the Arroyo Seco reaches on the "do not list." Like Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River, Arroyo Seco Reaches 1 and 2 were not on 2010 303(d) list, nor were they on the 2012 303(d) list, which did not make it to Los Angeles Basin Plan as an amendment. Nevertheless, the Los Angeles MS4 Permit subjects MS4 Permittees by extending the Los Angeles River Metals TMDL to Arroyo Seco reaches. The 2016 303(d) list should place these reaches on the "do not list" category for metals.	See response to comment 3.4.

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	Recommendation: place Arroyo Seco Reaches 1 and 2 on the "do not list" for any metal.	
30.2	**I. CTR and 303(d) Listing Policy** Nevertheless, additional pollutants should be considered for exclusion because they were not established in accordance with the California Toxics Rule (CTR) adopted in 2000; and/or did comply with the *Wat*er *Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004. • *California Toxic Rule* CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish <u>ambient</u> water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured	See response to comments 3.2.

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	against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.	
30.3	Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of metals and toxics more accurate. Generally, the higher the hardness value the higher the toxic/metal pollutant expressed as a numeric limit. And, the higher the limit there less difficult it is to meet. The metals and toxics TMDLs rely on differing hardness values. For the Dominguez Channel/Harbor Toxics TMDL an average hardness value of 50 mg/l is used. For Ballona Creek hardiness values for setting the wet weather TMDLs metals are varied, based on an average or median hardness that ranged from 77 mg/l to 108 mg/l. For dry weather, a median hardness value of 300 mg/l was applied. As mentioned, CTR is expressed exclusively as ambient and not wet weather standards. Thus the77 mg/l to 108 mg/l hardness values relative to wet weather are meaningless. For dry weather, a median value of 300 mg/l was used. For the Los Angeles River Metals TMDL variable hardness values were also used for wet and dry weather. The same is true to the San Gabriel River Metals TMDL. In any case, CTR requires actual hardness value to be determined at the time samples of metals/toxic pollutants are taken. Thus, in the final analysis, each of the metals/toxics pollutants that was placed on the "list" or "do not de-list" category should be placed on the "de-list" or "do not list" category because they were not established in ambient terms only and failed to use an actual hardness value.	Comments on TMDLs are outside the scope of this proposed action.
30.4	• 303(d) Listing Policy The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see	See response to comment 3.3.

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	attachment #1). A review of the 2016 303(d) list fact sheets reveals that many of the metals and toxics placed on previous 303(d) lists did not conform to the Listing Policy. Those that do not should be placed on the "de-list" or "do not list" category.	
31.	Ventura Countywide Stormwater Quality Management Program, March 30, 2017	
31.1	On behalf of the Ventura Countywide Stormwater Quality Management Program (Program), which includes the Watershed Protection District, the County of Ventura and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, we thank you for the opportunity to provide input on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list] which was distributed for public review on February 8, 2017. The Program has many concerns with the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waters. Several errors and inconsistencies hampered our ability to fully vet and review the proposed 303(d) list. It is our opinion that significant review and modifications must be made before adoption and additional public review after modifications will be necessary. Requested Action: After full consideration of all comments, revise draft 303(D) list, and allow for another 60-day comment period prior to adoption. It is critical that the Los Angeles Water Board's proposed revisions to the 303(d) list follow the State Water Resources Control Board (SWRCB) Listing Policy and be based on sound science and methodologies. The development and implementation of Total Maximum Daily Loads (TMDLs) is already a significant investment of resources, and the 303(d) list will drive pollutant waterbody prioritization under the potential Watershed Management Plan option in our next NPDES MS4 Permit.	See response to comment 32.1 and 7.2.
31.2	Data from a single point in time, or which is not representative of the receiving	It is in accordance with the Listing Policy to use

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	water, should be excluded from this effort as should data with results reported below reporting limits (J-flagged). It appears the Program's outfall data was erroneously included for the Santa Clara River. This sampling location represents the runoff discharging from an MS4, not the receiving water quality, and is mostly from infrequent and short-term rain events. Of special concern is where the beneficial use MUN is driving 303(d) listings even though it should not be applied because it is identified as P* and is a conditionally applicable beneficial use. **Requested Action:** **Strictly comply with the State Water Resources Control Board (SWRCB) Listing Policy on identifying beneficial uses, impairments due to natural sources, and the appropriate data to support a listing.**	samples collected on the same day to assess waterbody condition if the samples are from different locations. The Listing Policy does provide for consideration of circumstances in which the samples represent an unusual condition (see Listing Policy, Section 6.1.5.3, *If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set.)* LOEs and decisions which included “J-flagged” data are being reassessed, as identified. Decisions based on protection of a P*MUN beneficial use are being reassessed, as identified.
31.3	The Program supports the comments from the County of Ventura where a more detailed description of the issues identified here is discussed. The Program also supports the comments from the Calleguas Creek Watershed Stakeholders, as well as the Ventura County Irrigated Lands Group (VCAILG) who will be submitting separate comment letters regarding the proposed listing changes in the Calleguas Creek Watershed and VCAILG- affected waterbody segments. Significant resources are expended when a pollutant is included on the 303(d) list. Errors in this process, and the challenges of delisting a pollutant, divert our limited funding and staff time away from improving water quality. We greatly appreciate your attention to these requests and look forward to a 303(d) list that appropriately identifies the water quality issues within Ventura County.	Comment noted.
32.	Ventura Water Department of the City of San Buenaventura, March 30, 2017	
32.1	The specific focus of this comment letter by Ventura Water is on the Santa Clara River Estuary (SCRE) proposed listings. New constituents on the list for the SCRE include ammonia and pH. Constituents that are proposed to remain on the	See response to comments, below, for specific responses: 32.4 for ammonia,

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	list of particular note include nitrate and toxicity. Ventura Water specifically requests the Los Angeles Regional Water Quality Control Board (Regional Board): • Reconsider proposed ammonia listing by recalculating the exceedances and using more recent data sets currently available to the Regional Board. • Reconsider the proposed pH listing based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries. • Delist nitrate based on a recalculation using appropriate data and correct use of averaging periods for the data. • Reevaluate toxicity listing once the data is appropriately aggregated and averaged. • Reevaluate ChemA, Toxaphene, and Indicator Bacteria listings once more recent data is taken into consideration. • Address the issues identified in this letter and release a revised, proposed 303(d) list for another 60-day comment period prior to adoption.	32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria The public has had a 50-day comment period prior to the Los Angeles Water Board meeting. In addition, the State Water Board will provide an additional 30-day comment period so that the public may comment on the Los Angeles Region 303(d) list (in combination with five other Regional 303(d) lists) prior to bringing the list to the State Water Board for approval. Lastly, commenters will have an opportunity to comment to USEPA Region 9 regarding the California 303(d) List portion of the Integrated Report prior to final approval by USEPA.
32.2	**Relevant Background Information.** It is important to our overall comments on the 303(d) list to understand the context of the Santa Clara River and SCRE. Like many southern California rivers, the Santa Clara River has very minimal flows in the dry months leading to stagnant conditions in the SCRE that encourage algae growth and variations in both dissolved oxygen (DO) and pH due to the algae respiration cycles, as is the case to some extent even in more natural estuaries where conditions have not been modified. The river ends in the SCRE, which experiences both open and closed mouth periods due to beach berm formation and periodic, typically wet weather breaches. The SCRE is wind-mixed and mostly uniform in water quality, especially during closed mouth conditions. The Ventura Water Reclamation Facility (VWRF) discharges approximately 8 million gallons per day (mgd) of disinfected, tertiary effluent first to wildlife/water quality ponds, and then to the SCRE. During dry weather, the tertiary treated flows can be the	Comment noted.

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	dominate supply of water to the SCRE to support wildlife species that utilize it. Species that utilize the SCRE include the following state and federally listed species: steelhead trout, tidewater goby, snowy plover, and California least tern. Ventura Water has spent many years studying the SCRE both independently, and pursuant to requirements of its NPDES permits. Ventura Water has invested more than $21,000,000 dollars in treatment process upgrades of the Ventura Water Reclamation Facility (VWRF) to improve the quality of the tertiary treated flows discharged to the SCRE. Ventura Water also currently recycles approximately 1 mgd for urban irrigation. Ventura Water is also currently working on implementing a potable reuse program that would divert up to 100% of its discharges to water reclamation uses, and identifying how much effluent can be diverted from the SCRE while still protecting its ecology and ecology-related beneficial uses and without "taking" (as that term is defined under the state and federal Endangered Species Acts, as applicable) any of the listed species that use or occupy the SCRE.	
32.3	**General Comments.** Of particular concern to Ventura Water with regard to the proposed 303(d) list is that much of the data used to determine water quality impairment for the SCRE is older data that is not representative of current conditions. The Staff report states, "Data used as part of the 2016 Integrated Report were received through August 30, 2010." The report then goes on to later say, "All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report." These statements are at odds with each other as by choosing to only rely on data collected through 2010; quite clearly the 303(d) list was not developed with all readily available data as required by the Listing Policy. Significant plant improvements have be implemented since 2010. VWRF monitoring data since the plant upgrades are readily available and should be included within the 303(d) list determination analyses. The SCRE has also been heavily regulated by the VWRF's NPDES permits. Many of those permit requirements have become more stringent since 2010, with the application of technology based limitations. By Ventura Water's estimation, many	The Los Angeles Water Board staff has developed the Integrated Report consistent with project plans and timelines established by the State Water Resources Control Board. Staff is working closely with the State Water Board to ensure that the remaining steps in the process for State Water Board approval go smoothly and meet the State Water Board's schedule. Los Angeles Water Board staff considered all readily available data and information in the administrative record in the development of the 2016 California Integrated Report. The State Water Board defined readily available data as those data submitted during the 2010 public data solicitation period, which began on January 14, 2010 and concluded on August 30, 2010. The

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	of constituents on the proposed 303(d) list are not appropriate given recent water quality data. Lastly, based on current data and the State Water Resources Control Board's "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List" ("Listing Policy") requirements to aggregate the data by appropriate reach or area and to use appropriate averaging periods, Ventura Water disagrees with some of the constituent listings and requests recalculation of exceedances. This letter addresses the proposed 303(d) listings and presents current data for each proposed SCRE impairment listing.	State Water Board issued a memo dated November 12, 2013, which explains the strategy of handling the data assessment for the 2014 Integrated Report as follows: Due to the volume of data received during the 2010 data solicitation period, the State Water Board will not solicit additional data until all of the current data is assessed and migrated to the California Water Quality Assessment Database (CalWQA) for Regional Water Board listing and delisting recommendations. Consequently, at the direction of the State Water Board and consistent with the other Regional Water Boards, Los Angeles Water Board staff did not include data after the 2010 solicitation period in the development of the 2016 Integrated Report for the Los Angeles Region. Further, the State Water Board adopted Resolution No. 2015-0005, to amend the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) on February 3, 2015. The revisions to the Listing Policy were available for public comment prior to the public hearing to adopt those changes. Finding number eight in the Resolution states the following: State Water Board staff anticipates that next notice of solicitation will be sent out to solicit data and information for the 2018 Integrated Report (the CWA section 303(d) and 305(b)

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		reporting requirements). For the upcoming 2012, 2014 and 2016 Integrated Reports, the data and information submitted in response to the 2010 notice of solicitation shall be assessed and considered. Notwithstanding the above information, Los Angeles Water Board staff appreciates the concern that data must be is as up-to-date as possible and reviewed frequently in order to implement our various programs. Staff reviews all types of water quality data on an ongoing, real-time basis separately from the Integrated Report process to develop TMDLs or other regulatory programs. Staff strives to increase its use and application of current data, and improving in this manner is one of our highest priorities. Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.
32.4	**Ammonia Comments** The new ammonia listing cites that it is based on 4 exceedances out of 42 samples based on un-ionized ammonia concentrations using data collected from 1997 to 2010. While this meets the technical, formulaic requirements for number of exceedances set forth in the Listing Policy Table 3.1 for placing a waterbody on the 303(d) list, the methods and data used to calculate the exceedances are not clear. To calculate the concentration of un-ionized ammonia, total ammonia must be converted to un-ionized ammonia using site specific pH and temperature conditions within the SCRE at the time of the ammonia sampling. No conversion calculations for total ammonia were provided in the data set provided in the fact sheet; therefore, it is difficult to determine which pH and temperature data were used to correlate to corresponding total ammonia data. An accurate analysis	The data used to determine the listing can be found from a link on the factsheet “Decision ID 66589 Santa Clara River Estuary” for ammonia. The data is linked as <u>Data for Various Pollutants from the city of Ventura, 1997-2010.</u> Commenter does not explain why grab data would not reliable for purposes of determining the one-hour maximum values for temperature and pH. See response to comment 32.3 for a discussion of the “readily available” data considered for this

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	should ideally connect pH, temperature, and ammonia data with a reasonable averaging criteria or statistical determination if multiple data points were used. Ventura Water requests recalculation of the exceedances based on current total ammonia data as well as proper calculations of un-ionized ammonia that take into account temperature and pH conditions that occurred, or should have been expected during the total ammonia sampling events. More specifically, closer inspection of the 1997 through 2010 data set used to determine the 4 exceedances indicates that the pH data used to calculate un-ionized ammonia was potentially data retrieved from a continuous monitoring, multiparameter Sondes (2009-2010) deployed for the City's Phase 1 Estuary Study (Stillwater Sciences 2011), among other data. The only total ammonia data collected as part of the Phase 1 study were collected on 6 days in 2009 and 2010. Corresponding pH and temperature were collected along with these samples. However, Ventura Water is concerned that these data do not represent the SCRE as a whole, specifically after the improvements to the VWRF (after November 2011). Moreover, only total ammonia is shown in that data set, and the data set does not include the calculation of un-ionized ammonia. Monthly grab sample temperature and pH data for the receiving water exists for some of the monitoring years cited (1997 - 2010), but grab data is not reliable for purposes of determining the one-hour maximum values for temperature and pH. In light of the aforementioned issues with the methods that appear to have been used to calculate unionized ammonia using a 1997 to 2010 data set, Ventura Water requests the Regional Board provide the calculation for the un-ionized ammonia, and update the calculation as appropriate to include more recent and more valid total ammonia, pH, and temperature assumptions from other data sets readily available to the Regional Board. Based on Ventura Water's more recent monitoring results, all of which constitute data readily available to the Regional Board, it does not appear that the SCRE un-ionized ammonia water quality objective is likely to have been exceeded a sufficient number of times to warrant a listing. Ventura Water requests the Regional Board utilize the data submitted to it by Ventura Water more recently than 2010 to assure that the evaluation of receiving water conditions in the SCRE is reasonably representative of current	Integrated Report and 303(d) list.

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	conditions. The Regional Board imposed stringent ammonia limits and a time schedule to attain those limits on VWRF discharges of tertiary treated flows in both its 2008 and 2013 NP DES permits. To comply with these limits and to better control nitrates, Ventura Water invested more than $21 million in a VWRF plant improvement project to implement nutrient removal in its biological processes. This treatment upgrade project undertaken to meet the stringent NPDES permit ammonia effluent limits came online in November 2011. Since then, VWRF NPDES permit effluent limits for ammonia, including its water quality based effluent limits, have only been exceeded once, indicating that ammonia conditions in the SCRE have changed since November 2011, and the data relied upon in developing the proposed 303(d) list is not representative of conditions within the SCRE. The receiving water standards for the SCRE (used to establish the NPDES effluent limitation) are set based on un-ionized ammonia for saltwater criteria. The limits used to determine the 303(d) listing are the same criteria that are used to calculate limits in the NPDES permit (1999 Update of Ambient Water Quality Criteria for Ammonia): • One Hour Concentration = 0.233 mg/I unionized ammonia, based on fish spawning, and • 4 day average of 0.035 mg/L of unionized ammonia The total ammonia NPDES effluent limit calculated to meet this water quality objective is total ammonia of 1.07 mg/l average monthly and 1.17 mg/l max daily in the summer. Limits in the winter months are slightly higher. The limits were determined in accordance with EPA standards by considering the 50th and 90th percentile pH and temperature for considering chronic and acute toxicity. As shown in Figure 1 below, the total effluent ammonia from 2012 to 2016 only exceeded 1 mg/l once out of 59 samples, thus not exceeding the Listing Policy's binomial distribution null hypothesis Table 3.1 criteria for listing a constituent on	

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	the 303(d) list (i.e., would need at least 5 exceedances). Similarly, the receiving water samples from 2012 to 2016 only exceeded 1 mg/l total ammonia twice out of 60 samples, so also not meeting the Table 3.1 criteria for listing a constituent on the 303(d) list. *Figure 1 Historical Effluent and Receiving Water Ammonia Monitoring* **[See the comment letter for Figure 1]** The effluent compliance point for all constituents except for flow in the 2013 NPDES permit for the VWRF is station MOOl, which is located at the Effluent Transfer Station (ETS) right before discharge into the wildlife ponds. Station MOOlA is located downstream of the wildlife ponds. It is only used for compliance with flow, but ammonia levels have been monitored there, starting in December 2013. Total ammonia actually drops from the compliance point to MOOlA as water passes through the wildlife ponds, likely due to a combination of volatilization and vegetative uptake. Therefore, the ammonia concentrations in the discharges into the SCRE are well below the permit standards that were set up to meet the ammonia receiving water quality objectives for saltwater, which are more stringent than freshwater standards. The comparison of ETS versus MOOlA data is shown in Figure 2. *Figure 2 Historical Effluent Ammonia Before and After Wildlife Ponds* **[See the comment letter for Figure 2]** **In light of the treatment plant upgrades implemented to reduce ammonia, and the fact that more recent data indicates only 1 exceedance in 59 samples, Ventura Water requests recalculation of the exceedances for ammonia and reconsideration of the listing decision based on the more recent data set currently available to the Regional Board.**	
32.5	pH Comments It is important to understand that many estuaries exhibit wide daily variations in pH mediated by algae as the result of daily photosynthesis and nighttime respiration (Park et al 1958). Beyond potential connections between algal	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not

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	productivity with the multiple nutrient sources to the SCRE (e.g., VWRF, agricultural runoff, groundwater, riverine, VWRF, ocean exchanges), algal growth and pH variations in the SCRE are exacerbated by physical factors as well (e.g., shallow waters, lack of consistent riverine flows, intermittent breaching and limited tidal exchange with the ocean). Consideration of the estuarine conditions likely to induce large pH swings is supported by recent monitoring data fully available to the Regional Board that shows that the VWRF plant tertiary treated flows are always in compliance with pH effluent limits (shown as a black dot on Figure 3). However, despite the very steady and compliant pH values for the tertiary treated flows, the receiving water does experience wide swings in pH as shown in Figure 3 below even when data collected from 2012 through 2016 is analyzed. However, it is important to note that the receiving water pH data is collected by grab samples (via boat) in the SCRE, likely at similar times of day and therefore does not necessarily reflect actual conditions in the estuary over the course of the day or the month. The receiving water data collected could theoretically meet the Listing Policy formulaic criteria. However, the determination whether to list should not be considered in a vacuum, but rather must also take into account the "type of waterbody (Bay and Harbors, Coastal Shoreline, *Estuary*, Lake/reservoir ...)" being considered for impairment. One way to take into account the type of waterbody considered for a 303(d) listing is to consider "reference conditions" as defined in Section 7 of the Listing Policy to understand the characteristics of estuarine water bodies that are least impaired by human activities to determine attainable biological conditions for such waterbodies in southern California. As discussed earlier, studies of pH variation in estuaries reveals that wide swings in pH due to the presence of algae constitute reference conditions for typical estuaries. The proposed listing does not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan). As stated in the Fact Sheets and according to the Basin Plan, "The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges." However, it was not demonstrated for the SCRE that	completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Estuary including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances of pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. The way to "take into account" the type of waterbody, or reference conditions, or the interaction between pH and other factors such as algae, is during the development of a TMDL. See also, response to comment 16.2.

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	the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if not such evidence exists, the Regional Board should remove this proposed listing. **Ventura Water requests reconsideration of the proposed pH listing for the SCRE based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries.** *Figure 3 pH at VWRF and Receiving Water Locations* **[See the comment letter for Figure 3]**	
32.6	**Nitrogen and Nitrate Comments** Nitrogen/nitrate (collectively "nitrate") was originally listed on the 303(d) list adopted in 2012. The nitrate listing is based on receiving water samples collected between 2002 and 2007. Given that Ventura Water implemented a nitrification and denitrification project in November 2011, nitrate data collected before 2011 is no longer representative of SCRE conditions, and is therefore not reliable for determining current SCRE exceedance estimates. In reviewing receiving water data collected monthly from 2012 through 2016 (60 sample dates}, which is submitted to the Regional Board as part of NPDES reporting and is therefore readily available data under the Listing Policy, there were only 5 days during which SCRE water quality exceeded the nitrate receiving water quality objective of 10 mg/I . Because the SCRE is wind-mixed and fairly uniform (Phase 1 Estuary Subwatershed Study, Stillwater 2011}, we would argue that on any given day, sampling at a given location is strongly influenced by conditions at other nearby locations. The Listing Policy states: "Based on these evaluations of the water body setting, the Regional Water Boards should aggregate the data by appropriate reach or area . ... To be considered temporally independent, samples collected during the	The data used to list the Santa Clara River Estuary for Nitrogen Nitrate was NPDES receiving water monitoring from the City of San Buenaventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list. The Listing Policy does allow for not using older data; Section 6.1.5.3 states, in part, "If the implementation of a management practice(s) has resulted in a change in the water body segment, only recently collected data {since the implementation of the management measure(s)) should be

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	averaging period shall be combined and considered one sampling event. ... If the averaging period is not stated for the standard, objective, criterion, or evaluation guideline, then the samples collected less than 7 days apart shall be averaged." As shown in Figure 4 below, exceedances in multiple locations occurring in the SCRE on the same sampling date should be considered a single event because the multiple sampling results are designed to provide a spatial representation of the estuary during any particular event of exceedance. According to the binomial distribution null hypothesis (Listing Policy Table 3.1), the listing requirement for 60 to 71 data points is 6 exceedances, which is more than the current 5 exceedances demonstrated by the more recent data set developed after Ventura Water's implementation of treatment plant and treatment process upgrades. Section 4 of the Listing Policy states that a water segment shall be removed from a 303(d) listing if the water meets the water quality standards. Using Policy Table 4.1, the null hypothesis indicates that for 60 to 71 data points, if there are 5 exceedances or less, then the water segment can be delisted. **Based on current data, the number of exceedances (S) meets the delisting criteria, and given that VWRF already has an NPDES permit limit for nitrate, Ventura Water requests recalculation of the exceedances based on current data and correct use of averaging periods for the data (data collected on the same day to be averaged}. Ventura Water requests that based on this recalculation, nitrate be removed from the 303(d) list for the SCRE.** *Figure 4 Receiving Water Nitrate Levels* **[See the comment letter for Figure 4]**	considered…" In the next listing cycle, when Water Board staff is able to consider the more recent data, staff can consider the implementation of nitrification and denitrification in 2011 and the appropriateness of averaging the more recent data.
32.7	**Toxicity Comments** The City monitors chronic toxicity using Selanstrum for both effluent and receiving water. Using readily available data collected by Ventura Water from 2012 - 2016 and submitted to the Regional Board, the VWRF tertiary treated flows consistently met toxicity criteria of 1 TUc for the 60 samples, as shown in Figure 5. However, receiving water monitoring data does not similarly show consistent and full attainment of toxicity criteria. The receiving water monitoring	The data used to list the Santa Clara River Estuary for toxicity was NPDES receiving water monitoring from the City of San Buenaventura Ventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data

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	locations have a data set of 25 sample dates. **Using the argument presented above that the data should be aggregated and appropriate averaging should be used, Ventura Water requests that each sampling event (day) be considered separately and the data points be averaged.** To meet the Listing Policy Table 4.1 requirements for delisting, with 26 data points there would need to be 2 or fewer exceedances of toxicity objectives for the SCRE. Even considered as single events, there have been more than 2 exceedances of a 1 TUc, although those exceedances are unrelated to toxicity of tertiary treated flows, which did not show exceedances. Therefore, it does not appear that de listing the SCRE for toxicity would be appropriate at this time, even though toxicity exceedances are unrelated to VWRF tertiary treated flows. **However, Ventura Water requests this listing be reevaluated once the data is appropriately aggregated and averaged.** *Figure* 5 *Effluent and Receiving Water Toxicity* **[See the comment letter for Figure 5]**	collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.8	**ChemA** ChemA is being included on the 303(d) list without any supporting data. The reasons for its listing are that the U.S. EPA approved a TMDL for the estuary in 2011. However, no data, historic or otherwise, were used to support the continued placement on this list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of ChemA on the 303(d) list.**	ChemA is a suite of bio-accumulating pesticides that includes aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorocyclohexane (HCH) (including lindane), endosulfan, and toxaphene. ChemA was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. The 1998 303(d) listing (and subsequent listings) for Chem A were predominately based on fish tissue concentrations of toxaphene. Los Angeles Water Board developed a TMDL for toxaphene in

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		fish tissue in the Santa Clara River Estuary in 2010, which was approved by EPA in 2011. Source analysis showed that the source of toxaphene was irrigated agriculture and the TMDL was adopted as a single regulatory action through the renewal of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands. The agricultural discharges regulated by the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands monitor for toxaphene and chlordane. During the next listing cycle, when Water Board staff is able to review this more recently collected monitoring data, staff may recommend revision of the 303(d) list including, potentially, a simplification of the list, by removing Chem A because the toxaphene and chlordane data more appropriately represent the impairment or non-impairment of the Estuary.
32.9	**Toxaphene** Similar to ChemA, toxaphene was included on the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. Based on data collected semiannually by the VWRF, toxaphene has not even been detected in either the effluent or the receiving water in recent memory. **Ventura Water requests that recent readily available data be taken into consideration when assessing the placement of toxaphene on the 303(d) list.**	Similar to ChemA, toxaphene was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.10	**Indicator Bacteria** Similar to ChemA and toxaphene, indicator bacteria was included in the 303(d)	Indicator Bacteria was placed on the 303(d) list for

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	list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of indicator bacteria on the 303(d) list.**	the Santa Clara River estuary prior to 1998 (this impairment was originally called "coliform bacteria"). Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. The Los Angeles Water Board developed a TMDL for indicator bacteria in 2010, which was approved by USEPA in 2012. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.11	Summary/Conclusion Ventura Water appreciates the opportunity to comment on the proposed 303(d) list. Based on the analysis presented above using more recently collected, readily available data that properly represents existing conditions in the SCRE (2012 - 2016), our findings include: • Appropriate ammonia data were not considered in the proposed listing and current data do not meet the Listing Policy criteria for 303(d) listing. • A listing for pH is not warranted in light of reference conditions for pH within estuaries, which indicates that steady state pH values in compliance with water quality objectives are not biologically attainable even in high functioning estuaries. • Nitrate should be delisted based on relevant Listing Policy criteria. • Toxicity is unrelated to VWRF discharges of tertiary treated water to the SCRE, and the listing should be reevaluated once the data is appropriately aggregated and averaged.	Comments noted. See response to comment 32.4 for ammonia, 32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.

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	• Chem A, Toxaphene, and Indicator Bacteria listings did not include recent data and should be reevaluated based on current data. It is important to note the City has been conducting studies on the SCRE since 2009 per the special studies requirements in the NPDES permits for the VWRF. These studies analyze the existing discharge impacts/benefits to aquatic habitat, and evaluate alternatives that include a reduction in discharge, improvement in discharge water quality, or a combination of both, for the purpose of improving aquatic habitat. These studies are site specific, taking into account the listed species using or occupying the SCRE, and the associated physical/chemical parameters that contribute to site specific aquatic habitat conditions. The results of the studies will be presented in the Phase 3 Estuary Studies Report (expected January 2018), and will provide a detailed understanding of the SCRE and information relevant to the 303(d) listing process.	

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

To: Interested Persons

From: Renee Purdy, Section Chief
Regional Programs

Date: April 26, 2017

Subject: **Notice of change to Item 9, "Consideration of the proposed revisions to the Clean Water Act section 303(d) List of impaired waterbodies in the Los Angeles Region" on the May 4, 2017 Los Angeles Regional Water Quality Control Board meeting agenda**

Item 9, Consideration of the proposed revisions to the Clean Water Act section 303(d) List, was previously noticed as an action item on the May 4, 2017 Board agenda. The Los Angeles Water Board received a significant number of written comments in response to the public notice and comment period, which ended on March 30, 2017. Board staff is actively working to respond to these comments and revise the proposed 2016 303(d) list, where appropriate.

Due to the extensive number of listing decisions and associated lines of evidence involved, and in order to have sufficient time to make the appropriate revisions prior to a decision on the Los Angeles Region's 303(d) list, Item 9 has been changed to a Board workshop rather than an action item. The workshop format will allow Board staff to discuss the 303(d) listing process with the Board members and stakeholders as well as provide the status of Board staff's response to comments. The update provided on the response to comments will include a discussion of the types of revisions to the proposed 303(d) list that will be made in response to comments. Some of these revisions include correcting lines of evidence that addressed beneficial uses that should not have been assessed (for example, P* MUN use designations); creating and assessing new lines of evidence for data submitted by August 2010 that were not included in the State's assessment database; and correcting decisions where sampling data were misapplied to a waterbody.

The Los Angeles Water Board's goal is to forward to the State Water Resources Control Board (State Water Board) a regional 303(d) list that includes decisions based on all data submitted by the August 2010 deadline; complies with the State's Listing Policy; and adheres to the 2016 303(d) listing cycle guidelines provided by the State Water Board. The State Water Board has a goal of finalizing the 2014 and 2016 303(d) lists by early fall 2017. A Board workshop at the regional level will better allow for a thorough discussion of the issues and for the State Water Board and the Los Angeles Water Board to meet their goals.

After the May 4, 2017 Board workshop, Los Angeles Water Board staff will continue to revise the 303(d) list, as appropriate, per comments received and any direction provided by the Board during the workshop. Los Angeles Water Board staff will not bring the 2016 303(d) list back to the Los Angeles Water Board for action. Instead, Los Angeles Water Board management and staff will provide a recommendation to the State Water Board and the State Water Board will consider approval of the Los Angeles Region's 2016 303(d) list, along with the other remaining Regional Water Boards' 303(d) lists, at a future State Water Board meeting.

We also note that the notice of "Public Hearing and Opportunity to Comment on the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region" dated February 8, 2017, included the following language:

> ***IV. FUTURE REVIEW BY STATE WATER BOARD***
>
> *To request the State Water Resources Control Board (State Water Board) or Executive Director of the State Water Board review specific listing recommendations approved by the Los Angeles Water Board, the request must be submitted to the State Water Board within 30 days after the Los Angeles Water Board approval…*

With this revised approach, a request within 30 days will not be necessary. Instead, stakeholders can respond directly to the State Water Board when it releases its combined 2014 and 2016 303(d) list for public comment. The Los Angeles Water Board will provide notice to stakeholders and post on its website revisions to the 303(d) list per the comments received prior to the State Water Board's release of the combined 2014 and 2016 303(d) list for public comment.

The workshop will be held at the Los Angeles Water Board's regularly scheduled board meeting on:

Date:	Thursday, May 4, 2017
Time:	9:30 a.m.
Place:	City of Pasadena Council Chambers 100 North Garfield Avenue Pasadena, California 91101

Please check the Los Angeles Water Board's website (http://www.waterboards.ca.gov/losangeles/) for the most up-to-date public meeting date and location as they are subject to change.

For additional information regarding this notice, please contact Dr. Jun Zhu at Jun.Zhu@waterboards.ca.gov or (213) 576-6681 or Dr. L.B. Nye, at LB.Nye@waterboards.ca.gov or at (213) 576-6785.

Lyris Name: 303(d)
4/26/17

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11/9/2010 15:47	martinagarnier@gmail.com	Martin Garnier
11/9/2010 15:56	seth.carr@lacity.org	seth carr
11/9/2010 16:40	ecomom2008@gmail.com	Chris Rowe
11/9/2010 16:48	2tweet@gmail.com	Teresa Williams
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow

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11/9/2010 23:34	acecivil@aol.com	Carlos Alba
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11/10/2010 8:32	gvazquez@ci.cypress.ca.us	Gonzalo Vazquez
11/10/2010 14:32	hgraumlich@calleguas.com	Henry Graumlich
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/14/2010 13:00	scott@fireconsult.net	SCOTT FRANKLIN
11/15/2010 7:46	CaliforniaWaterTechnologies@gmail.com	Carlos Aguilar
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11/18/2010 13:23	roger@ceitoday.com	Roger Pearson
11/28/2010 20:36	lmckenney@sawpa.org	Larry McKenney
1/5/2011 11:54	jpekala@environcorp.com	John Pekala
1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
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1/25/2011 18:02	dgrilley@sgch.org	Daren Grilley
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4/22/2011 6:18	mohsen.dkhili@dnr.mo.gov	Mohsen Dkhili
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
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1/22/2013 8:04	mbenavides@dpw.lacounty.gov	Marcela Benavides
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1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/26/2013 10:24	info@pooprintswest.com	kevin sharpton
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
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4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
4/8/2013 13:57	nprice@lawa.org	Nancy Price
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
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4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
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2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
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6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
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7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
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7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
3/23/2010 11:19	tony.pepe@csun.edu	Tony Pepe
4/1/2010 10:47	jzane@padreinc.com	Jeffrey Zane
4/7/2010 6:13	pat.covert@valero.com	Patrick Covert
4/7/2010 9:04	hseverin@elsegundo.org	h severin
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/13/2010 15:03	tech@normbrown.com	Norm Brown
4/19/2010 9:55	llough@bbinfrastructureinc.com	Lynn Lough
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/28/2010 13:58	msclimenti@mwdh2o.com	Mike Sclimenti
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
5/26/2010 8:55	morton.price@lacity.org	Morton Price
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
6/29/2010 15:32	ken.ezoe@chemoil.com	Ken Ezoe
7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/27/2010 12:38	conkle@geoconinc.com	Mike Conkle
8/23/2010 11:36	kmattfeld@portla.org	Kenneth Mattfeld
9/3/2010 12:22	hjgarcia@farmerjohn.com	Hector J. Garcia
9/7/2010 14:00	dohertysean@mac.com	Sean Doherty
9/9/2010 15:25	acruz@ci.burbank.ca.us	Alvin Cruz
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
9/27/2010 15:04	miguel@urbansemillas.com	Miguel Luna
9/27/2010 15:08	chad_hymel@yahoo.com	Chad Hymel
9/27/2010 15:08	walt.young@mrca.ca.gov	Walt Young
9/27/2010 15:09	sbacklar@folar.org	Shelly Backlar
9/27/2010 15:10	jburns84@hotmail.com	Jim Burns
9/27/2010 15:10	jeffreytipton@aol.com	Jeffrey Tipton
9/27/2010 15:15	alexander.robinson@gmail.com	Alexander A Robinson
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11/9/2010 16:59	srojas@newhall.com	Sam Rojas
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
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11/10/2010 5:47	wlaton@earthforensics.com	Richard Laton
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11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/15/2010 9:11	bdingman@lvmwd.com	Brett Dingman
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
11/18/2010 13:23	roger@ceitoday.com	Roger Pearson
11/28/2010 20:36	lmckenney@sawpa.org	Larry McKenney
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1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
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11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
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2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
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10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/15/2012 8:15	bdawadi@civiltec.com	Bed Dawadi
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/31/2012 15:37	jlanza@lacsd.org	Jodie Lanza
11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/20/2012 16:02	betsye@lwa.com	Betsy Elzufon
1/3/2013 7:48	atwater.richard@gmail.com	Richard Atwater
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/3/2013 17:47	RSorensen@calwater.com	Ronald Sorensen
1/9/2013 10:12	ccarreon@ecokai.com	Carlos Carreon
1/9/2013 10:43	jnfireball@yahoo.com	Jane E. Nelson

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1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/21/2013 18:02	melissa@malibutimes.com	Melissa Caskey
1/22/2013 8:04	mbenavides@dpw.lacounty.gov	Marcela Benavides
1/23/2013 14:15	gcoon@dpw.lacounty.gov	Giles Coon
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
4/17/2013 12:40	bbondy@calleguas.com	Bryan Bondy
4/24/2013 20:58	christiankiillkkaa@gmail.com	Christian Kiillkkaa
4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
4/29/2013 13:26	shokoufe.marashi@lacity.org	Shokoufe Marashi
5/1/2013 7:20	kelly.hahs@ventura.org	Kelly Hahs
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
6/3/2013 15:33	Cy.Oggins@slc.ca.gov	
6/3/2013 15:33	Jennifer.Lucchesi@slc.ca.gov	
6/26/2013 9:32	kkwan@semprautilities.com	Karen Kwan
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
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8/21/2013 11:58	deborah.deets@lacity.org	deborah deets
9/10/2013 9:49	ehorn@kcmgroup.net	Erika Horn
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9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
10/2/2013 12:23	emmanuel.riclet@gmail.com	Emmanuel Riclet
10/7/2013 16:53	dmoore@environcorp.com	David Moore
10/13/2013 22:00	alan.cade@aol.com	Alan Cade
10/19/2013 8:17	jon.green@ch2m.com	Jonathan M Green
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1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
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3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
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4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
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2/2/2015 12:48	samick@rma.org	Sarah Amick
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2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
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7/2/2015 10:07	chris.speelman@gerdau.com	Chris Speelman
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker

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9/1/2015 8:34	matiwaiya@wishtoyo.org	Mati Waiya, Chumash Tribal Rep.
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/19/2015 15:49	jbryson@soundearthinc.com	James Bryson
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin.	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 9:50	anthony.brown@aquilogic.com	anthony brown
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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12/1/2006 2:38	mstevens@kinneticlabs.com	Marty Stevenson
12/1/2006 10:23	Peggy.Nguyen@lacity.org	Peggy H. Nguyen
2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
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3/26/2007 14:40	mpeterson@kpcc.org	Molly Peterson
4/5/2007 16:20	justin@calcattlemen.org	Justin Oldfield
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5/10/2007 10:06	rob.osborne@redondo.org	Rob Osborne
5/30/2007 21:16	saeedtabatabaeepour@yahoo.com	Saeed Tabatabaeepour
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
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9/3/2010 12:22	hjgarcia@farmerjohn.com	Hector J. Garcia
9/22/2010 11:07	ana.deanda@longbeach.gov	Ana DeAnda
10/4/2010 9:18	kjames@healthebay.org	Kirsten James
10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
11/9/2010 15:30	ogalang@dpw.lacounty.gov	Oliver Galang
11/9/2010 15:35	rrozz@parks.ca.gov	Richard Rozzelle
11/9/2010 15:38	wrlindinc@aol.com	Wes Lind
11/9/2010 15:47	dparkinson@geosyntec.com	David Parkinson
11/9/2010 15:47	martinagarnier@gmail.com	Martin Garnier
11/9/2010 15:56	seth.carr@lacity.org	seth carr
11/9/2010 16:24	bbarker@bh.lacounty.gov	Betsy Barker
11/9/2010 16:40	ecomom2008@gmail.com	Chris Rowe
11/9/2010 16:49	rscoultas@msn.com	robert d. coultas
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 20:36	lakesidemedia@earthlink.net	Timothy Bramet
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 9:50	cynthia_gabaldon@urscorp.com	Cynthia Gabaldon
11/12/2010 10:25	jfutoran@parks.ca.gov	John Futoran
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
11/28/2010 20:36	lmckenney@sawpa.org	Larry McKenney
12/9/2010 11:21	tbarber@cityoflancasterca.org	Trevin W. Barber
12/23/2010 20:27	info@ecokai.com	Jim Burton
1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
1/16/2011 16:06	jessica@ecoadapt.org	Jessica Hitt
1/25/2011 18:02	dgrilley@sgch.org	Daren Grilley
1/28/2011 13:08	deana@aquabio.us	DeAna Vitela-Hayashi
2/5/2011 15:56	stoyoda@indio.org	Sara Toyoda
2/8/2011 14:00	matzrubber@sbcglobal.net	Phillip Jensen
2/24/2011 20:43	ggeckeler@geoinc.org	Grant Geckeler
3/10/2011 9:37	rhs@malibufamilywines.com	Ronald H. Semler
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4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/6/2011 12:42	levisimons@gmail.com	Ariel Levi Simons
4/19/2011 14:22	jaynes@ddsd.org	Jayne Strommer
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5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
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11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
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10/14/2013 15:27	vbrar@cerritos.us	vince brar
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
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11/18/2013 17:19	mpassanisi@dpw.lacounty.gov	Mercedes Passanisi
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/26/2013 9:55	antonia.graham@polb.com	Antonia Castro-Graham
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/27/2014 18:18	richard@haimann.com	Richard Haimann

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2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
4/27/2014 7:59	mikeri@ci.salinas.ca.us	Michael Ricker
5/13/2014 9:07	flopez@harris-assoc.com	Frank Lopez
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/16/2014 11:48	alan.cade@aol.com	Alan Cade
6/25/2014 14:04	erojas@wrd.org	Esther Rojas
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/17/2014 12:55	SGallant@ci.monrovia.ca.us	Sharon Gallant
7/17/2014 20:11	garzamourino@att.net	Rosa Garza-Mourino
7/24/2014 9:59	hicksbr@wlac.edu	bruce Hicks
8/12/2014 10:07	mtse@beverlyhills.org	Michelle Tse
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/3/2014 15:31	shilpa.gupta@ladwp.com	Shilpa Gupta
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9/22/2014 12:32	allysonc42@outlook.com	Allyson Bakboychuk
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/10/2014 16:07	leftonk@metro.net	Kyle Lefton
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11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
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12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
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2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/17/2015 16:31	vgrossman@wishtoyo.org	Valarie Grossman
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
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5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/27/2014 16:55	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/29/2014 11:29	george.muehleck@urs.com	George Muehleck
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/5/2014 11:56	ariana@capca.com	Ariana Zamora
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
9/12/2014 16:03	melissa.gunter@waterboards.ca.gov	Melissa Gunter
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
9/30/2014 14:28	pete.osmolovsky@waterboards.ca.gov	Peter Osmolovsky
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/21/2014 23:49	rsurles1@sbcglobal.net	Rhonda M Surles
11/6/2014 9:33	emily@watershedhealth.org	Dr Emily Daniels
11/11/2014 16:35	bjatkins@atkinsenvironmental.com	B. J. Atkins
11/14/2014 10:01	jgamble@lvmwd.com	Jacqy Gamble
11/18/2014 7:06	bob.sun@ladwp.com	Bob Sun
11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
12/2/2014 8:20	mark.ching@ladwp.com	Mark Ching
12/2/2014 9:23	pamalbers@sbcglobal.net	Pamela Albers
12/12/2014 13:42	tmoorhouse@cleanlake.com	Tom Moorhouse
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/19/2015 9:44	croncw@cdmsmith.com	charles cron
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
1/29/2015 15:57	serge.haddad@ladwp.com	Serge Haddad
1/30/2015 9:07	abraham.razon@lacity.org	Abraham Razon
2/2/2015 9:00	stephen.opot@lacity.org	Stephen Opot
2/2/2015 12:48	samick@rma.org	Sarah Amick
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo

3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 7:08	greg.reed@ladwp.com	Greg Reed LADWP
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/17/2015 15:15	mark.cady@cdfa.ca.gov	Mark Cady
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/25/2015 13:13	sue@wspa.org	Sue Gornick
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/1/2015 14:50	laura@houstonmagnani.com	Laura Cottrell
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6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
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11/4/2015 16:08	mnaftaly@dudek.com	Matt Naftaly
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11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
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1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
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2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/18/2016 13:38	aaron.s.miller@water.ca.gov	Aaron Miller
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2/10/2017 15:46	marcelo.garbiero@arcadis.com	Marcelo Garbiero
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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2/17/2017 8:27	mathewwatson@lacsd.org	Mathew Watson
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3/10/2017 15:01	Bryand.Duke@wildlife.ca.gov	Bryand Duke
3/24/2017 11:24	dbmarcum@ucanr.edu	Daniel B Marcum
3/30/2017 16:32	skramer@percwater.com	Sam Kramer
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4/26/17

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8/26/2004 12:56	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
8/3/2005 14:06	Jeff.Pratt@ventura.org	Jeff Pratt
8/3/2005 14:08	spaulsen@flowscience.com	Susan Paulsen
8/3/2005 14:09	kens@sccwrp.org	Ken Schiff
8/3/2005 14:09	sbarragan@ci.san-dimas.ca.us	Steve Barragan
8/3/2005 14:11	cinciong@ladpw.org	Carrie Inciong
8/3/2005 14:11	fwu@ladpw.org	Frank Wu
8/3/2005 14:11	ocramer@santa-clarita.com	Oliver Cramer
8/3/2005 14:13	mgold@healthebay.org	Mark Gold
8/3/2005 14:14	dsmith@waterboards.ca.gov	Deb Smith
8/3/2005 14:15	jnewman@waterboards.ca.gov	Jenny Newman
8/3/2005 14:16	vconway@lacsd.org	Vickie Conway
8/3/2005 14:17	bdepoto@ladpw.org	Bill Depoto
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/8/2005 10:08	allen.camp@sfcox.com	Allen F. Camp
9/23/2005 9:12	dnarrieta@aol.com	David Arrieta
9/26/2005 12:55	kwong@semprautilities.com	Karen Wong
9/26/2005 23:43	fkrieger@msn.com	Fred Krieger
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
10/14/2005 10:17	susanstark10@sbcglobal.net	Susan Stark
10/19/2005 14:39	mike@wspa.org	Mike Wang
10/19/2005 16:26	jerrod.j.newlander@boeing.com	Jerrod Newlander
10/21/2005 9:13	llarsen@rbf.com	laura larsen
10/25/2005 8:02	ggearheart@waterboards.ca.gov	Greg Gearheart
11/4/2005 12:06	info@smcca.org	George Wolfberg
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
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4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/11/2006 20:09	g.wolfberg@verizon.net	George Wolfberg
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
4/19/2006 4:26	annadbrat@yahoo.com	A Bee
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
4/28/2006 8:51	richard.a.haimann@mwhglobal.com	Richard Haimann
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
6/1/2006 8:25	csaylan@earthlink.net	charles saylan
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/17/2006 13:22	jpereira@ladpw.org	Jason Pereira
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9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
9/26/2006 13:49	rnf92679@yahoo.com	Raul N. Fernandez
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2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
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6/22/2007 18:29	hgest@burhenngest.com	Howard Gest
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10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
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5/9/2008 8:51	chrism@lwa.com	Chris Minton
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8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
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10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
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11/9/2010 15:38	wrlindinc@aol.com	Wes Lind
11/9/2010 15:47	martinagarnier@gmail.com	Martin Garnier
11/9/2010 15:56	seth.carr@lacity.org	seth carr
11/9/2010 16:32	kstpeters@earthconsultants.com	Kay St. Peters
11/9/2010 16:40	ecomom2008@gmail.com	Chris Rowe
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/12/2010 10:25	jfutoran@parks.ca.gov	John Futoran
11/14/2010 13:00	scott@fireconsult.net	SCOTT FRANKLIN
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
12/6/2010 6:34	dbroadbent@targheeinc.com	Dave Broadbent
1/7/2011 17:50	ira.brown@longbeach.gov	Ira Brown
1/18/2011 13:37	bbax@lacsd.org	Beth Bax
1/24/2011 11:30	vhevener@ci.arcadia.ca.us	Vanessa Hevener
2/2/2011 14:43	snania@forester.net	
3/10/2011 9:37	rhs@malibufamilywines.com	Ronald H. Semler
4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 12:39	jandkkracke@yahoo.com	John W. Kracke
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
5/2/2011 6:54	Debbie.Neev@gmail.com	Deborah Neev
5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
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5/12/2011 22:58	cyanda@gmail.com	Catherine Yanda
5/31/2011 16:57	charpole@newhall.com	Corey Harpole
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6/11/2011 22:08	humanhealthrisk@gmail.com	Daniel K. Lee
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12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/6/2015 20:11	susan.damron@ca.rr.com	Susan Damron
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1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
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2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
2/25/2015 22:47	sabrshirley@yahoo.com	Elliott M. Benson
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
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4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/20/2015 0:40	dawolford@prodigy.net	David Wolford
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5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
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5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
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3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/4/2005 11:50	rmontevideo@rutan.com	Richard Montevideo
3/4/2005 14:59	mrnolan@socal.rr.com	Nolan Farkas
3/5/2005 14:18	clarkjh@bv.com	James Clark
3/8/2005 7:43	lance.baroldi@claytonindustries.com	Lance Baroldi
3/10/2005 10:12	DLaff@ladpw.org	Daniel J. Lafferty
3/15/2005 10:54	lmcgovern@ci.camarillo.ca.us	Lucia McGovern
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
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3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
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4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
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2/16/2012 14:54	aclark@calwater.com	Allyson Clark
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
3/8/2012 9:59	kdjbio@gmail.com	Karen Jones
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:33	rhino0026@yahoo.com	John Parent
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
4/5/2012 17:06	meinerscanary@matilijasustainability.org	Elizabeth Anne von Gunten
4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
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6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
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3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder
3/8/2005 10:51	jreinhardt@lvmwd.com	Jeff Reinhardt
3/15/2005 10:54	lmcgovern@ci.camarillo.ca.us	Lucia McGovern
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/3/2013 12:16	ekunitake@dpw.lacounty.gov	Elaine Kunitake
4/8/2013 13:57	nprice@lawa.org	Nancy Price
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
5/2/2013 16:53	petebarbee@hotmail.com	Pete Barbee
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
5/31/2013 8:27	jcramsie@cc-eng.com	James R. Cramsie
6/10/2013 8:27	vaday@flowscience.com	Vada Yoon
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
8/13/2013 10:52	myoung@awattorneys.com	
8/21/2013 11:58	deborah.deets@lacity.org	deborah deets
8/27/2013 14:19	patrickt@ballonafriends.org	Patrick Tyrrell
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
10/2/2013 12:23	emmanuel.riclet@gmail.com	Emmanuel Riclet
10/14/2013 15:27	vbrar@cerritos.us	vince brar
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/18/2013 17:19	mpassanisi@dpw.lacounty.gov	Mercedes Passanisi
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/26/2013 9:55	antonia.graham@polb.com	Antonia Castro-Grahan
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/27/2014 18:18	richard@haimann.com	Richard Haimann

2/7/2014 11:11	larrykoch0516@yahoo.com	Larry Koch
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/13/2014 10:09	Elyramere@verizon.net	PAT BROWNE
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
2/24/2014 17:16	lara@lawaterkeeper.org	Lara Meeker
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
4/27/2014 7:59	mikeri@ci.salinas.ca.us	Michael Ricker
5/13/2014 9:07	flopez@harris-assoc.com	Frank Lopez
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/16/2014 11:48	alan.cade@aol.com	Alan Cade
6/25/2014 14:04	erojas@wrd.org	Esther Rojas
6/26/2014 11:25	emily@watershedhealth.org	Dr Emily Daniels
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/17/2014 12:55	SGallant@ci.monrovia.ca.us	Sharon Gallant
7/17/2014 20:11	garzamourino@att.net	Rosa Garza-Mourino
7/24/2014 9:59	hicksbr@wlac.edu	bruce Hicks
8/12/2014 10:07	mtse@beverlyhills.org	Michelle Tse
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/3/2014 15:31	shilpa.gupta@ladwp.com	Shilpa Gupta
9/11/2014 10:57	bdietrick@rmcwater.com	Brian Dietrick
9/16/2014 9:47	jcarlin@fullerton.edu	Joe Carlin
9/16/2014 10:40	aguzmanperez@dpw.lacounty.gov	Amanda Guzman-Perez
9/22/2014 12:32	allysonc42@outlook.com	Allyson Bakboychuk
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/10/2014 16:07	leftonk@metro.net	Kyle Lefton
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/21/2014 23:49	rsurles1@sbcglobal.net	Rhonda M Surles
10/25/2014 7:25	tastyasstatted12@gmail.com	Audrina Jackson
10/27/2014 9:12	carriola@montereypark.ca.gov	Chris Arriola
11/17/2014 11:59	madisont@metro.net	Travis J Madison
11/21/2014 10:03	laureneverett@kennedyjenks.com	Lauren Everett
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
12/15/2014 9:42	kmorris@hermosabch.org	Kristy Morris
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones

1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/17/2015 16:31	vgrossman@wishtoyo.org	Valarie Grossman
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 10:58	maa65993@csun.edu	Mike Antos
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
3/31/2015 16:52	bponton@bh.lacounty.gov	Brenda Ponton
4/15/2015 15:09	Elena@usgvmwd.org	Elena Layugan
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/22/2015 8:16	Myrna.Pietri@lacity.org	Myrna Pietri
5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/20/2015 9:34	lmustafa@ci.claremont.ca.us	Loretta Mustafa
6/26/2015 10:19	vivian.marquez@lacity.org	Vivian Marquez
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/6/2015 8:51	apartie@jlha.net	Alison Partie
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/3/2015 10:02	jsira@cityofinglewood.org	Jesse Sira
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/24/2015 16:22	kerry.beane@agralogics.com	Kerry Beane
8/31/2015 13:08	sal@ebaplanning.com	Salvador Lopez Jr.
8/31/2015 16:29	ali.poosti@lacity.org	Ali Poosti
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
10/13/2015 9:00	lcyrus@cityofalhambra.org	Latoya Cyrus

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11/2/2015 11:59	gchavez@cityofsignalhill.org	grissel chavez
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin.com	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/8/2016 9:31	chelovd@gmail.com	Marcelo DIaz
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 7:50	Hamid.Tadayon@lacity.org	Hamid Tadayon
2/25/2016 7:51	kevin@kjservices.net	kevin sales
2/25/2016 8:00	brad.lindahl@redondo.org	Bradley Lindahl
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 8:57	jbrickey@jlha.net	Jillian Brickey
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 11:00	charles.herbertson@culvercity.org	Charles D. Herbertson
2/27/2016 11:36	ochi@ci.monrovia.ca.us	Oliver Chi
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
3/23/2016 11:49	abakarian@elcapenv.com	Ara Bakarian
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/19/2016 10:54	lnichols@cabrilloedc.org	
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/9/2016 12:55	sandilp@centralbasin.org	Sandi Linares-Plimpton
5/23/2016 8:42	michael.partain@vmsinc.org	Michael E. Partain
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
8/17/2016 21:57	LouisaStephen@yahoo.com	Louisa Stephen
8/24/2016 6:54	lhempe@lynwood.ca.us	Lorry Hempe
8/25/2016 15:06	wwinter@dpw.lacounty.gov	Bill Winter
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/1/2016 7:43	eddyteasdale@kennedyjenks.com	Eddy Teasdale
9/7/2016 15:56	nancy@farmbureauvc.com	Nancy Broschart
9/7/2016 15:59	zoe.carlson@ventura.org	Zoe Carlson
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
9/9/2016 13:21	ghooper@mnwd.com	GREGG HOOPER
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo

10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/19/2016 11:38	rmacnamara@hswri.org	Ruairi MacNamara
11/7/2016 11:34	dana.brown@ngem.com	Dana R. Brown
11/10/2016 8:41	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 9:02	laplante@pcl.com	Lisa Plante
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/15/2017 11:14	scott.seyfried@waterboards.ca.gov	Scott Seyfried
2/16/2017 20:33	edm@malibuonline.com	EUGENE DONALD MICH
2/17/2017 8:27	mathewwatson@lacsd.org	Mathew Watson
3/7/2017 9:25	tmarella@rinconconsultants.com	Travis Marella
3/10/2017 15:01	Bryand.Duke@wildlife.ca.gov	Bryand Duke
4/6/2017 8:32	info@cleanwatertechnologies.net	Michael Omary
4/11/2017 17:20	ron.reeves@longbeach.gov	Ron Reeves
4/20/2017 12:22	yvana.hrovat@amecfw.com	Yvana Hrovat

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Lyris Name: NPS Horse Livestock
4/26/17

DATEJOINED_	EMAILADDR_	FULLNAME_
7/6/2009 11:29	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/10/2015 13:01	rcendejas@ovs.org	Robert Cendejas
2/11/2015 14:55	teaguecaitlyn@gmail.com	Caitlyn Teague
2/12/2015 10:41	denis@horster.com	Denis Murrin
2/12/2015 16:05	mary_bergen1@roadrunner.com	Mary Bergen
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/17/2015 9:40	mtlopez@mwdh2o.com	Maria Lopez
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/18/2015 8:37	edith.hannigan@bof.ca.gov	Edith Hannigan
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/22/2016 11:43	amanda.hall@sen.ca.gov	Amanda Hall
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 7:50	Hamid.Tadayon@lacity.org	Hamid Tadayon
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/23/2016 8:42	michael.partain@vmsinc.org	Michael E. Partain

5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/6/2016 17:07	cmmartin@co.slo.ca.us	Cathy Martin
6/22/2016 15:12	DianaE@lwa.com	Diana Engle
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
8/2/2016 14:14	lexieverhart.vcrcd@gmail.com	Lexi Everhart
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/30/2016 14:36	glen.osterhage@waterboards.ca.gov	Glen Osterhage
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/15/2017 11:14	scott.seyfried@waterboards.ca.gov	Scott Seyfried
3/7/2017 9:25	tmarella@rinconconsultants.com	Travis Marella
3/7/2017 15:27	Tachiki.Nicole@epa.gov	Nicole Tachiki

Lyris Name: NPS Hydromodification
4/26/17

DATEJOINED_	EMAILADDR_	FULLNAME_
10/5/2000 0:00	Theresa.Rodgers@waterboards.ca.gov	Theresa Rodgers
1/3/2001 0:00	aharrington@ci.claremont.ca.us	Andrea Harrington
4/16/2002 0:00	kruffell@lacsd.org	Kristen Ruffell
8/15/2002 0:00	robert_wu@dot.ca.gov	Bob Wu
4/22/2003 0:00	vconway@lacsd.org	Victoria O. Conway
4/24/2003 0:00	schroederdj@cdm.com	Donald Schroeder
10/28/2003 0:00	eralston@ladpw.org	Elizabeth Ralston
10/30/2003 0:00	kathleen.enve@verizon.net	Kathleen Mcgowan
8/27/2004 16:17	tlange@santa-clarita.com	Travis Lange
11/19/2004 10:52	srojas@newhall.com	Sam Rojas
12/1/2004 14:54	JEndicott@aei-casc.com	Jeff Endicott
12/28/2004 7:34	asaponara@treadwellrollo.com	Anthony Saponara
12/30/2004 1:29	Joemamabush@netzero.com	Joe Bell
1/6/2005 15:15	tbilezikjian@rbf.com	Tanya Bilezikjian
2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 11:12	lorettac@ci.irwindale.ca.us	Loretta Corpis
2/28/2005 12:53	trak@trakenviro.com	Bradford S. Newman
2/28/2005 16:44	baykeeper@smbaykeeper.org	Tracy Egoscue
3/1/2005 9:59	blwilliams@ci.ventura.ca.us	Robert L. Williams
3/1/2005 10:40	RWPearson@aol.com	Roger W. Pearson
3/1/2005 10:55	jkelly@toaks.org	JoAnne Kelly
3/1/2005 11:00	cstone@ladpw.org	Christopher Stone
3/1/2005 13:01	mzirbel@atozlaw.com	Mark Zirbel
3/1/2005 14:04	gamah@waterboards.ca.gov	Ginachi Amah
3/1/2005 14:53	jgibson@torrnet.com	Jeffery W. Gibson
3/1/2005 15:03	akuhlman@ci.camarillo.ca.us	Anita Kuhlman
3/1/2005 15:07	jranells@ci.la-verne.ca.us	JR Ranells
3/1/2005 15:07	skennedy@enfact.net	Sheila Kennedy
3/2/2005 7:13	canderson@ci.azusa.ca.us	Chet F. Anderson
3/2/2005 9:56	Citymanager@hiddenhillscity.org	Cherie L. Paglia
3/2/2005 11:01	toleary@longbeach.gov	Tom Leary
3/2/2005 12:01	bottorffm@verizon.net	Ron Bottorff
3/2/2005 16:53	jhunter@jlha.net	John Hunter
3/3/2005 8:38	ekiepke@willdan.com	Elroy Kiepke
3/3/2005 9:18	kkeeling@bonterraconsulting.com	Kristin Keeling
3/3/2005 10:09	mlcoffee@nossaman.com	Mary Lynn Coffee
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/4/2005 6:57	RKUBOMO@ladpw.org	Rod Kubomoto
3/4/2005 14:59	mrnolan@socal.rr.com	Nolan Farkas
3/8/2005 7:43	lance.baroldi@claytonindustries.com	Lance Baroldi
3/9/2005 11:53	jvanwagn@mailbox.lacity.org	Julie Van Wagner
3/15/2005 10:54	lmcgovern@ci.camarillo.ca.us	Lucia McGovern
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
4/5/2005 9:52	fchin@ladpw.org	Frank Chin
9/23/2005 9:17	paul.tantet@ventura.org	Paul Tantet
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo

10/25/2005 8:02	ggearheart@waterboards.ca.gov	Greg Gearheart
11/2/2005 14:00	Gerhardt.Hubner@ventura.org	Gerhardt Hubner
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/24/2006 16:50	jtopel@waterboards.ca.gov	Jack Topel
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
1/26/2006 7:28	rorton@lvmwd.com	Dr. Randal Orton
2/23/2006 9:23	cthrush@jacksonandperkins.com	Christine Thrush
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
4/25/2006 14:31	hgallardy@ladpw.org	Heather Gallardy
4/28/2006 8:51	richard.a.haimann@mwhglobal.com	Richard Haimann
5/4/2006 16:09	carla.cummings@westonsolutions.com	Carla Cummings
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
5/30/2006 12:12	clayton.yoshida@ladwp.com	Clayton Yoshida
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/17/2006 13:22	jpereira@ladpw.org	Jason Pereira
9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
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12/1/2006 10:23	Peggy.Nguyen@lacity.org	Peggy H. Nguyen
12/20/2006 15:37	leo@wecklabs.com	Leo Raab
1/2/2007 22:58	srlee@waterboards.ca.gov	Shin-Roei Lee
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1/12/2007 8:20	cm_consulting@comcast.net	Cliff Moriyama
3/6/2007 8:05	tfung@dot.ca.gov	Tom Fung
3/14/2007 16:53	krubin@ladwp.com	Katherine Rubin
3/26/2007 14:40	mpeterson@kpcc.org	Molly Peterson
4/5/2007 16:20	justin@calcattlemen.org	Justin Oldfield
4/12/2007 11:02	sschales@ladpw.org	T Scott Schales
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5/14/2007 9:46	cmattingly@ci.port-hueneme.ca.us	Carrie Mattingly
5/30/2007 21:16	saeedtabatabaeepour@yahoo.com	Saeed Tabatabaeepour
7/18/2007 14:29	Kalam.Cheung@lacity.org	Kalam Cheung
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/2/2007 17:23	apapa@ci.seal-beach.ca.us	Alvin Papa
8/7/2007 9:51	obuje@hotmail.com	victor ukpolo
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
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4/17/2008 16:32	sma@waterboards.ca.gov	Sue Ma
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1/21/2009 11:57	mharrison@diamondwest.net	Mike Harrison
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2/6/2012 11:02	Ana.Alvarez@ocpw.ocgov.com	Ana Alvarez
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 11:12	melissa.pamer@dailynews.com	Melissa Pamer
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3/25/2012 16:12	laustin@geosyntec.com	Lisa Austin
4/9/2012 9:31	sweetgrass.environmental@gmail.com	Julie Clark De Blasio
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3/10/2014 16:29	coury.mckinlay@aes.com	Coury McKinlay
3/26/2014 18:12	snichols@allenmatkins.com	Sandi Nichols
3/29/2014 7:17	charles.michaels@laaco.net	Charles Michaels
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/25/2014 13:08	carlson@mcandc.com	Stephen Carlson
4/28/2014 10:10	dwidgerow@brownandwinters.com	Davin Widgerow
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
6/11/2014 20:39	Econard@counsel.lacounty.gov	Erik Conard
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
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10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
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11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/14/2011 18:35	rcking@rain.org	Robert King
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/23/2011 8:45	melanie_beck@nps.gov	Melanie Beck
11/23/2011 11:41	mgarcia@tvmwd.com	Mario Garcia
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12/7/2011 14:53	pauldebusschere@gmail.com	Paul DeBusschere
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
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11/28/2007 12:54	dmcalister@geotransinc.com	David McAlister
12/11/2007 12:52	Karen.Ciccone@ca.rr.com	Karen Palladino Ciccone
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin
1/28/2008 12:48	DianaE@lwa.com	Diana Engle
2/28/2008 17:33	dparkinson@geosyntec.com	David Parkinson
3/21/2008 12:05	barbaradye@cox.net	Barbara Dye
3/24/2008 14:26	jchien@parks.lacounty.gov	Jui Ing chien
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/5/2008 11:07	s.gasca@pcrnet.com	Stephanie Gasca
5/7/2008 13:31	casmith@smithmooreassoc.com	Catherine A. Smith
5/9/2008 8:51	chrism@lwa.com	Chris Minton
5/13/2008 12:13	gsparks@waterboards.ca.gov	Genevieve Sparks
6/5/2008 11:06	hwylie1@hotmail.com	Heather Wylie
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
6/12/2008 4:40	GlennBaileySFV@yahoo.com	Glenn Bailey
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/17/2008 9:48	maricela1977@yahoo.com	Maricela Gomez
7/17/2008 10:34	heyrunt@yahoo.com	Linda Porta
8/1/2008 13:53	tania.bonfiglio@ladwp.com	Tania Bonfiglio
8/5/2008 12:43	dhock@rmcwater.com	Dawn Hock
8/6/2008 15:41	jdougall@lvmwd.com	Jan Dougall
8/12/2008 7:43	jane@jlstormwater.com	Jane Ledford
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
8/14/2008 15:39	bhill@fs.fed.us	Barry Hill
8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/16/2008 14:44	swernette@trcsolutions.com	Stephanie Wernette
9/17/2008 10:59	rambrose@ucla.edu	Richard F. Ambrose
9/23/2008 11:12	Rosie.Villar@waterboards.ca.gov	Rosie Villar
9/27/2008 20:10	2tweet@gmail.com	Teresa Williams
10/2/2008 3:14	ECOMOM2008@gmail.com	Christine L. Rowe

10/16/2008 10:44	barry@winefieldassoc.com	Barry White
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11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
11/5/2008 17:07	kathleen.bullard@tetratech.com	Kathleen Bullard
12/6/2008 12:49	rfields68@aol.com	Robert Fields
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12/9/2008 18:36	oceanguy02@yahoo.com	Chuck Cleeves
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
12/18/2008 8:09	nisheeth.kakarala@gmail.com	Nisheeth Kakarala
12/23/2008 15:59	ahenderson@biasc.org	Andrew Henderson
1/5/2009 11:40	tmcmahon@moffattnichol.com	Tonia McMahon
1/7/2009 14:08	jrp@astound.net	John Peterson
1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
1/19/2009 18:15	michael.a.beasley@boeing.com	Michael Beasley
1/26/2009 14:07	ajirik@portla.org	Andrew Jirik
1/26/2009 14:31	Jeanine.Hutton@ci.oxnard.ca.us	Jeanine Hutton
2/5/2009 8:20	hubertus.cox@lacity.org	Hubertus H.J. Cox
2/6/2009 17:43	olivia@malibutimes.com	Olivia Damavandi
2/6/2009 20:25	eugene.allevato@woodbury.edu	Eugene Allevato
3/18/2009 15:53	lesliejdaigle@aol.com	Leslie Daigle
4/2/2009 9:58	sarahd@nautilusenvironmental.com	Sarah Douglass
4/6/2009 19:07	janswift@live.com	jan andrew swift
4/7/2009 6:53	bruceheyman@cox.net	Bruce Heyman
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5/27/2009 12:47	sadie.iverson.az@gmail.com	Sadie Iverson
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6/9/2009 10:25	rdalfarra@sespeconsulting.com	Rob DalFarra
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7/20/2009 16:47	jnewman@waterboards.ca.gov	Jenny Newman
7/28/2009 10:38	damon.wing@ventura.org	Damon Wing
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3/9/2010 9:38	mkinsler@wheelerandgray.com	Mary Kinsler
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
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6/3/2010 11:25	landtrust@ballona.org	Michele Bigelow
6/11/2010 12:43	dale@farmbureauvc.com	Dale Zurawski
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
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2/17/2011 14:19	lharris@casitaswater.com	Larry W Harris
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
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6/30/2011 20:06	liz@southernsustainableresources.org	Liz Kirchoffer Pectol
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8/4/2011 8:42	jbrown@malibucity.org	Jennifer Brown
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8/23/2011 8:51	zoe.carlson@ventura.org	Zoe Carlson
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
8/29/2011 14:09	Julie_Carver@ci.pomona.ca.us	Julie Carver
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
9/11/2011 18:15	tweybright@gmail.com	Teague Weybright
9/11/2011 20:56	davidrobinson77@gmail.com	David Robinson
9/16/2011 9:48	ply@wrd.org	Phuong Ly

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10/31/2011 10:33	ashlid@lwa.com	Ashli Desai
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11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/8/2011 13:57	dick@pwenvironmental.com	dick botke
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/14/2011 9:17	Darren.Brumback@noaa.gov	Darren Brumback
11/14/2011 14:29	rick.bush@noaa.gov	Rick Bush
11/14/2011 15:20	scott@fireconsult.net	SCOTT E. FRANKLIN SR.
11/15/2011 3:53	mark.osokow@sfvaudubon.org	Mark Osokow
11/18/2011 11:04	reb@bry.com	Robert Boston
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
11/21/2011 11:15	vujovichranch@gmail.com	
11/23/2011 8:45	melanie_beck@nps.gov	Melanie Beck
11/27/2011 15:37	ROVINCO@AOL.COM	ROBERT ROCHE
11/28/2011 15:36	robert@ssseeds.com	Robert Sjoquist
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12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/15/2011 14:30	kathy.knight@verizon.net	Kathy Knight
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
1/3/2012 12:25	revseikai@yahoo.com	Rev. Seikai Luebke
1/8/2012 22:25	andorra13@gmail.com	Noelle Burkey
1/12/2012 14:50	kgraves@schmitzandassociates.net	Kris Graves
1/22/2012 19:59	davidw20003@yahoo.com	David Warren
1/26/2012 16:38	dboyer@nossaman.com	David D. Boyer
2/2/2012 15:01	aklecha@semprautilities.com	Anthony Klecha
2/6/2012 11:02	Ana.Alvarez@ocpw.ocgov.com	Ana Alvarez
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/15/2012 14:06	blake@watershedhealth.org	Blake Whittington
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/8/2012 9:59	kdjbio@gmail.com	Karen Jones
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:33	rhino0026@yahoo.com	John Parent
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
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4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
5/17/2012 16:36	k.london.haldeman@gmail.com	Katie Haldeman
5/23/2012 7:38	matt.helon@sierrachemsales.com	Matt Helon
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
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9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
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11/12/2012 20:28	rw@malibu-arts-journal.com	
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11/27/2012 13:08	vickere.murphy@sen.ca.gov	Vickere Murphy
12/21/2012 11:15	brenda@cawg.org	brenda coleman
1/3/2013 7:48	atwater.richard@gmail.com	Richard Atwater
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1/9/2013 10:12	ccarreon@ecokai.com	Carlos Carreon
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2/7/2013 10:06	mharrison@diamondwest.net	Mike Harrison
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
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3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
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1/19/2014 8:06	dutragroup@gmail.com	Steven Thompson
1/27/2014 18:18	richard@haimann.com	Richard Haimann
1/29/2014 13:48	tehya@ceert.org	Tehya Wood
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
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3/20/2014 8:13	kmiddleton@glacvcd.org	Kelly Middleton
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/27/2014 7:59	mikeri@ci.salinas.ca.us	Michael Ricker
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/5/2014 11:56	ariana@capca.com	Ariana Zamora
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/11/2014 20:39	Econard@counsel.lacounty.gov	Erik Conard
6/12/2014 11:14	jariley@amgen.com	James Riley
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
6/16/2014 11:48	alan.cade@aol.com	Alan Cade
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
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7/8/2014 11:05	jerry.hidalgo@mrca.ca.gov	Jerry Hidalgo
7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
7/17/2014 12:55	SGallant@ci.monrovia.ca.us	Sharon Gallant
7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
7/24/2014 18:10	ryandavyes@gmail.com	Ryan Davyes Troughton
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11/17/2014 11:59	madisont@metro.net	Travis J Madison
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1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
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1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
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11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/10/2014 15:27	bmeux@lawaterkeeper.org	Brian Meux
2/7/2014 14:05	kehrlich@elkinskalt.com	Ken Ehrlich
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora

4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
7/8/2014 11:05	jerry.hidalgo@mrca.ca.gov	Jerry Hidalgo
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/27/2014 9:12	carriola@montereypark.ca.gov	Chris Arriola
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
12/18/2014 16:13	justin@mcadvise.com	Justin Mahramas
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
4/22/2015 14:54	twin@acwm.lacounty.gov	Thant Zin Win
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/22/2015 11:09	djensen@ph.lacounty.gov	David Jensen
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/12/2015 20:58	JoanLavine@gmail.com	Joan Lavine
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11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin.com	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
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1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
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2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
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5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
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1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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4/26/17

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8/29/2000 0:00	rferber@ix.netcom.com	Robin Ferber
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10/17/2000 0:00	randy@wqa.com	Randy Schoellerman
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7/23/2002 0:00	Citymanager@toaks.org	City of Thousand Oaks
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12/30/2004 1:29	Joemamabush@netzero.com	Joe Bell
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2/28/2005 10:33	spaulsen@flowscience.com	Susan C. Paulsen Ph.D. P.E.
2/28/2005 12:53	trak@trakenviro.com	Bradford S. Newman
2/28/2005 20:07	chuckoconnell@prodigy.net	Charles J. O'Connell
3/1/2005 7:20	cinciong@ladpw.org	Carrie Inciong
3/1/2005 14:50	biniguez@bellflower.org	Bernardo Iniguez
3/1/2005 14:55	rob-vcaa@pacbell.net	Robert P. Roy
3/1/2005 15:07	jranells@ci.la-verne.ca.us	JR Ranells
3/2/2005 9:44	susanstark10@sbcglobal.net	Susan Stark
3/2/2005 9:47	Ronald.Sheets@OjaiSan.org	Ronald Sheets
3/2/2005 10:56	jdeakin@simivalley.org	Joe Deakin
3/2/2005 16:36	lbehjan@simiValley.org	Laura Behjan
3/3/2005 9:08	tsmith@bonterraconsulting.com	Thomas E Smith Jr
3/3/2005 11:08	jcruz@ladpw.org	Jemellee Cruz
3/3/2005 15:51	fleming.terrence@epa.gov	Terrence Fleming
3/5/2005 14:18	clarkjh@bv.com	James Clark
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder

3/8/2005 7:43	lance.baroldi@claytonindustries.com	Lance Baroldi
3/8/2005 10:51	jreinhardt@lvmwd.com	Jeff Reinhardt
3/10/2005 10:12	DLaff@ladpw.org	Daniel J. Lafferty
3/15/2005 10:54	lmcgovern@ci.camarillo.ca.us	Lucia McGovern
3/22/2005 12:07	fkrieger@msn.com	Fred Krieger
3/24/2005 14:57	ummorow127@yahoo.com	Andrew Amorao
4/4/2005 7:39	rorton@lvmwd.com	Randal Orton
4/5/2005 9:52	fchin@ladpw.org	Frank Chin
4/14/2005 12:52	jtruhan@mwdh2o.com	Joyce T. Clark
5/16/2005 7:40	jwoolf@rainforrent.com	Joel Woolf
6/1/2005 11:37	blizmo1@aol.com	Elizabeth Zlotnik
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
1/4/2006 11:50	mbearzi@earthlink.net	Dr. Maddalena Bearzi
1/6/2006 14:08	hazem.gabr@sce.com	Hazem Gabr
1/24/2006 16:33	wetlandact@earthlink.net	Marcia Hanscom
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully
1/25/2006 18:01	mpestrel@ladpw.org	Mark Pestrella
2/15/2006 16:17	kjames@healthebay.org	Kirsten James
2/24/2006 12:06	powerskj@yahoo.com	Kevin Powers
4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 20:09	g.wolfberg@verizon.net	George Wolfberg
4/12/2006 12:46	tmoorhouse@cleanlake.com	Thomas Moorhouse
4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
4/14/2006 8:03	malibugrants@aol.com	Barbara A. Cameron
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
5/15/2006 15:56	rovinco@aol.com	Corky Roche Roche Vineyard Consulting
5/25/2006 15:49	tgoss@aqmd.gov	Tracy A. Goss
6/1/2006 8:25	csaylan@earthlink.net	charles saylan
7/10/2006 15:14	ca3@imsinfo.com	Kimberly JOhnson
7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
7/24/2006 11:31	kkatona@lacbos.org	Karly Katona
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9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
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9/19/2006 16:26	kvivanti@lakewoodcity.org	Konya Vivanti
9/26/2006 13:49	rnf92679@yahoo.com	Raul N. Fernandez
10/6/2006 11:32	jbell@mwdh2o.com	Janet Bell
11/28/2006 13:07	koletty@usc.edu	Stephen Koletty PhD
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4/2/2007 9:43	dlaff@dpw.lacounty.gov	Daniel J. Lafferty
4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
4/12/2007 11:02	sschales@ladpw.org	T Scott Schales
4/13/2007 16:56	jfordyce@waterboards.ca.gov	Jennifer Fordyce
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9/5/2007 9:29	pmarkle@lacsd.org	Philip Markle
9/12/2007 11:09	FGuerrero@lacsd.org	Francisco Guerrero
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10/22/2007 7:34	geoff@brosseau.us	Geoff Brosseau
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2/28/2008 17:33	dparkinson@geosyntec.com	David Parkinson
4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/9/2008 8:51	chrism@lwa.com	Chris Minton
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
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6/13/2008 16:56	mray@wmspartners.com	Maya Ray
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7/3/2008 12:09	travis.peterson.solutions@gmail.com	Travis Peterson
7/5/2008 7:45	bflores007@msn.com	Bill Flores
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/18/2008 10:38	brent.a.smith@amec.com	Brent Smith
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10/8/2008 11:31	fhutton@fionahuttonassoc.com	fiona hutton
10/9/2008 10:35	dleachman@lacsd.org	Debra Leachman
10/9/2008 19:42	ccash@paramountcity.com	Christopher S.Cash
10/24/2008 12:13	william.taylor@emcbc.doe.gov	William L. Taylor
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
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12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
1/7/2009 14:08	jrp@astound.net	John Peterson
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1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
1/21/2009 9:33	fgonzal@dpw.lacounty.gov	Fred A. Gonzalez
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2/25/2009 7:32	alasso@dpw.lacounty.gov	Aracely Lasso

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3/6/2009 12:10	mmehta@nrdc.org	Michelle Mehta
3/10/2009 5:44	mpalmer@demaximis.com	Michael Palmer
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5/12/2009 14:13	lbond@rwglaw.com	Lisa Bond
5/20/2009 11:51	peter.gutierrez@lw.com	Peter J. Gutierrez
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7/31/2009 16:32	tstein@coxcastle.com	Tamar C. Stein
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12/30/2009 9:39	jcrooks@schmitzandassociates.net	Julie Crooks
1/4/2010 16:20	dxjones@sempra.com	Debran Reed
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3/9/2010 9:38	mkinsler@wheelerandgray.com	Mary Kinsler
3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
4/1/2010 10:47	jzane@padreinc.com	Jeffrey Zane
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/28/2010 13:58	msclimenti@mwdh2o.com	Mike Sclimenti
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 16:18	lnye@waterboards.ca.gov	LB Nye
5/11/2010 10:52	olympicautopart@aol.com	Chong Wol Han
5/13/2010 8:57	alecmu@aol.com	Alec Uzemeck
5/27/2010 11:33	symeon.finch@orco.com	Symeon Finch
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/28/2010 9:14	dmurray@healthebay.org	Dana Murray
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
7/8/2010 10:07	dn@davidnahai.com	David Nahai
7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/22/2010 11:18	amy.grant@erm.com	Amy Grant
9/3/2010 12:22	hjgarcia@farmerjohn.com	Hector J. Garcia
9/9/2010 15:25	acruz@ci.burbank.ca.us	Alvin Cruz
9/13/2010 7:53	einnes@dpw.lacounty.gov	Emiko Innes
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/12/2010 14:27	quangtran59@gmail.com	Quang Tran
10/19/2010 17:14	hgest@burhenngest.com	Howard Gest
10/28/2010 12:38	vsalazar@ldcla.com	Victor Salazar PE
11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett
11/9/2010 15:47	martinagarnier@gmail.com	Martin Garnier
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 17:50	landtrust@ballona.org	Michele Bigelow
11/10/2010 5:47	wlaton@earthforensics.com	Richard Laton
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 12:57	martin@sod.com	Martin Gramckow
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/15/2010 7:46	CaliforniaWaterTechnologies@gmail.com	Carlos Aguilar
11/15/2010 9:11	bdingman@lvmwd.com	Brett Dingman
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
11/19/2010 10:55	bthrupp@thesourcegroup.net	Bruce Thrupp
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1/5/2011 14:32	kens@sccwrp.org	Ken Schiff
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4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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11/13/2012 12:16	betsye@lwa.com	Betsy Elzufon
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1/8/2013 15:53	John.capoccia@gmail.com	John Capoccia
1/11/2013 15:04	george.watland@sierraclub.org	George Watland
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/21/2013 18:02	melissa@malibutimes.com	Melissa Caskey
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
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2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/13/2013 14:01	jennfeinberg.nrdc@gmail.com	Jenn Eckerle
3/20/2013 17:01	llee@dpw.lacounty.gov	Linda Lee Miller
3/29/2013 16:02	randerson@rjreng.com	Robert W. Anderson
4/3/2013 12:59	hmarley@waterboards.ca.gov	hugh marley
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4/29/2013 11:53	jguerrer@dpw.lacounty.gov	Jolene Guerrero
5/17/2013 11:49	dpedersen@lvmwd.com	David W. Pedersen
6/3/2013 15:26	Cy.Oggins@slc.ca.gov	Cy Oggins

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6/25/2013 12:59	ccebrian@coxcastle.com	Christian Cebrian
6/26/2013 9:32	kkwan@semprautilities.com	Karen Kwan
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
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7/19/2013 11:49	o-namba@msn.com	Rex Namba
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8/30/2013 13:13	bmoreno@e-hii.com	Bernardo Moreno
9/10/2013 9:49	ehorn@kcmgroup.net	Erika Horn
9/22/2013 9:50	RCB@jmbm.com	Rebecca Couch Barnhardt
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
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2/10/2014 9:01	gatkinson@mansonconstruction.com	George Atkinson
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2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
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3/19/2014 14:08	simon@windwardyachtcenter.com	Simon Landt
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3/27/2014 18:04	lauren@stefangeorge.com	Lauren De Valencia
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5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
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6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
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11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith
11/18/2015 8:37	edith.hannigan@bof.ca.gov	Edith Hannigan
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/19/2015 15:49	jbryson@soundearthinc.com	James Bryson
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbe	Peter Benjamin
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 9:46	erica.wolski@waterboards.ca.gov	Erica Wolski
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/9/2016 16:40	jenna.latt@arb.ca.gov	

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2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 9:50	anthony.brown@aquilogic.com	anthony brown
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2/25/2016 7:51	kevin@kjservices.net	kevin sales
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2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
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3/4/2016 14:45	domingo.orosco@lacity.org	Domingo Orosco
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3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
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4/19/2011 9:56	lrcooke@vandermostconsulting.com	Lennie Rae Cooke
4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
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1/25/2011 18:02	dgrilley@sgch.org	Daren Grilley
1/31/2011 12:11	anu.b.garg@boeing.com	Anu Garg
2/1/2011 11:42	rasancho@dpw.lacounty.gov	Randall Sancho
2/2/2011 14:43	snania@forester.net	
2/4/2011 10:02	marycarol@atlglobal.com	Marycarol Valenzuela
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2/8/2011 14:00	matzrubber@sbcglobal.net	Phillip Jensen
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2/10/2011 10:41	etuttle@santamonicabay.org	Elena Tuttle
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4/25/2011 15:19	Robert.Vega@lacity.org	Robert Vega
5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
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2/13/2014 9:12	akuhlman@cityofcamarillo.org	Anita Kuhlman
2/24/2014 10:56	trevor.currie@ladwp.com	Trevor Currie
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
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9/23/2014 14:50	wliu@waterboards.ca.gov	Wendy Liu
9/24/2014 9:48	allyson@frogenv.com	Allyson Bakboychuk
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman

9/25/2014 8:36	fbecerra@interplastic.com	Frank Becerra
9/30/2014 10:43	vyoon@anchorqea.com	Vada Yoon
10/8/2014 15:42	eripley@algcorp.com	Elliott Ripley
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/13/2014 11:23	smontrowl@quantumozone.com	Sarah Montrowl
10/16/2014 13:39	apaxton@resourceslegacyfund.org	Alexandra Paxton
10/24/2014 8:57	jbaker@aqmd.gov	Jillian Baker
10/27/2014 9:12	carriola@montereypark.ca.gov	Chris Arriola
11/3/2014 9:41	ahunter@sanpedro.net	Alan Hunter
11/11/2014 12:50	catherine.vargas@culvercity.org	Catherine Vargas
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11/17/2014 11:59	madisont@metro.net	Travis J Madison
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12/4/2014 13:30	Brianc@termoco.com	Brian Cruz
12/4/2014 19:16	brimanFXST@gmail.com	Brian Wassell
12/15/2014 9:42	kmorris@hermosabch.org	Kristy Morris
12/16/2014 16:02	ama@dpw.lacounty.gov	Allen Ma
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
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1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/6/2015 20:11	susan.damron@ca.rr.com	Susan Damron
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12/2/2016 14:38	rcarver@cityofhawthorne.org	Rick Carver
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
12/20/2016 10:03	vmarchetti@lbschools.net	Vince Marchetti
12/30/2016 13:49	angineh.shahnazarian@waterboards.ca.gov	Angineh Shahnazarian
12/31/2016 17:06	woonhoe.kim@waterboards.ca.gov	Woonhoe Kim
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3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
3/14/2017 13:21	lindamiller@lacsd.org	Linda Lee Miller
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4/11/2017 17:20	ron.reeves@longbeach.gov	Ron Reeves
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6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/12/2012 11:32	Fresh@freshcreek.com	wallytrnka
6/15/2012 13:49	sandym@lwa.com	Sandy Mathews
6/20/2012 10:37	jtruhan@mwdh2o.com	Joyce Clark
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
8/6/2012 10:00	wjohnson@dpw.lacounty.gov	William Johnson
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/29/2012 8:24	ggreene@cwecorp.com	Gerald Greene
9/14/2012 12:10	dburhenn@burhenngest.com	David Burhenn
9/14/2012 14:28	smandegari@greenesol.com	shirin mandegari
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/3/2012 15:30	rmcpherson@portla.org	Rachel McPherson
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/15/2012 8:15	bdawadi@civiltec.com	Bed Dawadi
10/17/2012 12:06	dmcalister@eaglereef.net	David McAlister
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/8/2012 15:11	Dan.Askenaizer@WQTS.com	Dan Askenaizer
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
12/3/2012 13:43	kotch@reynolds-group.com	Frank Kotch
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1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
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1/12/2013 15:27	davert85@hotmail.com	David Boyer
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7/17/2013 14:43	bharmon@tait.com	Brian Harmon
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3/10/2014 16:29	coury.mckinlay@aes.com	Coury McKinlay
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
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2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
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3/17/2016 8:00	colette.monell@atcassociates.com	Colette Monell
3/23/2016 11:49	abakarian@elcapenv.com	Ara Bakarian
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5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
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5/20/2016 9:50	fguerrero@lacsd.org	Francisco Guerrero
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
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7/13/2016 15:53	vallen@conteches.com	Vaikko Allen
7/19/2016 13:43	mtremblay@lacsd.org	Martha Tremblay
7/25/2016 12:52	sidkumar@datmobilesolutions.com	Sid Kumar
8/1/2016 11:42	simoneevett@lacsd.org	Simone Evett
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
9/26/2016 8:53	brenda.panuco@siderah2o.com	Brenda Pancuo
9/28/2016 14:02	kanan.patel-coleman@aecom.com	Kanan Patel-Coleman
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/27/2016 11:25	jhallman@astropak.com	Josh Hallman
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11/8/2016 6:47	mhall@pmanet.org	M Hall
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2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/15/2017 12:28	jbreitling@lewisandco.net	James Breitling
2/17/2017 8:27	mathewwatson@lacsd.org	Mathew Watson
3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
3/14/2017 13:21	lindamiller@lacsd.org	Linda Lee Miller
3/30/2017 13:53	victor@frogenv.com	Victor Cervantes
4/4/2017 18:31	neotecuv@neotecuv.net	Sunny Kim
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3/16/2010 8:24	hmerenda@santa-clarita.com	Heather Merenda
3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
3/23/2010 11:19	tony.pepe@csun.edu	Tony Pepe
4/5/2010 11:48	kruffell@lacsd.org	Kristen Ruffell
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/19/2010 9:55	llough@bbinfrastructureinc.com	Lynn Lough
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/6/2010 7:56	arne.anselm@ventura.org	Arne Anselm
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
5/20/2010 7:53	navedissian@quakercityplating.com	NICK AVEDISSIAN
5/26/2010 8:55	morton.price@lacity.org	Morton Price
5/27/2010 11:33	symeon.finch@orco.com	Symeon Finch
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/22/2010 11:57	AEMiller@waterboards.ca.gov	Alan E. Miller
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
7/1/2010 14:57	michael.blum@gmail.com	Michael Blum
7/2/2010 12:04	rfwpetro@verizon.net	Darry White
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7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/27/2010 12:38	conkle@geoconinc.com	Mike Conkle
7/29/2010 9:03	langford.book@ladwp.com	Langford Book
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8/9/2010 10:52	paul.ahn@sce.com	Paul ahn
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8/23/2010 11:36	kmattfeld@portla.org	Kenneth Mattfeld
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9/10/2010 15:36	alfredo.magallanes@lacity.org	Alfredo Magallanes
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11/9/2010 15:23	dlippman@lvmwd.com	
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11/10/2010 8:32	gvazquez@ci.cypress.ca.us	Gonzalo Vazquez
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1/25/2011 18:02	dgrilley@sgch.org	Daren Grilley
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2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
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2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 8:50	shawn.hagerty@bbklaw.com	Shawn Hagerty
2/22/2012 16:20	kaying_lee@ci.pomona.ca.us	Kaying Lee
2/23/2012 8:33	tiffanyshedrick@santafesprings.org	Tiffany Shedrick
3/5/2012 15:02	jtorres@ci.vernon.ca.us	Jerrick Torres
3/7/2012 16:27	Jim@CuratingLA.com	Jim Gilbert

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3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 14:29	msgrajeda@picowaterdistrict.net	Mark Grajeda
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/25/2012 16:12	laustin@geosyntec.com	Lisa Austin
3/27/2012 8:54	caroline@lawyersforcleanwater.com	Caroline Koch
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
3/29/2012 10:34	aazimi@azimipearsallinc.com	Ali Azimi
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/13/2012 15:01	mlcoffee@nossaman.com	Mary Lynn K. Coffee
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
4/23/2012 17:22	dsmith@waterboards.ca.gov	Debbie Smith
4/23/2012 20:12	chrism@lwa.com	chris minton
5/9/2012 8:28	dgould@stormwaterusa.com	Derek A. Gould
5/16/2012 15:54	busurfmd@aol.com	Jeff Harris
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5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
5/31/2012 14:03	dguillory@mwdh2o.com	Daniel Guillory
6/5/2012 14:16	kosta.kaporis@lacity.org	Kosta Kaporis
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/6/2012 23:06	egkim@berkeley.edu	Esther G. Kim
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6/12/2012 11:32	Fresh@freshcreek.com	wallytrnka
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11/18/2013 17:19	mpassanisi@dpw.lacounty.gov	Mercedes Passanisi
12/4/2013 9:21	msimon@counsel.lacounty.gov	Michael Simon

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12/31/2013 9:54	teri.madia@cdcr.ca.gov	Teri Madia
1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
1/13/2014 10:27	laura.amezcua@longbeach.gov	Laura Amezcua
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/27/2014 18:18	richard@haimann.com	Richard Haimann
1/28/2014 7:39	quinonez_joseph@montebello.k12.ca.us	Joseph Quinonez
2/5/2014 14:54	eoffermann@gmail.com	Eddie Offermann
2/7/2014 14:05	kehrlich@elkinskalt.com	Ken Ehrlich
2/12/2014 8:20	ssanchez@newhall.com	Sandy Sanchez
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/13/2014 9:12	akuhlman@cityofcamarillo.org	Anita Kuhlman
2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
3/3/2014 17:44	davidw20003@yahoo.com	David Warren
3/14/2014 16:29	fred@soundpathtech.com	Fred C. DeMetz Sr.
3/20/2014 8:13	kmiddleton@glacvcd.org	Kelly Middleton
3/27/2014 13:29	aluna@sco.ca.gov	Arturo Luna
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4/1/2014 19:29	cynthia.gabaldon@cgrme.com	Cynthia Gabaldon
4/2/2014 17:59	tiffany.haskins@lmco.com	Tiffany Haskins
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4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
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4/11/2014 16:06	amousavi@infeng.co	Aidan Mousavi
4/22/2014 9:46	Robin.Sehler@gmail.com	Robin Sehler
5/21/2014 15:34	richroman@live.com	Richard Roman
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6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
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12/16/2015 14:28	amaday@calleguas.com	Amy Maday
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1/19/2016 16:04	garth.engelhorn@altaenviron.com	Garth Engelhorn
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1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/1/2016 21:37	mpena@kleinfelder.com	Melissa Pena
2/2/2016 12:53	dstimson@glendaleca.gov	Dave Stimson
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2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
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9/10/2009 17:49	geosvcs@sbcglobal.net	Frank Kenton
9/16/2009 9:53	mackw@lwa.com	Malcolm Walker
9/16/2009 9:55	alicia.p.thompson@navy.mil	Alicia Thompson
11/9/2009 6:26	collins-6666@msn.com	J. Roger Collins
11/12/2009 14:30	farmcoo@yahoo.com	Jeffrey D Littell
12/9/2009 16:37	hwalsh@sikand.com	Henry Walsh
12/11/2009 11:51	mbiedebach@sespeconsulting.com	mike biedebach
12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
1/14/2010 14:32	stormwatercentral@gmail.com	Anna Hensley
2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
3/9/2010 9:38	mkinsler@wheelerandgray.com	Mary Kinsler
3/16/2010 8:24	hmerenda@santa-clarita.com	Heather Merenda
3/25/2010 8:53	denise@2gec.com	Denise Gallion
3/30/2010 13:34	cbeam@jdtplaw.com	
4/1/2010 10:47	jzane@padreinc.com	Jeffrey Zane
4/7/2010 8:58	jdougall@lvmwd.com	Jan Dougall
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/13/2010 13:02	engrnish@aol.com	David Nishimura
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
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5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
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5/11/2010 10:09	jfordyce@waterboards.ca.gov	Jennifer Fordyce
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6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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9/17/2010 8:45	zora.baharians@lacity.org	Zora
10/4/2010 9:18	kjames@healthebay.org	Kirsten James
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11/12/2010 10:25	jfutoran@parks.ca.gov	John Futoran
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11/18/2010 11:41	ben@sbck.org	Ben Pitterle
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12/23/2010 20:27	info@ecokai.com	Jim Burton
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6/12/2012 11:32	Fresh@freshcreek.com	wallytrnka
6/12/2012 19:28	roche20@earthlink.net	WILLIAM ROCHE
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6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
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7/18/2012 14:05	russ.baggerly65@gmail.com	Russ Baggerly
7/20/2012 15:25	ncox@parks.ca.gov	Nat Cox
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9/11/2012 15:52	mmotto@geosyntec.com	Megan Otto
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9/14/2012 14:28	smandegari@greenesol.com	shirin mandegari
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
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11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
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11/12/2012 20:28	rw@malibu-arts-journal.com	
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
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2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin
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6/11/2015 9:29	bob.nimocks@zpowerbattery.com	Robert Nimocks
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 10:51	aballrot@wgr-sw.com	Amber Ballrot
7/9/2015 15:59	jennifer.lindquist@csuci.edu	Jennifer Lindquist
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/9/2015 15:41	sseivright@calcima.org	Suzanne Seivright
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 5:21	hschillinger@torrentresources.com	Hal Schillinger
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/17/2015 11:36	haskell.daniel@epa.gov	Daniel Haskell
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/14/2015 11:28	jessica.pearson@waterboards.ca.gov	Jessica Pearson
12/29/2015 14:48	aaron.williams@ventura.org	aaron williams
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 9:45	kit@kitcoleconsulting.com	Kit Cole
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:21	Ksusilo@geosyntec.com	Ken Susilo
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
2/26/2016 15:26	bryn@pacrl.com	Bryn Home
3/2/2016 15:57	hugh.marley@waterboards.ca.gov	Hugh Marley
3/17/2016 8:00	colette.monell@atcassociates.com	Colette Monell
3/18/2016 13:38	aaron.s.miller@water.ca.gov	Aaron Miller

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3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
4/29/2016 9:20	chris.beegan@waterboards.ca.gov	chris beegan
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/5/2016 16:44	Gerhardt@sslocsd.us	Gerhardt Hubner
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
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7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/25/2016 12:52	sidkumar@datmobilesolutions.com	Sid Kumar
7/29/2016 7:39	ASexton@simivalley.org	Al Sexton
8/1/2016 11:42	simoneevett@lacsd.org	Simone Evett
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
9/8/2016 9:36	lhlampara@aeraenergy.com	Louise Lampara
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
9/26/2016 8:53	brenda.panuco@siderah2o.com	Brenda Pancuo
9/28/2016 14:02	kanan.patel-coleman@aecom.com	Kanan Patel-Coleman
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:06	rmanwill@toaks.org	Ron Manwill
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/20/2016 15:55	shiri.klima@oxnard.org	Shiri Klima
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1/3/2017 15:54	edwardpettit@vrsd.com	Eddie Pettit
1/18/2017 10:44	seydev@pbworld.com	Veronica Seyde
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
1/26/2017 12:18	david.laak@ventura.org	David Laak
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1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
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5/4/2006 13:07	tom.pecht@verizon.net	Tom Pecht
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5/4/2006 13:14	jaferro@aol.com	John Ferro
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5/4/2006 13:28	nosethomas@aol.com	Tom Nose
5/4/2006 13:30	susanj@solimarfarms.com	Susan Josue
5/9/2006 13:52	pjenkin@sbcglobal.net	Paul Jenkin
5/9/2006 15:07	wdarlington@soilandplantlaboratory.com	William Darlington
5/15/2006 15:56	rovinco@aol.com	Corky Roche Roche Vineyard Consulting
5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson
6/21/2006 10:36	Lynnepl1@juno.com	Lynne Plabeck
6/21/2006 10:39	Steve.sligh@disney.com	Steve Sligh
6/21/2006 10:40	exec@lacfb.org	Laura Blank
6/21/2006 10:47	abcnursery@sbcglobal.net	Eric Yonemura
6/21/2006 10:48	aynursery@aol.com	Hugo Ayon
6/21/2006 10:57	sempervirensbotanico@earthlink.net	John Low
6/21/2006 11:00	dixons@colorspot.com	Dixon Suzuki
6/21/2006 11:02	Bill.Levalley@coloramanursery.com	Bill LeValley

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7/11/2006 7:25	zora.baharians@lacity.org	Zora Baharians
9/12/2006 14:36	ewu@waterboards.ca.gov	Eric Wu
9/20/2006 14:25	ca3@imsinfo.com	Cory R. Espinoza
10/4/2006 15:48	lnye@waterboards.ca.gov	L. B. Nye
10/26/2006 16:48	john@greenwoodgarden.com	john Schustra
11/27/2006 14:53	jon.chase@mac.com	Jonathan Chase
12/1/2006 2:38	mstevens@kinneticlabs.com	Marty Stevenson
1/16/2007 8:05	gvillarreal@rbf.com	Gian Villarreal
3/6/2007 8:05	tfung@dot.ca.gov	Tom Fung
4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
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5/30/2007 21:16	saeedtabatabaeepour@yahoo.com	Saeed Tabatabaeepour
7/24/2007 9:46	masoliman@dpw.lacounty.gov	Maged Soliman
8/23/2007 10:43	tgaur@smbaykeeper.org	Tatiana K. Gaur
8/29/2007 16:19	gamenu@dpw.lacounty.gov	Geremew G. Amenu
9/12/2007 11:09	FGuerrero@lacsd.org	Francisco Guerrero
9/19/2007 22:15	arlene.hopkins@gmail.com	arlene hopkins
12/3/2007 15:39	anthonys.assistant@yahoo.com	anthony dominguez
3/14/2008 10:14	dhock@rmcwater.com	Dawn Hock
3/24/2008 14:26	jchien@parks.lacounty.gov	Jui Ing chien
5/9/2008 8:51	chrism@lwa.com	Chris Minton
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7/2/2008 8:22	rnack@ci.camarillo.ca.us	Richard Nack
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
8/29/2008 12:59	kerickson@rmcwater.com	Kraig Erickson
9/23/2008 11:14	Rosie.Villar@waterboards.ca.gov	Rosie Villar
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
12/8/2008 18:01	cabrera-stagno.valentina@epa.gov	Valentina Cabrera
12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
12/18/2008 8:09	nisheeth.kakarala@gmail.com	Nisheeth Kakarala
1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
2/13/2009 14:36	JHUMBLE@dfg.ca.gov	Jeff Humble
2/24/2009 15:16	lrockett@dpw.lacounty.gov	Laura Rockett
4/6/2009 19:07	janswift@live.com	jan andrew swift
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5/6/2009 9:11	john@farmbureauvc.com	John Krist
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11/12/2009 14:30	farmcoo@yahoo.com	Jeffrey D Littell
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
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4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/13/2010 15:03	tech@normbrown.com	Norm Brown
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 17:44	selimeren@gmail.com	SELIM EREN
5/20/2010 15:42	tcdoan@coastal.ca.gov	Tamara Doan
6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/21/2010 10:10	karenc@lwa.com	Karen Cowan
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9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
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11/9/2010 15:52	rob-vcaa@pacbell.net	Rob Roy
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11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/18/2010 11:41	ben@sbck.org	Ben Pitterle
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6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
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11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
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11/8/2011 9:48	ghoeksma@allenmatkins.com	Gerben Hoeksma
11/8/2011 10:53	bettypalato@yahoo.com	Richard Palato
11/8/2011 20:02	avoking@roadrunner.com	Kevin Cannon
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11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/9/2011 18:02	geoff@sunderland4.com	Geoffrey Sunderland
11/10/2011 11:09	ARPeterfy@aol.com	Annette Peterfy
11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio
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11/15/2011 8:57	chris@saticoyroots.com	Chrs Sayer
11/16/2011 9:26	yanofarms@aol.com	Wayne Yano
11/16/2011 10:12	bilwk@aol.com	Camille E. Held
11/16/2011 10:14	jconrowcpa@gmail.com	Jerry Conrow
11/16/2011 14:08	aimee@brokawnursery.com	Aimee Meidinger
11/17/2011 16:20	richg@countypipeline.com	Richard Gallimore
11/18/2011 16:45	gcramer@cramertynan.com	Gary M. Cramer
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
11/29/2011 17:06	leavens@west.net	Leavens Ranches
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas

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12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
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3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
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4/28/2005 13:15	kozelka.peter@epa.gov	Peter Kozelka
7/13/2005 10:08	jjensen@waterboards.ca.gov	Joanna Jensen
7/21/2005 9:10	jnewman@waterboards.ca.gov	Jenny Newman
8/9/2005 19:51	sgreen@lacsd.org	Sharon N. Green
8/16/2005 14:27	pmcgaw@archernorris.com	Peter W. McGaw
9/26/2005 23:43	fkrieger@msn.com	Fred Krieger
9/29/2005 10:09	laustin@geosyntec.com	Lisa Austin
10/11/2005 15:34	ksusilo@geosyntec.com	Ken Susilo
11/15/2005 12:22	ashlic@lwa.com	Ashli Desai
11/17/2005 11:07	houstgrp@pacbell.net	Laura Cottrell
12/17/2005 8:28	aheil@lacsd.org	Ann Heil
12/19/2005 11:22	adorablesam_4@yahoo.co.in	sam
1/24/2006 16:50	jtopel@waterboards.ca.gov	Jack Topel
1/25/2006 7:47	jgully@lacsd.org	Joseph R. Gully

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4/4/2006 16:22	ysim@ladpw.org	Youn Sim
4/11/2006 14:14	Wing.Tam@lacity.org	Wing Tam
4/12/2006 14:14	jim.lamm@ballonacreek.org	Jim Lamm
4/16/2006 0:31	pweinberger55@hotmail.com	Peter Weinberger
5/18/2006 11:41	rexfrankel@yahoo.com	Rex Frankel
5/22/2006 12:45	kthompson@mail.wqa.org	Kelley Thompson
5/30/2006 10:34	ghaseg3112@aol.com	Glen Hasegawa
6/1/2006 8:25	csaylan@earthlink.net	charles saylan
6/15/2006 16:08	ken.franklin@lacity.org	Kenneth Franklin
7/7/2006 16:27	gamah@waterboards.ca.gov	Ginachi Amah
7/20/2006 15:30	charlie.yu@lacity.org	Charlie Yu
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11/28/2006 13:07	koletty@usc.edu	Stephen Koletty PhD
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12/7/2006 17:28	jbell@mwdh2o.com	Janet Bell
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2/12/2007 10:18	laurie_solis@urscorp.com	laurie solis
2/13/2007 9:52	leighanner@westbasin.org	Leighanne Reeser
2/13/2007 9:57	deana@aquabiocleanup.com	Deana Vitela
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4/4/2007 9:11	mpf@stateside.com	Melissa Patra Farmer
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11/26/2007 15:37	farhana.mohamed@lacity.org	Farhana Mohamed
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5/9/2008 8:51	chrism@lwa.com	Chris Minton
5/19/2008 16:42	kjames@healthebay.org	Kirsten James
6/12/2008 8:14	hugo.bermudez@nassco.com	Bermudez, Hugo
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/17/2008 9:48	maricela1977@yahoo.com	Maricela Gomez
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
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9/11/2008 10:09	lin.cindy@epa.gov	Cindy Lin
9/23/2008 11:17	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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9/27/2008 20:10	2tweet@gmail.com	Teresa Williams
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4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
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5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
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6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
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3/10/2011 10:39	kemmerer.john@epa.gov	John Kemmerer
3/23/2011 11:22	rwang@dpw.lacounty.gov	Ruby Wang
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8/22/2011 11:54	jsayre@brwncald.com	Jaime Sayre
8/25/2011 13:44	marisayrodriguez@gmail.com	Marisa Rodriguez
9/1/2011 5:14	etostado@essociated.com	Exequiel Tostado
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11/1/2011 15:24	mali@waterboards.ca.gov	Mazhar Ali
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11/5/2011 20:04	neilandeb@aol.com	Neil Dipprey
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/8/2011 9:25	jozettem99@aol.com	Jo McKie
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11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
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11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
11/21/2011 7:50	gderas@pico-rivera.org	Gladis Deras
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11/20/2012 16:15	gtakayesu@honolulu.gov	Gerald Takayesu
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1/16/2013 16:16	kpease@healthebay.org	Katherine Pease
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
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2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
3/7/2014 9:22	bh94940@yahoo.com	John Raulph
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7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
7/25/2014 12:25	JoanLavine@gmail.com	Joan Lavine
8/15/2014 14:35	bobbigold@ucla.edu	Bobbi Gold
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
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11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/6/2011 17:01	jimengel@wildblue.net	Jim Engel
11/6/2011 19:56	johnbfarmad@cs.com	John Borchard
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/8/2011 20:02	avoking@roadrunner.com	Kevin Cannon
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
11/9/2011 11:54	nrccgcm@gmail.com	J. Ryan Bentley
11/9/2011 12:42	csummers@missionpro.com	Chris Summers
11/9/2011 16:05	ann.demartini@gmail.com	Ann DeMartini
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio

11/10/2011 14:53	ATRAFTON@BOETHINGTREELAND.COM	Andrew Trafton
11/11/2011 8:02	Davidjoeross@gmail.com	David J. Ross
11/11/2011 10:06	ctyrrell@rmcwater.com	Catherine Tyrrell
11/12/2011 10:30	ltyko@msn.com	leonard m tyko
11/14/2011 18:35	rcking@rain.org	Robert King
11/16/2011 10:14	jconrowcpa@gmail.com	Jerry Conrow
11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
11/17/2011 16:20	richg@countypipeline.com	Richard Gallimore
11/21/2011 11:15	vujovichranch@gmail.com	
11/29/2011 17:06	leavens@west.net	Leavens Ranches
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas
12/7/2011 14:53	pauldebusschere@gmail.com	Paul DeBusschere
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
1/6/2012 9:52	ankitavyas@rbf.com	Ankita Vyas
1/8/2012 22:25	andorra13@gmail.com	Noelle Burkey
1/10/2012 10:23	sbeck@mbcnet.net	Shane Beck
1/30/2012 17:41	98people@roadrunner.com	felicia schoenewald
2/4/2012 17:13	john@gretherfarming.com	John M. Grether
2/13/2012 16:55	srapoport@waterboards.ca.gov	Shana Rapoport
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:54	aclark@calwater.com	Allyson Clark
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
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4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/2/2012 8:42	jeff.palmer@ojaisan.org	Jeff Palmer
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5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/15/2012 13:49	sandym@lwa.com	Sandy Mathews
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
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7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
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10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
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12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
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1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/12/2013 15:27	davert85@hotmail.com	David Boyer
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2/14/2014 22:50	Simon_Tregurtha@yahoo.com	Simon Tregurtha
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4/10/2015 15:43	hoconnell@mnsengineers.com	Heather O'Connell
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5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
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5/27/2015 15:09	mstaffield@jlha.net	Michelle Staffield
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7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
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8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo

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9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/16/2015 14:28	amaday@calleguas.com	Amy Maday
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/17/2016 11:03	acondelli@simivalley.org	Alex Condelli
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/22/2016 11:35	sabbott@ph.lacounty.gov	Scott Abbott
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/29/2016 7:39	ASexton@simivalley.org	Al Sexton
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
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10/20/2016 15:55	shiri.klima@oxnard.org	Shiri Klima
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
1/26/2017 12:18	david.laak@ventura.org	David Laak
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
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2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
3/7/2017 9:25	tmarella@rinconconsultants.com	Travis Marella
3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
4/4/2017 18:31	neotecuv@neotecuv.net	Sunny Kim
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9/23/2008 11:21	Rosie.Villar@waterboards.ca.gov	Rosie Villar
2/14/2012 9:44	catalinakayaks@sbcglobal.net	Wet Spot Rentals - Catalina Kayak Adventures
2/14/2012 9:45	eric@catalinadiverssupply.com	Eric Mahan op. mgr, Catalina Divers Supply
2/14/2012 11:35	renee.purdy@waterboards.ca.gov	Renee Purdy
2/14/2012 11:39	ehmail@ph.lacounty.gov	LA Co. Dept. of Public Health General Mail
2/14/2012 11:56	kjames@healthebay.org	Kirsten James
2/14/2012 11:58	ngarrison@nrdc.org	Noah garrison
2/14/2012 12:00	tgaur@nrdc.org	Tatiana Gaur
2/14/2012 12:06	info@CatalinaChamber.com	Catalina Island Chamber of Commerce
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2/14/2012 14:02	angie@dinghydocks.com	Angie Bera
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2/14/2012 15:37	lnye@waterboards.ca.gov	L.B. Nye
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 8:50	shawn.hagerty@bbklaw.com	Shawn Hagerty
3/2/2012 14:56	acallotdavis@rbf.com	Anne Gene Callot Davis
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3/22/2012 8:25	jbell@mwdh2o.com	Janet Bell
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3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
3/30/2012 10:48	ankitavyas@rbf.com	Ankita Vyas
4/5/2012 14:48	boutwin@waterboards.ca.gov	Brandi Outwin-Beals
4/5/2012 17:06	meinerscanary@matilijasustainability.org	Elizabeth Anne von Gunten
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2/24/2014 10:57	trevor.currie@ladwp.com	Trevor Currie
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2/10/2015 13:19	chrism@lwa.com	Chris Minton
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5/11/2015 12:57	cooper.cameron@sce.com	Cooper Cameron
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
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5/28/2015 12:32	kmulligan816@gmail.com	Kevin Mulligan
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
6/16/2015 16:56	benjamin.gibson@lw.com	Ben Gibson
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6/19/2015 7:23	darryl.guenther@lacity.org	Darryl Guenther
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/6/2015 8:51	apartie@jlha.net	Alison Partie
7/7/2015 10:51	aballrot@wgr-sw.com	Amber Ballrot
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
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11/4/2011 13:29	gilbert_ogaz@dot.ca.gov	Gilbert Ogaz
11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 16:38	rmontevideo@rutan.com	Richard Montevideo
11/10/2011 10:16	epi@riousa.com	David Light
11/14/2011 12:32	vcastro@covinaca.gov	Vivian Castro
11/17/2011 14:22	rtahir@tecsenv.com	Ray Tahir
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas

12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/27/2011 16:30	mayorlutz@gmail.com	Mary Ann Lutz
1/6/2012 9:52	ankitavyas@rbf.com	Ankita Vyas
1/10/2012 10:23	sbeck@mbcnet.net	Shane Beck
2/13/2012 16:55	srapoport@waterboards.ca.gov	Shana Rapoport
2/14/2012 16:27	marcbeyeler@mac.com	marc Beyeler
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/16/2012 14:54	aclark@calwater.com	Allyson Clark
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/21/2012 4:06	wbotha@brownandwinters.com	Wentzelee Botha
3/5/2012 14:15	luke.milick@lacity.org	Luke Milick
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
3/27/2012 13:25	Berry.Ueoka@EverestConsultants.com	Berry Ueoka
4/5/2012 14:48	boutwin@waterboards.ca.gov	Brandi Outwin-Beals
4/10/2012 12:43	emka_researcher@yahoo.com	godly e thankgod
4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
5/1/2012 14:02	gderas@pico-rivera.org	Gladis Deras
5/25/2012 21:27	mitchm@lwa.com	Mitch Mysliwiec
5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/8/2012 15:29	tattnlaw@gmail.com	JOHNTOMMY ROSAS
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
7/5/2012 14:06	crholguin@yahoo.com	claudia holguin
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
8/6/2012 10:00	wjohnson@dpw.lacounty.gov	William Johnson
8/13/2012 19:23	fmcchesney@waterboards.ca.gov	Frances McChesney
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/14/2012 11:35	lnaslund@dpw.lacounty.gov	Lisa Naslund
8/29/2012 8:24	ggreene@cwecorp.com	Gerald Greene
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9/14/2012 12:16	myanai@counsel.lacounty.gov	Mark Yanai
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10/3/2012 15:30	rmcpherson@portla.org	Rachel McPherson
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 8:43	carellano@ci.vernon.ca.us	Claudia Arellano
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
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2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
2/14/2013 11:53	rbeste@torranceca.gov	Robert Beste
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
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4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
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6/6/2013 9:11	amelgoza-mendez@semprautilities.com	Adriana Melgoza-Mendez
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
7/31/2013 14:22	pshellenbarger@healthebay.org	Peter Shellenbarger
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10/28/2013 14:26	mhogan@awattorneys.com	Miles Hogan
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
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1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/7/2014 5:16	mike.mccollough@sbcglobal.net	Mike McCollough
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3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
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3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
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5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
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5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
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6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/16/2015 15:53	lee.huang@lacity.org	Lee Huang
6/16/2015 16:56	benjamin.gibson@lw.com	Ben Gibson
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 7:21	ochan.otim@lacity.org	Dr. Ochan Otim
6/19/2015 7:23	darryl.guenther@lacity.org	Darryl Guenther
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 11:49	tom.juma@lacity.org	Tom Juma
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 10:51	aballrot@wgr-sw.com	Amber Ballrot
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/14/2015 14:59	ghuizar@lawndalecity.org	Grace Huizar
8/5/2015 19:29	leonard.a.wong@gmail.com	Leonard Wong
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/19/2015 11:03	melinda@flowscience.com	Melinda Werts
8/28/2015 11:34	caln@stormwaterx.com	Calvin P Noling
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/3/2015 12:30	mkim@jlha.net	Michelle Kim
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/29/2015 9:04	fdelorenzo@lacsd.org	Frank J DeLorenzo
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/13/2015 9:00	lcyrus@cityofalhambra.org	Latoya Cyrus
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/6/2016 13:06	melissavm@lawaterkeeper.org	Melissa von Mayrhauser
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:00	brad.lindahl@redondo.org	Bradley Lindahl
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:45	Mstevens@kinneticlabs.net	Marty Stevenson
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 10:03	cmccullough@jlha.net	Cameron McCullough
3/2/2016 12:47	sbishop@lacsd.org	Shannon Bishop

3/14/2016 10:40	mpena@kleinfelder.com	Melissa Pena
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
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8/25/2016 15:06	wwinter@dpw.lacounty.gov	Bill Winter
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/6/2016 16:51	algrajeda@dpw.lacounty.gov	Alberto Grajeda
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10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
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11/8/2016 6:47	mhall@pmanet.org	M Hall
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12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
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1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
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3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
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8/10/2016 15:15	astroduo@hotmail.com	Astro Duo
8/10/2016 15:15	sands.linda@hotmail.com	Linda Sands
8/10/2016 15:16	d_gottas@yahoo.com	Debbie Gottas
8/10/2016 15:16	jimhotchkiss@yahoo.com	Jim Hotchkiss
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8/17/2016 21:57	LouisaStephen@yahoo.com	Louisa Stephen
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3/4/2005 14:24	dburhenn@burhenngest.com	Dave Burhenn
3/7/2005 11:28	sbroten@icfconsulting.com	Scott Broten
3/7/2005 13:11	barry.snyder@amec.com	Barry J. Snyder
3/8/2005 10:51	jreinhardt@lvmwd.com	Jeff Reinhardt
3/9/2005 10:45	ghildeb@ladpw.org	Gary Hildebrand
3/10/2005 10:12	DLaff@ladpw.org	Daniel J. Lafferty
3/15/2005 14:42	kathleen.enve@verizon.net	Kathleen McGowan
3/16/2005 9:48	bteaford@ci.burbank.ca.us	Bonnie Teaford
3/22/2005 12:07	fkrieger@msn.com	Fred Krieger
3/24/2005 14:34	kprickett@portla.org	Kat Prickett
3/28/2005 15:36	smith.davidw@epa.gov	David W. Smith
3/28/2005 15:37	mgold@healthebay.org	Mark Gold
3/29/2005 16:00	fddryden@juno.com	Franklin D. Dryden
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4/4/2005 9:43	joe.bellas@nbcuni.com	Joe Bellas

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10/19/2005 14:39	mike@wspa.org	Mike Wang
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3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
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4/7/2010 8:58	jdougall@lvmwd.com	Jan Dougall
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
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5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
5/3/2010 17:45	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
5/10/2010 17:08	robert.ruscitto@arcadis-us.com	Robert Ruscitto
6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
6/2/2010 19:24	hnazarian@hfinc.com	Henrik Nazarian
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/13/2010 17:13	ileeleviten@yahoo.com	Ian Lee-Leviten
6/20/2010 10:36	pmglick@gmail.com	Peter Glick
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7/20/2010 16:08	jdettle@TorranceCA.gov	John Dettle
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4/19/2012 8:41	gilbert.ogaz@dot.ca.gov	Gilbert Ogaz
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5/27/2012 12:38	suzi_youssef@ymail.com	Suzi Youssef
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7/21/2012 16:48	ffederico@ioes.ucla.edu	Felicia Federico
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/30/2012 12:44	jjaakola@annenbergfoundation.org	Jackie Jaakola
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
8/13/2012 19:23	fmcchesney@waterboards.ca.gov	Frances McChesney
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/29/2012 8:24	ggreene@cwecorp.com	Gerald Greene
8/30/2012 11:59	cgallon@waterboards.ca.gov	Celine Gallon
9/4/2012 17:27	mbw61@aol.com	Mike Wlliams
9/11/2012 15:52	mmotto@geosyntec.com	Megan Otto
9/14/2012 12:16	myanai@counsel.lacounty.gov	Mark Yanai
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
11/20/2012 16:15	gtakayesu@honolulu.gov	Gerald Takayesu
12/11/2012 15:01	editorial@malibutimes.com	Carly Erickson
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
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3/12/2013 10:04	Christy_Brigham@nps.gov	Christy Brigham
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10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
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1/23/2017 16:12	adriell@lwa.com	Adriel Leon
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1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
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2/11/2010 12:11	jason@andersenenviro.com	Jason Ironi
2/27/2010 15:59	pmglick@gmail.com	Peter Glick
3/16/2010 12:47	clopez@dpw.lacounty.gov	Christopher Lopez
3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
4/7/2010 8:58	jdougall@lvmwd.com	Jan Dougall
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 16:17	einnes@dpw.lacounty.gov	Emiko Innes
4/29/2010 7:28	hanslaetz@gmail.com	Hans Laetz
5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
5/3/2010 17:45	selimeren@gmail.com	SELIM EREN
5/6/2010 8:17	jsvensson@dpw.lacounty.gov	Josh Svensson
6/1/2010 15:38	miriam.ejcw@gmail.com	Miriam Torres
6/3/2010 11:25	landtrust@ballona.org	Michele Bigelow
6/3/2010 12:43	blosey@rbf.com	Brad Losey
6/21/2010 10:10	karenc@lwa.com	Karen Cowan
6/28/2010 13:58	liz@smbaykeeper.org	Liz Crosson
7/21/2010 13:21	jagjiwan_grewal@dot.ca.gov	Jagjiwan Grewal
7/30/2010 15:00	shada@waterboards.ca.gov	Stefanie Hada
9/10/2010 15:36	alfredo.magallanes@lacity.org	Alfredo Magallanes
9/14/2010 10:01	markbaker@physislabs.com	Mark D. Baker
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
9/23/2010 7:17	rabbott5@toromail.csudh.edu	Rodney Abbott
10/8/2010 11:55	martinagarnier@gmail.com	Martin Garnier
11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett

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11/9/2010 18:17	deana@aquabio.us	DeAna Vitela-Hayashi
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 8:59	gail.m.campos@usace.army.mil	Gail Campos
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
12/13/2010 9:01	sanghera@anchorqea.com	Shelly Anghera
12/23/2010 20:27	info@ecokai.com	Jim Burton
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2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
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11/7/2011 14:06	kirk.c.brus@usace.army.mil	Kirk Charles Brus
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
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1/11/2014 17:54	marvin@brashind.com	Marvin H. Sachse
1/13/2014 13:08	daniel@fantaseayachts.com	Daniel Ginzburg
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1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/15/2014 22:00	bwschaf@gmail.com	Bruce Schaffer
1/19/2014 8:06	dutragroup@gmail.com	Steven Thompson
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2/5/2014 23:39	yachtsforfun@aol.com	Winstead Weaver
2/6/2014 18:46	jerry6185@gmail.com	Jerry
2/7/2014 12:15	bmoore310@ca.rr.com	Bill Moore
2/7/2014 16:33	smwyc06@gmail.com	Harlan Holmes
2/10/2014 10:03	pgriffith@lacsd.org	Patrick Griffith
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
2/13/2014 9:23	joshuamerel@gmail.com	Joshua Merel
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2/18/2014 16:48	maureen.gorsen@alston.com	Maureen Gorsen
2/21/2014 11:49	anadjarian@vectisstrategies.com	Aram Nadjarian
3/3/2014 17:44	davidw20003@yahoo.com	David Warren
3/15/2014 20:25	FoodieJoan@gmail.com	Joan Lavine
3/26/2014 18:12	snichols@allenmatkins.com	Sandi Nichols
3/27/2014 18:04	lauren@stefangeorge.com	Lauren De Valencia
3/29/2014 7:17	charles.michaels@laaco.net	Charles Michaels
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/7/2014 13:15	janet.cooper@ritzcarlton.com	Tony Mira
4/7/2014 13:17	greg@hregllc.com	Gregory F. Schem
4/7/2014 13:18	cemcguire@cox.net	Charles McGuire_ Willaim Arnold Lessees
4/7/2014 13:20	john.adriany@yahoo.com	John Adrany
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
4/10/2014 13:12	ychebabi@ladpw.org	youssef chebabi
4/10/2014 14:47	lansford.ruth@gmail.com	Ruth Lansford
4/23/2014 12:28	mtripp@bh.lacounty.gov	Michael Tripp
4/25/2014 13:08	carlson@mcandc.com	Stephen Carlson
5/8/2014 15:51	jerry@desmondlobbyfirm.com	Gerald J Desmond Jr
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/22/2014 12:50	jim@cmanc.com	jim haussener
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
7/23/2014 11:44	LaurelHoctorJones@gmail.com	Laurel Hoctor Jones
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8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
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11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 11:54	alicia_black@avalonbay.com	Alicia Black
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
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2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/5/2015 13:43	michelle.bowman@amecfw.com	Michelle Bowman
2/10/2015 14:04	martin.molly@epa.gov	Molly Martin
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3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
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7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/15/2015 11:24	dick@pacrl.com	richard botke
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
10/6/2015 14:38	ghina.yamout@altaenviron.com	Ghina Yamout
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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1/22/2016 11:43	amanda.hall@sen.ca.gov	Amanda Hall
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/19/2016 14:44	crivers@cwecorp.com	Cindy Rivers
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
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6/27/2016 13:32	daneh.haj@sce.com	Daneh Haj-Manouchehri
7/6/2016 6:55	itseng@dpw.lacounty.gov	Iwen Tseng
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11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
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2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
3/7/2017 9:25	tmarella@rinconconsultants.com	Travis Marella
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3/2/2005 10:56	jdeakin@simivalley.org	Joe Deakin
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1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
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6/20/2010 10:36	pmglick@gmail.com	Peter Glick
6/21/2010 10:10	karenc@lwa.com	Karen Cowan
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7/30/2010 15:00	shada@waterboards.ca.gov	Stefanie Hada
9/14/2010 10:01	markbaker@physislabs.com	Mark D. Baker
9/22/2010 15:44	sbirosik@waterboards.ca.gov	Shirley Birosik
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11/9/2010 15:33	ecamster@yahoo.com	Camie Pickett
11/9/2010 15:35	rrozz@parks.ca.gov	Richard Rozzelle
11/9/2010 15:47	dparkinson@geosyntec.com	David Parkinson
11/9/2010 15:50	kwang@waterboards.ca.gov	Kenny Wang
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11/9/2010 16:49	rscoultas@msn.com	robert d. coultas
11/9/2010 17:11	leo.raab@wecklabs.com	Leo Raab
11/9/2010 20:36	lakesidemedia@earthlink.net	Timothy Bramet
11/10/2010 8:28	bsteets@geosyntec.com	Brandon Steets
11/10/2010 15:17	kchapman@spweather.net	Ken Chapman
11/12/2010 14:05	rkrimmer@atozlaw.com	Robert krimmer
11/14/2010 8:00	hipshotspl@gmail.com	Spencer Leafdale
11/15/2010 9:11	bdingman@lvmwd.com	Brett Dingman

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2/2/2011 14:43	snania@forester.net	
2/17/2011 14:19	lharris@casitaswater.com	Larry W Harris
2/18/2011 11:31	wade@grahamstudio.net	Wade Graham
2/24/2011 9:15	cchang@wrd.org	Cathy Chang
3/9/2011 15:14	sanghera@anchorqea.com	Shelly Anghera
3/10/2011 10:39	kemmerer.john@epa.gov	John Kemmerer
4/3/2011 19:01	uhdenr@metro.net	Roger Uhden
4/8/2011 13:18	rwatson@rwaplanning.com	Richard A. Watson
5/3/2011 10:09	ncorpuz@gmail.com	Nicole Corpuz
5/6/2011 8:10	kevarts@rbf.com	Kevin Evarts
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6/11/2011 22:09	Daniel.Lee@Arcadis-us.com	Daniel K. Lee
6/11/2011 22:09	humanhealthrisk@gmail.com	Daniel K. Lee
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11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
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11/8/2011 18:33	dancerdawg@yahoo.com	Kurt Johnson
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 10:54	ksmolenhouse@msn.com	Sally Molenhouse
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11/10/2011 13:07	Kurt@saticoycountryclub.com	Kurt Desiderio
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11/16/2011 10:14	jconrowcpa@gmail.com	Jerry Conrow
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11/18/2011 9:53	patnorris@roadrunner.com	Patricia Mercer Norris
11/21/2011 16:41	grant@ci.ojai.ca.us	Greg Grant
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12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
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6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
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2/25/2009 7:32	alasso@dpw.lacounty.gov	Aracely Lasso
3/2/2009 11:26	kbrophy@gswater.com	Katherine Brophy
4/6/2009 19:07	janswift@live.com	jan andrew swift
4/7/2009 6:53	bruceheyman@cox.net	Bruce Heyman

4/7/2009 11:22	geraldine.trivedi@redondo.org	Geraldine Trivedi
4/8/2009 15:48	michael.blum@gmail.com	Michael Blum
5/6/2009 18:08	sndworsky@gmail.com	Susan Dworsky
5/12/2009 14:13	lbond@rwglaw.com	Lisa Bond
5/20/2009 11:51	peter.gutierrez@lw.com	Peter J. Gutierrez
5/27/2009 12:47	sadie.iverson.az@gmail.com	Sadie Iverson
5/28/2009 18:07	dboggs@craworld.com	Dave Boggs
6/9/2009 10:25	rdalfarra@sespeconsulting.com	Rob DalFarra
6/19/2009 9:10	kevin@g4grp.com	kevin p. garrity
7/29/2009 13:55	ndupont@rwglaw.com	Norman Dupont
7/31/2009 16:20	lfeldman@localgovlaw.com	Lauren Feldman
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8/3/2009 10:35	scheng@sgch.org	Angela Cheng
8/5/2009 16:24	cdeleau@schmitzandassociates.net	Christopher M. Deleau
8/6/2009 9:54	kmoore@sunstarlabs.com	Kevin Moore
8/7/2009 13:15	creyes@lvmwd.com	Carlos G. Reyes
8/12/2009 15:28	rkolb@sandiego.gov	Kolb, Ruth
8/24/2009 9:40	rfreeman@lawa.org	Robert Freeman
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9/14/2009 14:13	andrea.crumpacker@westonsolutions.com	Andrea Crumpacker
9/25/2009 11:09	ann.laduca@tetratech.com	Ann LaDuca
10/6/2009 13:20	hanslaetz@gmail.com	Hans Laetz
10/20/2009 12:26	dpatton@integratedwaterservices.com	David Patton
11/24/2009 8:58	rick.valte@smgov.net	Rick T. Valte, PE
12/15/2009 10:51	tony.barboza@latimes.com	Tony Barboza
12/15/2009 10:59	john.r.madden@usace.army.mil	John Madden
1/12/2010 8:06	pcmsusa@hotmail.com	Raymond Wells PhD
1/13/2010 15:26	jan@mlagreen.com	Jan Dyer
2/2/2010 9:23	kristy.allen@tetratech.com	Kristy Allen
2/27/2010 15:59	pmglick@gmail.com	Peter Glick
3/9/2010 9:28	nascarjws@yahoo.com	John Schwartz
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3/16/2010 13:45	Chien_pei_yu@dot.ca.gov	Chien-pei M. Yu
3/22/2010 15:01	Hamid.Tadayon@lacity.org	Hamid Tadayon
4/5/2010 11:48	kruffell@lacsd.org	Kristen Ruffell
4/8/2010 10:14	ewelina.mutkowska@ventura.org	Ewelina Mutkowksa
4/11/2010 11:28	Marcella_Ketelhut@msn.com	Marcella Ketelhut
4/20/2010 15:56	jkaur@ch2m.com	Jagjit Kaur
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5/3/2010 11:29	michael.scaduto@lacity.org	Michael Scaduto
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10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/23/2012 17:54	paul@venicedispatch.info	Paul Chavez
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
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11/12/2012 20:28	rw@malibu-arts-journal.com	
11/26/2012 17:49	carren.jao@gmail.com	Carren Pineda
12/11/2012 15:01	editorial@malibutimes.com	Carly Erickson
12/21/2012 15:07	Hyginus.Mmeje@Lacity.org	Hyginus Mmeje
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/9/2013 10:12	ccarreon@ecokai.com	Carlos Carreon
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1/22/2013 8:04	mbenavides@dpw.lacounty.gov	Marcela Benavides
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3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/12/2013 10:04	Christy_Brigham@nps.gov	Christy Brigham
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
3/28/2013 14:38	shieldsmoose@gmail.com	Rebecca Shields Moose
4/16/2013 16:08	kimberly@colbertgroup.com	Kimberly Colbert
5/28/2013 10:50	ychebabi@dpw.lacounty.gov	Youssef Chebabi
6/3/2013 15:57	Cy.Oggins@slc.ca.gov	
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6/12/2013 12:34	cary@wkrklaw.com	Cary Reisman
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1/10/2014 19:35	genelucero213@gmail.com	Gene Lucero
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1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/5/2014 14:54	eoffermann@gmail.com	Eddie Offermann
2/7/2014 14:05	kehrlich@elkinskalt.com	Ken Ehrlich
2/12/2014 22:46	douglaspfay@aol.com	Douglas Fay
3/3/2014 17:44	davidw20003@yahoo.com	David Warren
3/7/2014 10:58	gaby@brashind.com	Gabrielle Zamora
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
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5/22/2014 12:50	jim@cmanc.com	jim haussener
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7/16/2014 9:27	tommy.wells@amec.com	Tommy Wells
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11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:31	evan.arnold@gmail.com	Evan Arnold
11/10/2015 20:43	quezada1@gmail.com	Alma Quezada
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbenjamin	Peter Benjamin
11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 12:03	maryann.lutz@mail.house.gov	Mary Ann Lutz
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1/17/2016 16:12	katlh9@gmail.com	Katherine Hunt
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
1/25/2016 7:39	mklee@jlha.net	Mikki Klee
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5/30/2012 13:01	MeredithClement@kennedyjenks.com	Meredith Clement
6/6/2012 14:41	jkelly@wheelerandgray.com	John Kelly
6/8/2012 7:55	AMangelsdorf@waterboards.ca.gov	Alydda Mangelsdorf
6/24/2012 7:12	filkins@impulse.net	Barbara Filkins
6/26/2012 11:30	ctregulations@gmail.com	Jennifer Claassen
6/28/2012 10:09	kdmven@earthlink.net	Kioren Moss
7/6/2012 10:16	WENDY.WANG@bbklaw.com	Wendy Wang
7/20/2012 15:25	ncox@parks.ca.gov	Nat Cox
7/24/2012 9:27	bbarry@waterboards.ca.gov	Barbara Barry
7/31/2012 15:34	veronica.shannon@erm.com	Veronica Shannon
8/13/2012 19:23	fmcchesney@waterboards.ca.gov	Frances McChesney
8/13/2012 19:24	njohnson@waterboards.ca.gov	Nicole Johnson
8/30/2012 11:59	cgallon@waterboards.ca.gov	Celine Gallon
9/4/2012 17:27	mbw61@aol.com	Mike Wlliams
9/5/2012 7:52	Buzbonsall@gmail.com	Shull Bonsall Jr.
9/26/2012 11:15	mmcmeechan@environcorp.com	Melissa McMeechan
10/5/2012 15:01	dillardjoyce@yahoo.com	Joyce Dillard
10/24/2012 13:27	rebecca.veiga@ag.ok.gov	Rebecca Veiga Nascimento
10/30/2012 12:51	rpiamonte@dpw.lacounty.gov	Rafael Piamonte
11/6/2012 10:35	tina@rasnowpeak.com	Tina Rasnow
11/8/2012 15:11	Dan.Askenaizer@WQTS.com	Dan Askenaizer
11/12/2012 3:47	karyn_schmidt@americanchemistry.com	Karyn Schmidt
11/12/2012 20:28	rw@malibu-arts-journal.com	
12/11/2012 15:01	editorial@malibutimes.com	Carly Erickson
12/12/2012 16:02	JWestfall@lacsd.org	Josh Westfall
12/20/2012 16:02	betsye@lwa.com	Betsy Elzufon
12/28/2012 10:45	dornl@sacsewer.com	linda dorn
1/3/2013 12:06	rnamvar@rmcwater.com	Reza Namvar
1/9/2013 10:43	jnfireball@yahoo.com	Jane E. Nelson
1/12/2013 15:27	davert85@hotmail.com	David Boyer
1/15/2013 13:39	oliver.slosser@us.mwhglobal.com	Oliver Slosser
1/26/2013 11:00	pooprintswest@gmail.com	Kevin Sharpton
1/30/2013 17:53	zack@waterqualityconsultinggroup.com	Zack Moran
2/11/2013 11:41	generalmanager@lvmwd.com	Kimmey Conklin

2/11/2013 20:06	aridlands@woodbury.edu	Peter Arnold
3/3/2013 20:06	jwolfe@limno.com	John Wolfe
3/20/2013 22:00	randerson@rjreng.com	Robert W. Anderson
4/17/2013 12:40	bbondy@calleguas.com	Bryan Bondy
4/29/2013 14:01	ferdmana@gmail.com	Alan Ferdman
5/1/2013 7:20	kelly.hahs@ventura.org	Kelly Hahs
5/17/2013 11:49	dpedersen@lvmwd.com	David W. Pedersen
6/3/2013 15:58	Cy.Oggins@slc.ca.gov	
6/3/2013 15:58	Jennifer.Lucchesi@slc.ca.gov	
6/6/2013 9:11	amelgoza-mendez@semprautilities.com	Adriana Melgoza-Mendez
6/12/2013 16:42	crholguin@yahoo.com	Claudia Holguin
7/1/2013 10:29	bnewton@newtongh.com	Brad Newton
7/31/2013 14:22	pshellenbarger@healthebay.org	Peter Shellenbarger
9/24/2013 8:06	chowing@rkagroup.com	Cody Howing
9/27/2013 16:05	rsawyer@rmmenvirolaw.com	Robert Sawyer
10/28/2013 9:32	sonya.m.webb@gmail.com	Sonya Webb
10/31/2013 9:30	jeff.shaw@stantec.com	Jeff Shaw
11/12/2013 15:42	Khalid.Abdullah@waterboards.ca.gov	Khalid Abdullah
11/20/2013 7:42	pete.osmolovsky@waterboards.ca.gov	Peter Osmolovsky
11/25/2013 10:57	jennad@sbck.org	Jenna Driscoll
11/26/2013 7:04	newsletters@watrhub.com	John Newsletter
12/30/2013 11:01	ykouwonou@dpw.lacounty.gov	Yao Kouwonou
1/14/2014 15:57	amonterrosa@dpw.lacounty.gov	Antonino Monterrosa
1/21/2014 8:12	charles.genkel@ventura.org	Charles Genkel
1/27/2014 18:18	richard@haimann.com	Richard Haimann
2/10/2014 9:35	gatkinson@mansonconstruction.com	George Atkinson
3/7/2014 14:46	nmaguire@fcoplaw.com	Neal Maguire
4/4/2014 14:44	Roger.Mitchell@waterboards.ca.gov	Roger Mitchell
4/9/2014 21:16	david.renfrew@altaenviron.com	David Renfrew
5/21/2014 15:34	richroman@live.com	Richard Roman
5/21/2014 16:08	hafezghafari@yahoo.com	Hafez Ghafari
5/22/2014 12:50	jim@cmanc.com	jim haussener
5/27/2014 16:55	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/12/2014 11:14	jariley@amgen.com	James Riley
6/16/2014 8:47	teaguecaitlyn@gmail.com	Caitlyn Teague
8/6/2014 9:27	JDodge@DBStephens.com	John J Dodge
8/14/2014 11:37	mikeh@ejharrison.com	Mike Harrison
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
8/25/2014 9:28	kmiller@haleyaldrich.com	Katherine Rose Miller
9/1/2014 19:29	charlesdriggers.ca@outlook.com	
9/24/2014 10:41	dana@unitedstormwater.com	Dana De Guzman
10/8/2014 15:42	eripley@algcorp.com	Elliott Ripley
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George

1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/13/2015 13:58	cjones@scsengineers.com	Cory Jones
1/13/2015 13:58	emurphy@treepeople.org	Edward Murphy
1/26/2015 15:27	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:47	nancy@farmbureauvc.com	Nancy Broschart
1/29/2015 14:12	chad.lamacchia@ladwp.com	Chad Lamacchia
1/30/2015 9:26	phillip.lopez@jmsmucker.com	Phillip Lopez
2/3/2015 17:37	jeremy.burns@amecfw.com	Jeremy Burns
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/10/2015 6:19	gramsay@venocoinc.com	George Ramsay
2/23/2015 8:45	steve.granade@navy.mil	Steve Granade
3/8/2015 10:36	stormwaterexpertsllc@gmail.com	Arthur Sakaev
3/9/2015 11:13	jon.lefevre@jmsmucker.com	Jonathan LeFevre
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
3/27/2015 13:19	chris.lopez@waterboards.ca.gov	Chris Lopez
4/6/2015 14:48	jntrotter@burnsmcd.com	Jennifer Trotter
4/10/2015 15:43	hoconnell@mnsengineers.com	Heather O'Connell
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/18/2015 16:37	cindyzhang@singtaola.com	Cindy Zhang
4/21/2015 15:13	david.harter@ojaisan.org	David Harter
4/21/2015 21:29	rkampalath@healthebay.org	Rita Kampalath
4/28/2015 6:38	craig.hoover@fda.hhs.gov	Craig Hoover
5/1/2015 9:00	alberto.angelini@dot.ca.gov	Alberto Angelini
5/7/2015 10:26	joshuas@sccwrp.org	Joshua Steele
5/15/2015 15:55	onlibst@yahoo.com	Douglas Schmalenberger
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass
5/26/2015 10:22	withwind2@gmail.com	Larry W. Harris
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/25/2015 10:04	csmith@greenbergglusker.com	Christopher Smith
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
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8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
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9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
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10/30/2015 16:44	skoken@semprautilities.com	Scott Koken
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
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11/30/2015 9:18	cwgrldotty78@gmail.com	Dorothy Horn
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1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
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2/9/2016 13:29	jeffrey.sanchez@waterboards.ca.gov	Jeff Sanchez
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3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
4/19/2016 10:54	lnichols@cabrilloedc.org	
4/29/2016 8:38	gzamora@twininginc.com	Gabrielle Zamora
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/5/2016 16:44	Gerhardt@sslocsd.us	Gerhardt Hubner
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5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/26/2016 8:50	sawyer.rob@icloud.com	Rob Sawyer
8/18/2016 13:20	Erum.Razzak@waterboards.ca.gov	Erum Razzak
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/7/2016 8:34	kristy.monji@crc.com	Kristy Monji
9/8/2016 9:36	lhlampara@aeraenergy.com	Louise Lampara
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10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/25/2016 14:01	atariq@renovitas.com	Annum Tariq
11/10/2016 10:58	Shanta.Keeling@waterboards.ca.gov	Shanta Keeling
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/1/2016 14:10	Michael.Oguro@dot.ca.gov	Michael S. Oguro P.L.A
12/8/2016 11:17	sjepsen@dudek.com	Steve Jepsen
12/13/2016 7:56	hcox@toaks.org	Helen Cox
12/19/2016 17:11	cdalessandro@geosyntec.com	Chris D'Alessandro
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour

1/26/2017 12:18	david.laak@ventura.org	David Laak
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
2/13/2017 13:14	kmoran@tdcenvironmental.com	Kelly Moran
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/16/2017 20:33	edm@malibuonline.com	EUGENE DONALD MICHAEL
3/7/2017 9:25	tmarella@rinconconsultants.com	Travis Marella
3/7/2017 15:28	Tachiki.Nicole@epa.gov	Nicole Tachiki
3/10/2017 15:01	Bryand.Duke@wildlife.ca.gov	Bryand Duke
4/4/2017 18:31	neotecuv@neotecuv.net	Sunny Kim
4/6/2017 8:32	info@cleanwatertechnologies.net	Michael Omary

From: Nye, LB@Waterboards

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Cc: Purdy, Renee@Waterboards; Zhu, Jun@Waterboards

Subject: Notice of Availability : Revised Documents, Response to Comments for the Proposed 303(d) List for the Los Angeles Region

Date: Monday, May 1, 2017 5:05:04 PM

Subject: Notice of Availability of Revised Documents and Response to Comments for the Proposed Revisions to the Clean Water Act Section 303(d) List for the Los Angeles Region and the 2016 Integrated Report

The Los Angeles Water Board has posted comment letters received and response to comments for the workshop on the proposed revisions to the Clean Water Act Section 303(d) list for the Los Angeles Region and the 2016 Integrated Report. It is anticipated that revised staff report, including appendices will be released soon depending on the functionality of the CalWQA database.

The documents are posted on Los Angeles Water Board website at:
http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d/2016/2016_303d.shtml

The workshop is scheduled during the Los Angeles Water Board's scheduled board meeting on:

Date: Thursday, May 4, 2017
Time: 9:30 a.m.
Place: City of Pasadena
Council Chambers
100 North Garfield Avenue
Pasadena, CA 91101

ADDITIONAL MATERIAL TO BE INCLUDED IN THE AGENDA PACKAGE

ITEM: 9

SUBJECT: Workshop on the proposed revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

FROM: Renee Purdy PHONE: 213-576-6622

DATE: May 1, 2017

BOARD MEETING DATE: May 4, 2017

Please add or replace Items to your Board Package behind Divider Tab 9

	Tab	Item	Page No.
Replace	9-1	Executive Summary	9-1
Replace	9-4	Appendix A – Proposed Updates to the 303(d) List	9-25
Add	9-6	Response to Comments	9-1096

TO: __ X ____ ALL BOARD MEMBERS

___ FRANCINE DIAMOND
___ JAMES FAMIGLIETTI
___ MADELYN GLICKFELD
___ CYNTHIA GUZMAN
___ IRMA MUNOZ
___ CHARLES STRINGER
___ LAWRENCE YEE

ATTORNEYS

__ X __ DAVID COUPE
___ JENNIFER FORDYCE
___ FRANCIS McCHESNEY

Consideration of the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

REVISED EXECUTIVE SUMMARY

California Regional Water Quality Control Board
Los Angeles Region
May 4, 2017

Item Number: 9

Proposed Board Item: Workshop on Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

Background: **Introduction.** The federal Clean Water Act requires each state to assess the status of water quality in the state (per section 305(b)), and provide a list of impaired waterbodies (per section 303(d)) to the U.S. Environmental Protection Agency (USEPA) every two years. An “Integrated Report” documents the outcome of these two efforts.

These efforts entail reviewing available monitoring data for surface waters, including river reaches, tributaries, lakes, and coastal waters. Waterbodies are evaluated for their support of beneficial uses including, among others, aquatic life support, fish consumption, recreation, and municipal and domestic supply based on a comparison of water quality data to applicable water quality objectives. Waterbodies are placed into one of five non-overlapping categories based on the overall beneficial use support of the water segment and the need for a TMDL.

Waterbody Categories

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data to make a beneficial use support determination but data indicate beneficial uses may be threatened.
4	At least one beneficial use is not supported, but a TMDL is not needed.
4a	*One or more TMDLs have been developed and approved by USEPA for all pollutants causing impairment.*
4b	*Another regulatory program is reasonably expected to result in attainment of the water quality standard.*
4c	*The impairment is the result of pollution, not a pollutant.*
5	At least one beneficial use is not supported and a TMDL is still needed.

Waterbodies listed in categories 4a, 4b and 5 make up the 303(d) list. For water quality limited segments (a.k.a. impaired waterbodies) included on the 303(d) list, the state is required to develop a Total Maximum Daily Load (TMDL) or take other action to address the impairment.

Scheduling. The State Water Board has established a procedure for developing California's statewide "Integrated Report," including its 303(d) list, in which groups of three Regional Water Boards submit their regional "Integrated Reports" and 303(d) lists in a rotating fashion every six years. The State Water Board established this procedure in consideration of the large size of the State, the extensive amount of data to evaluate, and the increasing complexity of data analysis. In addition, beginning with the 2018 303(d) list, all data to be evaluated by the Water Boards for the Integrated Report and 303(d) list must be submitted to the California Environmental Data Exchange Database (CEDEN).

The State Water Board adopted these changes as amendments to the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) in February 2015. The purpose of these and other changes is to improve the State of California's ability to produce a statewide 303(d) list every two years.

The last update to the State's 303(d) list that included the Los Angeles Region was the 2010 303(d) list. The 2010 303(d) list included data submitted through February 28, 2007. For the 2016 303(d) list, the State Water Board accelerated the schedule for Regions 2, 4 and 8 and set a deadline of May 2017 for these Regional Water Boards to provide their region's changes to the 303(d) list. The State Water Board determined that the 2016 303(d) list for these three regions would only address data submitted prior to August 30, 2010, which is the same data period as for the other six regions' most recent 303(d) lists. The State Water Board intends to consider the 303(d) lists for Regions 2, 3, 4, 5, 8, and 9 in fall 2017. The State Water Board previously approved the 303(d) lists for Regions 1, 6, and 7.

Workflow. During this process, the State and Regional Water Boards have divided the work in the following manner. State Water Board staff solicited data, reviewed the data received, entered all acceptable data into the California Water Quality Assessment (CalWQA) database, and created lines of evidence (LOEs) to be considered at the decision-making stage. Each LOE addresses a specific waterbody pollutant combination. The key fields in the LOEs include, but are not limited to, waterbody name, pollutant, beneficial use assessed, sample type (water, sediment, or tissue), evaluation guideline (i.e., applicable water quality objective), number of samples and number of exceedances.

Each LOE also identifies the spatial and temporal representation of the samples as well as quality assurance information. Regional Water Board staff assessed the LOEs in CalWQA and made the listing recommendations of "list," "do not list," "delist" or "do not delist." For this list update, Regional Water Board staff reviewed approximately 11,000 LOEs and made approximately 5,800 decisions.

All of the waterbodies assessed, whether in previous listing cycles or this listing cycle, are grouped into the categories presented in the table above. The waterbodies in each category are listed in appendices to the Staff Report. As previously indicated, the lists of waterbodies in categories 4a, 4b and 5 are those that comprise the 303(d) list. Lists of the waterbodies in the other categories are provided, but do not require Board approval per the State's Listing Policy.

The Staff Report and Appendix A to the Staff Report, "Proposed Updates to the 303(d) List," are included in the Board Package. Appendices B - H are provided as web links due to the length of the documents, and to preserve access to hyperlinks embedded in these appendices. For each proposed change to the 303(d) list, a "factsheet" with detailed information on the decision is available (Appendix G).

Stakeholder Participation

The State Water Board issued a public solicitation for water quality data on January 14, 2010 (and an amended solicitation on May 24, 2010). The data solicitation closed on August 30, 2010.

The Los Angeles Water Board publicly noticed the Tentative Resolution and Staff Report with appendices including factsheets for this listing cycle on February 8, 2017 for a 30-day public comment period. In response to stakeholder requests, the Los Angeles Water Board extended the public comment deadline to March 30, 2017. During the public comment period, Board staff met with several commenters.

Summary of Comments

The Los Angeles Water Board received 32 comment letters from municipalities, POTW agencies, other dischargers, and environmental non-profit organizations.

The majority of comments concerned the appropriateness of a specific pollutant or waterbody condition being included or not included on the 303(d) list of impaired waters. The Board's responses are included in the Response to Comments. We present some of the key comments and responses below.

Several commenters identified instances where data submitted to the State Water Board by the August 2010 deadline were not included in the CalWQA database. Several commenters also noted that LOEs were developed to evaluate a municipal and domestic water supply (MUN) beneficial use in waters where the MUN use was conditionally designated (i.e., identified as MUN P" in the Basin Plan). These LOEs were developed in error. To address these comments, Regional Water Board staff will work with the State Water Board staff to resolve them prior to consideration by the State Water Board.

In addition, several commenters identified instances where data were not assigned to the correct waterbody because the mapping underlying the CalWQA database did not match the waterbody delineations in the Los Angeles Region Basin Plan. Board staff will work with State Water Board staff to correct the CalWQA mapping and propose revised decisions, where appropriate. This will be addressed as soon as possible and no later than the next listing cycle for the Los Angeles Region.

Two commenters, Wishtoyo and Earth Law Center, provided comments on flow and flow-related listings that have long been on the Los Angeles Water Board's 303(d) list, such as listings for "fish barriers," "pumping" and "water diversion." The State's Listing Policy clarifies that the 303(d) list only covers waterbody impairments by "pollutants" (rather than flow-related listings such as pumping or water diversion). In addition, a TMDL already addresses four of these flow-related listings in the Ventura River. In cases where a TMDL is addressing the listing, Board staff proposes to retain the listing as "being addressed by a TMDL" in the 4a category (or 5B if another pollutant requires a TMDL in that waterbody). In the other cases, Board staff proposes to remove the listing from the 303(d) list, since it is not a "pollutant". The Water Boards do not have a defined methodology or established thresholds for determining impairment due to non-pollutant related pollution and, more specifically, the Water Boards do not have an established approach to analyzing the extent to which flow-related alterations may cause water quality impairments relative to applicable water quality standards.

The Farm Bureau of Ventura County provided comments on listing decisions that were based primarily on data collected under the Irrigated Lands Conditional Waiver program. The Farm Bureau maintains that several of the waterbodies assessed are "agricultural ditches" and, therefore, not candidates for identification on the 303(d) list. Board staff finds that all these surface waters are subject to the provisions of section 303(d). However, we intend to review the data with the commenter to determine if waterbody-pollutant combinations could be included in Category 4b (where another regulatory program such as the Irrigated Lands Program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified timeframe).

Consideration of the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

REVISED EXECUTIVE SUMMARY

Many commenters noted that the proposed 303(d) list revisions only consider data up to 2010 and that more recent data would support different listing decisions. As discussed in the summary above, the State Water Board determined that the Water Boards would only consider data through August 2010 for the 2016 303(d) list.

Finally, in response to comments, we have made a number of corrections to the 303(d) list by identifying more waterbody-pollutant combinations that are within the category of "being addressed by a TMDL."

Status of Response to Comments and Process Modification

The comment letters received are included in the Board Package. The Response to Comments will be included in a supplement to the Board Package. Due to the number of comments received, and the technical complexity of data review and CalWQA database modification, Board management has determined that a complete and technically accurate 303(d) list cannot be completed prior to the May 4, 2017 Board meeting. Given the State Water Board schedule of finalizing the State's 303(d) list at a State Water Board meeting in October 2017, Board management has modified the process for transmitting the Los Angeles Region's 303(d) list to the State Water Board.

This modified process will entail holding a Board workshop at the May 4th Board meeting as staff continue to revise the 303(d) list in light of the comments received. The State's Listing Policy allows for either Regional Water Board approval followed by State Water Board approval of a region's 303(d) list, or for the State Water Board to approve a region's 303(d) list. In this modified process for the Los Angeles Region 303(d) list, staff will not bring its recommendations to the Los Angeles Water Board for approval[1]; however, the Board's comments and direction at the workshop will be used in finalizing staff's listing/delisting recommendations for State Water Board consideration. After the workshop, the Los Angeles Water Board management and staff will provide its listing/delisting recommendations directly to the State Water Board. The State Water Board will then consider approval of the Los Angeles Region's 2016 303(d) list at a future State Water Board meeting this year.

The Los Angeles Water Board staff will provide notice to stakeholders and post on its website recommended revisions to the 303(d) list in response to the comments received prior to the State Board's release of the Statewide 303(d) list for public comment. Stakeholders can then respond directly to the State Water Board during the State Water Board

[1] Note that, since the Los Angeles Water Board is not taking action on the 303(d) list, Board members will not be asked to approve the tentative resolution included in the Board package behind tab 9-2.

public comment period, if they determine their comments submitted at the regional level were not fully addressed.

The 303(d) list is always a work-in-progress; new data are being collected continually, waterbody delineations are periodically updated, water quality objectives are added and/or modified, analytical methodologies advance, etc. While the 303(d) list is approved at set intervals, the Water Boards are continually working on it in some fashion. In light of this reality, and as indicated earlier, Regional Water Board staff will work with State Water Board staff to address several of the issues described above either prior to State Water Board consideration, or for mapping inconsistencies, as soon as possible and no later than the next listing cycle.

Further Action

As noted above, Board staff will forward its recommendations regarding changes to the Los Angeles Region 303(d) list to the State Water Board for inclusion in the Statewide 303(d) list. The Statewide list, including the Los Angeles Region's list, will be made available for another public comment period and will require approval by the State Water Board before being forwarded to USEPA for final approval.

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Date: 05/01/17

2016 INTEGRATED REPORT
SUMMARY OF REGIONAL BOARD RECOMMENDED CHANGES TO THE 2012 303(d) LIST
(includes Categories 4a, 4b, and 5)

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Abalone Cove Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Alamitos Bay	Indicator Bacteria				
		Oxygen, Dissolved	Y			
4	Alhambra Wash	Ammonia	Y			
		Benthic Community Effects	Y			
4	Aliso Canyon Wash	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Alondria Park Lake	PCBs (Polychlorinated biphenyls)	Y			
4	Amarillo Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	Benthic Community Effects	Y			
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Artesia-Norwalk Drain	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Arundell Barranca (Ventura County)	Indicator Bacteria	Y			
4	Ashland Avenue Drain	Indicator Bacteria			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Organic Enrichment/Low Dissolved Oxygen				
		Toxicity				
4	Avalon Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Balboa Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
		Toxicity	Y			
4	Ballona Creek	~~Cadmium~~		Y		
		ChemA				
		Chlordane				
		Copper				
		Cyanide				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria			Y	
		Lead				
		PCBs (Polychlorinated biphenyls)			Y	
		~~Selenium~~		Y		
		Silver			Y	
		Toxicity				
		Trash				
		Viruses (enteric)				
		~~Zinc~~		Y		
		pH				
4	Ballona Creek Estuary	Cadmium				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Indicator Bacteria			Y	
		Lead			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)			Y	
		Silver				
		Toxicity			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Zinc			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Ballona Creek Wetlands	Exotic Vegetation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Habitat alterations				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Hydromodification				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Reduced Tidal Flushing				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Bell Creek	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Big Rock Beach	Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bluff Cove Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Boulder Creek (Ventura County)	Bifenthrin	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Toxicity	Y			
4	Brown Barranca/Long Canyon	Nitrate and Nitrite				
4	Bull Creek	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bull Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
4	Burbank Western Channel	Ammonia				
		Cadmium				
		Copper				
		Cyanide				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Scum/Foam-unnatural				
		Selenium				
		Taste and odor				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash				
4	Cabrillo Beach (Outer)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Chlordane (tissue)				
		Copper				
		DDT (tissue & sediment)				
		Dieldrin				
		Endosulfan (tissue)				
		Mercury				
		Nickel				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene				
		Toxicity			Y	
		Zinc				
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Endosulfan			Y	
		Indicator Bacteria				
		Nitrogen				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Toxaphene			Y	
		Toxicity				
		Trash				
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		DDT (Dichlorodiphenyltrichloroethane)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dieldrin				
		Indicator Bacteria	Y			
		Mercury	Y			
		Nitrate and Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Total Dissolved Solids				
		Toxaphene				
		Trash				
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	Boron				
		ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chlorpyrifos (tissue)			Y	
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Fecal Coliform			Y	
		Nitrate as Nitrate (NO3)				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Selenium				
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chlorpyrifos (tissue)				
		DDT (tissue & sediment)				
		Dacthal (sediment)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Excess Algal Growth				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (sediment)				
		Diazinon				
		Dieldrin				
		Indicator Bacteria			Y	
		Nitrate and Nitrite				
		Nitrate as Nitrate (NO3)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Boron				
		Chloride				
		Chlorpyrifos				
		Diazinon				
		Indicator Bacteria				
		Organophosphorus Pesticides				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	Boron				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (Dichlorodiphenyltrichloroethane)				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Diazinon				
		Dieldrin				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue)				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue)				
		Nitrate as Nitrate (NO3)				
		Nitrogen, Nitrate				
		Nitrogen, Nitrite	Y			TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		~~Chlordane~~		Y		
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		~~Endosulfan (tissue)~~		Y		
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Nitrogen, Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	~~Ammonia~~		Y	Y	
		Chlordane (tissue)				
		Chlorpyrifos	Y			
		DDT (tissue)			Y	
		Diazinon	Y			
		Dieldrin				
		Malathion	Y			
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Canada Larga (Ventura River Watershed)	Indicator Bacteria			Y	
		Oxygen, Dissolved			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	Carbon Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Casitas, Lake	Mercury				
4	Castaic Lagoon	PCBs (Polychlorinated biphenyls)	Y			
4	Castaic Lake	Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Castlerock Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Channel Islands Harbor	Lead			Y	
		Zinc			Y	
4	Channel Islands Harbor Beach	Indicator Bacteria			Y	
4	Colorado Lagoon	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		Lead			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Compton Creek	Benthic Community Effects			Y	
		Copper				
		Indicator Bacteria				
		Iron	Y			
		Lead				
		Trash				
		Zinc	Y			
		pH				
4	Coyote Creek	Abnormal Fish Histology (Lesions)				
		~~Ammonia~~		Y		
		Copper, Dissolved				
		Diazinon				
		Excess Algal Growth				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron	Y			
		~~Lead~~		Y		
		Malathion	Y			
		Toxicity				
		Zinc				
		pH				
4	Coyote Creek, North Fork	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Crystal Lake	Organic Enrichment/Low Dissolved Oxygen				
4	Dan Blocker Memorial (Coral) Beach	Indicator Bacteria			Y	
4	Dockweiler Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Dominguez Channel (lined portion above Vermont Ave)	Aldrin				
		Ammonia			Y	
		ChemA				
		Chlordane				
		Chromium			Y	
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				
		~~Diazinon~~		Y		TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Aldrin				
		~~Ammonia~~		Y		
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		ChemA				
		Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium (total)				
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Zinc (sediment)~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Copper	Y			
		Oxygen, Dissolved	Y			
4	Dry Canyon Creek	Indicator Bacteria			Y	
		Selenium, Total				
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	Y			
		ChemA			Y	
		Chlordane				
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Nitrogen				
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene				
		Toxicity				
4	Echo Park Lake	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Ammonia~~		Y		
		Chlordane	Y			
		~~Copper~~		Y		
		Dieldrin	Y			
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	El Dorado Lakes	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Elderberry Forebay	Dieldrin	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Elizabeth Lake	Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
		Trash				
		pH				
4	Ellsworth Barranca	Chlorpyrifos	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDE (Dichlorodiphenyldichloroethylene)	Y			
4	Escondido Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Flat Rock Point Beach Area	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	Boron				
		Chlordane	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Sulfates				
		Total Dissolved Solids				
4	Hermosa Beach	~~Indicator Bacteria~~		Y	Y	
4	Hobie Beach (Channel Islands Harbor)	Indicator Bacteria			Y	
4	Honda Barranca	Bifenthrin	Y			
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
4	Hopper Creek	Sulfates				
		Total Dissolved Solids				
4	Hueneme Drain	Escherichia coli (E. coli)	Y			
		Trash	Y			
4	Inspiration Point Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	J Street Drain (Ventura County)	Trash	Y			
4	Javon Canyon	Benthic Community Effects	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Selenium	Y			
4	La Costa Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Calabasas	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Hughes	Algae				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Eutrophication			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		~~Fish Kills~~		Y		
		Odor				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Trash				
4	Lake Lindero	Algae				
		Chloride				
		Eutrophic				
		Odor				
		Selenium				
		Specific Conductivity				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Sherwood	Algae				
		~~Ammonia~~		Y	Y	
		Eutrophic				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Mercury (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Organic Enrichment/Low Dissolved Oxygen~~		Y	Y	
4	Las Flores Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Tunas Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Virgenes Creek	Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Organic Enrichment/Low Dissolved Oxygen			Y	
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Legg Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				
		pH				
4	Leo Carillo Beach (South of County Line)	~~Indicator Bacteria~~		Y	Y	
4	Lincoln Park Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 1	Algae				
		Benthic Community Effects				
		Indicator Bacteria			Y	
		Invasive Species				
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 2 (Above Lake)	Algae				
		Indicator Bacteria			Y	
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Beach City Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Cabrillo Marina	Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Consolidated Slip	2-Methylnaphthalene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Cadmium (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nickel				
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls) (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Fish Harbor	Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dibenz[a,h]anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Beach Closures				
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles River Estuary (Queensway Bay)	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	
		Trash				
		Zinc				
4	Los Angeles River Reach 1 (Estuary to Carson Street)	Aluminum				
		Ammonia				
		Cadmium				
		Copper, Dissolved				
		Cyanide				
		Diazinon				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Trash				
		Zinc, Dissolved				
		pH				
4	Los Angeles River Reach 2 (Carson to Figueroa Street)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Ammonia			Y	
		Copper				
		Indicator Bacteria	Y			
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Temperature, water	Y			
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	~~Ammonia~~		Y	Y	
		Benthic Community Effects	Y			
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 5 (within Sepulveda Basin)	Ammonia			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Copper				
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	1,1-Dichloroethylene (DCE)/ Vinylidene Chloride				
		Copper	Y			
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Tetrachloroethylene/PCE				
		Toxicity	Y			
		Trichloroethylene/TCE				
4	Los Angeles/Long Beach Inner Harbor	~~Beach Closures~~		Y		
		Benthic Community Effects				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Cerritos Channel	Ammonia				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Bis(2ethylhexyl)phthalate (DEHP)				
		Chlordane (sediment)				
		Copper				
		Indicator Bacteria			Y	
		Lead				
		Trash				
		Zinc				
		pH				
4	Los Sauces Creek	Selenium	Y			
4	Lunada Bay Beach	Beach Closures				
		Indicator Bacteria				
4	Machado Lake (Harbor Park Lake)	Algae				
		Ammonia				
		ChemA			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				
		Odor				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Trash				
4	Madranio Canyon	Benthic Community Effects	Y			
		Copper	Y			
		Selenium	Y			
4	Malaga Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y		
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Malibou Lake	Algae				
		Dieldrin	Y			
		Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
4	Malibu Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Malibu Creek	Benthic Community Effects			Y	
		Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Sulfates				
		Toxicity	Y			
		Trash				
4	Malibu Lagoon	Benthic Community Effects				
		Eutrophic				
		Indicator Bacteria			Y	
		Swimming Restrictions				
		Viruses (enteric)				
		pH				
4	Malibu Lagoon Beach (Surfrider)	Beach Closures				
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Manhattan Beach	~~Indicator Bacteria~~		Y	Y	
4	Marina del Rey Harbor - Back Basins	Chlordane			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Copper			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin			Y	
		Indicator Bacteria				
		Lead			Y	
		Oxygen, Dissolved	Y			
		PCBs (Polychlorinated biphenyls)			Y	
		Toxicity			Y	
		Zinc			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Marina del Rey Harbor Beach	Indicator Bacteria			Y	
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Creek Reach 2 (Above Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Reservoir	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	McCoy Canyon Creek	Indicator Bacteria			Y	
		Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium, Total				
4	McGrath Beach	Indicator Bacteria			Y	
4	McGrath Lake	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (sediment)				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	Algae				
		Benthic Community Effects	Y			
		Indicator Bacteria			Y	
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 2 (Abv Confl. with Lindero)	Algae				
		Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	Nitrate and Nitrite				
4	Monrovia Canyon Creek	Lead				
4	Munz Lake	Eutrophic				
		Trash				
4	Nicholas Canyon Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ormond Beach	Indicator Bacteria				
4	Ormond Beach Wetlands	Trash	Y			
		pH	Y			
4	Oxnard Drain	Escherichia coli (E. coli)	Y			
		Trash	Y			
		pH	Y			
4	Padre Juan Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	Palo Comado Creek	Indicator Bacteria			Y	
4	Palo Verde Shoreline Park Beach	Pathogens				
		Pesticides				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Paradise Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peck Road Park Lake	Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peninsula Beach	Indicator Bacteria				
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	Chloride				
		Toxicity	Y			
		pH				
4	Point Dume Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Fermin Park Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Mugu Beach	Indicator Bacteria	Y		Y	
4	Point Vicente Beach	Beach Closures				
		Indicator Bacteria				
4	Pole Creek (trib to Santa Clara River Reach 3)	Sulfates				
		Total Dissolved Solids				
4	Port Hueneme Beach Park	Indicator Bacteria	Y		Y	
4	Port Hueneme Harbor (Back Basins)	Arsenic	Y			
		Cadmium	Y			
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)	Y			
		PCBs (Polychlorinated biphenyls)			Y	
4	Port Hueneme Pier	PCBs (Polychlorinated biphenyls)				
4	Portuguese Bend Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Potrero Canyon Creek	Oxygen, Dissolved	Y			
4	Promenade Park Beach	~~Indicator Bacteria~~		Y	Y	
4	Puddingstone Reservoir	Chlordane			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Mercury			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Organic Enrichment/Low Dissolved Oxygen				
		PCBs (Polychlorinated biphenyls)			Y	
4	Puente Creek	Indicator Bacteria			Y	
		Selenium				
4	Puerco Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Pyramid Lake	Chlordane	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Redondo Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Resort Point Beach	Beach Closures				
		Indicator Bacteria				
4	Rincon Beach	Indicator Bacteria				
4	Rincon Parkway Beach	Indicator Bacteria	Y			
4	Rio De Santa Clara/Oxnard Drain No. 3	ChemA (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen				
		Nitrogen, Nitrate	Y			
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxaphene (tissue)				
		Toxicity			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Toxicity				
		Trash				
		Zinc				
		pH				
4	Rio Hondo Reach 2 (At Spreading Grounds)	Ammonia				
		Coliform Bacteria				
		Cyanide				
		Indicator Bacteria	Y			
		Iron	Y			
		Oxygen, Dissolved	Y			
		Toxicity	Y			
4	Robert H. Meyer Memorial Beach	~~Beach Closures~~		Y		
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Rocky Point Beach	Beach Closures				
4	Royal Palms Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	San Antonio Creek (Tributary to Ventura River Reach 4)	Indicator Bacteria				
		Nitrogen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	San Buenaventura Beach	Indicator Bacteria				
4	San Gabriel River Estuary	Abnormal Fish Histology (Lesions)				
		Copper				
		Dioxin				
		Indicator Bacteria	Y			
		Nickel				
		Oxygen, Dissolved				
		Toxicity	Y			
4	San Gabriel River Reach 1 (Estuary to Firestone)	Abnormal Fish Histology (Lesions)				
		Excess Algal Growth				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		~~Indicator Bacteria~~		Y	Y	
		Temperature, water	Y			
		Toxicity				
		pH				
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	Copper				
		Cyanide				
		~~Indicator Bacteria~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Temperature, water	Y			
		Zinc				
4	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Gabriel River, East Fork	Benthic Community Effects	Y			
		Trash				
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	Ammonia				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxicity				
		pH				
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
4	San Nicolas Canyon Creek	Trash	Y			
4	San Pedro Bay Near/Off Shore Zones	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium			Y	
		Copper			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	
4	Sanjon Barranca Creek	Escherichia coli (E. coli)	Y			
		Trash	Y			
4	Santa Clara River Estuary	Ammonia	Y			
		ChemA				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
		pH	Y			
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	Oxygen, Dissolved	Y			
		Toxicity				
		Trash	Y			
		pH	Y			
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	~~Ammonia~~		Y	Y	
		Chloride				
		Escherichia coli (E. coli)	Y			
		Indicator Bacteria	Y			
		Mercury	Y			
		Selenium	Y			
		Total Dissolved Solids				
		Toxicity				
		Trash	Y			
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	Ammonia			Y	
		Benthic Community Effects	Y		Y	
		Chloride				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron				
		Nitrate and Nitrite				
		Toxicity	Y			
		Trash	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	Ammonia				
		Chloride				
		Chlorpyrifos				
		Copper				
		Diazinon				
		~~Indicator Bacteria~~		Y	Y	
		~~Iron~~		Y		
		Temperature, water	Y			
		Toxicity				
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)	Trash	Y			
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	Boron				
		Specific Conductance				
		Sulfates				
		Total Dissolved Solids				
4	Santa Fe Dam Park Lake	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Bay Offshore/Nearshore	Arsenic	Y			
		Chlordane				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Toxicity~~		Y	Y	
		Trash			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Beach	Indicator Bacteria			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Santa Monica Canyon	Indicator Bacteria				
		Lead				
4	Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)	Trash	Y			
4	Sawpit Creek	Bis(2ethylhexyl)phthalate (DEHP)				
		~~Indicator Bacteria~~		Y	Y	
4	Sea Level Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Sepulveda Canyon	~~Ammonia~~		Y	Y	
		Copper				
		Indicator Bacteria				
		Lead				
		Selenium				
		Zinc				
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	Chloride				
		pH				
4	Solstice Canyon Creek	Invasive Species				
4	South San Jose Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
		pH	Y			
4	Stokes Creek	Indicator Bacteria			Y	
4	Surfers Point at Seaside	Indicator Bacteria				
4	Tapo Canyon	Chlordane	Y			
		Chloride	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		Malathion	Y			
		Nitrogen, Nitrate	Y			
		Specific Conductivity	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxicity	Y			
4	Timber Canyon	Chlorpyrifos	Y			
4	Topanga Beach	Beach Closures				

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Topanga Canyon Creek	Lead				
4	Torrance Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Torrance Carson Channel	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Torrey Canyon Creek	Nitrate and Nitrite				
4	Trancas Beach (Broad Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Triunfo Canyon Creek Reach 1	Benthic Community Effects	Y			
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Triunfo Canyon Creek Reach 2	Benthic Community Effects				
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Tujunga Wash (LA River to Hansen Dam)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Venice Beach	Indicator Bacteria			Y	
4	Ventura Harbor: Ventura Keys	Arsenic	Y			
		Cadmium	Y			
		Chlordane	Y			
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)	Y			

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dieldrin	Y			
		Indicator Bacteria	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Ventura Marina Jetties	DDT (Dichlorodiphenyltrichloroethane)				
		PCBs (Polychlorinated biphenyls)				
4	Ventura River Estuary	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Trash				
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Algae				
		Benthic Community Effects	Y			
		Temperature, water	Y			
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Benthic Community Effects	Y			
		Indicator Bacteria				
		Mercury	Y			
		Pumping				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity	Y			
		Water Diversion				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	Benthic Community Effects	Y			
		Pumping				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Temperature, water	Y			
		Water Diversion				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Verdugo Wash Reach 2 (Above Verdugo Road)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Walnut Creek Wash (Drains from Puddingstone Res)	Benthic Community Effects			Y	

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		~~Indicator Bacteria~~		Y		
		Toxicity				
		pH				
4	Westlake Lake	Algae				
		Ammonia				
		Eutrophic				
		Lead				
		Organic Enrichment/Low Dissolved Oxygen				
4	Wheeler Canyon/Todd Barranca	Chlordane	Y			
		Cypermethrin	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Specific Conductivity	Y			
		Sulfates				
		Total Dissolved Solids				
		Toxaphene	Y			
		Toxicity	Y			
4	Whites Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Wildlife Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
4	Will Rogers Beach	Indicator Bacteria			Y	
4	Wilmington Drain	Ammonia				
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
4	Zuma Beach (Westward Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

* Additional listings and delistings can be an artifact created from mapping changes such as the splitting of a water body into additional segments or the merging of water bodies into one single water body. Original 303(d) listings are copied to new segments and then delisted from the old segment. This generates listings and delistings that should not be included in important counts of new listings and delistings.

Response to Comments on the Draft 2016 303(d) List
Comment Deadline: March 30, 2017

List of Public Review Comment Letters
1. Wishtoyo Foundation and Ventura Coastkeeper, March 24, 2017
2. City of Rolling Hills Estates, March 28, 2017
3. City of Rosemead, March 28, 2017
4. City of Compton, March 29, 2017
5. City of Redondo Beach, March 29, 2017
6. City of Santa Clarita, March 29, 2017
7. Farm Bureau of Ventura County, March 29, 2017
8. Castaic Lake Water Agency, March 30, 2017
9. City of Azusa, March 30, 2017
10. City of Gardena, March 30, 2017
11. City of Los Angeles, Bureau of Sanitation, March 30, 2017
12. City of Manhattan Beach, March 30, 2017
13. City of Palos Verdes Estates, March 30, 2017
14. City of Pomona, March 30, 2017
15. City of San Fernando, March 30, 2017
16. City of Ventura, March 30, 2017
17. County of Los Angeles and Los Angeles County Flood Control District, March 30, 2017
18. County of Ventura Public Works Agency, March 30, 2017
19. County of Ventura and the Cities of Fillmore and Santa Paula, March 30, 2017
20. California Department of Water Resources, March 30, 2017
21. Earth Law Center, March 30, 2017
22. Heal the Bay, March 30, 2017
23. Los Angeles Department of Water and Power, March 30, 2017
24. Lower Los Angeles River Watershed Committee, March 30, 2017
25. Lower San Gabriel River Watershed Committee, March 30, 2017
26. Sanitation Districts of Los Angeles County, March 30, 2017
27. Santa Barbara Channelkeeper, March 30, 2017
28. Sherwood Valley Homeowners Association, March 30, 2017
29. Stakeholders Implementing TMDLs in the Calleguas Creek Watershed, March 30, 2017
30. TECS Environmental Compliance Services, March 30, 2017
31. Ventura County Stormwater Quality Management Committee, March 30, 2017
32. Ventura Water Department of the City of San Buenaventura, March 30, 2017

Response to Comments on the Draft 2016 303(d) List
Comment Deadline: March 30, 2017

No.	Comment	Response
1.	Wishtoyo Foundation and Ventura Coastkeeper (VCK), March 24, 2017	
1.1	In reviewing the Draft 303(d)/305(b) List and in corresponding with Los Angeles Regional Water Quality Control Board ("Los Angeles Regional Board") staff, it has come to our attention that almost all of the proposed 303(d)/305(b) listings (See Attachment A) and accompanying supporting data timely submitted on August 30, 2010 by Wishtoyo Foundation's Ventura Coastkeeper Program ("VCK") were not assessed for inclusion in the Draft 303(d)/305(b) List. Attachment A and Attachment B **<u>Nicholas Canyon Creek (San Nicolas Canyon Creek)</u>** Trash. Five out of 7 Nicholas Canyon Creek monitoring events showed the presence of trash.	Inadvertently, the data submitted by Wishtoyo was not entered into the CalWQA database for assessment. Los Angeles Water Board Staff is working with State Board staff to assess all the data from Wishtoyo that were submitted by August 30, 2010. These data will be assessed and used in decision-making either as the State Board staff prepares the 303(d) list for approval by the State Board in the fall, or prior to the next listing cycle that includes the Los Angeles Region.
1.2	**<u>San Jon Barranca / Creek (Sanjon Barranca Creek)</u>** Trash. Eight out of 8 San Jon Barranca / Creek monitoring events showed the presence of trash. E. Coli. Five out of 8 San Jon Barranca / Creek monitoring events showed exceedance of E coli.	See response to comment 1.1.
1.3	**<u>Ormond Beach Lagoon (Ormond Beach Wetlands)</u>** Trash. Nine out of 9 Ormond Beach Lagoon monitoring events showed the presence of trash. E. Coli. Six out of 32 monitoring events showed exceedance of E coli. pH. Six out of 8 monitoring events showed exceedance of pH. Nitrate. Eleven out of 14 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.

No.	Comment	Response
1.4	**<u>Bubbling Springs (Hueneme Drain)</u>** Trash. Nine out of 9 monitoring events showed presence of trash. VCK's Data not assessed E. coli. Five out of 11 monitoring events showed exceedance of E coli. VCK's Data not assessed	See response to comment 1.1.
1.5	**<u>J-Street Drain</u>** Trash. Nine out of 9 monitoring events showed presence of trash.	See response to comment 1.1.
1.6	**<u>Oxnard Industrial Drain (Oxnard Drain)</u>** Trash. Eight out of 8 monitoring events showed presence of trash. E. Coli. Five out of 11 monitoring events showed exceedance of E coli. pH. Six out of 7 monitoring events showed exceedance of pH. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.
1.7	**<u>Santa Clara River Estuary</u>** Trash. Eight out of 8 monitoring events showed presence of trash. Dissolved Oxygen. The City's sondes, violated the Basin Plan numeric water quality standard for Dissolved Oxygen of 5 mg/l for surface waters designated as WARM and 6mg/l for surface waters designated as COLD on over 40 days between 2009 and 2010. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate. Phosphate. Ten out of 10 monitoring events showed exceedance of Phosphate.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.

No.	Comment	Response
	pH. E recordings taken on separate days in the Santa Clara River Estuary via the City's North and South Sondes, pH levels in the Santa Clara River Estuary water column exceeded Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults	
1.8	**<u>Santa Clara River Reach 1</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults. Trash. Nine out of 9 monitoring events showed presence of trash.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.
1.9	**<u>Santa Clara River Reach 2</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.
1.10	**<u>Santa Clara River Reach 3</u>** E Coli. Five out of 27 monitoring events showed exceedance of E coli. Trash. Trash. Twenty-six out of 31 monitoring events showed presence of trash. Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1 21.11 for a detailed discussion of flow.
1.11	**<u>Santa Clara River Reach 4a</u>**	See response to comment 1.1.

No.	Comment	Response
	Trash. Seven out of 8 monitoring events showed presence of trash.	
1.12	**<u>Santa Clara River Reach 5 or 6</u>** Trash. Five out of 7 monitoring events showed presence of trash.	See response to comment 1.1.
1.13	We thus respectfully request the Los Angeles Regional Board assess all of VCK's proposed 303(d)/305(b) listings and accompanying data submitted in 2010, and ensure VCK's proposed listings are included in the 2016 303(d)/305(b) List. All of VCK's proposed listings meet the requirements for listing in the State Water Resources Control Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Notably, as demonstrated by VCK August 30, 2010 proposed listing submission, VCK's watershed monitoring data supporting the proposed listings were collected and analyzed in accordance with VCK's Quality Assurance Project Plan (QAPP) approved by the Los Angeles Regional Water Quality Control Board.	See response to comment 1.1.
1.14	Furthermore, we ask the Board to include on the list, the dissolved oxygen ("DO") data submitted by VCK that supports the Santa Clara River Estuary ("Estuary") being included on the 2016 Draft 303(d)/305(b) list for DO impairment. Even one event where DO levels drops below Basin Plan thresholds can be catastrophic for native and endangered aquatic life, including the Southern California Steelhead and Tidewater Goby that use the Estuary as habitat and that need healthy and suitable water quality in the Estuary to survive and recover. It only takes one event of low DO for these species to perish, and the Los Angeles Regional Board was provided over 200 separate data entries indicating that DO fell in the Estuary below Basin Plan thresholds and non-harmful levels for aquatic life. Attached to this letter is are two studies by a Regional Board Scientist (Carter 2005 and 2008) that further details the harms of low DO on aquatic life and native and endangered species, including Southern California Steelhead.	See responses to comments 1.1 and 1.7.
1.15	VCK's mission is to protect, preserve, and restore the ecological integrity and water quality of Ventura County's inland and coastal waterways. In 2009 and 2010, VCK, in coordination with the Los Angeles Regional Water Quality Control Board and State Water Resources Control Board Clean Water Team, dedicated a	See response to comment 1.1.

No.	Comment	Response
	tremendous amount of resources to its watershed monitoring program that resulted in VCK's proposed 303(d)/305(b) listings. These resources include VCK running volunteer stream teams, utilizing staff time to collect and analyze water quality data, purchasing and maintaining field equipment, and running a laboratory. It would be a shame, and detrimental to Ventura County's inland and coastal waterways and their beneficial uses, if the water quality impairments discovered, rigorously documented by VCK, and provided to the state did not result in 2016 303(d)/305(b) listings, especially on the account that they were not assessed. It is without second thought that the Los Angeles Regional Board assessing our proposed 303(d)/305(b) listings and accompanying data from August 30, 2010, and ensuring these proposed listings are included in the 2016 303(d)/305(b) List, is critical to the protection of Ventura County's waters for all the people, wildlife, communities, and the Chumash Native American Peoples that depend upon clean and healthy waters to sustain their health, wellbeing, and life ways.	
2.	City of Rolling Hills Estates, March 28, 2017	
2.1	The City is pleased that that Palos Verdes Peninsula beaches are being proposed for delisting for indicator bacteria. This is also consistent with Regional Board Resolution No. 2006-008 reviewing the Implementation Plan submitted by Jurisdictional Group 7 for the Santa Monica Bay Beaches Bacteria Wet Weather TMDL which noted that "Palos Verdes Peninsula have had historically fewer exceedances than the reference beach". and " .... existing water quality is equivalent to compliance with the Santa Monica Bay Beaches Wet Weather TMDL."	Comment noted.
2.2	**City of Rolling Hills Estates Comments on Proposed Revisions to 303(d) List** **Water Body/Pollutant: Los Angeles-Long Beach Inner Harbor/Zinc** **Comment:** We are in agreement with Decision ID 33644 LARWCB staff recommendation to delist the water body both due to flaws in the original listing and because applicable water quality standards are not being exceeded this recommendation, however Appendix A does not reflect this proposed change. **Recommendation:** Add a "Y" in the New Delistings column in Appendix A for	The Los Angeles-Long Beach Inner Harbor recommendation for Zinc is DO NOT DELIST. This is unchanged from 2006. The Water Board recommendation in 2006 was to delist, however EPA decided to not delist based on information in the LOEs indicating sediment toxicity.

No.	Comment	Response
	Zinc in Los Angeles-Long Beach Inner Harbor.	The factsheet has been edited for clarity and to update that the listing is being addressed by the Dominguez Channel Los Angeles and Long Beach Greater Harbor Waters Toxic Pollutants TMDL.
2.3	**Wilmington Drain/Lead** **Comment:** We are in agreement with Appendix G Decision ID 35085 to delist the Wilmington Drain for lead based on the weight of evidence. Additionally, the weight of evidence is stronger than indicated because data was included in this fact sheet from Compton Creek. LOE 90133 included in Fact Sheet 35085 describes data collected in Compton Creek which is unrelated to the Wilmington Drain. **Recommendation:** Remove LOE 90133 from Fact Sheet 35085 and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that "0 of 33 samples exceeded the CRITERIA."	As noted by the commenter, the current decision is to delist Wilmington Drain for lead. Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, if necessary, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.
2.4	**Wilmington Drain/Copper** **Comment:** The Appendix G Decision ID 44676 regarding copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation:** Remove LOE ID data set 90473 from Decision ID 44676 and revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.
2.5	**Machado Lake/Algae, Ammonia, ChemA, Eutrophic, Odor, Trash** **Comment:** These listings for Machado Lake are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these pollutant listings are being addressed by USEPA approved TMDLs.	The Machado Lake listings for Algae, Ammonia, Eutrophic, Odor and Trash were assigned to category 4a in 2010 and that assessment has not changed. ChemA was reassigned to 4a in this listing cycle.

No.	Comment	Response
	Recommendation: These listings should be moved to Category 4a in Appendix C. An explanation that "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" should be included in Appendix A under the "Other Revisions" column for each of these pollutants in Machado Lake.	Because all the individual Machado Lake listings were categorized as 5B (category 5B is for listings "being addressed by a TMDL"), the waterbody as a whole should have been in the Category 4 Appendix, not the Category 5 Appendix. The Category Appendices have been updated to make this correction.
2.6	**Los Angeles-Long Beach Outer Harbor (inside breakwater)/DDT, PCBs and Toxicity; Los Angeles Harbor Inner Cabrillo Beach/DDT, PCBs; San Pedro Bay Near-Off Shore/Chlordane, PCBs, Total DDT, and Toxicity** **Comment:** These are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these listings are being addressed by the USEPA approved TMDL for Dominguez Channel and Greater Los Angeles and Long Beach Harbors. These changes are explained in Appendix A summary under "other revisions". **Recommendation:** These listings for DDT, PCBs and Toxicity should be moved to Category 4a in Appendix C.	Although the Los Angeles-Long Beach Outer Harbor (inside breakwater) DDT and PCBs listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a. Los Angeles Harbor Inner Cabrillo Beach DDT and PCBs listings have been reassigned to "being addressed by a TMDL" and the waterbody as a whole will move to category 4a. Although the San Pedro Bay Near-Off Shore Chlordane, PCBs, and Total DDT listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a.

No.	Comment	Response
2.7	**San Pedro Bay Near-Off Shore Zones/Zinc** **Comment:** Appendix G Decision ID 42798 to Delist San Pedro Bay Near/Off Shore Zones for Zinc because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for zinc.	Zinc was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.8	**San Pedro Bay Near-Off Shore Zones/Chromium** **Comment:** Appendix G Decision ID 42525 restates and does not revise the original recommendation to delist San Pedro Bay Near/Off Shore Zones for Chromium, however delisting does not seem to have occurred since the pollutant-waterbody combination still appears in Appendix A. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs and remove the "Y" from the Pollutant Name Changes column since there does not appear to have been any name change made for this pollutant.	Chromium was delisted in the 2010 303(d) list. This is not a New Delisting. The name has been changed. In the 2010 list it was "chromium (sediment)" and now it is "chromium". Chromium is included in Appendix A to show the recommended name change. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.9	**San Pedro Bay Near-Off Shore Zones/Copper** **Comment:** Appendix G Decision ID 44434 to Delist San Pedro Bay Near/Off Shore Zones for Copper based on flaws in the original listing. This recommendation is not reflected in Appendix A summary of recommended changes.	Copper was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. The name has been changed. In the 2010 list it was "Copper (sediment)" and now it is "copper". Copper is included in Appendix A to

No.	Comment	Response
	Recommendation: Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for copper.	show the recommended name change. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.10	**San Pedro Bay Near-Off Shore Zones/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Decision ID 43259 to Delist San Pedro Bay Near/Off Shore Zones for PAHs because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs.	PAHs (Polycyclic Aromatic Hydrocarbons) was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. The name has been changed. In the 2010 list it was "PAHs (Polycyclic Aromatic Hydrocarbons) (sediment)" and now it is "PAHs (Polycyclic Aromatic Hydrocarbons)". PAHs (Polycyclic Aromatic Hydrocarbons) is included in Appendix A to show the recommended name change.
2.11	**Santa Monica Bay Offshore- Nearshore/Chlordane** **Comment:** The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.12	**Santa Monica Bay Offshore- Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment:** The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for	PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is

No.	Comment	Response
	PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
2.13	**Santa Monica Bay Offshore- Nearshore/ Arsenic** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5—these sampling areas are north of Redondo Beach Pier. **Recommendation:** This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet (Decision ID 67208) should be revised to discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. However, the fact sheet does state where the fish were collected. At the time a TMDL is developed, or other regulatory program is developed, for arsenic in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement. However, a review of this decision is in process at this time in order to review the data included in the analysis and the applicable evaluation guideline.
2.14	**Santa Monica Bay Offshore- Nearshore/Mercury** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation:** This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. The fact sheet does state where the fish were collected. At the time a TMDL is developed, or other regulatory program is developed, for mercury in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement.

No.	Comment	Response
	Wastewater Treatment Plant discharge on these waters. The fact sheet should be revised to (Decision ID 67209) discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	However, a review of this decision is in process at this time in order to review the data included in the analysis.
3.	City of Rosemead, March 28, 2017	
3.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because: 1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.	Comments on TMDLs and MS4 permits are outside the scope of this action. Pollutants, including metals, are assessed as "de-list," "do not list," "list," and “do not delist” based on available data, not on the status of TMDLs. See also, response to comment 3.2, 3.3, and 3.4.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>3.2</td><td>California Toxic Rule
CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: This final rule establishes ambient water quality for priority toxic pollutants. USEPA defines ambient as:

Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.

Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by</td><td>Comments on TMDLs are outside the scope of this proposed action.</td></tr>
</table>

No.	Comment	Response
	CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
3.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	The Los Angeles Water Board disagrees. While the current and past 303(d) lists of impaired waterbodies pre-date the State's Listing Policy, this does not invalidate previous listing decisions. The Listing Policy does not support delisting a waterbody pollutant combination simply because it was listed prior to adoption of the Listing Policy and, as such, a different data assessment method may have been used. The 303(d) list includes assessments of readily available data and uses data assessment guidelines available at the time of preparation. The list is periodically updated based on newer readily available data and, if newer assessment guidelines or methods are available, these are used. Accordingly, several of the existing waterbody pollutant combinations originally listed in the TMDL are recommended for delisting, while several are not recommended for delisting. Additionally, several new waterbody pollutant combinations for metals are recommended for listing based on new readily available data since the last update of the list for the Los Angeles Region.

No.	Comment	Response
		Finally, comments on the LA River Metals TMDL are outside the scope of this proposed action.
3.4	MS4 Permittees located in Reach 2 of the Rio Hondo will be pleased to know that the 2016 303(d) list does not propose to list it for any of the metals covered by the LARMTDL. This makes sense given that this reach was not listed for metals impairment on the 2010 303(d) list. Further, LAR-MTMDL makes no mention of Reach 2 of the Rio Hondo. As result, the following cities should not be subject to this TMDL: Alhambra (partially); Arcadia; Bradbury; Duarte; El Monte; Irwindale (partially); Montebello (partially); Monterey Park; Pasadena (partially); Rosemead; San Gabriel; San Marino; South El Monte; Irwindale (partially); and South Pasadena (partially). However, it is noted that Reaches 1 and 2 of the Arroyo Seco was not placed on the "do not list" for metals. It should have been for the same reason Reach 2 of the Rio Hondo was. Neither Reach 1 nor Reach 2 of the Arroyo Seco appears on the 2010, 2006, or 2002 303(d) list for metals. The Regional Board may wish to update the 2016 303(d) list to place the Arroyo Seco on the "do not list" category.	Comments on the applicability of TMDLs are outside the scope of this action. The Integrated Report and the 303(d) list do not include any decisions for metals in the Arroyo Seco because no metals data were available or assessed for the Arroyo Seco. The decision “do not list” is only made when there are data in the CalWQA database that support a “do not list” decision.
4.	City of Compton, March 29, 2017	
4.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).	See response to comment 3.1.

No.	Comment	Response
	Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because: 1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.	
4.2	**California Toxic Rule** CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water	See comment 3.2.

No.	Comment	Response
	Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
4.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	See comment 3.3.

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>4.4</td><td>II. Los Angeles River Reach/Tributary Specific Comments

Presented below are specific justifications for removing metals that fall under either the “list” or “do not list” categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories.

1. Compton Creek

Of the 4 subject LAR-MTMDL metals, the 2016 303(d) list only places selenium on the “do not list” for the Creek.

According to the fact sheet, copper is placed on the “do not de-list” based on 1 of 15 samples that exceeded dissolved copper. This result, however, does not meet the 3.1 Listing Policy’s binomial test requirement. The policy explains that the application of the binomial test requires a minimum sample size between 2 and 24, with at least 2 exceedances required for 303(d) listing placement. But, the Listing Policy also mentions that a sample size less than 16 is insufficient to meet the listing test.

Lead is also placed under the “do not de-list” category. <u>This appears to be in error</u>. According to the fact sheet, 1 of 15 samples and 0 of 3 samples exceeded the criteria for this sample size to determine the applicable beneficial use. However, 1 exceedance out of 15 and 0 out of 3 samples do not meet the Listing Policy for 303(d) list placement. Not only is the exceedance frequency insufficient, but the sample size is too small.

The same is true of zinc, which was placed on the “list” category because 2 of the 15 samples exceeded the allowable frequency. That cannot be. Once again, a sample size of 15 is too small. Further, it is not clear whether the samples were taken from the Creek during a storm event or during an ambient water body condition.

It should also be noted that according Regional Board SWAMP data taken in June of 2005, no exceedances were reported for copper, lead, or zinc.</td><td>“DO NOT DELIST” is the appropriate recommendation for copper and lead. Section 3.1 and Table 3.1 of the Listing Policy include a minimum sample size to list a pollutant, while Section 4.1 of the Listing Policy states, “[t]he binomial distribution cannot be used to support a delisting with sample sizes less than 28.” Listed waterbodies are evaluated and delisting decisions are made based on Section 4 of Listing Policy, not Section 3. Based on Section 4, there are insufficient samples to delist based on the binomial distribution. The SWAMP line of evidence has also been considered in the decision recommendation.

The LOEs that support the copper and lead listings are “placeholder” LOEs to show a finding of impairment made prior to 2006.

The lead recommendation also includes a third LOE, which is a “placeholder” LOE to show a finding of impairment made prior to 2006. The “placeholder” LOEs are valid LOEs; however, the data for these are not in the CalWQA database. However, Section 4.1 of the Listing Policy still requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist.

See response to comment 3.3 for additional discussion on listing prior to the adoption of the Listing Policy.</td></tr>
</table>

No.	Comment	Response
	Based on the foregoing, it is recommended that copper, lead, and zinc be placed on the "do not list" category. Table I Compton Creek **[See the posted letter for Table I]**	
4.5	**2. Los Angeles River Reach 1 (Estuary to Carson)** Copper, lead, and zinc were listed, while selenium was not. The justification for their listing is questionable. The listing fact sheet indicates 7 out of 18 samples exceeded CTR criteria. Because the LAR-MTMDL asserts that CTR limitations can be based on both wet weather and dry weather (ambient) sampling, the Regional Board needs to provide data that shows which samples were based on wet weather and dry weather. As mentioned above, CTR limitations are exclusively expressed as ambient standards. Wet weather samples should be excluded. If the number of excluded samples does not meet the Listing Policy requirement for minimum sample size, then the sampling data is invalid. Further, it is not clear when the samples were taken, nor whether the actual hardness value was applied. Based on this information, copper, lead, and zinc should be de-listed. Table II LAR Reach 1. **[See the posted letter for Table II]**	The decisions for copper, lead, and zinc are previous listing decisions. No new data were assessed by the Board for the current cycle. See response to comment 4.4 regarding "placeholder" LOEs. The Listing Policy neither indicates that wet weather data should be excluded from the assessment nor that data from wet and dry weather must be assessed separately. While Section 6.1.5.3 of the Listing Policy states "… *If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision*", it does not state that wet weather samples should be excluded from the assessment. Comments on the TMDL are outside the scope of this action.
4.6	**3. Los Angeles River Reach 2 (Carson to Figueroa)** Copper and lead are carried-over from the 2010 303(d) list and placed in the "do not delist" category. Selenium and zinc were not listed. Copper and lead should be	The LOEs which support the copper and lead listings are "placeholder" LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include the "placeholder" LOE

No.	Comment	Response
	de-listed because according to the 303(d) listing fact sheet, 0 samples were taken. Based on this information copper and lead should be should be de-listed. Table III LAR Reach 2. **[See the posted letter for Table III]**	data from decisions made prior to 2006. There is no additional data in the CalWQA database that would support delisting. See, also, response to comment 4.4.
5.	City of Redondo Beach, March 29, 2017	
5.1	However, after reviewing the proposed changes to the 303(d) List, the City remains concerned about a number of specific issues, which are detailed below. The City's comments are generally grouped within two categories: • Segment specific comments on the proposed 303(d) List; and • Inconsistencies within the 303(d) List. **I. Segment Specific Comments on the Proposed 303(d) List** **A. Dominguez Channel (lined portion above Vermont)** <u>Comment 1: The benthic community effects listing (Decision ID 66165) appears to be flawed and should be removed.</u> The listing for benthic community effects should be removed because it is based on flawed data and/or analyses. The basis for this comment is as follows: • The sample size did not meet the minimum criteria pursuant to the Listing Policy. According to Section 3.9 Degradation of Biological Populations and Communities of the Listing Policy, *The analysis should rely on measurements from at least two stations.* The Appendix G Fact Sheets list only one sample site, however it treats the data from the one site as three separate samples, which is incorrect. As a result, there are not enough data to justify a listing. • The benthic community effects listing for the lined portion of Dominguez Channel lacks a sufficient reference site. Since this section of the Dominguez channel is lined, it does not have a traditional bed structure or substrates found in a typical stream. The classic Index of Biotic Integrity (181) stream assessment score does not take into consideration that lined channels naturally have lower IBI scores as noted in the recently released	Listings related to benthic community impairment in the Dominguez Channel and other channels that are lined entirely with concrete have been reassigned to Category 3 (i.e., insufficient information to assess beneficial use support, but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comments 11.19 and 11.24.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>SCCWRP Special Study on Engineered Channels. In order to make a robust assessment, the reference site should also be a lined channel that has not been subject to anthropogenic influences, however such a reference site was not used in the analysis.
• The IBI is not the assessment tool that should be used to determine benthic community effects. As acknowledged in the Appendix G Fact Sheets: The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs). We agree with this statement and also note that some IBI scores are especially skewed when utilized for hardened channels since they heavily rely on macroinvertebrates, which are inherently more common in natural bottom stream beds. Other assessment tools such as the diatom IBI may also be used to assess the benthic community of a hardened channel as demonstrated by the SCCWRP Study on Engineered Channels referenced earlier. Therefore, the IBI assessment tool should not be used as the sole basis for a listing in this lined channel.
• The benthic community effects exceedance should not be linked to diazinon as a way to establish a causal effect since this pollutant has been delisted with respect to the Dominguez Channel (lined portion above Vermont) (Decision ID 33061).

Requested Action:
• Remove the benthic community effects listing/or Dominguez Channel since the sample size does not meet the minimum criteria, this section of channel lacks a proper reference site, and is based on an inappropriate assessment tool.
• If the listing is not removed, the diazinon linkage to benthic community effects should be removed since this pollutant has been delisted.</td><td></td></tr>
<tr><td>5.2</td><td><u>Comment 2: The ammonia listing (Decision ID 35134) should be updated to consider all readily available data.</u></td><td>See response to comment 11.6.</td></tr>
</table>

No.	Comment	Response
	Ammonia was not de listed based on the existence of 2 exceedances out of 21 samples collected from 7/1/2009 to 8/13/2009 at Western Ave., Manhattan Beach Blvd, and El Segundo Blvd. Additional samples were also collected at a sample site just across Vermont Ave. (33° 52' 16" N, 118° 17' 23" W), however these samples were not included in the analysis. The Basin Plan lists Vermont Ave. as the reach break between the Dominguez Channel and Dominguez Channel Estuary and, therefore, it appears a decision was made to include the Vermont Ave. samples in the downstream segment - the Dominguez Channel Estuary (unlined portion below Vermont Ave.) The City maintains that the Vermont Ave. samples should be considered in the Dominguez Channel (lined portion above Vermont) based on their direct proximity to the end of the reach, offering optimal spatial representation of the water body segment. Furthermore, the sample site is located less than 100 meters from the lined portion of Dominguez Channel and according to the Listing Policy, a sample collected 200 meters upstream, in the lined portion of the Channel, would be considered the same station location. If the additional 8 samples from the Vermont Ave. station are included in the Dominguez Channel (lined portion above Vermont) analysis, the total samples in exceedance would be 2 out of 29. These data would then meet the requirement to delist ammonia as stated in Section 4.1 of the California Delisting Factors set in the Listing Policy - i.e., these samples support rejection of the null hypothesis using the binomial distribution and the sample size is greater than 28. Specifically, Table 4.1 at page 14 of the Listing Policy demonstrates that where 2 or less exceedances are identified in a sample size of 28-36 samples, such as here, then the water segment shall be removed from the 303(d) List. Therefore, based on the updated and appropriate sample size, which includes Vermont Ave. samples, and number of exceedances, ammonia should be delisted for this reach. *Requested Action*: • *Include the Vermont Ave. sampling data in the analysis of the ammonia listing for Dominguez Channel (lined portion above Vermont).* • *Delist ammonia based on the updated analysis.*	

No.	Comment	Response
5.3	**B. Dominguez Channel Estuary (unlined portion below Vermont Ave)** Comment 3: Delist Ammonia (unionized) due to lack of exceedances. A listing for ammonia was shown in the Appendix G Fact Sheets, however none of the cited lines of evidence (LOE) shows evidence of an exceedance. One LOE is an unspecified placeholder for a listing decision made prior to 2006, however the other two LOE show 0 out of 28 and 0 out of 7 exceedances. Based on the data, this pollutant meets the Section 4 California Delisting Factors set in the Listing Policy. *Requested Action*: • *Delist ammonia (unionized) (Decision ID 34669) based on lack of evidence and exceedances*.	The decision has been updated to "DELIST."
5.4	**C. Santa Monica Bay Offshore/Nearshore** Comment 4: The arsenic and mercury fish tissue listings are not based on all readily available data, are not spatially representative of the water body, and samples were not treated as temporally independent. The samples used for the proposed 5A Arsenic and Mercury fish tissue listings (Decision ID: 67208 and 67209) are not spatially representative of the water body. Samples used for these listings were collected for the City of Los Angeles Hyperion Treatment Plant NPDES Permit (NO. CA0109991). The permit designates 5 different sampling zones along the coast of the Santa Monica Bay of which the City falls along the border of zones 4 and 3 (see map in Attachment B). All of the samples used for these listings were collected from zones 4 and 5 - no representative samples were collected from zone 3, which includes the southern end of Santa Monica Bay and a substantial portion of the City's drainage area. Therefore, using current samples to list the entire Santa Monica Bay Offshore/Nearshore would incorrectly list zone 3 of the bay despite a lack of representative samples from this area. This would contradict the Listing Policy which states that "*samples should represent statistically or in a consistent targeted manner the segment of the water body*". The spatial coverage of the samples should be considered and the listing reassessed by either segmenting the water	See response to comment 2.13 for Arsenic and 2.14 for Mercury and spatial representativeness. See response to comment 32.3 for a discussion of readily available data. See response to comment 11.21 and 11.22 for fish temporal independence.

No.	Comment	Response
	body or using samples from all representative zones of Santa Monica Bay. In addition, sampling data beyond the 19 samples collected in 2006-2007 should be available from the City of Los Angeles' Hyperion Treatment Plant NPDES permit. It is unclear why only the 2006-2007 samples were used when there are presumably more samples available from the Hyperion Treatment Plant NPDES monitoring program. The City requests that the Water Board review all available data for fish tissue before making a listing for Arsenic and/or Mercury. Finally, the fish tissue assessment for arsenic and mercury did not properly categorize the data in a way that is temporally independent. The Listing Policy states that samples should be temporally independent; however, in some cases fish collected on the same day were treated as unique data points. In addition, the samples collected were from August 2006, October 2007- November 2007, and August - September 2007. Because both arsenic and mercury bioaccumulate over the lifetime of the individual species an averaging period of at least a year should be considered. Therefore, instead of considering 19 individual samples these data should only be considered representative of 2 years thus supporting the need for additional data as previously requested. *Requested Action*: • *Either (1) segment the Santa Monica Bay listing since the data used to list arsenic and mercury are not representative of the entire water body as required by the Listing Policy, or (2) seek additional data from all zones<~(Santa Monica Bay to ensure proper spatial representation of the data prior to listing.* • *Seek and reanalyze additional sample data from the City of Los Angeles beyond the 19 samples from 2006 and 2007 that were originally used/or the analysis*. • *The mercury and arsenic fish tissue data should be aggregated based on a more reasonable temporal resolution*.	
5.5	<u>Comment 5: Sediment toxicity should be delisted; no justification was provided for the name change in the Fact Sheets</u>.	The decision recommendation has been updated to "DELIST."

No.	Comment	Response
	The Santa Monica Bay Offshore/Nearshore toxicity listing (Decision ID 34120) was marked only as a name change in Appendix A. However, a TMDL for DDTs and PCBs was developed and approved by USEPA in 201210 which evaluated sediment toxicity resulting in a recommendation for delisting: *"Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list."* Based on the statement above and data summarized on pages 19 and 20 of the TMDL there is sufficient evidence to delist sediment toxicity for Santa Monica Bay Offshore/Nearshore. The listed name change appears to be a change from "sediment toxicity" to "toxicity" based on the Appendix G Fact Sheets. We assume that this name change is the result of the Water Board's acknowledged systems and clerical errors in Appendix A. In the event that it is not a mere error that will be corrected by the Water Board, the City requests that justification be provided to support the name change. This name change should only occur if new data is used to support the observation of toxicity in the water column as outlined in section 3.6 of the Listing Policy, however no new data was presented and a reason for this name change was not discussed in the staff report. *Requested Action*: • *Delist sediment toxicity for Santa Monica Bay based on the data analysis performed in the 2012 DDTs and PCBs TMDL.* • *Correct the name change error*	The name change is not in error. The 303(d) list no longer includes separate listings for different environmental media, that is, data for sediment toxicity and data for water toxicity are both considered in an assessment of toxicity. In fact, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.
5.6	**II. Inconsistencies within the 303(d) List** As noted by Water Board staff, the Appendices of the proposed 303(d) List have a number of inconsistencies. The inconsistencies listed below are a few examples	Diazinon is recommended for delisting for the Dominguez Channel above Vermont.

No.	Comment	Response
	and should not be considered an exhaustive list. We request that the Water Board do a thorough review of all of the Appendices to ensure that they are internally consistent with the changes listed in the Appendix G Fact Sheets. Table 1. Inconsistencies in the Proposed 303(d) List Appendices **Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Diazinon **Comment/Requested Action**: This pollutant is shown as "delisted" in Appendix A with a note "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL ". In Appendix G the same pollutant is listed as "Delist from 303(d) list (being addressed by USEPA approved TMDL)". **The City would like clarification that this listing will be entirely removed from the 303(d) list and not categorized as 4A as indicated by the note in Appendix A.**	Los Angles Water Board staff found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with the fact sheets in Appendix G.
5.7	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s):** Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs **Comment/Requested Action**: These pollutants are shown as delisted in the Appendix G factsheets, however they are not listed as changed in Appendix A. **All of these pollutants should be delisted due to flaws in the original listing (as noted within the factsheets).**	Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.8	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Chromium and Dieldrin **Comment/Requested Action**: These pollutants are shown as "name changes" in Appendix A, however we could find no evidence of a name change throughout the	In prior 303(d) lists, "Chromium" was "Chromium (total)" and "Dieldrin" was "Dieldrin (tissue)."

No.	Comment	Response
	rest of the document. **Any name change should be supported by a reason detailing the need for the change in the Fact Sheets. Furthermore both of these listing should be delisted based on the comment above.**	
5.9	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Aldrin, Chem A, Chromium (total), and PAHs **Comment/Requested Action**: These pollutants are not listed as a change in Appendix A, but shown as "delisted" in Appendix G. **All listings should be delisted either because of flaws in the original listing or lack of an exceedance.**	Aldrin, Chem A, Chromium (total), and PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.10	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: DDT **Comment/Requested Action**: This listing is missing from Appendix B or C and has not been listed as changed in Appendix A, however the Appendix G factsheets lists DDT as being addressed with a USEPA approved TMDL and therefore **should be categorized as 5B or 4A**.	The waterbody pollutant combination, Dominguez Channel Estuary/DDT, is categorized 5B because it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.
5.11	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Dieldrin **Comment/Requested Action**: Listed in Appendix A as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*", however the pollutant does not appear in Appendix B or C and is listed as "*List on 303(d) list (being addressed by USEPA approved TMDL)*" in Appendix G. **This pollutant should be listed as 4A or delisted.**	The waterbody pollutant combination, Dominguez Channel Estuary/Dieldrin is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.

No.	Comment	Response
5.12	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Chlordane (tissue) **Comment/Requested Action**: Listed in Appendix A as unchanged but not found in Appendix B or C. The Appendix G Fact Sheets list this pollutant as "*Do not delist (being addressed with USEPA approved TMDL)*". **The City would like clarification if this pollutant has been delisted or recategorized as 5B.**	The waterbody pollutant combination, Dominguez Channel Estuary/Chlordane is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. The pollutant was recategorized as 5B.
5.13	**Waterbody Segment: The Santa Monica Bay Offshore/Nearshore** **Pollutant(s)**: Chlordane and PAHs **Comment/Requested Action**: Not listed as a change in Appendix A but shown as "delisted" in Appendix G. **These pollutants should be delisted.**	Chlordane and PAHs were recommended for delisting in the 2010 303(d) list. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
5.14	**Waterbody Segment: Redondo Beach** **Pollutant(s)**: DDT **Comment/Requested Action**: Listed in Appendix A only as a "name change", however Appendix G lists this as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*". The 2010 303(d) list shows Redondo Beach DDT listing was Category SA however in the newly proposed 303(d) list the pollutant is listed as 4A in Appendix C. Category 4A is the correct category for this pollutant since a USEPA-approved TMDL does exist to manage DDT which is expected to result in full attainment of the water quality standard within a specified time frame. **The City would like Appendix A edited to reflect new 4A listing**. Furthermore if this is in fact a name change, as stated in Appendix A, **an explanation including supporting data for the name change should be**	Redondo Beach DDT is both a name change and a TMDL status change. Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with it. In prior 303(d) lists, "DDT" was "DDT (Dichlorodiphenyltrichloroethane)."

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	included in the Appendix G Fact Sheets.	
6.	City of Santa Clarita, March 29, 2017	
6.1	**Change All Listings to "*Being Addressed by Action Other Than a TMDL*"** Due to the extensive studies and long term implementation efforts contained in the EWMP, the City requests all pollutants remaining on the 303(d) list without a developed TMDL should be changed to the Category 4B for the Clean Water Act as "Being Addressed by Action Other Than a TMDL." More specifically, the pollutants will be addressed through the long-term implementation of the EWMP. In addition, the City requests a focus be placed on "Delisting" pollutants by the Regional Board so that limited resources can be better applied to applying long-term strategies of the approved EWMP.	The implementation of the EWMPs is likely to make a significant improvement in water quality in the affected watersheds. However, MS4 discharges may not be the only source of pollutants causing the impairment of these waterbodies; therefore, the actions identified in the EWMPs may not be the only implementation required. A source assessment and linkage analysis, during development of a TMDL, or during development of another regulatory program, or as a special study would be necessary to determine the relative contribution of all the sources and all the actions necessary to restore affected waterbodies to a condition of full water quality standards attainment.
6.2	The City requests the following amendments for the 2017 303(d) List. The affected water quality objectives are listed below. **Affected Waterbodies, Water Quality Objectives, and Suggested Revisions** *<u>Santa Clara River Reach 5 (Blue Cut Gauging Station to West Pier Highway 99 Bridge)</u>* Ammonia should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was completed in 2004. The Los Angeles County Sanitation Districts revised their operations at the Saugus Water Reclamation Plant and the Valencia Water Reclamation Plant and installed a Nitrification-Denitrification (NDN) process in 2004. The applicable water quality standards for nitrate, nitrite, and ammonia are not being exceeded. Decision ID 34352 states that no discharges exceeded limits.	Because the applicable water quality standard for ammonia is not being exceeded, Santa Clara River Reach 5 Ammonia is proposed to be delisted (CalWQA Decision 34352). The listing decision is "Delist from 303(d) list (being addressed by USEPA approved TMDL)."

No.	Comment	Response
6.3	Benthic Community Effects should be revised to "Being Addressed by Action Other Than a TMDL." Decision ID 44468 states that the water body is impaired with multiple pollutants, including zinc, iron, bacteria, and chloride. However, Line of Evidence 88732 states that 0 out of 153 samples had any exceedance for zinc. Although iron is naturally occurring in the Santa Clara River watershed, Line of Evidence 88656 found 6 of 81 samples exceeded and Line of Evidence 88648 found 0 of 2 samples exceeding water quality limits. There were no samples taken for coliform bacteria, and therefore, no exceedances recorded as per Line of Evidence 4156. Line of Evidence 88792 states that none of the two samples taken exceeded the criterion for chloride. Further, the listing was based on the Southern Coastal California Index of Biotic Integrity (SCIBI). However, the SCIBI-based analysis is inadequate for use in low-gradient and low-elevation waters, such as the Upper Santa Clara River. Through the implementation of the EWMP, the benthic community should rebound to its natural populations as the EWMP addresses toxicity, metals, pesticides, and other metrics that affect benthic communities.	See response to comment 6.1. For a discussion of low elevation and benthic macroinvertebrate impairments, see response to comment 26.13.
6.4	Chloride should be revised to "Being Addressed by Completed TMDL." The Santa Clara River chloride TMDL was approved by the United States Environmental Protection Agency (USEPA) on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	The listing decision (Decision 32396) is, in fact, "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" and so does not require revision.
6.5	Indicator bacteria should be revised to "Being Addressed by Action Other Than a TMDL." Through the implementation of the EWMP, indicator bacteria should fall to levels found in ambient waters.	The listing decision (Decision 34306) is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed

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		by the TMDL for Indicator Bacteria in Santa Clara River Estuary and Reaches 3, 5, 6, and 7 (approved by USEPA on Jan. 31, 2012). The listing decision does not require revision.
6.6	Iron should be revised to "Being Addressed by Action Other Than a TMDL." Iron was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.
6.7	Nitrate and nitrite should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32484 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.	The listing decision for Decision 32484 is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Santa Clara River Nitrogen Compounds TMDL. The listing decision does not require revision.
6.8	Toxicity should be revised to "Being Addressed by Action Other Than a TMDL." Toxicity was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.
6.9	<u>*Santa Clara River Reach 6 (West Pier Highway 99 to Bouquet Canyon Road)*</u> Ammonia should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations, including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32462 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.	Santa Clara River Reach 6 Ammonia is proposed to be delisted. The listing decision (Decision 32462) is "Delist from 303(d) list (being addressed by USEPA approved TMDL)" and does not require revision.

No.	Comment	Response
6.10	Chloride should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Santa Clara River chloride TMDL was approved by the USEPA on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	Decision 32397 is a “carryover” decision. No new data was assessed or LOE created, so the listing remains what it was on the last 303(d) list. The listing decision is "List on 303(d) list (being addressed by USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Upper Santa Clara River Chloride TMDL. The listing decision does not require revision.
6.11	For chlorpyrifos, Decision ID 33024 states samples were collected from August 2002 through April 2003. It should be noted that USEPA phased out all residential use of chlorpyrifos products since 2004. Since the samples were taken prior to being phased out and no further positive results are presented, this information is no longer relevant. Due to the long term implementation efforts contained in the EWMP, this pollutant should be changed to “Being Addressed by Action Other Than a TMDL.”	Decision 33024 was made based on LOE 2134, where 10 of 39 samples were found to exceed the evaluation guidelines. While USEPA phased out all residential use of chlorpyrifos products since 2004 and the data used in LOE 2134 were collected from August 2002 to April 2003, there is no new evidence/data in CalWQA to support a delisting decision. Therefore, the listing decision remains as "Do Not Delist". See, also, response to comment 6.1.
6.12	Copper was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Copper should be revised to “Being Addressed by Action Other Than a TMDL.”	See response to comment 6.1.
6.13	Decision ID 44805 states samples for diazinon were collected from August 2002 through April 2003. It should be noted that USEP A phased out all residential use of diazinon products since 2004. Only data generated from after the ban should be considered. For a sample size of 28-36, Table 4.1 of the State's Listing Policy recommends delisting a previously listed pollutant if the numbers of exceedances	Decision 44805 was made based on LOE 2135, where 28 of 29 samples were found to exceed the evaluation guideline. While USEPA phased out all residential use of diazinon products since 2004 and the data used in LOE 2135 were collected

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	are less than two. Since no other samples show an exceedance, diazinon should be delisted. In addition, due to the implementation of the EWMP, this pollutant could also be changed to “Being Addressed by Action Other Than a TMDL.”	from August 2002 to April 2003, there is no new evidence/data indicating that the waterbody is not impaired by diazinon. Therefore, the listing decision should remain as "Do Not Delist". See, also, response to comment 6.1.
6.14	Iron is abundant in the natural soils in the Santa Clarita Valley. In addition, iron was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Iron should be revised to “Being Addressed by Action Other Than a TMDL.”	Regional board staff reassessed the LOEs associated with this decision. The listing decision has been changed to "Delist from 303(d) list".
6.15	According to the National Weather Service, ambient air temperature for Santa Clarita during the summer months regularly exceeds 100 degrees Fahrenheit due to a semi-arid climate. The Santa Clara River is an ephemeral stream with water flow quickly subsiding into the natural sandy, soft- bottom riverbed. It is noted that all samples registering over 80 degrees Fahrenheit occurred between the months of May and August. It is reasonable that hot and dry air temperatures correlate to warmer water temperatures in shallow, sandy soils. Receiving waters in the Santa Clara River registering above 80 degrees Fahrenheit are the result of natural, ambient conditions and should not be considered as a result of storm drain or treatment discharge.	See response to comment 17.4.
6.16	In Line of Evidence 88683, it is noted that toxicity data was not reported with a control, and therefore anything reported as < 100% (chronic) or < 100% survival (acute) was considered an exceedance. In addition, toxicity was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Toxicity should be revised to “Being Addressed by Action Other Than a TMDL.”	Decision 33550 is supported by two LOEs. 4 of 4 samples were in exceedance in LOE 2137 and 4 of 40 samples were in exceedance in LOE 88683. Even though there was lack of control data for LOE 88683, the original listing decision was justified by LOE 2137 and there is no new evidence/data supporting a delisting decision. Therefore, the listing decision will remain as "Do Not Delist". A review of LOE 88683 is in process at this time.

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		For a more detailed discussion of toxicity, see response to comment 26.7. See, also, response to comment 6.1.
7.	Farm Bureau of Ventura County (FBVC), March 29, 2017	
7.1	Approximately 98 of the new 303(d) listings being proposed by the Los Angeles Regional Water Quality Control Board (Regional Board) are in Ventura County, and many are apparently driven by data collected through VCAILG's Conditional Waiver monitoring program. We have reviewed these proposed listings, and found numerous factual and legal errors that must be corrected. In some cases, the errors or ambiguities in the proposed listings are such that we and our technical consultants found it impossible to properly analyze them.	See response to comment 7.4 -7.102 for specific responses.
7.2	The development and implementation of TMDLs represents a significant investment of our members' resources, and compliance imposes a significant burden on agricultural operators, so it is critical that the 303(d) list be based on sound science and methodologies. We therefore ask that the issues identified in this letter be addressed, and that the proposed 303(d) list be revised and released for another 60-day comment period before adoption.	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend exclusively on the 303(d) list or the data contained therein (currently only through 2010). See response to comment 32.1 for additional discussion of additional comment periods.
7.3	The requested modifications fall into four general categories: 1. New Category 4 and 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g. mismatched units, incorrectly assigned sample locations). This comment category also addresses the issue of agricultural drains and ditches — which are	See response to comment 7.4 -7.102 for specific responses. Los Angeles Water Board staff will make the necessary corrections in the CalWQA database and make the appropriate listing/delisting

No.	Comment	Response
	not legally recognized as waterbodies — being inappropriately included in the listings. 2. Potential delistings that may be justified if all watershed data were evaluated (e.g. TMDL monitoring program and all wastewater treatment plant NPDES monitoring). 3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants. 4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.	decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or during the next Listing Cycle that includes the Los Angeles Region.
7.4	The remaining sections of this letter provide the detailed list of requested changes to the 303(d) list and the rationale for the requests. In summary, FBVC requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, that waterbody pollutant combinations in Table 3 and Table 4 be designated as being addressed by a TMDL if they remain on the 303(d) list after the reassessment, and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies. Furthermore, FBVC supports the 303(d) list comment letter submitted by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed.	See response to comment 7.4 -7.102 for specific responses.
7.5	**I. REQUESTED MODIFICATIONS TO THE LISTING STATUS** Based on a review of the proposed Category 4 and 5 waterbody pollutant combinations, FBVC has identified a number of waterbodies that we feel should either be delisted based on available data, or which should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table. **Table 1. Waterbody-pollutant combinations that should not be listed**	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83044 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles

No.	Comment	Response
	Waterbody segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).	Region. J-flagged data was incorrectly used in the original assessment. LOE 83043 will be modified. Decision 60531 will be changed to "Do Not List" due to insufficient information. Los Angeles Water Board staff's intention will be to enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.
7.6	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83048 and Decision 60506 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
7.7	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83138 and Decision 60539 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the

No.	Comment	Response
		Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
7.8	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification: • Listed based on toxicity observed during a single sampling event (6/4/07). According to the Listing Policy, a larger number of samples is required to justify this listing.	Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site. However, a review of the decision is in process at this time in order to confirm the number of toxicity tests completed.
7.9	Waterbody segment: **McGrath Lake Agricultural Drain** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decision for this waterbody-pollutant combination has been changed to “do not list,” due to insufficient information at this time to determine whether the McGrath Lake Agricultural Drain should be included in the region’s water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.10	**McGrath Lake Agricultural Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, as noted by the commenter, should McGrath Lake Agricultural Drain be included in the region’s water quality assessment, chlordane would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.

No.	Comment	Response
7.11	**McGrath Lake Agricultural Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.9.
7.12	**McGrath Lake Agricultural Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, as noted by the commenter, should McGrath Lake Agricultural Drain be included in the region's water quality assessment, DDT would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
7.13	**McGrath Lake Agricultural Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, note that toxaphene as an individual pollutant was not addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.
7.14	Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The decisions for Calleguas Creek Reach 2 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site at Broome Ranch Road (02D_BROOM). This site is not located in Calleguas Creek Reach 2. If the Los Angeles Water Board determines that this monitoring site should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d)

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		of the Clean Water Act, staff will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s). Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83361 will be modified. These changes are in process at this time.
7.15	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83362 will be modified. These changes are in process at this time.
7.16	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. The LOE will be modified. These changes are in process at this time.
7.17	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83204 and Decision 61025 will be retired. These changes are in process at this time.

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7.18	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83257 and Decision 61028 will be retired. These changes are in process at this time.
7.19	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Salts criteria do not apply below Potrero Rd.	See response to comment 7.14. Additionally, there is no water quality objective applied to this waterbody segment, since this reach is tidally influenced. LOE 83270 and Decision 61035 will be retired. These changes are in process at this time.
7.20	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83210 will be modified. Decision 61085 will be changed to "Do Not List". These changes are in process at this time.
7.21	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.	The decisions for Calleguas Creek Reach 4 have been revised to not use the data from the VCAILG monitoring sites at Etting Road (04D_ETTG) and S. Las Posas Road (04D_LAS). These sites are not located in Calleguas Creek Reach 4. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff

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		will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s). For a discussion of readily available data see response to comment 32.3
7.22	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.23	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83171 will be retired. These changes are in process at this time.
7.24	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.25	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.
7.26	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)**	See response to comment 7.21.

No.	Comment	Response
	Pollutant: Malathion Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.27	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83434 will be modified. Decision 61211 will be changed to "Do Not List". These changes are in process at this time.
7.28	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83450 and Decision 61212 will be retired. These changes are in process at this time.
7.29	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.21. Permethrin is not addressed in the Calleguas Creek Toxicity TMDL.
7.30	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83410 and Decision 61214 will be retired. These changes are in process at this time.

No.	Comment	Response
7.31	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83411 will be retired. Decision 42845 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.
7.32	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83416 will be retired. Decision 42771 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.
7.33	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	A review of the Calleguas Creek Reach 12 decisions are in process at this time. This requested change may require a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues where they exist, and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
7.34	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.33.
7.35	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)**	See response to comment 7.33.

No.	Comment	Response
	Pollutant: Malathion Justification: • Data does not appear to be from a station in Reach 12.	
7.36	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	LOE 83538 was based on the correct criteria/objective, which states "For waters designated WARM, water temperature shall not be altered by more than 5 deg. F above the natural temperature. At no time shall these WARM-designated waters be raised above 80 deg. F as a result of waste discharges." The decision (#61523) does not require revision. See, also, response to comment 17.4.
7.37	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2 are tributaries to Mugu Lagoon; therefore, they will be assessed for the same beneficial uses and objectives as the downstream Mugu Lagoon. The MUN beneficial use does not apply and a review of the decision is in process at this time.
7.38	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.39	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification:	See response to comment 7.37.

No.	Comment	Response
	• Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
7.40	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.41	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.
7.42	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.	J-flagged data was incorrectly used in the assessment. LOE 84178, LOE 84179 and LOE 84180, which include J-flagged data will be modified. Additionally, see response to comment 7.37. A review of the decision is in process at this time. Decision 33913, however, will remain as "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as LOE 2030, which was established in 2006, supports the listing decision.
7.43	Waterbody segment: **Ellsworth Barranca** Pollutant: DDE Justification:	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation.

No.	Comment	Response
	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84304 will be modified. These changes are in process at this time. Additionally, staff is reviewing the data to ensure that J-flagged data were not incorrectly used in the original assessment.
7.44	Waterbody segment: **Fox Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84487 will be modified.
7.45	Waterbody segment: **Honda Barranca** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE84752 will be modified.
7.46	**Honda Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84758 will be modified.
7.47	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is

No.	Comment	Response
	Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	tributary to Mugu Lagoon and the MUN beneficial use does not apply. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
7.48	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.47.
7.49	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.
7.50	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.
7.51	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is

No.	Comment	Response
	Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	tributary to Mugu Lagoon and the MUN beneficial use does not apply..
7.52	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	The "DO NOT DELIST" decision was based on LOE 4382, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. There is insufficient information to support a delisting decision.
7.53	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the La Vista Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to remove J-flagged data.
7.54	**La Vista Drain (Ventura County)**	See response to comment 7.53.

No.	Comment	Response
	Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.55	**La Vista Drain (Ventura County)** Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.
7.56	**La Vista Drain (Ventura County)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.57	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.58	**La Vista Drain (Ventura County)** Pollutant: DDT Justification:	See response to comment 7.53.

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	• Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.59	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.
7.60	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.53. This notwithstanding, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE 85332 would be modified.
7.61	Waterbody segment: **Santa Clara Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the Santa Clara Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.62	**Santa Clara Drain** Pollutant: Chlorpyrifos	See response to comment 7.61.

No.	Comment	Response
	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
7.63	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.64	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61. This notwithstanding, should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the COMM beneficial use. Santa Clara Drain drains to Calleguas Creek Reach 4 and COMM is not a beneficial use for Calleguas Creek Reach 4. Beneficial Use Assessed would be changed to "Warm Freshwater Habitat" for LOE 88067.
7.65	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61 and 7.64.
7.66	**Santa Clara Drain** Pollutant: DDT Justification:	See response to comment 7.61 and 7.64.

No.	Comment	Response
	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	
7.67	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.68	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.69	**Santa Clara Drain** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.70	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification:	See response to comment 7.61. This notwithstanding, the Los Angeles Water

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.
7.71	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
7.72	Waterbody segment: **Santa Clara River Reach 3** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decisions for Santa Clara River Reach 3 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site S03D_BARDS or from the Ventura County Stormwater Monitoring Program site, 11th Street Drain. These sites are not located in Santa Clara River Reach 3. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s).
7.73	**Santa Clara River Reach 3** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.

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7.74	**Santa Clara River Reach 3** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Criterion listed is for 2,4,5-TP, not cyfluthrin.	See response to comment 7.72. This notwithstanding, should a waterbody including the monitoring sites be included in the region's water quality assessment, LOE 88712 will be modified to reflect the correct evaluation guideline - "UC Davis Aquatic Life Criteria: Aquatic life should not be affected unacceptably if the 4-day average concentration of cyfluthrin does not exceed 0.00005 ug/L and if the 1-h average concentration does not exceed 0.0003 ug/L. For this assessment, the 4-day average concentration was used. Mixtures of cyfluthrin and other pyrethroids should be considered in an additive manner. (Fojut et al. 2012) ". These changes are in process at this time.
7.75	**Santa Clara River Reach 3** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
7.76	**Santa Clara River Reach 3** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.72. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. These changes are in process at this time.
7.77	**Santa Clara River Reach 3** Pollutant: DDE	See response to comment 7.72.

No.	Comment	Response
	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88736 will be modified. These changes are in process at this time.
7.78	**Santa Clara River Reach 3** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
7.79	**Santa Clara River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	See response to comment 7.72. This notwithstanding, the data did not exceed the objectives. LOE 88761 will be modified. These changes are in process at this time.
7.80	Waterbody segment: **Tapo Canyon** Pollutant: Chlordane Justification: • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	Toxicity LOE 89343 will be removed from Decision 64350. The listing decision for Decision 64350, however, will not be affected and will remain the same. These changes are in process at this time.
7.81	**Tapo Canyon** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89233, the “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used.

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		Decision 64445 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64445, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64445, however, will not be affected and will remain the same. These changes are in process at this time.
7.82	**Tapo Canyon** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89247, the “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 89247 will be modified. Decision 64446 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64446, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64446, however, will not be affected and will remain the same. These changes are in process at this time.
7.83	**Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification:	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 89235 and

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	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	Decision 67273 will be retired. These changes are in process at this time.
7.84	**Tapo Canyon** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88296 and Decision 64538 will be retired. These changes are in process at this time.
7.85	Waterbody segment: **Wheeler Canyon/Todd Barranca** Pollutant: Chlordane Justification: • J-flagged data incorrectly used in assessment. • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The LOEs for this waterbody pollutant combination will be modified to remove J-flagged data. However, chlordane data is a sum of cis- and trans- chlordane, cis- and trans- nonachlor, and oxychlordane. Disregarding the j-flagged data, the remaining valid data still show chlordane having 2 of 2 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision for Decision 63509, therefore will remain the same. Toxicity LOE 90290 will be removed from Decision 63509. The listing decision for Decision 63509, however, will not be affected and will remain the same. These changes are in process at this time.
7.86	**Wheeler Canyon/Todd Barranca** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 90237 and Decision 63585 will be retired. These changes are

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	applicable to waterbody.	in process at this time.
7.87	Waterbody segment: **Ventura River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 89901 will be modified. Decision 63958 will be changed to "Do Not List". Use rating will be changed to "Fully Supporting". These changes are in process at this time.
7.88	**1. *Agricultural Drain monitoring data incorrectly used as basis for listing decisions.*** There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in	See response to comments 7.9, 7.14, 7.21, 7.53, 7.61, and 7.72.

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	the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. McGrath Lake Agricultural Drain is also an agricultural drain comprised of a small open ditch that conveys water from surrounding agricultural lands. A monitoring site was selected on this drain for VCAILG Conditional Waiver monitoring to represent agricultural discharges and was not designed to characterize receiving waters. Moreover, discharges from this drain are already being addressed under the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL, which has identified this drain as the "Central Ditch" (the Monitoring Program for the Conditional Waiver also identifies this monitoring site as the Central Ditch). Implementation activities that reduce loadings of chlorinated pesticides and PCBs will also reduce loadings of toxaphene, bifenthrin and chlorpyrifos. For the foregoing reasons, McGrath Lake Agricultural Drain should be removed from the Draft Category 5 list. **Requested Action:** **• Remove all listings shown in Table 1 that were based on VCAILG Conditional Waiver monitoring data from agricultural drains not representative of the listed waterbody, and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.**	

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	• Remove La Vista Drain and Santa Clara drain from the list as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) list. **• Remove the McGrath Lake Agricultural Drain because it is not a waterbody that falls under the jurisdiction of the 303(d) list, and because there is an effective TMDL that addresses discharges from this agricultural drain ("Central Ditch") to McGrath Lake.**	
7.89	*2.* ***Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply*.** Numerous listings were based on water quality objectives for the protection of municipal drinking water for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated, or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans) state, "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards… (with certain exceptions which must be adopted by the Regional Board)." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan, except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the	As stated in previous responses, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. See response to comments 7.5- 7.7, 7.14 - 7.19, 7.28, 7.30-7.32, 7.37-7.41, 7.43-7.51, 7.56, 7.57, 7.67, 7.68, 7.70, 7.76, 7.77, 7.81-7.84, and 7.86.

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	County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."* In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified, "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision fact sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1: *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential"*	

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	beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty." Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate, as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3", where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in Table 1 should be removed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence, which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that	

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	shows an exceedance is based on the potential (P*) MUN, which, as described above, cannot be used to justify a listing. Furthermore, the fact sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process, and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** **• Revise all of the new listings in the fact sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** **• Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) list.**	
7.90	**3. *Reassess mercury listings using correct objective and correct units*.** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, La Vista Drain, Santa Clara Reach 3, and Ventura River Reach 3 are in ng/L and the objective is in µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. Our consultants believe that after this calculation has been performed, the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. Regional Board staff should explain why they used a recommended criterion instead of an established water quality objective. **Requested Action:** **• Repeat the mercury analysis after correcting the units error.**	As indicated in previous responses, the corrections are in process at this time. . See response to comments 7.20, 7.27, 7.60, 7.79, and 7.87.
7.91	**4. *Remove toxicity Lines of Evidence (LOE) from pollutant fact sheets when an LOE specifically for toxicity already exists*.** Numerous pollutants listed for Calleguas Creek Reach 3, Tapo Canyon and Wheeler Canyon/Todd Barranca include an LOE to support the pollutant listing,	As indicated in previous responses, Toxicity LOEs are being removed as LOEs from pollutant specific factsheets where a Decision for Toxicity already exists (and those LOEs are associated with that decision). See response to comments 7.80,

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	when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the fact sheet. The toxicity LOE listed for the waterbody is sufficient as it is intended to identify the cause of observed toxicity through established and accepted methodologies.	7.81, 7.82, and 7.85.
7.92	**5. Incorrect location and data were used for listings in Reach 12.** The name of the monitoring site presented in the fact sheet for chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12, and TO1 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, TO1 should not be used for a 303(d) listing decision, and University data are not from Reach 12. A review of the datasets provided in the link on the fact sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the fact sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, FBVC requests that only data collected after applicable pesticide-use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrate a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide-use restrictions, monitoring data collected prior to 2009 are not representative of current waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates continued impairment. **Requested Action:** **• Remove listings for Reach 12 that are not based on receiving water data from that reach.** **• Remove listings for chlorpyrifos, diazinon, and malathion based on historic**	See response to comments 7.33, 7.34, and 7.35. In addition, for a discussion of the readily available data assessed in this listing cycle see response to comment 32.3. The next listing cycle which includes the Los Angeles Region will assess more recent data and, should the information on pesticide use restrictions and the data support not considering data collected before a use restriction, a decision to assess only data collected after the use restriction may be appropriate.

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	data that are not representative of conditions after implementation of pesticide-use restrictions.	
7.93	**6. *Ensure no J-flagged data were used in the assessment*.** The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states: "*When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit*." All listings based on the use of J-flagged data should therefore be removed from the draft 303(d) list. Specific instances are included in Table 1 and further explained in Table 2 below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings. Table 2. Incorrect use of J-flagged data • Waterbody segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Comment: The LOE for Chlordane erroneously states that three out of five samples exceed the objectives. A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. • Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2** Pollutant: Toxaphene	For J-flagged data, see response to comments 7.5, and 7.42, 7.43, 7.53, and 7.85. For Boulder Creek, chlordane, see response to comment 7.5. For Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, toxaphene, see response to comment 7.42. For La Vista Drain, chlordane, see response to comment 7.53. In regards to chlordane in the Rio de Santa Clara, chlordane data are a sum of cis- and trans-chlordane, cis- and trans- nonachlor, and oxychlordane. Disregarding the j-flagged data, the reaming valid data still shows Chlordane having 4 of 5 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision (Decision 33192), therefore, will remain the same. These changes are in process at this time.

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	Comment: The Lines of Evidence (LOE) for Toxaphene lists the number of exceedances incorrectly at two. However, only one of six samples exceeded the indicated criterion. The other sample was reported by the laboratory as "estimated" (J-flagged). Because only one of six samples showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. • Waterbody segment: **Rio de Santa Clara/Oxnard Drain No. 3** Pollutant: Chlordane Comment: The LOE for Chlordane erroneously states that four out of five samples exceed the objectives. A review of the data shows that only 3 out of 5 samples exceed indicated criteria. The remaining 2 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. • Waterbody segment: **La Vista Drain** Pollutant: Chlordane Comment: The LOE for chlordane shows that one of the samples used to justify the listing is based solely on estimated (J-flagged) data because results were below the reporting limit. Because Chlordane has only one detected value for two sampling events, more monitoring data are needed to justify the listing and the proposed listing should be removed. Additionally, refer to comment 1 regarding the inappropriateness of this drain being a listed waterbody. **Requested Action:** **• Review all fact sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** **• Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain (though we also disagree with the listing of this as a waterbody to begin with), and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**	
7.94	**7.** ***Remove listings where a waterbody assessment does not meet listing***	See response to comment 7.52.

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	***thresholds based on data provided*.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) list. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) list. **Requested Action:** **• Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3, based on failure to meet listing threshold requirements in the Listing Policy.**	
7.95	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** As manager of the VCAILG program, FBVC is a stakeholder in the Calleguas Creek Watershed TMDL monitoring program and represents the agricultural responsible parties listed in the TMDLs. As such, FBVC supports the comments made by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed regarding the use of all appropriate monitoring data for the 303(d) listing process. The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. Please refer to the letter submitted by the Calleguas Creek Watershed Stakeholders for details regarding the waterbody/pollutant combinations eligible for delisting. While this comment is specific to knowledge regarding monitoring programs in the Calleguas Creek	See response to comment 32.3.

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	Watershed, it should be applied to the other watersheds in Ventura County. **Requested Action:** **• Reassess all Ventura County waterbodies using all available data.**	
7.96	III. **REQUESTED CATEGORY ASSIGNMENT CHANGES** ***8. Correct pollutants listed as Category 5A that should be 5B based on coverage by an existing TMDL.*** There are number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. Although we contend that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B as applicable. Because discharges from the McGrath Lake Agricultural Drain (i.e., "Central Ditch") are already being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL (effective June 30, 2011), toxaphene should be changed from Category 5A to Category 5B. A Calleguas Creek nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DDE, DDD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), and although we oppose the inclusion of these listings on the grounds that they are not waterbodies, the actual receiving waters are already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, the Nitrogen TMDL, and the Metals TMDL, and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for chlorpyrifos – Honda Barranca and Duck Pond Agricultural Drains – but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL.	For the McGrath Lake Agricultural Drain toxaphene, see response to comment 7.13. For the La Vista Drain and Santa Clara Drain, see responses to comments 7.53- 7.71. The list and the factsheets have been updated to reflect the nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed by the Santa Clara River Nitrogen TMDL. The Calleguas Creek Toxicity TMDL specifically addresses the organophosphate pesticides, chlorpyrifos and diazinon, and does not apply to pyrethroids. The Toxicity TMDL would need to be revised to identify pyrethroid targets, and include the other required elements of a TMDL for pyrethroids specifically. For Calleguas Creek Reach 2 listings see response to comments 7.18 and 7.19 The list and the factsheets have been updated to reflect the Calleguas Creek Reach 3 mercury listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the Calleguas Creek Reach 4 mercury has been updated to being addressed by a TMDL.

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	The nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed under the Santa Clara River TMDL, in effect since 2004. • We request that any listings in Table 3 and Table 4 that are maintained after addressing the issues in Comment I also be corrected to be designated in Category 5B. Table 3. 303(d) Category 5A listings which should be changed to 5B listings (see comment letter) In addition, we believe the Calleguas Creek Watershed Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion), if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity, and the Conditional Waiver includes a bifenthrin water quality benchmark triggering management practice implementation in response to exceedances, in addition to the organophosphate pesticides included in the TMDL. Additionally, the structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. As a result, if the waterbodies are placed on the 303(d) list as new listings, we request that the waterbodies in Table 4 be moved from 5A to 5B. Table 4. Pyrethroid and Organophosphate listings covered by the existing Toxicity TMDL (see comment letter) **Requested Action:** **• Change all pollutant-waterbody segment combinations in Table 3 and Table 4 from 5A to 5B or 4A based on coverage by an existing USEPA approved TMDL.**	Also see responses to comments 7.30, 7.31, and 7.32. The list and the factsheets have been updated to reflect the Calleguas Creek Reach 9A nitrate listing is being addressed by a TMDL The list and the factsheets have been updated to reflect the Calleguas Creek Reach 12 Chlorpyrifos and diazinon listing are being addressed by a TMDL. The list and the factsheets have been updated to reflect the Honda Barranca DDT listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the Fox Barranca DDE listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the La Vista Drain and Santa Clara Drain listings which are being addressed.
7.97	***9. Remove waterbody-pollutant combinations for agricultural drains listed***	The decisions for the waterbody-pollutant

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	as Category 2. Two new agricultural drains were included inappropriately on the Category 2 list (i.e., assessed for listing) and should be removed: Drain Along Gerry Road to Calleguas Creek Reach 9, and Oxnard Drain. The Gerry Road agricultural drain is a small drainage ditch with intermittent flows that exists solely to collect non-potable water from the adjacent agricultural lands before it drains into Calleguas Creek Reach 9; it is not a tributary to Calleguas Creek Reach 9. A VCAILG monitoring site was selected on this drain to be representative of agricultural discharges to Calleguas Creek Reach 9 and is not representative of receiving water conditions. Accordingly, neither the MUN beneficial use nor the MAR beneficial uses apply to this agricultural drain. The new listing for Oxnard Drain also should be removed from the Draft Category 2 list. The monitoring site indicated for this drain is located in the Ormond Beach Wetlands area where flows from the Hueneme Drain, the J St. Drain (now "Chumash Creek"), and the Oxnard Industrial Drain (formerly known as the Oxnard Drain but now known as the "Ormond Lagoon Waterway") commingle. In order to list the "Ormond Lagoon Waterway" (formerly the Oxnard Industrial Drain), a monitoring station would have to be established on that channel upstream of the wetlands area to ascertain water quality in that waterbody.	combinations associated with "Drain along Gerry Road" and "Oxnard Drain" have been changed to "do not list" due to insufficient information at this time to determine whether the Drain along Gerry Road and Oxnard Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.
7.98	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** FBVC's staff and consultants have identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified. The list is not comprehensive, because in many cases the information provided made it difficult or impossible to conduct a proper analysis. **10.** ***Correct Appendix G fact sheets.*** The Appendix G fact sheets often include incorrect information and discussion.	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.

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	While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include: • Incorrect Evaluation Guideline and Guideline Reference. For example, the Evaluation Guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200 and 88712 actually is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited Guideline Reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final fact sheets and 303(d) list. • Incorrect beneficial uses assigned to objectives. For example, MUN beneficial uses listed when aquatic life objectives are presented in the fact sheet. • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally influenced waterbody (e.g., Duck Ponds Agricultural Drain), and MAR and EST beneficial uses assigned to a waterbody that is too far upstream to be tidally influenced (e.g., Wheeler Canyon/Todd Barranca). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 and on Wheeler Canyon/Todd Barranca is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in fact sheets, including 3 samples with results of “ND”. Stating in fact sheets that a pollutant exceeds criteria in 100% of samples, instead of the true figure of 40%, conveys an inflated impression of the degree of impairment by that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.	

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	Requested Action: **• Correct the Appendix G fact sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples / number of exceedances.**	
7.99	**11. *Correct the Appendices and Fact Sheet Categories*.** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent, which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow FBVC to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are no associated fact sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The fact sheets for the following name changes should provide justification or explanation for the name change, as many appear to be switching tissue or sediment listings to water listings. If this is in fact the change being made, justification for the water listing needs to be provided in the fact sheet. It is not appropriate to characterize changing the medium that is the basis for the listing as a name change. Table 5. Listed as Name Changes in Appendix A (see comment letter) There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies. Table 6. Incorrectly listed waterbody segment-pollutant combinations (see comment letter)	Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data. The 303(d) list is being revised to no longer include separate listings for different environmental media, that is, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.

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	There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) list were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. We request clarification as to whether these waterbody-pollutant combinations are, in fact, being delisted, as some align with the assessment provided by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed. Table 7. Not described as delisted in Appendix A but not found Appendix B or C (see comment letter) **Requested Action:** **• Correct the numerous inconsistencies described above in Table 5, Table 6, and Table 7 and ensure that all of the proposed 303(d) list appendices are internally consistent.**	
7.100	12. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Calwater numbers to reflect those listed in the Basin Plan*.** There are multiple instances of what appear to be incorrect Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) list to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **• Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues including HUCs for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>7.101</td><td>13. Correct or clarify inconsistencies in the staff report.

There is inconsistent discussion about some proposed listings in the staff report, which should be clarified to avoid confusion. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants: “For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 … are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL … and would then be in Category 4A.” However, we could find no listings of DDE and DDD for Reach 3 in any Appendix of the report including Appendix C – Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that DDE and DDD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement, and clarify any other inconsistencies between the staff report and the list.

Requested Action:
• Correct or remove language cited on page 10 of the staff report regarding DDE and DDD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.</td><td>The Staff Report has been corrected.</td></tr>
<tr><td>7.102</td><td>14. Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy.

In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment. This is inconsistent with the Listing Policy, which states that it must be demonstrated that an evaluation guideline is “applicable to the beneficial use, protective of the beneficial use, scientifically based and peer reviewed, and well described.” Because it has not been demonstrated that the individual species’ response to these pollutants is applicable and protective of the beneficial use, these guidelines should not be used to make a listing. The Regional Board should review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin), as well as applicability to the beneficial use</td><td>As the State Water Board staff and Los Angeles Water Board staff review waterbody pollutant data for this and future listing cycles, they will continue to review the appropriateness of the guidelines and thresholds.</td></tr>
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	as described in the listing policy. Table 8. 303(d) Pollutants Using Thresholds for Interpreting Narrative Objectives (See comment letter) The 303(d) list includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in Ventura County watersheds. Currently no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the “Conclusions and Recommendations” section that “insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin.” The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 and Santa Clara River Reach 3 is inappropriate. LC50s do not meet the standard set forth in the listing policy as stated on page 20: *“ the evaluation guideline… identifies a range above which impacts occur and below which no or few impacts are predicted.*” By definition an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis criteria. However, upon reviewing the UC Davis source, we found the listed chronic standard for permethrin is 2 ng/L (page 92), which is 0.002µg/L not 0.0002µg/L as listed in the 303(d) list. **Requested Action:** **• Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.** **• Remove all guidelines that do not comply with the stated listing policy as**	

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	described above.	
8.	Castaic Lake Water Agency, March 30, 2017	
8.1	One of the subject proposed revisions would add polychlorinated biphenyls (PCBs) to the 303(d) listing for Castaic Lake and Lagoon. The data referenced in the proposed PCB listing is from a relatively small number of fish tissue samples analyzed in 2007. The Agency samples and analyzes water from the lake prior to treatment. Our data does not indicate that PCBs are present in the lake water. Because of this, and the limited data described above, we believe additional study should be conducted to look at longer term trends in PCB concentrations in fish tissue, and PCB source determination.	As indicated by the commenter, Castaic Lake is proposed for inclusion on 303(d) list for PCBs. This listing decision is based on 3 LOEs and supported by LOE 94733. In LOE 94733, a total of 4 fish tissue composites were generated from largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) from 2 sampling locations (20 fish, total). All four composite samples were found in exceedance of the criterion for PCB. The commenter is encouraged to submit the additional PCB water column data into CEDEN so that it can be assessed during future listing cycles. The longer-term trends in PCB concentrations in fish tissue, and PCB source determination are important determinations, which would take place if a TMDL or other regulatory program is developed to address PCBs in the Lake.
9.	City of Azusa, March 30, 2017	
9.1	**Summary** Of the 22 metals reported for all San Gabriel River water quality segments, 19 (84.3%) of them fall under the "de-list" and "do not list" categories. The City believes that 3 additional metals (15.7%) should be de-listed, which would raise the total to 22 (100%), for reasons more particularly described below. Based on the de-listing of these metals, the City contends that the Regional Board should remove the San Gabriel Metals TMDL from the Los Angeles Basin Plan.	Specific comments on the 303(d) list are addressed below; comments on the San Gabriel Metals and Selenium TMDL are outside the scope of this action. Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. The listing for copper in the San Gabriel River

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	I. San Gabriel River: Estuary As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. Whether or not this was an oversight on the part of the Regional Board, there is ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/I for hardness is only intended to be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998.	Estuary is carried over to the 2016 303(d) list. See Appendix A as well as Appendix G. The decision to "do not delist" copper is supported by data in CalWQA. Copper was first listed for the San Gabriel River Estuary in 2006 and has remained on the list in 2010, 2012 and 2016. For the 2016 303(d) list, the copper listing was "carried over" and new LOEs were added with new data for this listing cycle. The LOEs in the factsheet for the San Gabriel River Estuary copper listing do not support delisting copper. The decisions to "do not list" lead, selenium and zinc are supported by the data in CalWQA. The commenter may be assuming that a default hardness value was used, but the factsheet states, "***If no hardness data were available***, a value of 100 mg/L was used" (emphasis added). In this case, site-specific hardness data were available and were used as indicated in the data set "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010." See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Comments on TMDL and the Los Angeles County MS4 Permit and the provisions therein are outside

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	3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the comment letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3.7 ug/1 (see Table I(a) below). Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	the scope of this action.
9.2	**II. San Gabriel River: Reach 1 (Estuary to Firestone)** Metals for San Gabriel River, Reach 1 from the Estuary to Firestone were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table I(a), despite the fact that copper was not listed on the 2010 303(d) list in the first place. Table II. San Gabriel River: Reach 1 (Estuary to Firestone) **[See the comment letter for Table II]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list	The decisions to "do not list" copper, lead, selenium and zinc are supported by the data in CalWQA. Comments on MS4 permit requirements and the San Gabriel River Metals and Selenium TMDL are outside the scope of this action.

No.	Comment	Response
	justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
9.3	**III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)** As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons: 1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced). 2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above. 3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in zero exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement. 4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected. Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the comment letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals	The decisions to "do not delist" lead is supported by the data in CalWQA. Lead is not a "legacy" pollutant; there are current uses and sources of lead in the watershed. Comments on the TMDLs and the MS4 permits are outside the scope of this action. There are three LOEs for lead in the San Gabriel River Estuary Reach 2 including data collected under the MS4 permit and a County of Sanitation District of Los Angeles County permit.

No.	Comment	Response
	to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
9.4	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit Attachment P: TMDLs in San Gabriel River Watershed Management Area. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table l(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81.34 ug/1; and (2) Coyote Creek lists copper target of 24. 71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the comment letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	The decisions to “do not list” copper, lead, and zinc are supported by the data in CalWQA. Comments on TMDLs and MS4 permits are outside the scope of this action.
9.5	**V. San Gabriel River: Coyote Creek**	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons:

1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2.

2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees.

Table V. Coyote Creek **[See the comment letter for Table V]**

Recommendation to Regional Board: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td>The decision to “do not delist” for copper is supported by data in CalWQA.

Comments on the TMDLs and the MS4 permits are outside the scope of this action.

The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, CTR criteria apply to water quality in both dry and wet weather.</td></tr>
<tr><td>9.6</td><td>**VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)**

Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below).

Table VI: San Jose Creek Reach 1 **[See the comment letter for Table VI]**

Recommendation to Regional Board: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not</td><td>Comments on the TMDLs and the MS4 permits are outside the scope of this action.</td></tr>
</table>

No.	Comment	Response
	list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
9.7	**VII. South San Jose Creek (Los Angeles County)** This is Reach is a new listing under the 2016 303(d) List. VII. South San Jose Creek (Los Angeles County) **[See the posted letter for Table VII]** **Recommendation to Regional Board**: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	Comments on the TMDLs and the MS4 permits are outside the scope of this action.
10.	City of Gardena, March 30, 2017	
10.1	The City of Gardena (City) appreciates the opportunity to comment on the revised 2016 303(d) Integrated Report for the Dominguez Channel. The City also welcomes the proposed "de-list" and "do not list" of pollutants, particularly metals and toxics. These pollutants are the basis for the Dominguez Channel Harbor Toxics TMDL (DCHT-TMDL), which is derived from the 2010 303(d) list. The elimination of these pollutants should effectively eliminate the need for the DCHT-TMDL, which the Dominguez Channel Watershed Management Program was created to comply with. **I. 2010 303(d)/2016 303(d) List Dominguez Channel, Reaches 1 and 2** This list, on which the DCHT-TMDL was developed, contains the following toxics for Reach 1 and 2 as shown in the tables presented below. The tables also show the status of toxic pollutants, including metals, which the 2016 303(d) list revises in terms of the following categories: (1) list; (2) de-list; and (3) don't de-list. II. Reach 1 Dominguez Channel (unlined portion below Vermont)	Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. In regards to PAHs, while PAHs is delisted, the data in CalWQA support the listing of the individual PAHs of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene. The fact sheet for the PAH delisting states: *Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing the PAH sediment-pollutant combination and replacing this general PAH listing with the individually listings of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene on the section 303(d) list in the Water Quality*

No.	Comment	Response
	[See the posted letter for Table] In sum, the 2016 303(d) list for toxics and metals proposes to de-list PAHs and zinc (in sediment) and not list Methylnaphthalene 2. However, because PAHs are to be de-listed, Chryslene, Phenanthrene, and Pyrene must also be de-listed because they are specific types of PAHs. Thus, the total number of toxics to be eliminated from the 2016 303(d) list is 8. Copper should be delisted as well because: (1) it was not listed on the 2010 303(d) Integrated Report for toxics and metals for Reach 1 of the Dominguez Channel; (2) the 2012 303(d) list recommended that copper not be listed;" and (4) SWAMP data (2003) for all reaches of the Dominguez Channel resulted in only a few slight exceedances for dissolved copper (but not for total recoverable copper, which is the California Toxics Rule (CTR) compliance standard). Should the Regional Board insist on retaining copper on the 2016 303(d) list, it should provide sampling data based on the CTR for establishing ambient water quality standards. Excluding the aforementioned metals and toxics from the 2016 303(d) list eliminates 9 of them - 56% of the total. On this basis alone, the DCHT-TMDL should be voided.	*Limited Segments category.* The decision to "do not list" Naphthalene is based on one LOE in the CalWQA database that shows no exceedances of 15 samples. The decision to "de-list" zinc is based on three LOEs in the CalWQA database that show no exceedances. In regards to copper, the decision to "list' copper is supported by the data in CalWQA. This is a new "list" decision based on data added to the CalWQA database this listing cycle from both water and sediment. Both dissolved and total water column data (and sediment data) are used for metals assessments. See response to 3.3 regarding assessments based on readily available data.
10.2	As discussed below the metals and toxics on the proposed 2016 303(d) list that have not been de-listed for Reach 1 of the Dominguez Channel should be de-listed. **1. *Chlordane*** This toxic should be de-listed for the following reasons: (1) no justification to list chlordane was provided in Decision ID 20199 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) the 2016 303(d) list proposes that chlordane be de-listed for Reach 2 of the Dominguez Channel ();	Chlordane was listed for the Dominguez Channel Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database. There is insufficient data in the CalWQA database to justify a decision to "delist." Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle

No.	Comment	Response
	and (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for chlordane.	that includes the Los Angeles Region.
10.3	**2. *DDT (tissue/sediment)*** This toxic should be de-listed for the following reasons: (1) no justification was provided in Decision ID 19790 of the proposed 2016 303(d) list to list DDT in keeping with 303(d) Listing Policy; (2) DDT is de-listed for Reach 2 of the Dominguez Channel; (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for DDT; and (4) DDT is a legacy pollutant that has been banned for several decades.	Decision ID 19790 is the reference to the 2012 303(d) list which did not consider new data for the Los Angeles Region (the 2012 303(d) list considered data from Regions 1, 6 and 7); the decision simply “carried over” a previous decision. Decision ID 34076 is the relevant 2016 decision. Decision ID 34076 includes six LOEs and supports a decision to “do not delist.” The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is not a consideration in the data analysis. Reaches may be influenced by different sources. In regards to “legacy” pollutants, see response to comment 17.7.
10.4	**3. *Dieldrin (tissue)*** Dieldrin (tissue) should be de-listed for the following reasons: (1) no 303(d) listing policy justification for was provided in Decision ID 34645 of the proposed 2016 303(d) list to list dieldrin; (2) the proposed 2016 303(d) list recommends that dieldrin be de-listed for Reach 2 of the Dominguez Channel (despite the fact that the two reaches are connected); (3) dieldrin is a legacy pollutant; and (4) SWAMP data (2003) based on multiple grab samples for both Dominguez Channel reaches resulted in non-detects for dieldrin.	Dieldrin was listed for the Dominguez Channel Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database. There is insufficient data in the CalWQA database to justify a decision to “delist.” The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is

No.	Comment	Response
		not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.
10.5	**4.** ***Lead (including tissue)*** Lead (tissue) should be de-listed for the following reasons: (1) no justification to list lead was provided in Decision ID 34645 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in no exceedances for dissolved lead in Reach 1 of the Dominguez Channel; (3) according to the DCHT-TMDL, the samples taken for lead do not comply with the federal California Toxic Rule (CTR), in that they were not based exclusively on ambient samples and incorrectly used a hardness default value of 49 mg/13); and (4) lead as legacy pollutant has been significantly reduced in the environment as a result of de-leaded fuels).	It is clear from the context of the comment that commenter is actually referring to Decision ID 34613 for lead and not Decision ID 34645 which is for dieldrin. Decision ID 34613 includes six LOEs and supports a decision to "do not delist." Comments on the Dominguez Channel and Greater Harbor Waters Toxic Pollutants TMDL are outside the scope of this action. Lead is not a "legacy" pollutant; there are current uses and sources of lead in the watershed.
10.6	**5.** ***Polychlorinated Bi-phenyls (PCBs)*** PCBs should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 33063 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy); (2) PCBs are de-listed for	Decision ID 33063 includes five LOEs, which were all analyzed with respect to the binomial distribution per the Listing Policy. The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that

No.	Comment	Response
	Reach 2 of the Dominguez Channel; (3) PCBs are legacy pollutants that have been banned for decades; and (4) SWAMP data (2003) based on multiple grab samples for both reaches resulted in non-detects for PCBs.	reach. Whether or not another reach is listed is not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.
10.7	**6. *Toxicity*** Toxicity should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 43000 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy)4 ; (2) SWAMP data (2003) based on multiple grab samples for both reaches resulted in nondetects for most toxics (both Dominguez Channel reaches); and a few detects but no exceedances; and a very few exceedances for metals; and (3) the 2016 303(d) list proposes to de-list toxics affecting Dominguez Channel R1 and R2 that contribute to toxicity5 (there can be no toxicity if many of the toxics are to be de-listed).	Decision ID 43000 includes two LOEs both of which assessed data using the binomial distribution per the Listing Policy. Decision ID 43000 refers to Dominguez Channel (lined portion above Vermont). Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region. There can be toxicity even when the cause of the toxicity is undetermined. Section 3.6 of the Listing Policy states, *"Waters may also be placed on the section 303(d) list for toxicity alone."*
10.8	**7. *Sediment Toxicity*** Sediment toxicity cannot be commented on because it is not addressed in the 2016 303(d) listing report, although it is listed in both the 2010 and 2012 303(d) reports.	Sediment toxicity data for Dominguez Channel Estuary (unlined portion below Vermont) is included as part of the toxicity listing. The decision to "do not delist" toxicity include two

No.	Comment	Response
	It is not certain if the Regional Board intended to de-list sediment toxicity or to carry it over. Against this background it is recommended the all of following toxics and metals be eliminated from the proposed 2016 303(d) Integrated Report for Reach 1 of the Dominguez Channel: 1. Benzo(a)pyrene (PAH) 2. Benzo(a)anthracene (PAH) 3. Chlordane (tissue) 4. Chryslene (PAH) 5. Copper 6. DDT(tissue and sediment) 7. Dieldrin (tissue) 8. Lead (tissue) 9. Methylnaphthlene 2 10. Polychlorinated Bi-phenyls (PCBs) 11. Polyaromatic-Hydrocarbons (PAHs) 12. Phenanthrene (PAH) 13. Pyrene (PAH) 14. Sediment Toxicity 15. Toxicity 16.Zinc (sediment) Eliminating all of these toxics/metals should be sufficient justification for eliminating or significantly revising the DCHT-TMDL.	LOEs. For PAHs, see response to comment 10.1. For chlordane, see response to comment 10.2. For copper, see response to comment 10.1. For DDT, see response to comment 10.3. For Dieldrin, see response to comment 10.4. For lead, see response to comment 10.5. For Methylnaphthlene 2, see response to comment 10.1. For PCBs, see response to comment 10.6. For toxicity, also see response to comment 10.6 and 10.7. For zinc, see response to comment 10.1.
10.9	**III. Reach 2 Dominguez Channel (lined portion above Vermont)** **[See the posted letter for Table]** The 2016 303(d) list proposes to carry-over from the 2010 303(d) all of the toxics except diazinon, which is de-listed. Copper, lead, zinc, and toxicity should be de-listed for the same reasons for de-listing Dominguez Channel R1 metals and toxics.	See response to comment 10.1 to 10.7 regarding to metals and toxics listings. The Benthic Community Effects listings are associated with other pollutant listings so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a. See response to comment 11.19.

No.	Comment	Response
	The 2016 (303d) list also adds "Benthic-Macroinvertebrate Bioassessment" (8MB), which should not be listed for the following reasons: • BMB is not a pollutant. • BMB is used to evaluate the health of wadeable streams using a scoring system. Reach 1 of the Dominguez Channel is not wadeable. The Los Angeles County Flood Control District forbids entry into this and other flood control channels. • The Index of Biotic Integrity (IBI) score of 40, on which the BMB is justified, is considered to be on the edge of "poor" to "fair." But it was based only on 3 samples, taken in 2006, 2007, and 2008. Not only is the sample size not statistically significant, and therefore not in keeping with the 303(d) Listing Policy, but the data is not current. • BMB decision ID, 83960, also uses as lines of evidence toxicity, which is associated with copper, lead, zinc, and diazinon. However, copper, lead, zinc, and toxicity should not be listed on the proposed 2016 303(d) list for the same reasons they should not be listed for Reach 2 of the Dominguez Channel. Further, the 2016 303(d) list proposes to de-list diazinon, a toxic. • According to the Southern California Coastal Water Research Project (SCCWRP), Technical Report 88, which is a bioassessment study concluded in 2015, metals, toxicity, and pyrethroids were only weakly or rarely associated with poor stream health in the Southern region. • Biota, including fish, located in Reach 1 or Reach 2 of the Dominguez Channel has not been specifically identified as being impaired by metals or toxics. The Regional Board has not been able to demonstrate that fish and other wildlife have been impaired. Admittedly, this would be difficult given that Dominguez Channel is a non-perennial stream; it only flows when it rains. There are no studies that have identified the number and species of fish in the Dominguez Channel during storm events. If there were any fish in the channel traveling from up-stream they would probably perish when moving from a freshwater to a saltwater	Benthic Community Listings for channels that are lined entirely with concrete, which includes Dominguez Channel (above Vermont), have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24. For sample size, see response to comment 11.24. For copper, lead and zinc see response to comment 10.3, 10.5 and 10.1. Commenter may mean Technical Report 844 *"Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition's Regional Stream Survey."* Dominguez Channel was not assessed in this Report. Fish are not part of a Benthic Macroinvertebrate bioassessment.

No.	Comment	Response
	environment.	
10.10	**III. Conclusions** In the final analysis, each of the metals and toxic pollutants on the proposed 2016 303(d) list for Reaches 1 and 2 of the Dominguez Channel should be de-listed. The bases for the delistings are, in the aggregate, defective because: 1. The data supporting the listings are out-dated (in some cases by almost 15 years). It is unclear why more current water quality data is not available, especially given that each MS4 in the State is required to pay an annual SWAMP surcharge along with its regular annual MS4 Permit fee to the State. Unlike most non-SWAMP monitoring (sampling and analysis), the Regional Board's SWAMP unit conducts monitoring in accordance with USEPA guidance and State policy. The data SWAMP generates is accurate, objective, and extremely useful. Had SWAMP been allowed to conduct monitoring on a regular basis, the DCHT-TMDL may not have been necessary. 2. Over the past two decades, water quality undoubtedly has improved. Many toxic pollutants are no longer in the environment (e.g., DDT, various pesticides, cleaning solvents, lead in gasoline, etc.). Substantial credit should also be given to municipalities. Since the Los Angeles County MS4 program began in the nineties, cities have dutifully implemented best management practices (BMPs) that have been effective in source-controlling pollutants and reducing them from outfalls through post-construction runoff pollution mitigation controls. Community sensitivity to mitigating runoff pollution is another factor attributable to MS4 public education and outreach programs. 3. The pollutant listings claim to be based on water quality standards developed in conformance with CTR, but they are not. CTR standards for metals and toxics are intended to be ambient standards, derived from dry weather sampling and analysis from receiving water. Instead, they were derived from wet weather conditions. Further, CTR requires an actual hardness value to calculate water quality standards. Many of the 303(d) pollutants were CTR calculated using average	For a discussion of readily available data, see response to comment 32.3. The Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL was based on a thorough review of data that confirmed impairments for the pollutants addressed by the TMDL; it did not solely rely on past 303(d) listings. As noted earlier, adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. Additionally, while the Los Angeles Water Board acknowledges the efforts of MS4 permittees, comments on MS4 permits are outside the scope of this action. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately; additionally, CTR criteria apply to water quality in both dry and wet weather. For these data assessments, when hardness data was available, the hardness was used in the calculation of the criterion, per CTR. When hardness was not available, the default value of

No.	Comment	Response
	hardness values or in some cases the hardness factor of 100 mg/L. According to CTR, this factor was intended only to be used for illustrative purposes when calculating ambient standards for metals and toxics. 4. The pollutant listings, with the exception of those based on the Regional Board's Surface Water Ambient Monitoring Program (SWAMP), do not comply with the State's 303(d) Listing Policy's requirement of meeting the statistical frequency test using a binomial distribution in accordance with a null hypothesis. It should be noted that the DCHT-TMDL was based on faulty 303(d) metals and toxic pollutant listings. What is regrettable is that the costly Dominguez Channel EWMP is based on the DCHT-TMDL.	100 mg/L was used, per CTR. In regards to the binomial distribution see response to comments 10.6 and 10.7.
11.	City of Los Angeles, Bureau of Sanitation (LASAN), March 30, 2017	
11.1	It is crucial that the 303(d) List be revised based on sound science and methodologies following the requirements of the State's Listing Policy. Revisions to the 303(d) List may result in changes to our Enhanced Watershed Management Programs, Coordinated Integrated Monitoring Programs, as well as affecting requirements for the four Water Reclamation Plants operated by LASAN. As such, we feel it is imperative that the listings reflect our understanding of the watersheds to the best of our abilities given the available data.	Comment noted.
11.2	Attachment 1: Detailed Technical Comments on the 2016 Revisions to the Los Angeles Region 303(d) List **Water Body / Pollutant**: Wilmington Drain / Zinc **Technical Comment:** The Fact Sheet for Decision ID 63330 states that one line of evidence is available to assess zinc in Wilmington Drain (90159). LOE 90159 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 3 of 5 samples exceeded the evaluation guideline (i.e., the CTR). However, data collected by Heal the Bay's, "Compton Creek Monitoring Program", were collected from Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90159 consists of data that should not be included when assessing whether or not a zinc impairment exists in Wilmington Drain. Excluding LOE 90159 results in no data available to assess the waterbody pollutant combination. ***Requested Action: Remove Decision ID 63330 for the zinc listing for Wilmington Drain as there are no data to assess the waterbody pollutant combination.***	
11.3	Wilmington Drain / Copper Although the Fact Sheet for Decision ID 44676 states that only two lines of evidence are available in the administrative record to assess the pollutant, Appendix G shows three distinct lines of evidence (4280, 90131, and 90473). LOE 4280 is a placeholder LOE to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 90131 includes data collected by the City of Los Angeles where 2 of 33 samples exceeded the evaluation guideline (i.e., the CTR). LOE 90473 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 2 of 5 samples exceeded the evaluation guideline (i.e., the CTR). The Fact Sheet for Decision ID 44676 combines these three LOEs to state that 4 of 38 samples exceed the CRITERIA and this exceeds the allowable frequency listed in Table 4.1 of the Listing Policy. However, as previously noted, the third LOE includes data collected by Heal the Bay's, "Compton Creek Monitoring Program", which was focused on Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90473 consists of data that should not be included when assessing whether or not a copper impairment exists in Wilmington Drain. Excluding LOE 90473 results in the sample exceedance frequency being 2 of 33 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy.	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	Requested Action: Revise Decision ID 44676 for the copper listing for Wilmington Drain to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.	
11.4	Los Angeles River Estuary (Queensway Bay) / Copper The Fact Sheet for Decision ID 64264 presents one line of evidence related to copper in the Los Angeles River Estuary (85965). LOE 85965 presents information from a State of California program that sampled marinas throughout California and assess the data provided as follows: *"A total of six grab samples were collected during each sampling event. Four separate grab samples were collected from inside the marina basin (Sites 1, 2, 3, & 4) and two separate grab samples were collected from outside the marina basin (Sites 5 & 6). Sample results for sites inside the marina basin and sites outside the marina basin were averaged per sample event, resulting in two sample results per sampling event."* Per the LOE, the Regional Board utilized data collected from inside the Downtown Shoreline Marina (Sites 1, 2, 3, & 4) and data collected outside the marina basin (Sites 5 & 6) to make a determination that 3 of 6 samples exceeded the copper criterion. No site location information is provided specific to these sites (GPS locations are provided in the associated documents, but no sites are specifically named Sites 1, 2, 3, 4, 5, & 6) so it is not possible to verify the locations. Regardless, data from inside the Marina should not be combined with data from the Estuary to assess the Estuary. These are two distinct bodies of water with differing inputs and water quality conditions. Dissolved copper data collected inside the Marina shows an average concentration of 7 ug/L and represents three of the three exceedances identified in the Fact Sheet. Dissolved copper data collected outside of the Marina (presumably in the Estuary) shows an average concentration of 0.72 ug/L and represents zero of three exceedances. The dissolved copper data collected from inside and outside of the Marina are	Site locations in longitude, latitude are given in the "LocationsSamplesDetails" file included in the Data Reference link on the factsheet *"Data for Various Pollutants in California Marinas, 2006."* However, the sites 1, 2, 3, and 4 are within the Marina and should be included with the "San Pedro Bay Near/Off Shore Zones." Los Angeles Water Board staff intend to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.

No.	Comment	Response
	significantly different from one another, as is to be expected, given that they are separate waterbodies and one is a marina and the other is an estuary. ***Requested Action: Either 1) remove Decision ID 64264 and the corresponding 303(d) listing in Attachment B or 2) revise Decision ID 64264 to reflect the waterbody is the Downtown Shoreline Marina rather than the Los Angeles River Estuary and remove the copper listing for the Los Angeles River Estuary from the 303(d) list (Attachment B).***	
11.5	Ballona Creek / Toxicity The Fact Sheet for Decision ID 34253 presents two lines of evidence that indicate the presence of sediment toxicity (83019 and 83020). LOE 83019 references a Statewide Stream Pollution Trends Study 2008 and LOE 83020 references Statewide Project Urban Pyrethroid Status Monitoring. When reviewing the station locations (404SUP093 and 404BLNAxx) associated with these two LOEs in an August 2012 Surface Water Ambient Monitoring (SWAMP) report titled "Toxicity in California Waters: Los Angeles Region", the sampling locations are identified as (page 11) "approximately one kilometer downstream from the confluence with Sepulveda Channel." In a 2014 SWAMP report titled "Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program Third Report - Five-Year Trends 2008-2012", the site 404BLNAxx is identified as Ballona Creek Downstream of Centinela (33.986 -118.417). In the Ballona Creek Toxics TMDL Staff Report, Ballona Creek Reach 2 and Estuary are defined as follows (page 5): Ballona Creek to Estuary (Reach 2) is the longest segment of the creek (approximately 4 miles) continuing on from National Boulevard and ending at Centinela Avenue where the Estuary begins. As such, the sites identified in LOEs 83019 and 83020 are in the Ballona Creek Estuary rather than in Ballona Creek and the Estuary already has a toxics TMDL. ***Requested Action: Remove Decision ID 34253 for toxicity for Ballona Creek as there are no data to assess the waterbody pollutant combination.***	The Ballona Creek Estuary Toxics TMDL Staff Report identifies the downstream end of Ballona Creek Reach 2 correctly when it states, *"Centinela Creek drains directly to "Ballona Creek Estuary" just below the boundary with Reach 2"*; however, Ballona Creek Reach 2 does not end at Centinela Ave., as stated. Ballona Creek Reach 2 ends just above the confluence with Centinela Creek as shown in the Los Angeles Region Basin Plan. However, a review of the sampling location is in process at this time.

No.	Comment	Response
11.6	Dominguez Channel (lined portion above Vermont Ave) / Ammonia The Fact Sheet for Decision ID 35134 states that two lines of evidence are available in the administrative record to assess pollutant (4098 and 83962). LOE 4098 is a placeholder to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 83962 includes data collected by the City of Los Angeles (City) and states that samples were collected at 3 locations: Artesia Blvd. @ Western Ave., Manhattan Beach Blvd., and El Segundo Blvd. where 2 of the 21 samples exceeded the Water Quality Objective/Criterion. However, the data included within the Data Reference for LOE 83962 includes eight additional results that did not exceed the Water Quality Objective/Criterion (including samples collected at Vermont Ave., which was not identified within the LOE Spatial Representation). Given that the Basin Plan indicates that Vermont Ave. represents the reach break between Dominguez Channel and the Dominguez Channel Estuary, samples collected at Vermont Ave. are representative of the upstream water body (i.e., Dominguez Channel lined portion above Vermont Ave). Including all of the applicable data included within the Data Reference for LOE 83962 results in the sample exceedance frequency being 2 of 29 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy. ***Requested Action: Revise Decision ID 35134 for the ammonia listing for Dominguez Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.***	The sample collected at Vermont Ave. was collected just downstream of the Vermont Ave. reach break, so it was not included in the listing decision. That sampling location represents water quality of the downstream reach.
11.7	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Ammonia As presented in LOE 83995, ammonia, pH, and temperature data were collected by the City of Los Angeles at four stations in Dominguez Channel Estuary during July 2009 and August 2009. The following table summarizes the number of samples and exceedances.	The decision has been updated to “DELIST.”

No.	Comment	Response
	Summary of data for Dominguez Channel Estuary (unlined portion below Vermont Ave) Waterbody | # of Samples | # of Exceedances of 4-Day Criteria | Delist if the # of exceedances equal or is less than[1] Dominguez Channel Estuary (unlined portion below Vermont Ave) | 28 | 0 | 2 1 For toxicants, the maximum number of exceedances allowed for delisting is shown in Table 4.1 (Page 14) of the Listing Policy. **COMPARISON OF EXCEEDANCES TO LISTING POLICY** As shown in the table above, the total number of exceedances is below the maximum number of exceedances allowed to delist per the Listing Policy. As a result, the available data demonstrates that Dominguez Channel Estuary meets the water quality objectives for ammonia (un-ionized) and should be delisted from the 303(d) list. This decision would be consistent with Decision ID 62240 (which treated the listing as a new listing despite an existing listing being present), which finds that ammonia in the Dominguez Channel Estuary should not be listed and states the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification against placing this water segment-pollutant combination on the CWA section 303(d) List in the Water Quality Limited Segments category*. This conclusion is based on the staff findings that: 1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy. 2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy. 3. 0 of 28 samples exceeded the CRITERIA and this does not exceed the allowable frequency listed in Table 3.1 of the Listing Policy. 4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met. **Regional Board Staff Decision Recommendation:** After review of the available data and information, *RWQCB staff concludes that the water body-pollutant combination should not be placed on the section 303(d) list* because applicable water quality standards are not being exceeded."	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Requested Action: Revise Decision ID 34669 for the ammonia listing for Dominguez Channel Estuary to Delist from 303(d) list and remove from Category 5 (Appendix B) based on Decision ID 62240 (for the ammonia [un-ionized] listing for Dominguez Channel Estuary) and the data reference provided in LOE 83995.</td><td></td></tr>
<tr><td>11.8</td><td>Compton Creek / Iron

The Fact Sheet for Decision ID 62052 states that one LOE (83798) is available in the administrative record to assess iron in Compton Creek. LOE 83798 lists the following as the Evaluation Guideline used as the basis for the listing: "National Recommended Water Quality Criteria Continuous Concentrations are intended to protect freshwater aquatic organisms from chronic exposures and are expressed as 4-day average concentrations. The City has several concerns with this listing:
The only two exceedances are associated with wet-weather samples collected on October 13, 2009. The Evaluation Guideline used as the basis is Criteria Continuous Concentrations (i.e., chronic criterion). It is inappropriate to use a chronic criterion as it is meant to protect aquatic life against chronic exposure and the samples were taken during a wet-weather event not representative of chronic conditions. USEPA does not recommend a Criteria Maximum Concentration (acute criterion) for iron within its National Recommended Water Quality Criteria.
The National Recommended Water Quality Criteria Continuous Concentration for iron does not specify whether the criterion applies to the total recoverable or dissolved fraction. None of the dissolved iron results associated with the samples used to assess the water body exceeded the criterion.
Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision." However, multiple samples were collected on the same day during the same storms and each was considered separately.</td><td>The review of the decision for Compton Creek iron is in process at this time.</td></tr>
</table>

No.	Comment	Response
	Samples collected on the same day during the same storm (as was the case with the two exceedances) should not be considered independently from one another as they are clearly not temporally independent and do not meet the Listing Policy requirements. Averaging samples collected on the same day results in 1 of 5 exceedances, which does not meet the requirements of the Listing Policy for placing a water body segment on the 303(d) list. ***Requested Action: Revise the decision for Decision ID 62052 for the iron listing for Compton Creek to Do Not List on 303(d) list (TMDL required list) and remove from Category 5 (Appendix B) due to an inappropriate evaluation guideline being used as the basis for the listing, the observed exceedances were not temporally independent, and none of the dissolved results exceeded the evaluation guideline.***	
11.9	Ballona Creek Estuary / Silver The Fact Sheet for Decision ID 34520 states "Silver has not been specifically listed on the 303(d) list." Furthermore, the single Line of Evidence (LOE) does not indicate that any data were analyzed (i.e., the number of samples listed is zero). As such, the listing should be removed. ***Requested Action: Revise Decision ID 34520 for the silver listing for Ballona Creek Estuary to Delist from 303(d) list and remove from Category 4 (Appendix C) to be consistent with the Fact Sheet.***	During the development of the Ballona Creek Estuary Toxics TMDL, USEPA and the Los Angeles Region found that the Ballona Creek listings for sediments (cadmium, copper, lead and silver) were made in error and should be applied to the Estuary. The original listing (for Ballona Creek) was made in 1998 or prior; LOE 2408 is a "placeholder" to support a previous listing decision. Data for these "placeholder" LOEs are not included in the CalWQA database. The factsheet has been revised for clarity.
11.10	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Copper The Fact Sheet for Decision ID 33751 states that five LOEs are available to assess copper in the Dominguez Channel Estuary, four of which correspond to sediment and one of which corresponds to water. The sole LOE that presents water data	The review of the decision for Dominguez Channel Estuary (unlined portion below Vermont Ave) Copper is in process at this time. In addition, copper is included on the list as "being addressed by a TMDL," the Dominguez Channel

No.	Comment	Response
	states that 3 of 3 samples exceeded the dissolved California Toxics Rule (CTR) saltwater chronic criterion. However, these sample results were all collected on the same day and appear to be for total copper associated with a wet-weather event. When using the total copper CTR acute criterion (rather than the dissolved CTR chronic criterion), the samples do not exceed. As such, all LOEs that support a listing correspond to the sediment matrix. ***Requested Action: Revise the pollutant for Decision ID 33751 for the copper listing for Dominguez Channel Estuary to "Copper (sediment)" given that the LOEs supporting a listing correspond to the sediment matrix and move the listing to Category 4a (Appendix C).***	and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL.
11.11	Various waterbodies / Various pollutants For a number of existing listings, it appears as if a significant number of readily available data were not considered when making the Final Listing Decision. These data are from NPDES Permit monitoring programs (both wastewater and stormwater). When these data are considered, the number of measured exceedances supports rejection of the null hypothesis as presented in Table 4.1 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy). As such, these listings should be removed from the section 303(d) list. Furthermore, with regards to the cyanide listing for Ballona Creek, it appears as if Los Angeles (LA) Regional Water Quality Control Board (Regional Board or LARWQCB) staff applied the chronic CTR criterion to the entire dataset instead of applying the chronic CTR criterion during dry-weather and the acute CTR criterion during wet-weather.	See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list. While, in TMDLs, targets and allocations may be developed separately for dry weather and wet weather and may apply chronic criteria to dry weather and acute criteria to wet weather, that is not the procedure used in 303(d) listing decisions. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, and the more conservative chronic criteria from CTR applies, appropriately, to water quality assessments.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
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<table>
<tr><th rowspan="2">Water Body</th><th rowspan="2">Pollutant</th><th rowspan="2">Listing Category</th><th colspan="2">Date Range</th><th rowspan="2"># of Samples</th><th rowspan="2"># of Exceedances</th><th rowspan="2">Max # of Exceedances to Delist</th></tr>
<tr><th>Start</th><th>End</th></tr>
<tr><td>Ballona Creek</td><td>Cyanide</td><td>5</td><td>10/2000</td><td>12/2010</td><td>66</td><td>5</td><td>5</td></tr>
<tr><td>Burbank Western Channel</td><td>Selenium</td><td>5</td><td>10/2003</td><td>12/2010</td><td>201</td><td>15</td><td>17</td></tr>
<tr><td rowspan="2">Los Angeles River Reach 1 (Estuary to Carson Street)</td><td>Diazinon</td><td>5</td><td>10/2002</td><td>12/2010</td><td>56</td><td>1</td><td>4</td></tr>
<tr><td>Lead</td><td>5</td><td>02/2001</td><td>12/2010</td><td>173</td><td>4</td><td>14</td></tr>
<tr><td>Los Angeles River Reach 2 (Carson to Figueroa Street)</td><td>Lead</td><td>5</td><td>01/2001</td><td>12/2010</td><td>241</td><td>4</td><td>20</td></tr>
<tr><td>Los Angeles River Reach 5 (within Sepulveda Basin)</td><td>Lead</td><td>5</td><td>02/2002</td><td>11/2010</td><td>78</td><td>0</td><td>6</td></tr>
<tr><td rowspan="2">Sepulveda Canyon</td><td>Lead</td><td>4</td><td>10/2004</td><td>12/2010</td><td>98</td><td>4</td><td>8</td></tr>
<tr><td>Selenium</td><td>4</td><td>10/2004</td><td>12/2010</td><td>98</td><td>4</td><td>8</td></tr>
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Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list and remove from Category 5 (Appendix B) or Category 4 (Appendix C), whichever is applicable.
</td><td></td></tr>
<tr><td>11.12</td><td>Burbank Western Channel / Lead

The Fact Sheet for Decision ID 32882 finds that lead in the Burbank Western Channel should not be listed and states (emphasis added): “One line of evidence is available in the administrative record to assess this pollutant. None of the samples exceed the water quality objective. Based on the readily available data and information, the weight of evidence indicates that <u>there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category</u>.” In addition, the analysis conducted as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) did not identify any exceedances from October 2003 through December 2010.

Requested Action: Revise Decision ID 32882 for the lead listing for Burbank Western Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2003.</td><td>USEPA added lead to the 303(d) list (on the “being addressed by a TMDL” portion of the list) in 2006 because of the data review and the targets and allocations for lead included in the Los Angeles River metals TMDL.

The factsheet has been revised for clarity.</td></tr>
</table>

No.	Comment	Response
11.13	Los Angeles River Reach 1 (Estuary to Carson Street) / Cadmium The Fact Sheet for Decision ID 32639 finds that cadmium in the Los Angeles River Reach 1 should not be listed and states (emphasis added): "Three lines of evidence are available in the administrative record to assess this pollutant. The CTR criterion for cadmium for the protection of aquatic life was exceeded three out of forty-two samples from data collected between 1996 and 2002 and no samples exceeded CCR Title 22 MCL guidelines for the protection of MUN beneficial uses in data collected between 2000 and 2003. Based on the readily available data and information, the weight of evidence indicates that *there is sufficient justification for removing this water segment pollutant combination from the section 303(d) list.*" In addition, the analysis conducted as part of the ULAR EWMP did not identify any exceedances from February 2001 through December 2010. ***Requested Action: Revise Decision ID 32639 for the cadmium listing for Los Angeles River Reach 1 to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2001.***	In the 2002 303(d) list, a cadmium listing was added for Reach 1 of the Los Angeles River based on stormwater data. Data for listings prior to 2006 are not included in the CalWQA database. In addition, the USEPA final decision for the 2006 303(d) list added this listing to the 'being addressed by USEPA approved TMDL' portion of the 303(d) List on this basis of the data review and the targets and allocations for cadmium included in the Los Angeles River Metals TMDL. The factsheet has been revised for clarity.
11.14	Echo Park Lake / Ammonia Decision ID 34696 proposes to change the ammonia listing for Echo Park Lake from List on 303(d) list (TMDL required list) to list on the 303(d) list (being addressed by United States Environmental Protection Agency [USEPA] approved TMDL). However, the TMDL report made a finding of nonimpairment for ammonia, as outlined in the following excerpt from Section 6.2.3.2 of the TMDL report (emphasis added): "Echo Park Lake was listed as impaired for ammonia in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and	The 303(d) list and the factsheet has been updated to "DELIST."

No.	Comment	Response
	local agencies collected 35 additional samples (7 wet-weather) between May 2003 and February 2010 to evaluate current water quality conditions. There was one ammonia exceedance in 35 samples (Appendix G, Monitoring Data). Therefore, Echo Park Lake meets ammonia water quality standards and USEPA concludes that preparing a TMDL for ammonia is unwarranted at this time. *USEPA recommends that Echo Park Lake not be identified as impaired for ammonia in California's next 303(d) listing*."[1] ***Requested Action: Revise Decision ID 34696 for the ammonia listing for Echo Park Lake to Delist from 303(d) list and remove from Category 4 (Appendix C) based on USEPA's recommendation.*** 1 U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 6.2.3.2 Summary of Ammonia Non-Impairment, March 2012, p.6-13.	
11.15	Lincoln Park Lake / Lead Decision ID 34817 proposes to change the lead listing for Lincoln Park Lake from List on 303(d) list (TMDL-required list) to list on the 303(d) list (being addressed by USEPA approved TMDL). However, the TMDL report made a finding of nonimpairment for lead, as outlined in the following excerpt from Section 5.3 of the TMDL report (emphasis added): "Lincoln Park Lake was listed as impaired for lead in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 40 additional samples (11 wet-weather) between October 2008 and December 2010 to evaluate current water quality conditions. There were zero dissolved lead exceedances in 40 samples (Appendix G, Monitoring Data). USEPA also collected one sediment sample in September 2010 to further evaluate lake conditions. There were zero sediment lead exceedances of the 128 ppm freshwater (Probable Effect Concentrations) sediment target (Appendix G, Monitoring Data). Therefore, Lincoln Park Lake meets lead water quality standards and USEPA concludes that preparing a TMDL for lead is unwarranted	The 303(d) list and the factsheet has been updated to "DELIST."

No.	Comment	Response
	at this time. *USEPA recommends that Lincoln Park Lake not be identified as impaired by lead in California's next 303(d) list*." ***Requested Action: Revise Decision ID 34817 for the lead listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B) based on USEPA's recommendation.*** U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 5.3 Lead Impairment, March 2012, p.5-18	
11.16	Lincoln Park Lake / Ammonia The data utilized to develop the original listing in 1998 are not available (these data were requested from USEPA and the Regional Board during development of the TMDL in 2010. Based on USEPA's TMDL report, data collected prior to 2009 were reported as ammonium, without corresponding ammonia, pH, or temperature measurements making it impossible to compare these data to ammonia criteria. Only ammonia data collected with corresponding pH and temperature data can be used to determine if criteria were exceeded. In 2008, the Regional Board collected eight ammonia samples all of which were below the reporting limit of 0.1 mg/L and chronic criterion. In 2009, the City of Los Angeles and USEPA/Regional Board conducted monitoring and collected 15 and three samples, respectively, all of which were below the chronic criterion. As stated in the TMDL report (pg. 5-10): *"There were no exceedances of the acute or chronic ammonia criteria during any recent sampling events with associated pH and temperature measurements."* In summary, there are no ammonia data with corresponding pH and temperature measurements available to support the original listing and all available recent data demonstrate there are no exceedances. ***Requested Action: Revise Decision ID 35004 for the ammonia listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B).***	The Water Quality Assessment Report (LARWQCB, 1996) includes ammonia as not supporting beneficial uses. Twenty-eight ammonium samples were reported ranging from non-detect to 1.14 mg-N /L which is less than the acute target, but greater than the chronic target for total ammonia N (assuming the analytical method converted all ammonia to ammonium). Data from lines of evidence developed prior to 2006 are not included in the CalWQA database. While the EPA TMDL for the Los Angeles Area Lakes did review data from 2008 and 2009, which did not exceed criteria, unlike for lead, the EPA TMDL for the Los Angeles Area Lakes did not make a finding of non-impairment for ammonia and instead established targets.

No.	Comment	Response
11.17	Los Angeles River Reach 2 (Carson to Figueroa Street) and Los Angeles River Reach 5 (within Sepulveda Basin) / Oil The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized as follows: An investigation was conducted following seeps of petroleum hydrocarbons into the LA River in June 2001. Based on lab results and borings, it was concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands. Oil was visible in Puente formation seams, partings and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts with younger, less permeable units or layers. The USEPA On-Scene Coordinator (OSC) conducted subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge as a result of a spill, leak, or discharge from any facility and that the oil has been discharging to the river since at least 1943 and there is no practical means of preventing this oil seep from discharging to the River. On April 19, 2002, an email was sent to Steven Pedersen of City of Los Angeles /Watershed Protection Division (WPD) by Steven Poole of the US Coast Guard/National Pollution Funds Center (USGC/NPFC). Mr. Poole stated that City of Los Angeles cannot submit to USGC/NPFC a claim for reimbursement for cost incurred by the City associated with May 2001 oil clean-up efforts in the LA River because Title 1 of the Oil Pollution Act does not allow for reimbursement for **naturally-occurring oil** (natural seepage). In summary, the reports and correspondence discussed herein, indicate that multiple agencies believe that the oil found in the listed reaches of the LA River is associated with naturally-occurring seepage suggesting that a 303(d) listing is not	The State and Regional Water Boards are currently exploring options to address pollutants that may be naturally elevated in water bodies. Until the natural sources of pollutants are addressed by either an exclusion policy as adopted by the State Water Board or a natural sources exclusion (or other site-specific objective) is developed by the Los Angeles Water Board, oil in the Los Angeles River is an impairment and appropriately on the 303(d) list. There is no alternative regulatory program identified that will reduce oil in the Los Angeles River so the category cannot be 4b. However, the factsheet has been updated to include “natural sources” as the source.

No.	Comment	Response
	warranted. **Studies Used in the Analysis** The following studies/correspondences were used in the analysis: • Pollution Report (2002), USEPA Region IX • Correspondence (2002) from Michael P. Brown, Manager, Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles • Correspondence (2002) from Steven Poole, Claims Manager, USGC/NPFC Despite repeated efforts by WPD to obtain the historical information utilized to develop the original listing, the Regional Board has not provided the information for inclusion in the analysis. Therefore, the analysis is based solely on recent information available to WPD. **Summary of Findings** The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized below. **Investigations of the Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles – June 2001** An investigation was conducted following seeps of petroleum hydrocarbons into the engineered channel of the LA River across from the Piper Technical Center in June 2001. This study concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands, based on lab results and borings. The samples of the oil seeps and associated bacterial-growth scums revealed that the seeps were predominantly in the oil or heavy-hydrocarbon range. This supports the conclusion that the LA River oil seeps are natural crude oil as opposed to fuel leaks.	

No.	Comment	Response
	Drilling of wells along Mission St. (east of the river channel) confirmed that oil-bearing Puente formation sands and fractures are the source of crude oil and gases that migrate into the shallow alluvial soils. The hydrocarbons, visible oil and PID readings generally increased with depth toward the Puente formation. Oil was visible in Puente formation seams, partings, and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts younger, less permeable units or layers. **Pollution Report, EPA – January 2002** The USEPA OSC conducted extensive subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge to the River as a result of a spill, leak, or discharge from any facility based on the investigation. The oil has been discharging to the river since the least 1943 and there is no practical means of preventing this oil seep from discharging to the LA River. The OSC also evaluated the use of epoxy or urethane sealants on the seeps to reduce the flow of oil. However, it was concluded that the use of sealants on the seeps would cause the oil to get into the subdrain system and eventually enter the LA River. In summary, WPD attempted to evaluate the original listing information in light of the currently available information. Although the Regional Board did not provide the information, the reports and correspondence discussed herein, and attached to this letter, indicate that multiple agencies believe that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. ***Requested Action: Revise Decision IDs 34118 and 34203 for the oil listings for Los Angeles River Reaches 2 and 5 to Delist from 303(d) list and remove from Category 5 (Appendix B) given that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. Alternatively, move the listing to Category 4b as other regulatory programs are reasonably***	

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>expected to result in attainment of the water quality standard.</td><td></td></tr>
<tr><td>11.18</td><td>Various waterbodies Various / pollutants

Section 2 of the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) states (pg. 3): "At a minimum, the California section 303(d) list shall identify waters where standards are not met, pollutants or toxicity contributing to standards exceedance, and the TMDL completion schedule." In addition, Section 2.1 of the Listing Policy titled "Water Quality Limited Segments" states (pg. 3): "Waters shall be placed in this category of the section 303(d) list if it is determined, in accordance with the California Listing Factors that the water quality standard is not attained; the standards nonattainment is due to toxicity, a pollutant, or pollutants; and remediation of the standards attainment problem requires one or more TMDLs." As such, all listings that do not identify either toxicity or a pollutant as the impairment do not meet the requirements for being placed in the water quality-limited segments category. This is supported by current listing decisions made by the Los Angeles Regional Water Quality Control Board (Regional Board) in Burbank Western Channel for excess algal growth, scum/foam-unnatural, and taste and odor and Calleguas Creek Reach 13 for excess algal growth that state the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing these listing from the 303(d) Water Quality Limited Segment list because the segment pollutant combinations is not a pollutant." The following table presents water body segments and listings that correspond to instances where there is not a pollutant.

<table>
<tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr>
<tr><td>44553</td><td>Arroyo Seco Reach 1 (LA River to West Holly Ave.)</td><td>Benthic Community Effects</td></tr>
<tr><td>65656</td><td>Ballona Creek</td><td>Benthic Community Effects</td></tr>
</table></td><td>The Benthic Community Effects listings are associated with other pollutant or toxicity listings and, therefore, will require a TMDL (or other regulatory program) to attain standards.

The Ballona Creek Wetlands listings were addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation. The impairments identified are associated with sedimentation in addition to metals, trash and other pollutants. The hydromodification listing has been deleted.

While pH exceedances may be associated with algae impairment, excessively high pH is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, "The pH of all inland surface waters shall not be depressed below 6.5 or raised above 8.5…"

Algae, Eutrophic, Odor, Organic Enrichment, Nutrients (Algae) are discussed in the Listing Policy section 3.7.1: An acceptable nutrient-related evaluation guideline is exceeded using the binomial distribution as described in section 3.1 for excessive algae growth, unnatural foam, odor, and taste. Waters may also be placed on the section 303(d) list when a significant nuisance condition exists as compared to reference conditions, or when nutrient concentrations cause or contribute to excessive algae growth.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>
<table>
<tr><td>44746</td><td>Ballona Creek Wetlands</td><td>Exotic Vegetation</td></tr>
<tr><td>34697</td><td>Ballona Creek Wetlands</td><td>Habitat alterations</td></tr>
<tr><td>34699</td><td>Ballona Creek Wetlands</td><td>Hydromodification</td></tr>
<tr><td>44747</td><td>Ballona Creek Wetlands</td><td>Reduced Tidal Flushing</td></tr>
<tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr>
<tr><td>32967</td><td>Compton Creek</td><td>pH</td></tr>
<tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>34030</td><td>Echo Park Lake</td><td>Algae</td></tr>
<tr><td>34698</td><td>Echo Park Lake</td><td>Eutrophic</td></tr>
<tr><td>34756</td><td>Echo Park Lake</td><td>Odor</td></tr>
<tr><td>44748</td><td>Echo Park Lake</td><td>pH</td></tr>
<tr><td>35180</td><td>Lincoln Park Lake</td><td>Eutrophic</td></tr>
<tr><td>44641</td><td>Lincoln Park Lake</td><td>Odor</td></tr>
<tr><td>35223</td><td>Lincoln Park Lake</td><td>Organic Enrichment/Low Dissolved Oxygen</td></tr>
<tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr>
<tr><td>33456</td><td>Los Angeles River Reach 1 (Estuary to Carson Street)</td><td>Nutrients (Algae)</td></tr>
<tr><td>32959</td><td>Los Angeles River Reach 2 (Carson to Figueroa Street)</td><td>Nutrients (Algae)</td></tr>
</table>
</td><td>
The Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs addresses the Algae, Eutrophic, Odor and Organic Enrichment impairments in both Echo Park Lake and Lincoln Park Lake by developing TMDL targets for ammonia, chlorophyll *a*, dissolved oxygen, pH, Total Nitrogen and Total Phosphorus.

The Los Angeles River Nutrients (Algae) listings are being addressed by the Los Angeles River Nitrogen Compounds and Related Effects TMDL. Attaining the nitrogen compound objectives is intended to address impairments caused by pH, scum/foam, and algae as these effects are related to the presence of nitrogen in the waterbody.

While temperature exceedances may be associated with “pollution” such as hydromodification or lack of riparian cover, excessively high temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “*At no time shall these WARM designated waters be raised above 80 degrees F…”* See also response to comment 17.4 for additional discussion of temperature as a pollutant.

The Beach Closures listing for the Los Angeles/Long Beach Inner Harbor is being addressed by the Los Angeles Harbor, Inner Cabrillo Beach and Main Ship Channel Bacteria TMDL, which established targets and allocations for bacterial indicators.
</td></tr>
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<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
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<table>
<tr><td>66229</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Benthic Community Effects</td></tr>
<tr><td>34204</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Nutrients (Algae)</td></tr>
<tr><td>64386</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Temperature, water</td></tr>
<tr><td>66232</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Benthic Community Effects</td></tr>
<tr><td>44326</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Nutrients (Algae)</td></tr>
<tr><td>35160</td><td>Los Angeles River Reach 5 (within Sepulveda Basin)</td><td>Nutrients (Algae)</td></tr>
<tr><td>34207</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Beach Closures</td></tr>
<tr><td>34208</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr>
<tr><td>34305</td><td>Machado Lake (Harbor Park Lake)</td><td>Algae</td></tr>
<tr><td>42417</td><td>Machado Lake (Harbor Park Lake)</td><td>Eutrophic</td></tr>
<tr><td>42262</td><td>Machado Lake (Harbor Park Lake)</td><td>Odor</td></tr>
<tr><td>61605</td><td>Marina del Rey Harbor - Back Basins</td><td>Oxygen, Dissolved</td></tr>
</table>
</td><td>The Machado Lake Algae, Eutrophic, and Odor listings are being addressed by the Machado Lake Nutrients TMDL, which sets targets and allocations for phosphorus, nitrogen and chlorophyll a.

While Dissolved Oxygen exceedances may be associated with other factors such as algae, depressed dissolved oxygen is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At a minimum (see specifics below), the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 m g/L…”

Burbank Western Channel listings for excess algal growth, scum/foam-unnatural, and taste and odor and the Calleguas Creek Reach 13 listing for excess algal growth were delisted in 2010.

Benthic Macroinvertebrate listings are discussed also in response to comment 11.19 and 11.24.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, and remove from Category 5 (Appendix B) or Category 4 (Appendix C).</td><td></td></tr>
<tr><td>11.19</td><td>Various waterbodies / Various pollutants

There are numerous listings that include waterbody segments which are in nonattainment due to pollution that is not caused by a pollutant. The 2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region Staff Report states the following (pg. 9): “Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant, but rather caused by pollution, such as flow alteration or habitat alteration.” Impairments for benthic community effects, exotic vegetation, habitat alterations, hydromodification, reduced tidal flushing, and temperature are caused by either flow and/or habitat alteration (not by a pollutant or combination of pollutants) and; therefore, waterbody segments under these listings should instead be moved to Category 4c.

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<tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr>
</table></td><td>The Benthic Community Effects listings are associated by with other pollutant listings, so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a.

The Ballona Creek Wetlands listings are addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation; therefore, the appropriate waterbody category is 4a, “A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.”

Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore, Category 5 is the appropriate category. Temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At no time shall these WARM designated waters be raised above 80 degrees F…” See also response to comment 17.4 for additional discussion of temperature as a pollutant.</td></tr>
</table>

No.	Comment	Response
	<table><tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr><tr><td>66229</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Benthic Community Effects</td></tr><tr><td>64386</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Temperature, water</td></tr><tr><td>66232</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Benthic Community Effects</td></tr><tr><td>34207</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr></table> ***Requested Action: Notwithstanding the previous comment that supports revising the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, move all segments listed in the preceding table with impairments caused by pollution to Category 4c and revise Appendix B or C as appropriate.***	
11.20	Lincoln Park Lake / PCBs Decision ID 64083 proposes to list PCBs in fish tissue for Lincoln Lake Park. However, this Lake is annually stocked with fish and therefore the lake population	The minimum requirement to justify a listing is exceedances of the relevant criteria or guideline per the Listing Policy. Fish in Lincoln Park Lake exceeded the relevant guideline, the OEHHA fish contaminant goal for PCBs. The identification of

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	does not spend its lifespan in Lincoln Park Lake and may have accumulated PCBs from another waterbody. A number of studies have indicated that farmed salmon accumulate PCBs from the fish meal they are fed. In order to determine the source of the exceedance, fish from the State's stocking system need to be tested prior to introduction and the duration of time they spend in the Lake needs to be determined by a tagging program. The current analysis makes the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments. In addition, the Lake is restocked every year in April which suggests that all fish stocked are immediately removed and consumed. Both of these assumptions need to be fully evaluated prior to determining the source of the exceedance and therefore Lincoln Park Lake does not meet the minimum requirements to justify a listing. ***Requested Action: Remove Decision ID 64083 from Category 5 (Appendix B) or revise from Category 5 to Category 3 so that further evaluation of whether or not the lake itself is actually impaired.***	fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list. The analysis did not make the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments, because a source analysis has not been completed.
11.21	Santa Monica Bay Offshore/ Nearshore / Arsenic The Fact Sheet for Decision ID 67208 presents two lines of evidence related to arsenic in Santa Monica Bay (88949 and 88950). LOE 88949 presents information related to sediment and found that 0 of 32 samples exceeded the sediment goals utilized in the assessment. LOE 88950 presents information related to fish tissue and indicates that 19 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis and 10% of the total arsenic result represented the amount of inorganic arsenic in the sample for comparison to the guideline. In reviewing LOE 88950, no information/citation can be found supporting the assumption that 10% of the total arsenic result represented the amount of inorganic arsenic in the sample. It is appropriate to utilize inorganic arsenic in assessing potential risk; however, either measured inorganic arsenic or a conversion factor developed from actual measured ratios from Santa Monica Bay should be utilized. In USEPA's 2000 Guidance for Assessing Chemical	A review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic. 10% is a conservative assumption for amount of inorganic arsenic in the sample, though a locally developed conversion factor could be better and could be used in future assessment. Note, the San Diego listing only used 2 samples of shellfish leading to greater uncertainty than this assessment which used 19 samples and all 19 samples exceeded the guideline by a wide margin. The data were collected on several different days in several different zones. Data from different species cannot be aggregated from different species. Composites of different species will have different age profiles, different species occupy different trophic levels and will accumulate

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	Contaminant Data for Use in Fish Advisories Volume 1 Fish Sampling and Analysis Third Edition (EPA 823-B-00-007), USEPA recommends that, in both screening and intensive studies, total inorganic arsenic tissue concentrations be determined for comparison with the recommended screening value for chronic oral exposure. Scientific literature demonstrates that a range of total to inorganic arsenic ratios exist. For example, a 2008 study specifically looking at arsenic speciation in 383 samples of marine fish and shellfish, showed that the inorganic fraction of arsenic is typically <0.5% with a few of the highest samples ranging from 1-5% The City's concern with the approach has been expressed in other regions of California as well. The Port of San Diego in an August 11, 2016 comment letter to the San Diego Regional Water Quality Control Board regarding a 303(d) arsenic listing, noted the high level of variability of the proportion of inorganic arsenic across species (typically <10%) as measured in a number of other studies, as well as a methodology that could be used to ground truth the applied proportion through actual sample data. In response to the Port of San Diego's comment the San Diego Regional Board removed an arsenic listing from their draft 303(d) list and stated: *"… there is a high level of uncertainty in the levels of inorganic arsenic in shellfish tissue. The assumption regarding the percent of total arsenic in shellfish tissue is likely conservative, and the San Diego Water Board agrees that a listing based on those assumptions has a high probability of mischaracterizing the results as an impairment. The San Diego Water Board supports the Port's suggestion that future monitoring of shellfish incorporate a measurement of both total and inorganic arsenic."* The City also has concerns with the approach to utilizing the data in comparison to the guidelines. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years	pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point. In addition, while the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.

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	and the risk endpoint relates to a carcinogenic effect over a 30-year period, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes, which should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns. In summary, the lack of inorganic arsenic data and use of an unsupported conversion factor in combination with the approach to comparing tissue data that does not appropriately meet the requirements of temporal independence or reflect actual exposure conditions does support listing arsenic in Santa Monica Bay. The City welcomes the opportunity to discuss approaches to develop inorganic arsenic data for use in future evaluations, as well as an approach to consider tissue data to properly evaluate arsenic in Santa Monica Bay. ***Requested Action: Remove Decision ID 67208 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.*** [3]Peshut, P.J. et al., 2008. Arsenic speciation in marine fish and shellfish from American Samoa. Chemosphere 71 488-492. doi:10.1016/j.chemosphere.2007.10.014 [4]Port of San Diego comment letter to California Water Quality Control Board – San Diego Region. "*Comment – CWA Section 305(b)/303(d) Integrated Report.*" Letter Dated August 11, 2016.	

No.	Comment	Response
	[5]Page 47 of San Diego Region Response to Comment on 2014 303(d) list. http://www.swrcb.ca.gov/sandiego/water_issues/programs/303d_list/docs/Response_To_Comments.pdf	
11.22	Santa Monica Bay Offshore/ Nearshore / Mercury The Fact Sheet for Decision ID 67209 presents three lines of evidence related to mercury in Santa Monica Bay (4165, 88894, and 88891). LOE 4165 and 88891 presents information related to sediment toxicity and sediment chemistry, respectively. LOE 88894 presents information related to fish tissue and indicates that 2 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes that should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns.	Fish collected on the same day, in the same zone, and of the same species, could be aggregated, but this data set represents fish collected on different days or in different zones or they are different species and therefore cannot be aggregated.. In addition, the fact that tissue concentrations represent the accumulation of pollutants over a time period of years, and each fish is a different age and will have moved differently through the environment, provides independence of the tissue sample. However, a review of this decision is in process at this time to confirm the number of exceedances.

No.	Comment	Response
	The City welcomes the opportunity to discuss an approach to appropriately consider tissue data to properly evaluate mercury in Santa Monica Bay. ***Requested Action: Remove Decision ID 67209 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.***	
11.23	Echo Park Lake and Machado Lake (Harbor Park Lake) / Various pollutants Echo Park Lake and Machado Lake (Harbor Park Lake) are two waterbodies located in Los Angeles County which have both been included on the 303(d) impaired waters list since 2006. Because of their water quality impairments, the City invested significant resources to rehabilitate the water quality of the lakes. The $45 million Echo Park Lake Rehabilitation Project was completed in 2015 and included extensive changes to the lake hydrology (e.g., storm drain upgrades, inlet and outlet upgrades, removal of contaminated lake sediments, and installation of lake aeration system) and immediately surrounding areas, including best management practices (BMPs) to reduce the loads of targeted pollutants including trash, metals, coliform, pesticides, and nutrients. The Machado Lake Ecosystem Rehabilitation Project involved dredging and capping the lake bottom, constructing an oxygenation system, adding new storm drain systems, as well as a number of other BMPs to improve water quality. These award-winning projects have been very successful and produced significant water quality improvements; however, these improvements are not reflected in the Regional Board's proposed 303(d) list. The proposed changes for Echo Park Lake includes two delistings for copper and lead, which the City supports; however, two new listings were added for chlordane (tissue) and dieldrin. The other legacy listings for Echo Park Lake and Machado Lakes remain on the proposed 303(d) list (see following table). The City maintains that these legacy listings are inappropriately categorized and should	Echo Park Lake: Chlordane and Dieldrin in Echo Park Lake are addressed by the Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs. The Los Angeles Area Lakes TMDL included chlordane and reviewed chlordane data from several sources. The Chlordane data included as the LOE in the CalWQA database is from a SWAMP study, *"Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study"* (SWAMP, 2009). Inclusion of this listing is in accordance with the Listing Policy. The Los Angeles Area Lakes TMDL included dieldrin and reviewed dieldrin data from an organics study by UCLA. The dieldrin data included as the LOE in the CalWQA database is from a SWAMP study, "*Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study"* (SWAMP, 2009). Inclusion of this listing is

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	instead be listed as Category 3 based on the significant restoration efforts conducted since the last update to the 303(d) list. The USEPA 2010 Integrated Report Guidance uses the following definition for Category 3 listings: *"The existing and readily available data and information is not representative of current conditions of the water body. This rationale might include a determination that: significant land use changes have occurred in the watershed changing the hydrology and nonpoint source loadings; point source discharges were removed; new discharges are now operating; or the locations of sampling stations did not reflect the character of the segment (e.g., limited to locations near discharge outfalls)."* The extensive restoration projects have entirely changed not only the chemical and physical conditions of the lakes themselves, but have also completely transformed the nonpoint source loadings, and hydrology of the system. Any data collected prior to the restoration efforts (i.e., all of the data used for the current listings) are not representative of the current condition of the lakes; therefore, both of these waterbodies are excellent candidates for a Category 3 listing and should be categorized as such until enough data exists to establish their current condition. It is likely that as a result of both of these restoration efforts, the lakes could be entirely delisted. However, until that time, a Category 3 listing would represent the most conservative listing on the part of the Regional Board. The City appreciates the time and effort that goes into maintaining the 303(d) list and notes that these award-winning restoration projects were facilitated in part by the Regional Board's historical listing actions. The City hopes that the extensive resources put into restoring the beneficial use of these waterbodies can be recognized by assigning the proper Category 3 listing to Echo Park and Machado Lake pollutants. **Decision ID** | **Water Body Segment** | **Listing** 34030 | Echo Park Lake | Algae 34696 | Echo Park Lake | Ammonia	in accordance with the Listing Policy. The data available supports listing chlordane and dieldrin for Echo Park Lake in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data is speculative. See response to comment 32.3 for a discussion of "readily available" data for this listing cycle. Machado Park Lake: The Machado Park Lake impairments due to Algae, Ammonia, Eutrophic Conditions and Odor are being addressed by the Machado Lake Nutrient TMDL. The Machado Lake impairments due to Chem A, DDT, Chlordane and Dieldrin are being addressed by the Machado Lake Toxics TMDL. The data available supports listing all these listings in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data (and a movement to Category 3) is speculative. The inconsistences noted by the commenter for Echo Park Lake and Machado Lake in the 303(d) list have been addressed and all the listings are in category 4a. The significant restoration efforts are expected to be reflected in new data collected after the restoration efforts and submitted to CEDEN to

<table>
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62679	Echo Park Lake	Chlordane
62680	Echo Park Lake	Dieldrin
34698	Echo Park Lake	Eutrophic
34756	Echo Park Lake	Odor
33999	Echo Park Lake	PCBs (Polychlorinated biphenyls)
44748	Echo Park Lake	pH
32435	Echo Park Lake	Trash
34305	Machado Lake (Harbor Park Lake)	Algae
42416	Machado Lake (Harbor Park Lake)	Ammonia
34362	Machado Lake (Harbor Park Lake)	ChemA (tissue)
42417	Machado Lake (Harbor Park Lake)	Eutrophic
42262	Machado Lake (Harbor Park Lake)	Odor
35181	Machado Lake (Harbor Park Lake)	Trash

In reviewing the proposed listings for the 303(d) list for Echo Park and Machado Lakes a number of inconsistencies were noted. They have been identified below:

- Echo Park Lake PCB (tissue) (Decision ID 33999) is listed as a new 4A listing in Appendix C, but the change is not noted in Appendix A.
- Machado Lake Chlordane (tissue) (Decision ID 33013), Dieldrin (tissue) (Decision ID 33643), and PCBs (tissue) (Decision ID 33285) are not listed

</td><td>support the next listing cycle for the Los Angeles Region. The Los Angeles Water Board looks forward to the review of that data.</td></tr>
</table>

No.	Comment	Response
	as changes in Appendix A, do not appear in Appendix B or C, but are listed in Appendix G. • Machado Lake DDT (tissue) (Decision ID 33211) is not listed as a change in Appendix A and does not appear in Appendix B or C, but is listed in Appendix G, although incorrectly, as requiring a TMDL despite the fact that DDT is covered by an existing TMDL. • Machado Lake algae, ammonia, ChemA (tissue), eutrophication, odor and trash are included in Appendix G Fact Sheets as already being addressed by a USEPA-approved TMDL, which is expected to result in attainment of the standard; however, they are all listed as Category 5B in Appendix B and as unchanged in Appendix A in the proposed 303(d) List. The Regional Board should clarify if these omissions and inconsistencies equate to a delisting of the pollutants. As explained above, the City supports the delisting of the pollutants due to the extensive restoration projects that have been completed. If, for some reason, these listing were omitted in error and the RWQCB disagrees with the City's comment to include them as Category 3, then all of the listings should, at a minimum, be included as Category 4A. Category 4A is defined as "*A TMDL has been developed and approved by USEPA and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.*" Category 4A is supported by the approved TMDLs covering Echo Lake Chlordane and PCB listings, as well as the Machado Lake Chlordane, DDT, Dieldrin, PCB, algae, ammonia, ChemA(tissue), eutrophication, odor, and trash listings. ***Requested Actions:*** ***(1) Move all segments listed in the preceding table to Category 3 based on the completion of extensive restoration projects, and include the following text to explain the category change: "Due to recent extensive restoration efforts, data from 2010 and prior is not representative of current conditions of the water body. Available data are insufficient to determine attainment status."***	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>(2) If Category 3 listing of suggested pollutants does not occur, ensure that all pollutants listed in the preceding table are correctly categorized as Category 4A based on the existence of USEPA approved TMDLs.

(3) Correct and/or clarify inconsistent listings in Appendices for consistency throughout the entire proposed 303(d) document.</td><td></td></tr>
<tr><td>11.24</td><td>Various waterbodies / Benthic Community Effects

Notwithstanding the City’s comments related to removing all listings that do not identify either toxicity or a pollutant as the impairment, the City identified the following listings for Benthic Community Effects (summarized in the following table) that are inappropriate:
• Ballona Creek: Decision ID 65656
• Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165
• LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229
• LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232
• Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553
• Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548
• Compton Creek: Decision ID 44498

The City believes the listings are inappropriate, based on the following issues that are described in more detail below:
• <u>Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.</u> The listing decisions were based on Southern California Coastal Index of Biotic Integrity (SCIBI). The State Water Board has rejected use of the SCIBI in favor of the California Stream Condition Index (CSCI). The Regional Board Staff Conclusions</td><td>Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites.

See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition.

See response to comment 26.5 for a discussion of the established water quality criteria.

Benthic Community Listings for waterbodies that are lined entirely with concrete have been assessed as “insufficient information” until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels.
The Ballona Creek samples were taken from a fully concrete-lined section and now Ballona Creek benthic community condition has been assessed as “insufficient information”.
The Dominguez Channel above Vermont samples were taken from a fully concrete-lined section and now Dominguez Channel above Vermont benthic community condition has been assessed as “insufficient information”.</td></tr>
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	(Staff Conclusions) for the listing decisions do not acknowledge that the data used to support the decisions were SCIBI scores, not CSCI scores. Instead, the Staff Conclusions imply that the decisions are based on CSCI scores. • <u>There is no established water quality criteria for benthic community condition.</u> Use of a SCIBI score of 40 (or other "cutoffs" promulgated by the authors of the SCIBI) as a listing threshold is not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. The Regional Board use of a CSCI score of 0.79 in other listing decisions (and implied to be appropriate for Ballona Creek) is also not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. • <u>Listings for concrete-lined channels using current metrics are inappropriate.</u> Reference reaches for concrete-lined channels in highly urbanized catchments are lacking. Physical habitat conditions were apparently not considered during data evaluation. The State Board is planning to develop expectations for benthic community condition for developed landscapes using the CSCI and a new Algal Stream Condition Index (ASCI). TMDL development for benthic community effects in concrete-lined channels based on unofficial IBI thresholds is premature. • <u>Insufficient data are available to meet the listing requirements.</u> Notwithstanding the previous issues, several of the listings rely on a single site for data as a basis of the listing inconsistent with the Listing Policy.	**LA River Reach 3** samples were taken from a fully concrete-lined section and now LA River Reach 3 benthic community condition has been assessed as "insufficient information". Benthic Community Listings which were based on samples taken from un-lined sections of reaches were appropriately assessed. **Arroyo Seco Reach 1** was listed in 2010 for benthic macroinvertebrate assessment (2 out of 2 samples not meeting the standard) in an *unlined* section of the channel. The additional assessment added this listing cycle appears to be from a lined section of the Arroyo Seco and that LOE is classified as "insufficient information." **Compton Creek** was listed in 2010 for benthic macroinvertebrate assessment in an *unlined* section of Compton Creek. Additional assessments were added for this listing cycle also in the unlined section of Compton Creek. **Arroyo Seco Reach 2** is not fully lined; three out of three IBI scores from 2006, 2007 and 2008 exceeded the standard. The Benthic Macroinvertebrate data included in the CalWQA database for LA River Reach 4 should be associated with Reach 5. Additionally, this section is not fully-lined. Los Angeles Water Board staff's intention will be to correct the reach in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.

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<tr><th rowspan="2">Type of Decision</th><th rowspan="2">Segment / Station</th><th colspan="5">Cited Benthic Community Data</th></tr>
<tr><th>Line of Evidence (LOE) ID</th><th>Data Source</th><th>Metric used in Data Source</th><th>Time Frame</th><th>Scores[a]</th></tr>
<tr><td>New Listing</td><td>Ballona Creek (Station 14)</td><td>82971</td><td rowspan="5">Bioassessment Monitoring Report in LA County, 2006-2008</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>New Listing</td><td>Dominguez Channel (Station 19)</td><td>83960</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>New Listing</td><td>LA River Reach 3 (Stations 11 and 12)</td><td>85994</td><td>SCIBI</td><td>2006, 07</td><td>4/4 scores were below 40</td></tr>
<tr><td>New Listing</td><td>LA River Reach 4 (Station 13)</td><td>86097</td><td>SCIBI</td><td>2006, 07</td><td>2/2 scores were below 40</td></tr>
<tr><td rowspan="2">Do Not Delist</td><td rowspan="2">Compton Creek (Station 8)</td><td>83829</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>30224</td><td rowspan="2">LA County 1994-2005 Integrated Receiving Water Impacts Report. Section 5, LA River Watershed Management Area, pp 5.1 - 5.40</td><td>SCIBI</td><td>2003, 04</td><td>2/2 scores were "very poor"</td></tr>
<tr><td rowspan="2">Previous Listing</td><td rowspan="2">Arroyo Seco Reach 1 (Station LALT501)</td><td>30223</td><td>SCIBI</td><td>2003, 04</td><td>2/2 scores were below 13</td></tr>
<tr><td>82895</td><td rowspan="2">Bioassessment Monitoring Report in LA County, 2006-2008</td><td>SCIBI</td><td>2008</td><td>1/1 score was below 40</td></tr>
<tr><td>New Listing</td><td>Arroyo Seco Reach (Station 7)</td><td>82896</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
</table>

[a] Per Staff Conclusions, SCIBI scores were binned as very good (80-56), good (41-55), fair (27-40), poor (14-26) and very poor (0-13) habitat conditions; sites with scores below 26 are considered to have impaired conditions.

Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.

SCIBI-based datasets should not be considered for listing decisions. Section 3.9 of the Listing Policy states:

> *"A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities* ***as compared to reference site(s)*** *and is associated with water or sediment concentrations of pollutants including, but not limited to chemical concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.]*

While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low-elevation/low-gradient streams commonly found in the alluvial plains of the Los Angeles Region. It was developed using data from 275 sites, ranging from Monterey County to the Mexican border, but not a single reference location represented low-elevation and low-gradient streams. The reaches listed in the table above are extremely low gradient, low-elevation water

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There are sufficient data in the waterbody segments listed to be representative of the water body segment in accordance with the Listing Policy Section 6.1.5.2 and 6.1.5.3. When single stations were re-sampled, they were sampled on different years.

See response to comments 26.4, 26.13 and 26.14 for a discussion of low elevation segments and the benthic community scores.

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	bodies, and thus the SCIBI does not adequately define relevant reference conditions. Furthermore, the reference conditions used in the SCIBI represent a less restrictive definition of the reference condition than that which was deemed adequate as part of the State's Reference Condition Management Program[15]. The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a recently published paper regarding a study examining the SCIBI relative to other benthic macroinvertebrate bioassessments, he concluded that the SCIBI did not adequately address reference conditions in low-elevation sites, stating that the SCIBI was "not completely effective at controlling for an elevation gradient." Dr. Ode was also the coauthor of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams. This report describes recommendations made by a technical panel of experts on bioassessment, including experts from the California Department of Fish and Wildlife, Southern California Coastal Water Research Project (SCCWRP), US EPA Region 9, and various universities. The technical panel laid out a number of steps that would be necessary to develop a network of adequate reference sites for implementation of criteria for bioassessments. They note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity." In 2010, as part of its project to develop a statewide Biointegrity Policy, the State Board abandoned use of the SCIBI and other regional IBIs, and funded development of the statewide CSCI (Mazor et al., 2016). The CSCI addressed at least some of the problems with the SCIBI through its use of a modeled reference condition as opposed to a regional reference pool. Starting in late 2016, the State Board began funding the development of a "companion" Algal Stream Condition Index (ASCI). The State Board is developing expectations for benthic community condition using both the CSCI and the ASCI which will be incorporated in a statewide Biointegrity Assessment Implementation Plan.	

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	The Staff Conclusions associated with the new listings in the preceding table do not acknowledge that the data used to support the new listings were SCIBI scores. Further, the Staff Conclusions for all of the new listings imply that Regional Board staff based the listing decision on CSCI scores. The source of the BMI data for each of the new listings, and the new LOE for Compton Creek, ("Bioassessment Monitoring Report in Los Angeles County, 2006-2008") were appendices (Appendix H) of the Los Angeles County Stormwater Monitoring Reports for 2006, 2007, and 2008. *In these reports, BMI data were scored using the SCIBI (Ode et al. 2005), not the CSCI*. In two cases (Ballona Creek and Arroyo Seco Reach 2), the Staff Conclusions explicitly, but erroneously, state that the underlying BMI data were CSCI scores. In the other cases, the ambiguous acronym "IBI" is used where scores are cited, and then the narrative ends with a passage implying that the "IBI" scores were CSCI scores. The misleading information in the Staff Conclusion for each new listing recommendation is provided below. • Ballona Creek: "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing Benthic Community Effects on the CWA section 303(d) List. .... "**3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**, indicating poor water quality and that pollutant concentration and toxic effects are impacting aquatic life in this waterbody segment" ... "**The CSCI** is available statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity." (Regional Board Staff Conclusion for Decision ID 65656, emphasis added) • Dominguez Channel (lined portion above Vermont Ave.): "Three of the three samples collected had IBI scores below 40 there are several other pollutants in this water body that are listed for impairment including ammonia, copper, diazinon, nitrogen, toxicity, and zinc." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment	

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	purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66165, emphasis added) • Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.): "Four of the four samples collected had IBI scores below 40." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66299, emphasis added) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam): "Both of the two samples collected had IBI scores below 40.... Two of the two samples collected had IBI scores below 40. ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66232, emphasis added) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): "3 of 3 samples exceeded the GUIDELINE... **3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**. ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 65548, emphasis added) ***There is no established water quality criteria.*** Regional Board staff utilized a SCIBI score of 40 as a listing threshold. However, this value is not an established water quality criteria, nor does it represent the type of threshold the State Board intends to use to identify community condition or levels of impairment in its Biointegrity Assessment Implementation Plan. A SCIBI	

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	score of 39 was originally promulgated by the authors of the SCIBI (Ode et al. 2005) as an "impairment threshold" because it was equal to an arbitrary statistical criterion (two standard deviations below the mean reference site score). Although it was not used for the listings in the table above, Regional Board staff have also used a CSCI score of 0.79 as a listing threshold for other reaches (see also the statement regarding this threshold in the Staff Conclusions excerpt for Ballona Creek above). However, a CSCI threshold of 0.79 is also based on an arbitrary statistical criterion (10th percentile of the reference calibration site scores; Mazor et al. 2016), and is not an adopted water quality criteria. The State Board is not pursuing use of arbitrary statistical cutoffs, such as reference population percentiles, to identify benthic community impairment going forward. As outlined in the November 2016 Work Plan, the State Board is using a Biological Condition Gradient Expert Synthesis approach to relate ranges of biological condition scores to community condition. Using this approach, a team of experts uses taxonomic metrics to assign degrees of biological condition to test sites while being blind to the degree of anthropogenic stressors present at the sites. In addition, the analysis is blind to the relationship between site scores and statistical distributions of overall datasets or reference datasets. **Listings for concrete-lined channels using currently available metrics are inappropriate.** Application of the SCIBI to concrete-lined channels is especially inappropriate given the lack of a reference population for low-gradient streams in coastal southern California, in general, much less for modified channels, in specific. Section 6.1.5.8 of the listing policy states: *"When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall evaluate bioassessment data from other sites, and compare to reference condition. Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."* EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303(d) lists and recommends that, in all cases where	

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	physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[19] Physical habitat conditions are not referenced in the Lines of Evidence for the benthic community effects listings in the preceding table, although physical habitat data collection is a standard part of bioassessment monitoring and reporting. Ultimately, benthic community impairments in concrete-lined channels should be evaluated for potential listing in Category 4c of the 305(b) integrated report, instead of on the 303(d) list of segments requiring a TMDL. The USEPA Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (IRG) states: *"Circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization."* As part of its statewide Biostimulatory-Biointegrity Project, in recognition that it may not be appropriate or productive to apply a single set of benthic community condition expectations to streams in pristine and developed landscapes, the State Board is currently employing SCCWRP and CDFW to developing expectations for benthic community condition for developed landscapes using the CSCI and the Algal Stream Condition Index (ASCI).[20] The probability that concrete-lined channels in highly urbanized settings will be candidates for alternative benthic community endpoints is illustrated by language from the Work Plan: *"**In some streams, direct channel modifications (e.g., bank armoring) may also limit opportunities to sustain high-quality ecological conditions for aquatic life**. In these highly developed settings, the large number of linked stressors may prevent a stream from supporting its beneficial uses or attaining high scores on indices of biological condition. **Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards**. In these circumstances, the range of CSCI and/or ASCI scores may be constrained, but targeted restoration could improve conditions. Key technical questions underpinning*	

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	the range of options and prioritization of management actions for wadeable streams along the continuum from undeveloped to highly developed landscapes found within California are: For which streams is biological integrity constrained by development in the catchment? How can they be identified and mapped? What are the ranges of biological conditions these developed landscapes can support?" (Mazor et al. 2017; emphasis added) Triggering TMDL development for benthic community effects in concrete-lined channels using unofficial impairment thresholds derived from statistical distributions of IBIs from unarmored reference reaches is unwarranted. **Insufficient data are available to meet the listing requirements** Notwithstanding the previous issues, several of the listings rely on a single site for bioassessment data, which is inconsistent with the Listing Policy. Per section 3.9 (Degradation of Biological Populations and Communities) of the Listing Policy, "The analysis should rely on measurements from at least two stations." Only one site is referenced in the Fact Sheets for the following listing decisions: • Ballona Creek • Dominguez Channel (lined portion above Vermont Ave) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) [Also, note that the data associated with Los Angeles River Reach 4 was actually collected in Los Angeles River Reach 5.] • Arroyo Seco Reach 1 (LA River to West Holly Ave.) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam) • Compton Creek Because data were only collected at one site within these waterbodies, the requirements of the Listing Policy are not met. ***Summary*** As described in detail above, the approach utilized to establish benthic community effects impairments are not demonstrated using an appropriate metric for benthic community condition. The listings rely on an unestablished water quality criteria based on metrics that are not appropriate for concrete-lined channels. Lastly, in all but one listing, there are not sufficient data to meet the listing requirements per the	

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	Listing Policy as the data were only collected at a single site within a waterbody. ***Requested Action: Remove the following Decision IDs from the 303(d) list:*** • ***Ballona Creek: Decision ID 65656*** • ***Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165*** • ***LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229*** • ***LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232*** • ***Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553*** • ***Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548*** • ***Compton Creek: Decision ID 44498***	
11.25	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) / Temperature, water The temperature listing for Los Angeles River Reach 3 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Los Angeles River Reach 3 is WARM. Only the COLD beneficial use uses the rainbow trout growth range as a listing criteria. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. Notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses, the manner in which the evaluation guideline is applied is also inappropriate. Line of Evidence (LOE) 85933 references Moyle 1976 as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures." As such, while temperatures above 21°C may not be optimal according to Moyle 1976,	A review of the Los Angeles River Reach 3 temperature decision is in process at this time.

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	Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline as used in the proposed listing. When utilizing 23°C, only 40 of the 542 samples exceed the guideline, which does not meet the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants (a minimum of 90 exceedances would be required). As such, even if the Los Angeles River Reach 3 was designated with a COLD beneficial use, applying the appropriate "not-to-exceed" guideline of 23°C results in a finding of nonimpairment for temperature in Los Angeles River Reach 3. Lastly, notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses and that 23°C is the more appropriate "not-to-exceed" guideline, when the average water temperature across Los Angeles River Reach 3 was above 21°C (69.8°F), with only one exception out of 33, the air temperature was also above 21°C (69.8°F). As such, ambient air temperature above 21°C is most likely cause of exceedances of the 21°C evaluation guideline. ***Requested Action: Revise Decision ID 64386 for the temperature water listing for Los Angeles River Reach 3 to Do Not List on 303(d) list and remove from Category 5 (Appendix B) because the beneficial use protected by the evaluation guideline is not an existing or potential beneficial use within Los Angeles River Reach 3; the number of measured exceedances does not meet the minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants if an appropriate evaluation guideline is applied; and ambient air temperature is the most likely cause of exceedances of the evaluation guideline.***	
11.26	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 5 (within Sepulveda Basin), Bull Creek, Wildlife Lake, and Balboa Lake / Ammonia	Los Angeles River Reach 3 includes three LOEs (85894, 86019, and 2507); 85894 and 86019 were grouped to make the assessment that there were 33

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	The Fact Sheet for Decision ID 32974 corresponds to the ammonia listing for Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (85894, 86019, and 2507). LOE 2507 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 85894 and 86019 each state that all of the exceedances in each dataset occurred prior to and in 2007. The City found that the last exceedance was July 2007, which is to be expected given that 2007 was the year that the nitrification/denitrification (NDN) treatment process as completed at both the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) and Donald C. Tillman Water Reclamation Plant (DCTWRP). Both the LAGWRP and DCTWRP discharges travel through Los Angeles River Reach 3, and since the NDN processes to remove ammonia were completed in July 2007, no exceedances in this waterbody have been observed. The Fact Sheet for Decision ID 32567 corresponds to the ammonia listing for Los Angeles River Reach 5 (within Sepulveda Basin) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (86205, 86204, and 2520). LOE 2520 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 86205 and 86204 each state that all of the exceedances in each dataset occurred prior to March and August 2007, respectively. The DCTWRP discharge flows through part of Reach 5 and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60597 corresponds to the ammonia listing for Bull Creek and states that two lines of evidence are available in the administrative record to assess the pollutant (83158 and 83154). LOE 83154 presents one data point collected in May 2008 that does not show an exceedance. LOE 83158 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Bull Creek and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 66374 corresponds to the ammonia listing for Wildlife Lake and states that one line of evidence is available in the administrative record to assess the pollutant (90174). LOE 90174 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows	exceedances out of 111 samples total. Los Angeles River Reach 3 and Los Angeles River Reach 5 are being addressed by the Los Angeles River Nutrient TMDL. Bull Creek, Wildlife Lake, and Balboa Lake have been updated in the CalWQA database to reflect that they are being addressed by the Los Angeles River Nutrient TMDL. Los Angeles River Reach 4 is meeting the criteria based on the available data. Data collected after the NDN processes were put in place may show that the water quality in these reaches has improved; this update to the 303(d) list is only considering data submitted by August 30, 2010. For a discussion of readily available data see response to comment 32.3. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.

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	through Wildlife Lake and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60378 corresponds to the ammonia listing for Balboa Lake and states that one line of evidence is available in the administrative record to assess the pollutant (82930). LOE 82930 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Balboa Lake and the NDN processes to remove ammonia were completed in 2007. Furthermore, the Fact Sheet for Decision ID 32913 corresponds to the ammonia listing for Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) and includes the decision to Delist from 303(d) list (being addressed by USEPA approved TMDL) based on the following Regional Board Staff Decision Recommendation: “RWQCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not being exceeded.” This decision is based on two LOEs (2513 and 86136). LOE 2513 states “A TMDL and implementation plan have been approved for this water segment-pollutant combination. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004.” LOE 86136 finds that 0 of 152 samples exceeded the site-specific basin plan objective for total ammonia as nitrogen and only includes samples collected from 2008 to 2010 (which is after the date when the WRPs added the NDN treatment process and is inconsistent with the dates used in the assessments conducted for Los Angeles River Reaches 3 and 5, Bull Creek, and Wildlife Lake). Through the installation and implementation of NDN treatment facilities and process optimization by the City of Los Angeles (and City of Burbank), which has spent approximately $75 million to construct advanced treatment facilities to address ammonia, and approximately $6 million per year to operate those facilities, the quality of the water in the Los Angeles River watershed has been demonstrated to be fully attaining the applicable water quality objectives for ammonia. The message from the City and the Regional Board should be that the cooperative process worked, and that the applicable water quality standards are now being attained. Instead, the 303(d) list does not reflect the water quality	

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	improvement. Given that the addition of the NDN treatment process to the WRPs has eliminated exceedances, the timeframe used to evaluate impairments due to ammonia should be made consistent with the timeframe used in Los Angeles River Reach 4 which would result in the same listing decision for each water body (i.e., Delist from 303(d) list [being addressed by USEPA approved TMDL]). ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 3 Decision ID 32947*** - ***Los Angeles River Reach 5 Decision ID 32567*** - ***Bull Creek Decision ID 60597*** - ***Wildlife Lake Decision ID 66374*** - ***Balboa Lake Decision ID 60378*** -	
11.27	Los Angeles River Reach 1 (Estuary to Carson Street) and Los Angeles River Reach 2 (Carson to Figueroa Street) / Ammonia The Fact Sheet for Decision ID 32973 corresponds to the ammonia listing for Los Angeles River Reach 1 (Estuary to Carson Street) and is based on one LOE (2319), which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. The Fact Sheet for Decision ID 32911 corresponds to the ammonia listing for Los Angeles River Reach 2 (Carson to Figueroa Street) and is based on one LOE (2465) which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. In light of the information presented in the previous comment, it can be expected that conditions in Los Angeles River Reaches 1 and 2 since NDN was fully	Each of those LOEs are "placeholder" LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006. There is no additional data in the CalWQA database that would support delisting. Los Angeles Water Board staff encourages the commenter to enter into CEDEN the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) development prior to the next Listing Cycle that includes the Los Angeles Region.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>implemented (mid-2007) are consistent with what has been observed in Los Angeles River Reaches 3, 4, and 5 (i.e., no exceedances). A review of the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) do not show any exceedances.

Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:
- Los Angeles River Reach 1 Decision ID 32973
- Los Angeles River Reach 2 Decision ID 3291
-</td><td></td></tr>
<tr><td>11.28</td><td>Tujunga Wash (LA River to Hansen Dam) / Ammonia

The Fact Sheet for Decision ID 32873 corresponds to the ammonia listing for Tujunga Wash (LA River to Hansen Dam) and is based on one LOE (2554) which does not contain any data. Rather, the Fact Sheet states that “One line of evidence is available in the administrative record to assess this pollutant. A TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004. This listing will substitute for the previous listings for foam, floc, scum, and taste and odor.”

As there are no data to support the listing, the ammonia listing for Tujunga Wash should be removed. Also, substituting the listing for foam, scum, and taste and odor is not necessary because the Regional Board removed those listings from the section 303(d) list because they are not pollutants or toxicity.

Requested Action: Revise Decision ID 32873 for the ammonia listing for Tujunga Wash to Delist from 303(d) list and remove from Category 5 (Appendix B).</td><td>This LOEs is a “placeholder” LOE to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006.

There is no additional data in the CalWQA database that would support delisting.

The listings for foam, scum, and taste and odor were removed even though they showed impairment of beneficial uses because the listing for ammonia could “substitute” or stand in for those non-pollutant impairments and the Los Angeles River Nitrogen TMDL addresses those impairments.</td></tr>
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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>11.29</td><td>Bull Creek, Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam), Los Angeles River Reach 5 (within Sepulveda Basin), Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin), and Los Angeles/Long Beach Outer Harbor (inside breakwater) / Toxicity

The Fact Sheets for the following Decision IDs relate to toxicity in the water column:
- Decision ID 39159 Bull Creek
- Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
- Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
- Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin)
- Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)
- Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater)

The City has several concerns with the proposed listings:

1. Section 6.1.5.3 of the Listing Policy states that “Samples used in the assessment must be temporally independent.” However, data collected on the same day within the same waterbody are considered as independent samples without consideration of the fact they represent the same condition. These samples should be evaluated as representative of a single day.
2. In developing the number of samples analyzed and exceeded, the Regional Board appears to count a sample collected as one sample, but count acute and chronic results separately. In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic</td><td>Decision ID 39159 Bull Creek is DO NOT LIST for toxicity because Bull Creek is meeting the criteria based on the available data. Bull Creek, the waterbody, is on the list under 4a due to the indicator bacteria listing, which is being addressed by a TMDL.

Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) is a decision to LIST for toxicity with 29 out of 75 samples exceeding.

Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) is a decision to LIST for toxicity with 21 out of 48 samples exceeding.

Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin) is a decision to LIST for toxicity with 21 out of 53 samples exceeding.

Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin) is a decision to LIST for toxicity with 13 out of 19 samples exceeding.

Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater) is a decision to LIST for toxicity with two LOEs, 9 out of 37 and 32 out of 112 samples exceeding.

1. It is in accordance with the Listing Policy to collect samples on the same day if the samples are from different locations although the Listing</td></tr>
</table>

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	end points there is only one sample that is identified as not exceeded. One sample should result in only one nonexceedance or one exceedance. 3. For Decision IDs associated with the Los Angeles River watershed, data are included that do not represent current conditions. As described previously, the LAGWRP and DCTWRP upgraded their treatment processes to remove ammonia. Since the NDN processes to remove ammonia were completed, no exceedances for ammonia have been observed since August 2007. All toxicity data prior to August 2007 should be removed from the analysis. 4. A number of the results are based on testing with *Ceriodaphnia dubia* (*C. dubia*). As discussed in the Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document (SCCWRP Technical Report 956 December 2016), the report states (page 18) that during the intercalibration study, multiple laboratories observed *C. dubia* toxicity in laboratory dilution water (which should be non-toxic). Additionally, the report (page 16) found testing variability observed during the intercalibration study for *C. dubia* which had a response that ranged from 16 to 27% effect, and a standard deviation of 19 to 27% effect. The report further indicated that this large variability is not uncharacteristic of the variability observed by others. 5. Toxicity testing results were developed with a statistical approach that is no longer utilized in the NPDES monitoring programs. The LAGWRP, DCTWRP, HWRP and TIWRP NPDES permits require that toxicity endpoints be calculated using the Test of Significant Toxicity (TST) statistical approach. Future data will not be comparable to the listing data. As such, data used for listings should be assessed in a manner consistent with current regulations prior to making a determination of impairment. Given the issues associated with the data analysis and testing methods used as well as the implications of the listings, the City believes that additional efforts are needed to validate and assess whether or not an impairment exists. The City welcomes the opportunity to discuss an approach to properly evaluate toxicity in the affected waterbodies.	Policy does require consideration if the samples represent an unusual condition (see Listing Policy 6.1.5.3 "*If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set*.") These samples were collected over several years. 2. The commenter states: *In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic end points there is only one sample that is identified as not exceeded.* Los Angeles Water Board staff do not find where this happened. 3. See response to comment 32.6, and for a discussion of readily available data see response to comment 32.3. 4. See response to comment 17.3 5. Future data using the different method will be considered in separate LOEs. Water Board staff are open to discussions on approaches to properly evaluate toxicity in the affected waterbodies in order to ensure the most appropriate data is entered into CEDEN prior to the next Listing Cycle that includes the Los Angeles Region.

No.	Comment	Response
	Requested Action: Revise Decision IDs 39159, 64389, 64465, 64489, 64536, and 33930 for toxicity listings from Category 5 to Category 3.	
12.	City of Manhattan Beach, March 30, 2017	
12.1	The City of Manhattan Beach is gratified that its beaches meet the criteria for delisting for indicator bacteria. However, the staff report states that even though the delisting is being proposed, "it is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved." Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to *Category 4a - TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.* The City is concerned that delisting during all weather conditions may adversely affect our ability to compete for grant funding for multi-benefit regional and green street projects identified in the Beach Cities EWMP to address the Santa Monica Bay Beaches Bacteria TMDL (SMBBB TMDL) during wet weather within the high priority 28th Street Storm Drain System. Since the SMBBB TMDL targets are set differently for wet and dry weather, it would seem logical for the Regional Board to distinguish these conditions in the 303d listing and we ask that the Board revise the proposed delisting Manhattan Beach for indicator bacteria to be specific to dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the beach at the SMB 5-2 28th Street monitoring location remain on the list in Category 4a for wet weather conditions. This will enable the City to be more competitive when applying for grant funding to complete its implementation of the wet weather SMBBB TMDL. The Regional Board Notice of Extension of Comment Deadline notes that Regional Board staff are aware that "in several instances, Appendix A, the Proposed Updates to the 303(d) List has not fully captured all of the new listing and delisting decisions that are detailed in Appendix G, the Fact Sheets due to system and clerical errors". This has made review of the proposed listing changes quite challenging but we have done our best given the limited time available. The City of Manhattan Beach respectfully provides the attached comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report.	The beach meets the requirements for delisting per the Listing Policy. No provision of the Listing Policy allows for decisions to "list" or to "do not delist" based on funding considerations. However, as noted, the TMDL and the requirements of the TMDL contained in the Los Angeles County MS4 Permit remain in effect. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.

No.	Comment	Response
12.2	City of Manhattan Beach Comments on Proposed Revisions to 303(d) List **Water Body/Pollutant: Manhattan Beach/Indicator Bacteria** **Comment**: The staff report states that even though Manhattan Beach is being proposed for delisting for indicator bacteria, the Santa Monica Bay Bacteria TMDL remains in effect. Likewise, Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to Category 4a (A TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.) The City is concerned that delisting may adversely impact our ability to compete for grant funding for multi-benefit regional and green street projects to address the Santa Monica Bay Beaches Bacteria TMDL during wet weather. **Recommendation**: Consider delisting of Manhattan Beach for indicator bacteria only during dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the SMB 5-2 28th Street beach remain on the list in Category 4a Street beach remain on the list in Category 4a Manhattan Beach for wet weather indicator bacteria should be considered once the final wet weather SMBBB TMDL compliance deadline has passed.	See response to comment 12.1.
12.3	**Santa Monica Bay Offshore - Nearshore/Arsenic and Mercury** **Comment**: Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic and Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007. This data predates the last listing cycle and no data collected within the past decade is presented to support the listing. The SWRCB Listing Policy Section 1.1.2.1 states that "data and information previously submitted to the Regional Water Boards, such as Discharge Monitoring Reports, need not be solicited if the data and information remain available to the	See response to comment 32.3 for a discussion of readily available data. See also response to comments 11.21 and 11.22.

No.	Comment	Response
	Regional Boards." **Recommendation**: Before making such important new listings Regional Board staff should review all readily available data including data collected within the past decade from the Hyperion Wastewater Treatment Plant NPDES Permit.	
12.4	**Santa Monica Bay Offshore - Nearshore/ Sediment Toxicity** **Comment**: On March 26, 2012 USEPA issued a final TMDL for Santa Monica Bay DDT and PCBs which found that "Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list." Contrary to this recommendation the Regional Board has not proposed delisting sediment in Santa Monica Bay for toxicity. **Recommendation**: Appendix G Decision ID 34120 should be revised to delist Santa Monica Bay for sediment toxicity based on the review and recommendation by USEPA in developing the Santa Monica Bay DDT and PCBs TMDL. Appendix A should be revised to place a "Y" in the New Delistings column and the "Y" eliminated from the Pollutant Name Change column since there does not appear to be any name change being proposed.	The 303(d) list and the factsheet has been updated to "DELIST."
12.5	**Santa Monica Bay Offshore - Nearshore/ DDT and PCBs** **Comment**: The listing for Santa Monica Bay Offshore- Nearshore/DDT and PCBs is included in Attachment B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in Attachment A summary under "other revisions".	The 303(d) list has been updated to show the listing is "being addressed by a TMDL."

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	Recommendation: The listings for DDT and PCBs should be moved to Category 4a in Attachment C.	
12.6	**Santa Monica Bay Offshore - Nearshore/ Chlordane** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.
12.7	**Santa Monica Bay Offshore - Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.
12.8	**Dominguez Channel (lined portion above Vermont)/Benthic Community Effects** **Comment**: Appendix G Decision ID 66165 is proposing to list the Dominguez Channel concrete-lined section above Vermont Avenue due to degradation of biological populations and communities (Benthic Community Effects) as evidenced by IBI scores below 40, however use of IBI scoring methodologies does not provide a reference that takes into account that concrete lined channels do not typically provide benthic habitat that will support biological populations and communities. The listing policy states that to make this determination the water body must "exhibit significant degradation in biological populations and/or communities as compared to reference sites" .... "This condition requires diminished numbers of species or individuals of a single species or other metrics	See response to comment 11.19 and 11.24 for Benthic Macroinvertebrate listings.

No.	Comment	Response
	when compared to reference sites." Additionally the listing policy states that "The analysis should rely on measurements from at least two stations." Whereas the data presented to support Decision ID 66165 came from a single station. **Recommendation**: Do not list Dominguez Channel lined portion above Vermont for Benthic Community Effects because the analysis is not supported by data consistent with the SWRCB listing policy.	
12.9	**Dominguez Channel (lined portion above Vermont)/Lead** **Comment**: The quality of the data set used to support the original listing does not meet the data quality standards of the SWRCB's listing policy. The listing policy states that "when the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis." This listing was based on a data set more than a decade old with no actual detections of lead but where exceedances were presumed to have potentially occurred because the quantitation limit of 5 ug/L was not in all instances sufficiently low to determine compliance with the CTR dissolved lead criterion for continuous concentration in water (where the CTR value ranged from 0.23 to 7.27 ug/L, depending on the associated hardness of the water sample). The data set reviewed was for samples collected between January 2002 and April 2007 at the LACFCD Mass Emission Station S28 where Artesia Boulevard crosses Dominguez Channel and between 2000 and 2001 at S23 near LAX. Lead was not apparently detected in any of the samples above the quantitation limits, rather the identified exceedances of the lead standard were nondetections where the positive quantification limits 5 ug/L were too high to determine compliance with the standard when hardness caused depression of the standard below 5 ug/L. No measured exceedances of the standard were observed in the data set which is more than a decade old and for which more recent data sets exist. **Recommendation**: Decision Recommendation ID 37347 should be revised to state that the water body should be delisted due to inadequate data and because the data reviewed did not demonstrate that applicable water quality standards are	A review of the Dominguez Channel (lined portion above Vermont) lead decision is in process at this time.

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	being exceeded. Alternatively, Regional Board staff could review the more recent readily available data collected at these same Mass Emission stations as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 and the listing decision revised based on data of quality consistent with the SWRCB's listing policy.	
12.10	**Dominguez Channel (lined portion above Vermont)/ Copper and Zinc** **Comment**: Are listed in Appendix B as Category 5 needing a TMDL, when the Dominguez Channel Toxics TMDL is in affect and is addressing these pollutants. **Recommendation**: Recategorize Copper and Zinc as Category 4a being addressed by a TMDL and move to Appendix C.	The 303(d) list has been updated to show that copper and zinc are “being addressed by a TMDL.”
12.11	**Dominguez Channel (lined portion above Vermont)/ Diazinon** **Comment**: We are supportive of the proposed delisting for Diazinon. **Recommendation**: Consider eliminating the statement in Attachment A under Other Revisions which states "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" since this pollutant is being proposed for delisting.	Appendix A wording is automatically generated by the CalWQA database. We are exploring ways to better display this data.
12.12	**Dominguez Channel (lined portion above Vermont)/ Nitrogen, ammonia (Total Ammonia)** **Comment**: The Appendix G Fact Sheet Decision ID 35134 continues to support a listing for ammonia. This listing does not appear to be based on all readily available data since Los Angeles County Mass Emissions Station Data on the Dominguez Channel is not included in the data set. Monitoring data from 55 samples collected between November 2006 and July 2013 at LACFCD mass emission station S28 located where the Dominguez Channel crosses Artesia Boulevard in the City of Torrance, show that all 55 samples met the freshwater Basin Plan objective for ammonia. An additional 24 samples collected at	See response to comment 32.3 for a discussion of readily available data.

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	LACFCD mass emission station TS19 between November 2008 and April 2011 also met the freshwater Basin Plan objective in every instance. These data were readily available to Regional Board staff since they were reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001. **Recommendation**: Delist Dominguez Channel lined portion above Vermont for ammonia and include readily available data reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 into Decision ID 35134 to support this delisting.	
12.13	**Dominguez Channel (lined portion above Vermont)/ Aldrin** **Comment**: Appendix G Fact Sheet Decision ID 34620 for Aldrin recommends delisting due to flaws in the original listing. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Aldrin.	Aldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.14	**Dominguez Channel (lined portion above Vermont)/ ChemA** **Comment**: Appendix G Fact Sheet Decision ID 34426 for ChemA recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for ChemA.	ChemA was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.15	**Dominguez Channel (lined portion above Vermont)/ Chlordane** **Comment**: Appendix G Fact Sheet Decision ID 34427 for Chlordane recommends	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes

No.	Comment	Response
	delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chlordane.	and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.16	**Dominguez Channel (lined portion above Vermont)/ Chromium** **Comment**: Appendix G Fact Sheet Decision ID 34430 for Chromium recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chromium and remove the "Y" from the Pollutant Name Change column.	Chromium was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.17	**Dominguez Channel (lined portion above Vermont)/ DDT** **Comment**: Appendix G Fact Sheet Decision ID 36720 for DDT recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for DDT.	DDT was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.18	**Dominguez Channel (lined portion above Vermont)/ Dieldrin** Comment: Appendix G Fact Sheet Decision ID 42330 for Dieldrin recommends delisting due to flaws in the original listing because the data used for the original listing was from fish tissue collected in the soft-bottom estuary below Vermont and was incorrectly applied to the lined portion of Dominguez Channel above Vermont.	Dieldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.

No.	Comment	Response
	Recommendation: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Dieldrin and remove the "Y" from the Pollutant Name Change column.	
12.19	**Dominguez Channel (lined portion above Vermont)/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Fact Sheet Decision ID 34431 for PAHs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PAHs.	PAHs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
12.20	**Dominguez Channel (lined portion above Vermont)/ Polychlorinated Biphenyls (PCBs)** **Comment**: Appendix G Fact Sheet Decision ID 34429 for PCBs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PCBs.	PCBs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.	City of Palos Verdes Estates, March 30, 2017	
13.1	Please see the City of Palos Verdes Estates' specific comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report, included herewith as Attachment A. Appendix A – City of Palos Verdes Estates Comments on Proposed Revisions to 303(d) List	See response to comment 2.13.

No.	Comment	Response
	Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Arsenic) **Comment**: Decision No. 67208 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of arsenic. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67208 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.	
13.2	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Mercury)** **Comment**: Decision No. 67209(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of mercury. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67209 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.	See response to comment 2.14.

No.	Comment	Response
13.3	**Water Body/Pollutant: Malaga Cove Beach/Indicator Bacteria** **Comment**: Decision No. 32565 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes delisting Malaga Cove Beach from the section 303(d) list for indicator bacteria due to the fact that applicable water quality standards for this pollutant are not being exceeded. The City agrees with the Regional Board Staff Decision Recommendation in Decision No. 32565. However, while Decision No. 32565 has been modified since the last listing cycle in order to make the recommendation to delist, it continues to appear in the list of "original fact sheets" in Appendix G of the February 2017 integrated staff report for the Los Angeles region. Additionally, it is unclear why there is a "Y" in the Pollutant Name Change column in Appendix A since the original fact sheet relating to Decision No. 32565 shows the pollutant name as "indicator bacteria". **Recommendation**: Modify the Revision Status entry in Fact Sheet 32565 from "original" to "revised" and move the fact sheet into the revised fact sheet group.	The CalWQA database has been corrected to show the decision as "revised" and not to show that the name has been revised.
13.4	**Water Body/Pollutant: Lunada Bay Beach (Indicator Bacteria and Beach Closures)** **Comment**: The fact sheet for Decision No. 34394 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends that the original "beach closures" listing for Lunada Bay Beach should be revised to an "indicator bacteria" listing. No data is available to support a listing at this location as this is not an accessible beach but is in fact a rocky cove with steep bluff faces that cannot be safely accessed for monitoring. The original listing was for beach closures and Decision ID 34394 changed the pollutant name to indicator bacteria without any providing indicator bacteria data for evidence. **Recommendation**: Like the rest of the shoreline areas on the Palos Verdes Peninsula, Lunada Bay should be delisted for indicator bacteria and beach closures due to faulty listing by revising the recommendation in the Fact Sheet for Decision No. 34394 and place a "Y" in the New Delistings column of Appendix A to the February 2017 integrated staff report for the Los Angeles region. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky cove with a steep bluff face that is not readily accessible to the public.	All indicator bacteria-related listings in the State of California's 303(d) list including "beach closures," "coliform," "pathogens," have or will be revised to "indicator bacteria" for statewide consistency. Lunada Bay Beach was listed in 1996 and data from prior to 2006 are not included in the CalWQA database and staff have no information that the original listing was faulty.

No.	Comment	Response
13.5	**Water Body/Pollutant: Flat Rock Point Beach Area (Indicator Bacteria and Beach Closures)** **Comment**: Flat Rock Point forms the northern point of Bluff Cove and is part of the same "beach" as Bluff Cove. The fact sheet for Decision ID No. 34628 (located in Appendix G to the February integrated staff report for the Los Angeles Region) is proposing to revise the listing for Flat Rock Point from "beach closures" to "indicator bacteria" however no data to support the listing is provided. Since there is no separate monitoring data set for Flat Rock Point and Flat Rock Point is contiguous with Bluff Cove, Decision ID 32848 and supporting lines of evidence for Bluff Cove should also be applied to Flat Rock Point. **Recommendation**: Flat Rock Point Beach Area should be included with Bluff Cove Beach in the fact sheet for Decision ID No. 32848 and delisted along with Bluff Cove Beach. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky point that is not safely accessible for monitoring.	All indicator bacteria-related listings in the State of California's 303(d) list including "beach closures," "coliform," "pathogens," have or will be revised to "indicator bacteria" for statewide consistency. Flat Rock Point Beach was listed in 1996 and data from prior to 2006 are not included in the CalWQA database and staff have no information that the original listing was faulty. The requested change to combine Flat Rock Point with the adjacent Bluff Cove requires a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.
13.6	**Water Body/Pollutant: Malaga Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Malaga Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay. **Recommendation**: Change "source unknown" to "source – Palos Verdes Shelf Superfund Site" for both DDT and PCBs.	The sources for DDT and PCBs have been changed to "See TMDL documentation." The Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.
13.7	**Water Body/Pollutant: Bluff Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los	The sources for DDT and PCBs have been changed to "See TMDL documentation." The

No.	Comment	Response
	Angeles region states that Bluff Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay. **Recommendation**: Change "source unknown" to "source – Palos Verdes Shelf Superfund Site Palos Verdes Shelf Superfund Site" for DDT and PCBs.	Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.
13.8	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (DDT and PCBs)** **Comment**: Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes DDT and PCBs in the listing for Santa Monica Bay Offshore/Nearshore (a water segment where standards are not met and a TMDL is required but not yet completed); however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in the "other revisions" summary in Appendix A to the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: The listings for DDT and PCBs should be moved to Category 4a in Appendix C since there is a USEPA approved TMDL in effect addressing the listings.	The Santa Monica Bay Offshore/Nearshore listing for DDT and PCBs have been revised to show "being addressed by a TMDL."
13.9	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Chlordane)** **Comment**: Decision No. 37492(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for chlordane; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for Chlordane.	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.10	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore(Polycyclic Aromatic Hydrocarbons (PAHs))** **Comment**: Decision No. 32656 (located in Appendix G of the February 2017	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new

No.	Comment	Response
	integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for PAHs; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for PAHs.	listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
13.11	**Water Body/Pollutant: Wilmington Drain (Lead)** **Comment**: Decision No. 35085 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends delisting the Wilmington Drain for lead based on the weight of evidence. The City agrees with this recommendation due to the fact that LOE No. 90133 describes data collected in Compton Creek, which is unrelated to the Wilmington Drain. **Recommendation**: Remove LOE No. 90133 from the Fact Sheet for Decision No. 35085, and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that: "0 of 33 samples exceeded the CRITERIA."	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
13.12	**Water Body/Pollutant: Wilmington Drain/Copper** **Comment**: Decision ID 44676 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) for copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation**: Remove LOE No. 90473 from the Fact Sheet for Decision ID 44676 and revise the supporting evidence statement "2 of 33 samples exceeded the CRITERIA." Also revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.
13.13	**Water Body/Pollutant: Machado Lake (Algae, Ammonia, ChemA, Eutrophic, Odor, Trash)** **Comment**: Category 5 of Appendix B to the February 2017 integrated staff report	Machado Lake listings for Algae, Ammonia Eutrophic, Odor, and Trash were assessed as "being addressed by a TMDL" in 2010. The

No.	Comment	Response
	for the Los Angeles region includes listings for algae, ammonia, ChemA, eutrophic, odor and trash for Machado Lake (a water segment where standards are not met and a TMDL is required but not yet completed); however all of these pollutant listings are being addressed by USEPA-approved TMDLs. **Recommendation**: These listings should be moved to Category 4a in Appendix C to the February 2017 integrated staff report for the Los Angeles region. Additionally, Appendix A should include language under the column for "Other Revisions" for each of these pollutants explaining that: "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL."	Machado Lake listings for**,** ChemA, Chlordane, DDT, Dieldrin, and PCBs were assessed as "being addressed by a TMDL" in this listing cycle. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.
14.	City of Pomona , March 30, 2017	
14.1	**Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the San Gabriel River propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals and Selenium for the San Gabriel River and Impaired Tributaries (San Gabriel Metals TMDL) adopted by USEPA Region IX (USEPA) and the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with its waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). The City is appreciative of the several metals pollutants that Regional Board is proposing to de-list and not to list. A total of 22 metals are reported for all San Gabriel River water quality segments. 19 (84.3%) of them fall under the "de-list" and "do not list" categories. This result should be sufficient to void the San Gabriel River Metals TMDL. 3 additional metals (15.7%) should be de-listed,	Comments on the San Gabriel Metals and Selenium TMDL and the LA County MS4 Permit are outside the scope of this action. See response to comments 14.2 as well as 9.2 – 9.7 for detailed responses regarding individual listing decisions raised by the commenter.

No.	Comment	Response
	which would raise the total to 22 (100%), for reasons more particularly described below. The data here strongly demonstrates that that the San Gabriel Metals TMDL should be removed from the Los Angeles Basin Plan.	
14.2	**I. San Gabriel River: Estuary** As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. If this is an oversight on the part of the Regional Board there is, nevertheless, ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/l for hardness is only intended be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303{d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically	See response to comment 9.1 for the history of copper on the 303(d) list in the San Gabriel River Estuary as well as for a discussion of the CTR and the use of "real time" hardness in calculating limitations. Comments on the San Gabriel River Metals and Selenium TMDL and the provisions of the LA County MS4 Permit are outside the scope of this proposed action. See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.

No.	Comment	Response
	sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried-over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998. 3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the posted letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3. 7 ug/1 (see Table I(a) below). Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.3	**II. San Gabriel River: Estuary to Firestone** Metals for San Gabriel River from the Estuary to Reach 1 were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table 1 (a), despite the fact that copper was not listed on the 2010 303(d) list in the first place.	See response to comment 9.2.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Table II. San Gabriel River: Estuary to Reach 1 [See the posted letter for Table II]

Recommendation to Regional Board: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td></tr>
<tr><td>14.4</td><td>III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)

As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons:

1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced).

2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above.

3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in no exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement.

4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected.</td><td>See response to comment 9.3.</td></tr>
</table>

No.	Comment	Response
	Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the posted letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	
14.5	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit *Attachment P: TMDLs in San Gabriel River Watershed Management Area*. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table I(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81 /34 ug/1; and (2) Coyote Creek lists copper target of 24.71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the posted letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to	See response to comment 9.4.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td></tr>
<tr><td>14.6</td><td>V. San Gabriel River: Coyote Creek

The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons:

1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2.

2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees.

Table V. Coyote Creek[See the posted letter for Table V]

Recommendation to Regional Board: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td>See response to comment 9.5.</td></tr>
<tr><td>14.7</td><td>VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)

Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below).</td><td>See response to comment 9.6.</td></tr>
</table>

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>Table VI: San Jose Creek Reach 1 [See the posted letter for Table VI]

Recommendation to Regional Board: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td></tr>
<tr><td>14.8</td><td>VII. South San Jose Creek (Los Angeles County)

This is Reach is a new listing under the 2016 303(d) List.

<table>
<tr><th>2010 303 (d) List</th><th></th><th>2016 303 (d) List</th><th></th><th></th><th></th><th></th><th>MS4 Permit Requirement</th></tr>
<tr><td>Pollutant</td><td>List</td><td>List</td><td>De-List</td><td>Don't List</td><td>Don't De-list</td><td>Should De-List</td><td>Yes/No</td></tr>
<tr><td>Copper</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Lead</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Selenium</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Zinc</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
</table>

Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td>See response to comment 9.7.</td></tr>
<tr><td>15.</td><td colspan="2">City of San Fernando, March 30, 2017</td></tr>
<tr><td>15.1</td><td>I. Summary

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-MTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs)</td><td>See response to comment 3.1, 3.2 and 3.3.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).

Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:

1. although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and

2. the LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.</td><td></td></tr>
<tr><td>15.2</td><td>• California Toxic Rule

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: This final rule establishes ambient water quality for priority toxic pollutants. USEPA defines ambient as:

Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient</td><td>See response to comment 3.2.</td></tr>
</table>

No.	Comment	Response
	concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health. In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.	
15.3	• **California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the	See response to comment 3.3.

No.	Comment	Response
	LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	
15.4	II. Los Angeles River Reach/Tributary Specific Comments Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories. **1. Los Angeles River Reach 4** Copper and lead are placed on the "do not de-list" category. Selenium and zinc are placed on the "do not list." As noted on the table below there are no listing issues here. Table I. LAR Reach 4 **[See the posted letter for Table I]**	For comments related to the CTR, see response to comment 3.2, for those pertaining to the Listing Policy see response to comment 3.3. For Los Angeles River Reach 4, comment noted. Copper and lead, in fact, are on the on the "de-list" category.
15.5	**2. Los Angeles River Reach 5** Selenium and zinc are recommended for placement on the "do not list" category. Copper and lead, on the other hand, are recommended for placement on the "list" category. However, they should not. The justification reported on the fact sheet for both copper and lead is that *0 of the 12 samples and exceeded the criteria*. This must be in error. How can zero or "none" of the 12 samples have exceeded the criteria? Based on this information, copper and lead should be on the do not list category. Table II. LAR Reach 5 **[See the posted letter for Table II]**	The copper "DO NOT DELIST" decision was based on LOE 2527, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86184 (0 out of 12 sediment samples exceeding) is insufficient to make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. The lead "DO NOT DELIST" decision was based on LOE 2528, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86197 (0 out of 12 sediment samples exceeding) is insufficient to

No.	Comment	Response
		make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist.
15.6	**3. Tujunga Wash (Los Angeles River to Hansen Dam)** The Tujunga Wash is only listed (in the "do not list" category) for copper, carried-over from the previous 303(d) list (2010). According to the 303(d) list fact sheet, no samples were taken to justify placement (viz., 0 of the 12 samples exceeded the criteria). Based on this information copper should be de-listed. Table III. Tujunga Wash **[See the posted letter for Table III]**	The copper "LIST" decision is a "carryover" decision (no new data was assessed) and was based on LOE 2558, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision.
16.	City of Ventura, March 30, 2017	
16.1	The City has several concerns regarding the Regional Board's proposed 303(d) list and feels that it requires significant review and modifications before adoption. The City requests that the issues identified in this letter be addressed and the revised, proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed by the affected parties. The requested modifications fall into two general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and/or incorrect interpretation of the data (e.g., lack of temporal representation). 2. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include challenges in identifying the data sets and analysis methods used, inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.	It is the intent of Los Angeles Water Board staff to work to resolve issues identified by commenters, as appropriate, as the State Water Board staff prepares to bring the 2016 Integrated Report to the State Water Board for its consideration later this year. See response to comment 16.2-16.20 for specific responses.

No.	Comment	Response
	The remaining sections of this letter provide the detailed list of requested changes to the proposed 303(d) list and the rationale for the requests. In summary, the City requests that all waterbody pollutant combinations in Table 1 below not be listed on the 303(d) list and the errors and inconsistencies identified in the other letters cited above be addressed.	
16.2	l. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody pollutant combinations, the City has identified several waterbodies that should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table. Table 1. Waterbody-pollutant combinations that should not be listed **Waterbody Segment: Santa Clara River Estuary** **Pollutant**: pH **Justification**: "No demonstration high pH is a result of waste discharge. A listing is not warranted in light of reference conditions for pH within estuaries.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88249 was developed using 493 samples collected at dozens of sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See, also, response to comment 32.5.
16.3	**Waterbody Segment: Santa Clara River Estuary** **Pollutant**: Ammonia **Justification**: Appropriate data not considered and current data does not meet Listing Policy criteria.	LOE 88237 shows 4 of the 42 samples exceeded the one-hour average contraction of un-ionized ammonia. Even though 18 of the 42 samples were reported as non-detects, there is enough evidence that supports a listing decision. See, also, response to comment 32.4.
16.4	**Waterbody Segment: Santa Clara River Estuary**	The “Nitrogen, Nitrate” “LIST” decision is a

No.	Comment	Response
	Pollutant: Nitrogen, Nitrate **Justification**: Appropriate data not considered and current data does not meet Listing Policy criteria.	"carryover" decision (no new data was assessed) and was based on LOE 7819, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision. See, also, response to comment 23.6.
16.5	**Waterbody Segment: Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** **Pollutant**: pH **Justification**: No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88328 was developed using 60 samples collected at three sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed.
16.6	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Arsenic **Justification**: Data does not include proper temporal representation.	Fish were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected is spatially independent, it is still appropriate to assess the data as individual samples even though they were

No.	Comment	Response
		collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static and move throughout a waterbody, accumulating pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. However, a review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic and the applicable evaluation guideline. See, also, response to comment 11.21.
16.7	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Cadmium **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.8	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Chlordane **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.9	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: DDT **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.10	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Dieldrin **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.

No.	Comment	Response
16.11	**Waterbody Segment: S Ventura Harbor: Ventura Keys** **Pollutant**: PCBs (Polychlorinated biphenyls) **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.
16.12	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Benthic Community Effects **Justification**: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. See, also, response to comment 16.17.
16.13	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Temperature, water **Justification**: Analysis does not demonstrate temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.
16.14	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Indicator Bacteria **Justification**: Data from mouth of Arundell Barranca used in listing assessment.	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

No.	Comment	Response
16.15	***1. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan).[3] The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheets and according to the Basin Plan, "*The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5* ***as a result of waste discharges***."[4] However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if no such evidence exists, the Regional Board should remove this proposed listing.[5] **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as these high pH values are not the· result of waste discharge.**	See response to comment 16.2 and 16.5. Also see response to comment 32.5.
16.16	***2. Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5 .3 of the Listing Policy states that: *"Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision."* Many of the pollutants listed in Table 1 included data collected from a single sampling date, which violates the Listing Policy. For instance, all of the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day - February 28,	See response to comment 16.6-16.11.

No.	Comment	Response
	2007. These pollutants should not be listed because there is no temporal resolution provided. **Requested Action:** **Remove all listings shown in Table 1 that were based on a single sample collection date.**	
16.17	***3. Benthic Community Effects listing is based on flawed analyses and should be removed.*** The benthic community effects listing is based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects where the threshold used to distinguish an impaired reach was identified as a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value in the originating study. The State has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets for numerous other benthic community effects listings (e.g., Decision ID 66264)v, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the fi1ture for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).*" Despite this, the newly listed benthic community effects for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) utilizes the IBI to assess the waterbody. Therefore, the City requests that this flawed listing be removed until the waterbody can be assessed with a more representative metric such as the CSCI. In addition to use of an arbitrary metric, the proposed listing for benthic community effects for the Ventura River Reach 1 and 2 lacks proper spatial representation since only two samples were collected from the same sample site ("Station O Main Street Bridge, Mainstem Ventura River" according to the Fact Sheets). In addition, temperature is used as a line of evidence to support the benthic community effects listing, however, the temperature listing for this same waterbody segment is also flawed and should be removed as discussed in the	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected is temporally independent, it is still appropriate to assess the data as individual samples even though they were collected at the same site. See, also, response to comment 16.13 for temperature.

No.	Comment	Response
	comment below. **Requested Action:** **Remove the benthic community effects listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) due to use of an outdated metric, lack of spatial resolution, and lack of supporting evidence from the temperature listing.**	
16.18	***4. Correct the proposed temperature listings which are based on incorrect criteria.*** The temperature listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) uses an evaluation guideline of 13-21 °C as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as COLD is, "*For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature.*" The fact sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the way the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002.[7] Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures."[8] As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C, which indicates that the evaluation guideline of 21 °C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing.	See response to comment 16.13.

No.	Comment	Response
	Using the threshold of 23°C, only 2 samples would exceed the threshold in Ventura River Reach 1 and 2, which would not be enough to meet the listing threshold. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 based on lack of exceedances.**	
16.19	***5. Data from Arundell Barranca mouth is inappropriate to assess Ventura Harbor.*** Based on a review of the data provided in the spreadsheet entitled: Peninsula Beach, Ventura Harbor-Keys, and Arundell Barranca Data, site K5 appears to have been included in the analysis of the Ventura Harbor: Ventura Keys assessment. Site K5 is located in the mouth of the Arundell Barranca and is not within Ventura Harbor. A review of the data shows that the indicator bacteria concentrations at this site are much more similar to Arundell Barranca and not representative of the data for the rest of Ventura Harbor. In 2009, as part of the review of the proposed Harbor Cove TMDL, the City conducted an analysis of indicator bacteria data from Ventura Harbor using what appears to be the same dataset as used in the Regional Board's assessment. While the dataset appears to be the same, the number of samples and exceedances did not match completely (e.g., 103 exceedances of the enterococcus geomean with 510 samples in the City's analysis as compared to 104 exceedances and 537 samples in the Regional Board's analysis). The City could not easily determine what the differences in the calculations were and requests that the Regional Board review the exceedance calculations to ensure that all geomeans were calculated using a minimum of 5 samples and that duplicate samples in the dataset were correctly handled in accordance with the Listing Policy. Regardless of the potential differences in the calculations, the clear majority of the exceedances are from site K5 (64 of the 103 exceedances in the City's analysis). If	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

No.	Comment	Response
	site KS is removed from the Ventura Harbor analysis (and added to the Arundell Barranca analysis so it is in the correct waterbody), based on the City's calculations, insufficient samples exist to list Ventura Harbor: Ventura Keys for fecal coliform or enterococcus. A summary of the City's analysis is shown in Table 2. Table 2. Summary of City's Analysis Ventura Harbor Indicator Bacteria **[See the posted letter for Table 2]** **Requested Action:** **Revise the calculations for Ventura Harbor: Ventura Keys by removing site K-5 which is not located in the Harbor. Revise any Lines of Evidence that no longer support a listing for indicator bacteria and remove the listing if appropriate.**	
16.20	**II. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations are new listings. Additionally, in many cases, data and Quality Assurance Project Plan (QAPP) references in the fact sheets are inconsistent with the data provided for review and it is not always clear what data were used in the analysis presented in the fact sheets. Examples of these inconsistencies and errors are detailed in the Calleguas Creek Watershed Stakeholders, VCAILG, and County of Ventura comment letter. The City requests that the Regional Board do a thorough review of all appendices to ensure that the proposed 303(d) list is internally consistent, the correct data were used for the assessment, and the errors identified in the other comment letters are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**	See response to comment 7.98 and 7.99.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>17.</td><td colspan="2">County of Los Angeles (LAC) and Los Angeles County Flood Control District (LACFCD) , March 30, 2017</td></tr>
<tr><td>17.1</td><td>I. Waterbodies With Water Quality Attainment Should Be Delisted As Requested By The Los Angeles County Flood Control District During The 2010 Data Solicitation Period And Pursuant to the 303d Listing Policy

In August 2010 in response to the State Water Resources Control Board's (State Water Board's) data solicitation for the 2012 Integrated Report for Clean Water Act Sections 303(d) and 305(b), the Los Angeles County Flood Control District (LACFCD) submitted all the data and information that it collected since the State’s previous data solicitation in 2007. As part of the 2010 data submission, the LACFCD conducted a detailed analysis of the new data and found 15 listed waterbody-pollutant combinations that had attained their water quality standards and met the delisting criteria set forth in Section 4 of the Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List (303(d) Listing Policy). To this end, LACFCD provided a detailed analysis of this data and identified those waterbodies that should be delisted pursuant to the State's 303(d) Listing Policy. Those waterbody-pollutant combinations are listed below.

<table>
<tr><th>WATERBODY</th><th>POLLUTANT</th><th>Addressed in Current Proposed Revisions?</th></tr>
<tr><td>Coyote Creek</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Dominguez Channel (lined portion)</td><td>Diazinon</td><td>Yes</td></tr>
<tr><td>Legg Lake</td><td>Ammonia
Copper
Lead</td><td>No</td></tr>
<tr><td>Los Angeles River Reach 1</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Peck Road Park Lake</td><td>Lead
Dissolved Oxygen</td><td>No</td></tr>
<tr><td>Santa Clara River Reach 6</td><td>Chlorphyrifos
Diazinon
Copper
Iron</td><td>No</td></tr>
<tr><td>Santa Fe Dam Park Lake</td><td>Copper
Lead
pH</td><td>No</td></tr>
</table>
</td><td>The post-2007 data and analysis submitted by the LACFCD by the August 2010 deadline was not entered into the CalWQA database for use in the Integrated Report. Los Angeles Water Board staff will enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.</td></tr>
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<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>As set forth in the above table, none of the identified waterbody-pollutant combinations are currently proposed for delisting as part of the 2016 303(d) list, except for the Dominguez Channel Diazinon, despite meeting the delisting criteria under the State's Listing Policy. Based on a review of the fact sheets for these waterbodies in Appendix G, it appears that the post-2007 data and analysis submitted by the LACFCD was not taken into consideration by the Los Angeles Regional Water Quality Control Board (Regional Board).

The County and the LACFCD request that the Regional Board consider the data set forth in the LACFCD's 2010 submission. Attached is a copy of the LACFCD comment letter and technical report from the 2010 data solicitation for your review and consideration. The County and the LACFCD further request that the Regional Board delist these waterbodies as requested.</td><td></td></tr>
<tr><td>17.2</td><td>II. The Regional Board Should Wait For The Completion Of The State's Biointegrity Policy Development Before Listing Waterbodies For Benthic Community Effects

Currently, there is no officially established California water quality objective or guideline for listing waterbodies for benthic community effects. As such, the State Water Board is currently developing statewide biological objectives to assist in addressing this gap. The 2010 State Water Board's initial notice letter[1] for development of these biological objectives states the following:

"State and Regional Water Board plans and policies do not contain numeric objectives or guidance for using biological data in regulatory decision-making. Therefore, biological objectives are needed to provide the narrative or numeric benchmarks that describe conditions necessary to protect aquatic life beneficial uses. The initial effort will focus on wadeable perennial streams and rivers."

Similarly, the CEQA public scoping document[2] released in 2012 for this project states the following:</td><td>There are established California water quality guidelines for listing waterbodies for benthic community effects, the SCIBI and the CSCI, which are both appropriate for 303(d) listing. These evaluation guidelines meet the requirements in Section 6.1.3 of the Listing Policy and both are in use throughout the State.

Use of the guidelines is not premature; per the Listing Policy, the guidelines are "scientifically based and peer reviewed" and have been used in previous Integrated Reports. With respect to the use of IBI and CSCI for 303(d) listing, see response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition and response to comment 26.5 for a discussion of the established water quality criteria.

At this time, the CSCI and IBI are the best</td></tr>
</table>

No.	Comment	Response
	"Benchmarks for identifying biological impairments and interpreting narrative water quality objectives are not formally adopted in Water Board plans or policies and, therefore, not readily used as enforceable requirements ..." [Page 6 of the scoping document] "The State Water Board will develop [biological objectives and] program of implementation that describes how biological objectives will be incorporated into permits and other regulatory actions, such as assessing attainment of aquatic life beneficial uses for 303(d) listing." [Page 8 of the scoping document] Thus, there is no established objective in California for assessing biological data, such as benthic macroinvertebrate data, for regulatory decision-making. This includes 303(d) listings. The State Water Board is currently making progress on compiling available information and conducting necessary scientific studies to develop applicable objectives and implementation policy (also known as Biointegrity Policy). The State Water Board has hired the Southern California Coastal Water Research Project (SCCWRP) and the California Department of Fish and Wildlife to develop technical information to aid development of the policy. To ensure that a range of public interests are represented during the development process, the State Water Board has reached out to interested stakeholders. The County and LACFCD is actively participating in these meetings. Although the State Water Board is currently developing biological objectives for benthic communities, the Regional Board has listed multiple waterbodies for benthic community impairment prior to the development of those objectives and its implementation guideline. The following table summarizes the waterbodies being proposed for benthic community listings by the Regional Board in the County.	measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the State Board continues the development of the science and policy, new methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. As with any water quality objective, new science or policy may make necessary revisions to the 303(d) list, but this possibility is not a justification to delay making 303(d) listing decisions when appropriate guidelines are available. Benthic Community Listings for waterbodies that are lined entirely with concrete have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24, for more detail.

No.	Comment	Response
	(table below)	

WATERSHED	WATERBODY SEGMENT	CONCRETE CHANNEL?
Ballona Creek	Ballona Creek	Yes
Dominguez Channel	Dominguez Channel	Yes
Los Angeles River	Alhambra Wash	Yes
	Arroyo Seco Reach 3	No
	Los Angeles River Reach 3	Yes
	Los Angeles River Reach 4	Yes
Malibu Creek	Medea Creek Reach 1	No
	Triunfo Creek Reach 1	No
San Gabriel River	San Gabriel River – East Fork	No
Santa Clara River	Santa Clara River Reach 5	No

Adopting these benthic community impairment listings without first awaiting the State Water Board's development of water quality objectives and implementation guidance is premature. First, in assessing biological data and justifying the proposed listings, the Regional Board used the Index of Biological Integrity (IBI) and the California Stream Condition Index (CSCI). The benchmarks/thresholds used are 40 for IBI and 0.79 for CSCI. While IBI and CSCI are available tools for evaluating the relative biological condition of perennial wadeable streams, the associated benchmarks/thresholds used by Regional Board staff for justifying the listings have not been officially adopted by the State Water Board or the Regional Board for purposes of determining 303(d) listings. Thus, to ensure statewide consistency, the appropriate benchmarks should be set by the Biointegrity Policy being developed by the State Water Board.

Second, the CSCI was developed to replace the IBI and is expected to be used in the Biointegrity Policy. Thus, the IBI and its associated benchmark should not be used for assessing stream conditions for purposes of regulatory decisions, such as 303(d) listing.

Third, many of the listings set forth in the table above are for concrete/modified

No.	Comment	Response
	channels, which are being treated the same as natural channels. This is inconsistent with the approach that the State Water Board has been taking in developing the Biointegrity Policy, which provides that in highly altered conditions, the standard should be based on "best attainable conditions". In this regard, the State Water Board's 2012 CEQA Scoping document[3] for biological objectives states the following: *"One of the difficulties of defining reference conditions in California is that many waterbodies in the State have been severely altered from their natural condition. Some of these alterations are not a result of the controllable environmental factors…. In highly altered systems where biological conditions are limited by uncontrollable factors, the focus is on expectations for the 'best attainable' conditions."* Concrete/engineered flood control channels in urban environments are among the systems that the State Water Board considers highly altered. For those systems, the State's goal is to establish standards that are reasonably expected to be attainable, which is different than standards for natural channels. The State Water Board is using a gradient approach where the biological expectations for altered stream channels are based on the level of alteration. Since altered stream channels have limited habitat, it is improbable to expect a thriving benthic community in these channels the same way as in natural stream channels. This conclusion is well demonstrated in the stream survey report published in 2016 by the Southern California Stormwater Monitoring Coalition (SMC) – the *2015 Report on the SMC Regional Stream Survey4, with Special Study on Engineered Channels.* For the reasons described above, the Regional Board should not list waterbodies, and particularly those with concrete or engineered channels, for benthic impairments until the State Biointegrity Policy is developed and adopted. However, if the Regional Board lists any waterbody for benthic impairment, then the listings should be listed under Category 4c, and not under Category 5, since it is uncertain that these impairments are caused by pollutants.	
17.3	**III. Toxicity Listings Are Based On Unreliable Data and Should Be Removed**	All the toxicity data assessed met the required

No.	Comment	Response

Comment:

Ten County waterbodies are newly listed for toxicity, nine of which are streams or rivers, and one is an estuary. The majority of toxicity data used in the listings are from water toxicity tests conducted using the *Ceriodaphnia dubia* or other species.

WATERSHED	WATERBODY SEGMENT	TEST SPECIES
Los Angeles River	Bull Creek	C. dubia, Fathead
	LA River Reach 4	
	LA River Reach 5	
	LA River Reach 6	C. dubia, Fathead, Hyalella
San Gabriel River	SG River Estuary	Topsmelt, Fathead
	SG River Reach 3	C. dubia, Fathead
	San Jose Creek Reach 2	
Santa Clara River	South San Jose Creek	
	Piru Creek	C. dubia
	SC River Reach 5	C. dubia

These toxicity tests, however, have recently been found to be unreliable by a laboratory intercalibration study conducted by SMC[5]. The study utilized 10 laboratories in Southern California that are certified by the State of California for toxicity testing. (Almost all toxicity tests in Southern California are conducted by these laboratories.) Although standard methods and protocols were followed by all the laboratories, the test results for the same sample varied significantly between laboratories.

The below chart summarizes the results of the study. Each symbol in the chart represents the result from a single laboratory. **[See the posted letter for chart]**

As can be seen from the chart, there is high variability in the toxicity results between different laboratories for all the test species despite the fact that analytical procedures were performed on identical samples. For example, the results for

Response:

quality assurance.

The SMC Toxicity Testing Laboratory Guidance study, 2016, conducted a laboratory intercalibration study focusing on four species *C. dubia*, *Hyalella*, *Strongylocentrus* and *Mytilus*. Fathead and topsmelt were not a part of the study. The study did not conclude or recommend that previously analyzed data should be disregarded. The study authors recommended all four species for future use as part of the Stormwater Monitoring Coalition monitoring programs. The authors also provided specific guidance for stormwater testing for potential variability-inducing steps including hardness of dilution water, feeding, sample handling and water renewals, and aging of organisms. The authors further concluded:

> *"Based on the scoring system developed for this study, the participating laboratories were comparable for most of the test endpoints (Table 10). Virtually all laboratories were able to meet test acceptability requirements, including internal positive and negative controls. Most laboratories tended to produce internally consistent results when given blind duplicate samples. Finally, most laboratories produced data consistent with non - toxic samples when exposed to laboratory dilution water."*

WATERBODY SEGMENT	Source of data	Number of exceedances/ number of samples

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td> Ceriodaphnia survival vary between 0 percent and 100 percent for the same sample depending on the laboratory used. Also, a sample of lab dilution water, which is expected to be non-toxic was found to be toxic by many labs. Such high magnitudes of inconsistency and incomparability between the labs makes the existing toxicity data invalid or not useful. It is thus very probable that the proposed 303(d) listings for toxicity are the result of false positive toxicity tests, resulting in unimpaired waterbodies being wrongly listed for toxicity.
It is incumbent upon the State to ensure that the laboratories it certifies produce consistent and accurate toxicity test results. The uncertainties and variability reflected in testing results between laboratories, as shown in the SMC study, can have a profound effect on the regulatory actions placed on a waterbody.
For these reasons the proposed water toxicity listings are not supported by reliable data. The County and the LACFCD therefore request that all toxicity listing based off of water toxicity testing be removed from the list. We also request that the State continue to re-evaluate its laboratory certification protocols and address the problems identified by SMC. </td>
<td><table>
<tr><td>Bull Creek</td><td>Tillman WRP, NPDES permit CA0056227.</td><td>12 / 29</td></tr>
<tr><td>LA River Reach 4</td><td>Tillman WRP, NPDES permit CA0056227.</td><td>21 / 48</td></tr>
<tr><td>LA River Reach 5</td><td>Tillman WRP, NPDES permit CA0056227</td><td>21 / 53</td></tr>
<tr><td>LA River Reach 6</td><td>Tillman WRP, NPDES permit CA0056227</td><td>13 / 19</td></tr>
<tr><td>SG River Estuary</td><td>Los Angeles Sanitation District NPDES permits</td><td>14 / 113</td></tr>
<tr><td>SG River Reach 3</td><td>Los Angeles Sanitation District NPDES permits</td><td>13 / 75</td></tr>
<tr><td>San Jose Creek Reach 2</td><td>Los Angeles Sanitation District NPDES permits</td><td>8 / 24</td></tr>
<tr><td>South San Jose Creek</td><td>Los Angeles Sanitation District NPDES permits</td><td>5 / 18</td></tr>
<tr><td>Piru Creek</td><td>Stormwater Monitoring Council, recorded in SWAMP database</td><td>2 / 3</td></tr>
<tr><td>SC River</td><td>Stormwater Monitoring</td><td>2 / 2</td></tr>
</table></td></tr>
</table>

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<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td><table><tr><td>Reach 5</td><td>Council, recorded in SWAMP database</td><td></td></tr></table></td></tr>
<tr><td>17.4</td><td>IV. The Proposed Temperature Listings Are Based On An Inapplicable Standard And Therefore Should Be Removed

The following four waterbodies in the County are proposed listings for temperature-related impairment: Los Angeles River Reach 3, San Gabriel River Reaches 1 and 2, and Santa Clara River Reach 6. These listings should not be adopted for the following reasons:

First, natural temperatures for waterbodies in the Los Angeles Region are not known. Chapter 3 of the Los Angeles Region Basin Plan states the following for temperature:

"For waters designated WARM, water temperature shall not be altered by more than 5ºF above the natural temperature. At no time shall these WARM-designated waters be raised above 80ºF as a result of waste discharges."

"For waters designated as COLD, water temperature shall not be altered by more than 5ºF above the natural temperature."

The current Basin Plan does not have an established "natural temperature" baseline for waterbodies, nor does it have guidance for estimating natural temperatures. This precludes the use of alteration of natural temperature as a basis for assessing waterbodies in the region.

The Regional Board therefore appears to have used the 80°F objective as the basis for the proposed temperature listings. This standard, however, is not appropriate for two reasons: (1) Under the Basin Plan, the 80°F threshold is to be used only when there is evidence that the temperature rise was "as a result of waste</td><td>The 303(d) list appropriately identifies the temperature impairments. Analysis of sources and causes are not completed as part of the Integrated Report or 303(d) listing process.

The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have different objectives for different seasons.

The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority Project. Los Angles Water Board staff may consider the development of numeric temperature objectives for various waterbody classes and aquatic life beneficial uses in the future.

Temperature is also discussed in response to comment 11.18.</td></tr>
</table>

No.	Comment	Response
	discharges." The Regional Board did not provide evidence that any of the temperatures above 80°F were caused by waste discharges. (2) The 80°F threshold was applied to all waterbodies without considering the physical attributes or the historical ambient air temperatures of the waterbodies, which are uncontrollable. In the Los Angeles Region, ambient air temperatures can vary drastically, which would easily alter or raise the temperature above 80°F, especially in concrete channels during warmer months. Concrete channels are very susceptible to fluctuations in temperature due the material's ability to absorb heat. Even if the water is at a reasonable temperature when it enters a concrete channel, the water temperature may naturally rise as it travels through the channel, and not as the result of waste discharges. Second, Basin Plans of other Southern California Regions, which have similar habitats as in the Los Angeles Region, do not use 80°F as a water quality objective for WARM-designated waters. For example, the Santa Ana Region Basin Plan[6] uses 90˚F during warmer months of the year (June through October) and 78˚F during the rest of the year. The San Diego Region does not have any temperature water quality objectives for WARM-designated waters. Therefore, the use of 80˚F for purposes of assessing temperature-related impairments and listing waterbodies is unreasonable and unsupported, especially in concrete channels during dry seasons. The Regional Board should not list waterbodies for temperature until applicable standards are established for the Region.	
17.5	**V. Alondra Park Lake Is Not A Water of the United States And Therefore Should Be Removed From The Proposed 303(d) List** Alondra Park Lake is a man-made lake that was created in the late 1940s as part of County's plan to establish Alondra Park. The lake does not receive any runoff discharge from areas outside of the park and is not connected to the Dominguez Channel or any other surface waterbody. The lake's source of water is entirely groundwater that is pumped from the West Coast Groundwater Basin. This water is used to irrigate the park and the nearby golf course.	Alondra Park Lake is an approximately 7.3 acre lake. Waterbodies not explicitly identified in the Basin Plan Chapter 2 may still be subject to the “tributary rule.” The Los Angeles Basin Plan, Chapter 2, states: *Under federal law, all surface waters must have water quality standards designated in the Basin Plans. Most of the inland surface waters*

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	In addition, Alondra Lake is not identified in the Basin Plan and, thus, does not have any beneficial use designation assigned to it. This confirms that the lake is not a receiving waterbody. The Section 303(d) list applies only to waters of the United States. Alondra Park Lake is a man-made enclosed lake not connected to any other waterbody. Any listings associated with Alondra Park Lake should therefore be removed from the proposed 2016 303(d) list.	*in the Region have beneficial uses specifically designated for them. Those waters not specifically listed (generally smaller tributaries) are designated with the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary. This is commonly referred to as the "tributary rule."* Alondra Park Lake overflows to the Dominguez Channel in large storm events. Therefore, a hydrologic connection exists between Alondra Park Lake and the Dominguez Channel, a water of the United States. In addition, because such intermittent flow is capable of moving pollutants from the Alondra Park Lake to Dominguez Channel, a significant nexus exists between Alondra Park Lake and the Dominguez Channel. The Dominguez Channel travels through a number of municipalities in Los Angeles County before emptying into the Los Angeles Harbor. In addition, fishing takes place at Alondra Lake. The California Department of Fish and Wildlife plants trout at the Lake. Tissue mercury data from fish from Alondra Lake are part of the Statewide dataset used in the OEHHA statewide advisory, *Statewide Health Advisory and Guidelines for Eating Fish from California's Lakes and Reservoirs, July 2013.* The identification of fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list.

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<tr><td>17.6</td><td>VI. Data Being Used For Legacy Pollutant Listings Do Not Satisfy The Temporal Representativeness Requirements of The State's Listing Policy

The data being used to support proposed listings of waterbody-pollutant combinations for legacy pollutants does not satisfy the temporal requirements of the State's 303(d) Listing Policy as described below. Thus, these proposed listings should be removed.

Section 6.1.5.3 of the State's 303(d) Listing Policy states:

“Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision. Samples should be available from two or more seasons or from two or more events . . .”

Section 6.1.5.6 of the Listing Policy states:

“To be considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value.”

Section 3.1 of the Listing Policy requires a minimum of two exceedances to place a waterbody on the 303(d) list for toxic pollutants.

The data used to support some of the new listings was collected only on a single day. Therefore, pursuant to Sections 6.1.5.3 and 6.1.5.6 of the Listing Policy, these samples are not temporally independent and should be combined and considered as a single data point. Moreover, under Section 3.1 of the Listing Policy, a minimum of two exceedances are needed to place a waterbody on a 303(d) list. Thus, the following listings do not meet these Listing Policy guidelines:</td><td>The data used to support the listings identified by the commenter were collected on a single day but from two species per waterbody. Multiple composites from each unique species were averaged, but it would be inappropriate to average composites from different species. Composites of different species will have different age profiles and different species occupy different trophic levels and will accumulate pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point.

Most of the averaged composite samples supporting theses listings represent 10 individual fish.

In addition, fish are not static; they move throughout a lake or stream and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent even though they were collected at the same site on the same day.

<table><tr><th>WATER BODY SEGMENT</th><th>POLLUTANT</th><th>Number of fish in composites</th></tr><tr><td>Alondra Park Lake</td><td>PCBs</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr><tr><td>Malibou Lake</td><td>Dieldrin</td><td>Composites were largemouth bass (2 composites - 5 fish per</td></tr></table></td></tr>
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WATERSHED	WATERBODY SEGMENT	POLLUTANT(S)
Dominguez Channel	Alondra Park Lake	PCBs
Malibu Creek	Malibou Lake	Dieldrin
Los Angeles River	Echo Park Lake	Chlordane, Dieldrin
	Lincoln Park Lake	PCBs
San Gabriel River	Legg Lakes	DDT, PCBs
	Santa Fe Dam Park Lake	PCBs
Santa Clara River	Castaic Lagoon	PCBs
	Castaic Lake	PCBs
	Elderberry Forebay	Dieldrin, PCBs
	Pyramid Lake	Chlordane, DDT, Dieldrin, PCBs

The County and the LACFCD request that these listings be removed until more samples are collected to satisfy the temporal representativeness of data of the State's Listing Policy.

		composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Echo Park Lake	Chlordane, Dieldrin	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Lincoln Park Lake	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species
Legg Lakes	DDT, PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Santa Fe Dam Park Lake	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.
Castaic Lagoon	PCBs	Composites were largemouth bass (2 composites - 5 fish per composite), rainbow trout (1 composite - 5 fish per composite) and redear sunfish (2 composites - 5 fish per composite). Composites were

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				averaged by species.
		Castaic Lake	PCBs	Composites were largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites. Composites were averaged by species.
		Elderberry Forebay	Dieldrin, PCBs	Composites were largemouth bass (2 composites - 5 fish per composite) and channel catfish (2 composites - 5 fish per composite). Composites were averaged by species.
		Pyramid Lake	Chlordane, DDT, Dieldrin, PCBs	Chlordane and DDT - Composites were largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites. Dieldrin- A composite was generated from largemouth bass (5 fish per composite) for 2 locations. A composite was generated from brown bullhead (5 fish per composite) for 1 location. PCBs - Composites were generated from largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations

No.	Comment	Response
		for a total of 4 composites.
17.7	**VII. Legacy Pollutants (PCBs, DDT, Dieldrin, Chlordane) Should be Listed As a Category 4b, Not as Category 5** Many of the pollutants that are being considered for incorporation into the 303(d) list are legacy pollutants that have been banned by the U.S. Environmental Protection Agency (EPA) decades ago and are no longer manufactured or used in the United States. These pollutants include PCBs, DDT, Dieldrin, and Chlordane. PCBs were banned in 1979, DDT in 1980, Dieldrin in 1987, and Chlordane in 1988. The newly proposed listing includes several waterbodies in the County that are listed for impairments associated with these pollutants: WATERSHED / WATERBODY SEGMENT / POLLUTANT(S): Dominguez Channel / Alondra Park Lake / PCBs Malibu Creek / Malibou Lake / Dieldrin Los Angeles River / Echo Park Lake / Chlordane, Dieldrin Los Angeles River / Lincoln Park Lake / PCBs San Gabriel River / Legg Lakes / DDT, PCBs San Gabriel River / Santa Fe Dam Park Lake / PCBs Santa Clara River / Castaic Lagoon / PCBs Santa Clara River / Castaic Lake / PCBs Santa Clara River / Elderberry Forebay / Dieldrin, PCBs Santa Clara River / Pyramid Lake / Chlordane, DDT, Dieldrin, PCBs The complete ban on these pollutants three decades ago, which is the strongest regulatory action an agency can take, has effectively addressed the true sources of these pollutants in the environment. Since these chemicals are no longer	The definition of 4b is "*Evidence shows at least one use is not supported, but a TMDL is not needed as an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame*." A ban, in and of itself, is not a regulatory program and no time frame has been specified by any authority for waterbodies impaired by DDT, PCBs, Chlordane, or Dieldrin to attain the water quality standard under the ban, therefore the appropriate category for these waterbodies is 4a or 5. Several TMDLs address these legacy pollutants; these TMDLs have timeframes for attainment of the standard and identify potential implementation actions such as non-structural and structural BMPs, and/or diversion and treatment to reduce sediment transport from the watershed to the waterbody. Implementation may, in some cases, require the removal of 'hotspots' of high sediment contamination. When an approved TMDL is in place the waterbody may be placed in category 4a (or may remain in category 5 if there are additional pollutants that are not yet addressed by a TMDL or other regulatory program). The Echo Park Lake waterbody pollutant combinations are already addressed by a TMDL,

No.	Comment	Response
	manufactured or used, the regulatory program already in place by the U.S. EPA is reasonably expected to result in the attainment of the water quality standard for these pollutants over time. As indicated in comment VI, waterbodies that contain legacy pollutants should not be listed because the data used for their listing does not satisfy the Listing Policy. However, if the Regional Board does list these waterbodies, we request that they be listed as Category 4b, not Category 5, because a regulatory program is already in place to address them.	the Los Angeles Area Lakes Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs TMDL. Other TMDL for legacy pollutants include: Dominguez Channel and the Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL; Colorado Lagoon Organochlorine Pesticides, PCBs, sediment toxicity, PAHs and metals TMDL; McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL; Ballona Creek Estuary Toxic Pollutants TMDL (including Chlordane, DDT and PCBs); Machado Lake Pesticides and PCBs TMDL; Marina del Rey Harbor Toxics TMDL (including Chlordane and PCBs); and Calleguas Creek OC Pesticides and PCBs TMDL.
17.8	**VIII. The State Should Rely On The Most Updated Guideline to List Waterbodies Based On Fish Tissue Contamination** In assessing waterbodies for fish tissue contamination, the Regional Board used the following two guidelines: a. The 2008 Office of Environmental Health Hazard Assessment (OEHHA) fish contaminant goal, and b. The 1972 National Academy of Sciences (NAS) guidelines. The OEHHA guideline, developed in 2008 is not only up-to-date but also specific to California and, thus, reasonable to use for this particular assessment. On the other hand, the NAS guideline is half a century old and out of date. In the absence of an up-to-date NAS guideline, the assessment should be based exclusively on the OEHHA standard's line of evidence.	The use of both guidelines is appropriate, each supports a different beneficial use. Two or three lines of evidence were developed for the evaluation of the data for each of these waterbody pollutant pairs. One or two LOEs were developed for each of these waterbody pollutant pairs in support of an aquatic life beneficial use (WARM, COLD or both), which compared the data to the NAS evaluation guideline developed to protect aquatic life from the accumulation of toxic substances. In only one case this guideline was exceeded. One LOE was developed for each of these waterbody pollutant pairs in support of the fishing

No.	Comment	Response
	Based on the OEHHA guideline, the following waterbodies meet water quality standards and, therefore, should be removed from the proposed listing: • Castaic Lagoon for PCBs • Elderberry Forebay for Dieldrin • Pyramid Lake for Chlordane, DDT, Dieldrin, PCBs • Alondra Park Lake for PCBs Echo Park Lake for Chlordane and Dieldrin • Legg Lakes for DDT and PCBs.	beneficial use, COMM, which compared the data to the OEHHA guideline developed to protect human health from consumption of toxic substances. For all of these waterbody pollutant pairs, this guideline was exceeded frequently enough to place the waterbody pollutant pair on the 303(d) list.
17.9	**IX. ADDITIONAL COMMENTS** **A. Wilmington Drain-Copper should be delisted** Per Appendix G fact sheets, two lines of evidences (LOE) were used to support the listing for copper in Wilmington Drain. However, the information used for the second LOE is data collected in Compton Creek, which is a different waterbody. This data should not be used to evaluate Wilmington Drain. Removal of this LOE would lead to only 2 exceedances out of 33 data points. This would satisfy the delisting criteria of the State's Listing Policy. Therefore, copper should be delisted for Wilmington Drain.	Los Angeles Water Board staff will correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.
17.10	**B. The listings in Appendix A should be corrected to reflect the listing and delisting decisions in Appendix G** As already acknowledged in the February 24 Regional Board notice letter, Appendix A does not accurately capture all the listing and delisting decisions detailed in the fact sheets in Appendix G. For example, for Ballona Creek, Chlordane, DDT, Dieldrin, and PCBs were delisted during the previous listing cycle. However, these listings continue to be identified in Appendix A as part of the 2016 303(d) list. This is true for many of the waterbodies summarized in Appendix A. This error should be corrected to avoid any confusion and misinterpretation of the information by the general public.	Los Angeles Water Board staff is aware of the inconsistencies and Appendix A has been revised.
17.11	**C. Waterbodies that are on the 303(d) list and being addressed by a USEPA approved TMDL should be moved to Category 4a from Category 5**	Each of these waterbody pollutant pairs are included in the 303(d) list as "being addressed by

No.	Comment	Response
	Many of 303(d)-listed waterbodies from the previous listing cycle now have TMDLs. This requires a change in their status from Category 5 (TMDL required list) to Category 4a (being addressed by US EPA approved TMDL). Some of these status changes are not reflected in the revised list and need correction. Similarly, some of the newly proposed listings are already being addressed by an existing TMDL for that watershed. In those cases, it is appropriate to put them also under Category 4a as opposed to Category 5. Examples, include: • LA River Reach 3 and Rio Hondo Reach 2 for Indicator Bacteria, which are being addressed by the Los Angeles River Watershed Bacteria TMDL • LA River Reach 6 for Copper and Compton Creek for Zinc, which are being addressed by the Los Angeles River Metals TMDL.	USEPA approved TMDL." However, each of these waterbodies remains on the list in Category 5 because there are other pollutants impairing those waterbodies that have yet to be addressed by a TMDL or other regulatory program. For example, Rio Hondo Reach 2 has a TMDL for indicator bacteria (the Los Angeles River Watershed Bacteria TMDL); however, Rio Hondo Reach 2 also is listed for dissolved oxygen and toxicity, which are not being addressed by a TMDL. Therefore, the water body, as a whole, is in Category 5. Nonetheless, in the Appendix for Category 5, waterbody pollutant combinations for which a TMDL is complete are shown as 5B and waterbody pollutant combinations for which there is no TMDL are shown as 5A.
18.	County of Ventura Public Works Agency, March 30, 2017	
18.1	The County has a number of concerns regarding the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waterbodies and believes that it requires significant review and modification before adoption. The County requests that the issues identified in this letter be addressed and the proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed.	See response to comment 32.1 for additional discussion of additional comment periods.
18.2	Requested modifications fall into three broad categories: 1. New Category 5 listings should not be listed due to incorrect thresholds applied to the beneficial use, incorrect sample locations, and incorrect interpretation of the data (e.g., mismatched units or lack of temporal representation).	See response to comment 18.3-18.61 for specific responses.

No.	Comment	Response
	2. Delistings requested previously by the County that have not been incorporated. 3. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives <WQOs), and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide a detailed summary of requested changes to the 303(d) list and the rationale for the requested actions. In summary, the County requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, nitrogen compounds in Santa Clara River Reach 3 be delisted, and the errors and inconsistencies identified in the CCW TMDL Stakeholders Letter be addressed.	
18.3	**I. REQUESTED MODIFICATIONS TO THE LISTING STATUS** Based on a review of the proposed Category 5 waterbody segment-pollutant combinations, the County has identified a number of waterbodies that should be either delisted based on available data or for which proposed new listings should not be listed based on errors in the data evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested changes. A detailed discussion of each of the justifications follows the table. **Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody Segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.5.

No.	Comment	Response
	• J-flagged data incorrectly used in assessment (WARM).	
18.4	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.6.
18.5	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.7.
18.6	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 7.8.
18.7	Waterbody Segment: **Ellsworth Barranca** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	See response to comment 7.43.
18.8	Waterbody Segment: **Javon Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition.

No.	Comment	Response
		See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.
18.9	Waterbody Segment: **Javon Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected is spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.10	Waterbody Segment: **Los Sauces Creek** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move

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		throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.11	Waterbody Segment: **Madranio Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.12	Waterbody Segment: **Madranio Canyon** Pollutant: Copper Justification: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.13	Waterbody Segment: **Madranio Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.14	Waterbody Segment: **Medea Creek Reach 1 (Lake to Confl. with Lindero)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comments 26.4 and 26.15.

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	• Data does not include proper temporal representation.	
18.15	Waterbody Segment: **Padre Juan Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Benthic Community Effects data do not support listing. • Data does not include proper temporal representation.	See response to comments 26.4 and 26.15. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.16	Waterbody Segment: **Padre Juan Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.
18.17	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.18	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants

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		in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.19	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Dieldrin Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.20	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: PAHs (Polycyclic Aromatic Hydrocarbons) Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.
18.21	Water Segment: **Santa Clara River Estuary** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	See response to comments 16.2 and 32.5.

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18.22	Water Segment: **Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Reach 1 including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances in pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. See, also, response to comment 16.5.
18.23	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlordane Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.
18.24	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlorpyrifos Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.73.
18.25	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cyfluthrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.74.

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18.26	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cypermethrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.75.
18.27	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDD Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.76.
18.28	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDE Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.77.
18.29	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDT Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.78.
18.30	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.79.

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18.31	Waterbody Segment: **Tapo Canyon** Pollutant: DDD Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	See response to comment 7.81.
18.32	Waterbody Segment: **Tapo Canyon** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	See response to comment 7.82.
18.33	Waterbody Segment: **Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.83.
18.34	Waterbody Segment: **Tapo Canyon** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.84.
18.35	Waterbody Segment: **Triunfo Canyon Creek Reach 1** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	Two LOEs with five bioassessment scores supported a listing decision. Though IBI scores will be replaced by CSCI in the future for water quality assessment purposes, it remains appropriate to use data on IBI scores for listing

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		purposes. The waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See response to comments 26.4 and 26.15.
18.36	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.37	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.38	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Chlordane Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.39	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: DDT Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.40	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Dieldrin Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6
18.41	Waterbody Segment: **Ventura Harbor: Ventura Keys**	See response to comment 16.6

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	Pollutant: PCBs (Polychlorinated biphenyls) Justification for Not Listing: • Data does not include proper temporal representation.	
18.42	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.
18.43	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	See response to comment 16.13.
18.44	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.
18.45	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.87.
18.46	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Toxicity Justification for Not Listing:	Of the 43 samples evaluated, eight samples were in exceedance, which supported a listing decision. The waterbody pollutant combination should be listed until more data supporting a delisting

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	• Toxicity data from prior to pesticide use restrictions used for listings. More recent data does not show toxicity.	decision become available. Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.
18.47	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.
18.48	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.
18.49	Waterbody Segment: **Wheeler Canyon/Todd Barranca** Pollutant: Benthic Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.87.

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	applicable to waterbody.	
18.50	***Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5.3 of the State Water Resources Control Board (SWRCB) Listing Policy1 states that: "*Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision."* Many of the pollutants listed in **Table 1** included data collected from a single sampling date. This violates the Listing Policy. For instance, all the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day- February 28, 2007. Because there is no temporal resolution provided for these pollutants they should not be listed. **Requested Action:** **Remove all listings shown in Table 1 that were based on a single sample collection date.**	See response to comment 18.3-18.49 for specific responses.
18.51	***1. Benthic Community Effects Listing are based on flawed analyses and should be removed.*** The benthic community effects listings are based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects. The threshold used to distinguish an impaired reach was a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value. The state has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets, "*The CSCI is applicable*	See response to comment 18.8, 18.11, 18.14, 18.15, 18.35, 18.42, 18.44, and 18.47

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	statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." Despite this, all of the newly listed benthic community effects in Table 1 utilize the IBI to assess the waterbodies. Therefore, the County is requesting that these flawed listings be removed until the waterbodies can be assessed with a more representative metric such as the CSCI. In addition, a number of water segments are listed as an exceedance for benthic community effects citing a low CSCI score, however, the original data shows only IBI scores. The Water Board should clearly note whether a CSCI or IBI assessment was performed. For instance, the Fact Sheets show that Padre Juan Canyon has 2/2 samples which exceed for benthic community effects using a CSCI score of 0.35 and 0.52 which is below the 0. 79 CSCI threshold. However, the raw data shows that an IBI was performed resulting in scores of 40 and 39, which would only represent one exceedance which would not support listing the water body. The Water Board should clearly state where the CSCI scores are that they are referring to. This issue applies to all new benthic community effects listings. More detailed information can be provided upon request. In addition, many of the benthic community effects listings rely on a single day of sampling which does not provide proper temporal representation as discussed in the previous comment. **Requested Action:** **• Update the Appendix G Fact Sheets to clearly state that an IBI metric was used not the CSCI for all pollutants noted in Table 1.** **• Remove all listings shown in Table 1 for benthic community effect that use the IBI listing.**	
18.52	***2. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Basin Plan. The Santa Clara	See response to comment 16.15.

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	River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheet and according to the Los Angeles Region Basin Plan "*The pH of inland surface waters shall not be depressed below 6. 5 or raised above 8. 5* ***as a result of waste discharges***" [emphasis added]. However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Los Angeles Water Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets, or, if no such evidence exists, the Los Angeles Water Board should remove these proposed listings. **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as there is no data provided in the Fact Sheet that demonstrate that these high pH values are the result of waste discharge.**	
18.53	***3. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using WQOs for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles	See response to comment 7.89, 18.3, 18.4, 18.5, 18.7, 18.27, 18.28, 18.31, 18.32, 18.33, 18.34, and 18.49.

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	Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U. S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*') in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*) for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*') in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S. C. § 1313(c)(3)."*[3] In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that WQOs applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable WQOs in waterbodies designated with an asterisk("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a	

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	listing decision for Los Angeles River Reach 1 : *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty. "* Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), WQOs specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to WQOs applicable to the MUN beneficial use. **Requested Action:** **Revise all the new listings in the Fact Sheets to ensure none are based on municipal drinking water objectives when the MUN beneficial use does not apply.**	
18.54	***4. Agricultural Drain and MS4 outfall monitoring data incorrectly used as basis for listing decisions.*** There are some instances where listing decisions are based on data from the Agricultural VCAILG Monitoring Program which include monitoring data from agricultural drains. Santa Clara River Reach 3 (Freeman Diversion to A Street) listings (i.e., chlordane, chlorpyrifos, cyfluthrin, cypermethrin, ODD, ODE, and DDT) were based on multiple lines of evidence, but were primarily listed based on exceedances at VCAILG sample site "S03D_Bards" which is an agricultural drain that drains to Santa Clara River Reach 3. This site was selected to be representative of agricultural discharges to Reach 3 and it is not representative of receiving water conditions. Therefore, any data collected from "S03D_Bard" and other agricultural drain sites cannot be used to list the downstream reach. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains.	See response to comments 7.72 and 7.88.

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	In some cases, other lines of evidence cite location "Santa Clara River at Freeman Diversion at 11th Street Drain (tributary to Santa Clara River) at sample location Santa Paula-1" ("Santa Paula-1"). This location is an MS4 outfall location that is designed to characterize urban discharges from City of Santa Paula and is not located in the Santa Clara River's receiving waters. As a result, the data from "Santa Paula-1" location should not be used for listing receiving waters. However, it should be noted that the data linked to the Fact Sheet did not include any data from "Santa Paula-1" so it is unclear what data were evaluated for these listings. Unless receiving water data contain exceedances, none of the constituents for Santa Clara River Reach 3 should be listed. **Requested Action:** **Remove all listings shown in Table 1 that were based on Agricultural and MS4 discharge monitoring data not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain or MS4 outfall monitoring rather than receiving water monitoring.**	
18.55	***5. Remove toxicity Lines of Evidence (LOE) from pollutant Fact Sheets when a LOE specifically for toxicity already exists.*** Numerous pollutants listed for Tapo Canyon (chlordane, DDD, and DDE) include a toxicity LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the Fact Sheet. **Requested Action:** **Remove the Lines of Evidence for toxicity for Tapo Canyon in Table because no evidence was provided that these constituents were the cause of toxicity.**	See response to comment 18.31 and 18.32.
18.56	***6. Reassess mercury listings using correct objective and correct units.*** The data used to assess mercury for Santa Clara River Reach 3 and Ventura River Reach 3 are in ng/L (nanograms per liter) and the objective is µg/L (micrograms per liter). The data need to be converted into the same units as the objective before	See response to comment 7.90.

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	an exceedance can be determined. The County expects that after this calculation has been performed the waterbodies will no longer meet the listing guidelines. Additionally, although a California Toxics Rule objective exists for mercury, an USEPA nationally recommended criteria was used for the assessment. An explanation for the use of a recommended criteria when an established WQO exists should be provided. **Requested Action:** **Repeat the mercury analysis after correcting the unit error and clarify the objective used.**	
18.57	***7. Correct the proposed temperature listings which are based on incorrect criteria.*** The temperature listing for Ventura River Reaches 1 and 2 (Estuary to Weldon Canyon) and Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd) uses an evaluation guideline of 13-21 degrees Celsius (°C) as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as *COLD* is "For waters designated as COLD, water temperature shall not be altered by more than 5 degrees F above the natural temperature." The Fact Sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the manner in which the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 20024. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer", although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures (25, 26). " As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater	See response to comment 18.43 and 18.48.

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	than 23°C which indicates that the evaluation guideline of 21 °C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing. Using the threshold of 23°C, no samples would exceed the threshold in Ventura River Reach 4 and only 2 samples would exceed the threshold in Ventura River Reaches 1 and 2. Neither of these number of exceedances would meet the listing thresholds. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 as well as Ventura River Reach 4.**	
18.58	***8. The toxicity listing for Ventura River Reach 3 (Weldon Canyon to Confl. With Coyote Cr) relies on outdated data*** Based on a review of the available data, all the observed toxic samples occurred prior to 2009. Of the 8 exceedances, 3 occurred in 2000/2001 and the rest were in 2006, 2007 and 2008. In the 2006-2008 time period, toxicity was commonly observed due to chlorpyrifos and diazinon which were subsequently restricted. Toxicity in many watersheds has been significantly reduced as a result of these use modifications. The available data shows that no samples exceeded after 2008, indicating that those pesticides or another cause that is no longer present, were the cause of the toxicity. Because of the transient nature of toxicity and the potential that the causes of the toxicity are no longer present, exceedances from prior to the pesticide use bans should not be used as the basis for a listing. The more recent samples since the pesticide use restrictions should be used as a basis for evaluation. **Requested Action:** **Do not list Ventura River Reach 3 for toxicity based on exceedances from outdated data.**	See response to comment 18.46.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td>18.59</td><td>9. Ensure no J-flagged data were used in the assessment.
The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states:

"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit. "

All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) list. Specific instances are included in Table 1, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.

For example, the line of evidence for the Boulder Creek chlordane listing erroneously states that three out of five samples exceed the objectives. . A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. A similar situation also occurred in the Ellsworth Barranca DOE listing.

Both the Boulder Creek and Ellsworth Barranca listings should be removed based on the incorrect assignment of the beneficial use MUN (as discussed earlier) in addition to the use of J-flagged data.

Requested Action:
• Review all Fact Sheets and Lines of Evidence for the use of J-flagged data and remove any instances where J-flagged data were used.
• Delist chlordane for Boulder Creek and DDE for Ellsworth Barranca as</td><td>See response to comment 7.5.</td></tr>
</table>

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	well as any other pollutants that lack the minimum number of exceedances required to justify a listing.	
18.60	**II. REQUESTED DELISTINGS** In June 2015, the County and the Cities of Fillmore and Santa Paula submitted a letter with data and analysis that supported delisting of the Santa Clara River for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded with plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report. The letter is provided as an attachment to this letter. The County requests that the delistings provided in the attached letter be included in the 303(d) list scheduled for adoption on May 4, 2017. **Requested Action:** **Delist Ammonia in Santa Clara River Reach 3.**	As stated in the November 10, 2016 letter, the Regional Board staff recommended delisting of Santa Clara River Reach 3 Ammonia from the 2016 California Integrated Report. Decision 32846 was revised to “Delist from 303(d) list (being addressed by USEPA approved TMDL)”.
18.61	**III. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. As a result, there is concern that not all changes to the 303(d) list that may be considered for adoption were identified in the review. The lack of clarity comes from the following inconsistencies: • Not all new listings are summarized in Appendix A. • Appendix B was found to be missing some new and old listings based on a comparison to Appendix G. • Appendix G has fact sheets for some listings noted as new in Appendix A or B identified as old fact sheets from the last listing cycle (e. g. benthic community listings in Javon Canyon). This indicates they were old listings, but a comparison to the 2010 303(d) list identified that they were in fact new listings and the fact sheets were incorrect or located in the wrong location.	See response to comment 7.98 and 7.99.

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	Additionally, in many cases, data and Quality Assurance Project Plan references in the Fact Sheets are inconsistent with the data provided for review. Examples of these inconsistencies and errors were detailed in the CCW TMDL Stakeholders' comment letter. The County asks that the Los Angeles Water Board do a thorough review of all appendices to ensure that the Proposed 303(d) List is internally consistent, the correct data were used for the assessment, and the other errors identified in the CCW TMDL Stakeholders' comment letter are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**	
19.	County of Ventura and the Cities of Fillmore and Santa Paula, March 30, 2017	
19.1	The proposed updates to the 303(d) list did not include delisting of the Santa Clara River Reach 3 for ammonia as recommended by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) in the letter dated November 10, 2016 provided as an attachment to this letter. In June 2015, the County and the Cities submitted a letter with data and analysis that supported delisting of the Santa Clara River Reach 3 for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded: "Based on the findings described above, the requirements for delisting have been met. Therefore, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report." (page 2 of the attached November 10, 2016 letter). The County and the Cities request that the ammonia delistings be included in the 303(d) list scheduled for adoption on May 4, 2017. Requested Action: Delist Ammonia in Santa Clara River Reach 3.	See response to comment 18.60.

Response to Comments on the Draft 2016 303(d) List
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20.	California Department of Water Resources (DWR), March 30, 2017	
20.1	The updates to the 303(d) list propose to add the following pollutants to the following State Water Project (SWP) affiliated locations: • Dieldrin, chlordane, DDT, and polychlorinated biphenyls (PCB) to Pyramid Lake • PCBs to Castaic Lake and Castaic Lagoon, and • Dieldrin and PCBs to Elderberry Forebay. DWR has the following comments: 1) The proposed pollutant listings lack a clear rationale that supports the recommended listings. A clear rationale, such as recommended food (i.e. fish) exposure levels (Food and Drug Administration for example), Fish Contaminant Goal (FCG), or Advisory Tissue Levels (ATL) for each pollutant should be provided so a clear comparison can be made. Some of the levels for these contaminants are above the FCG, they have not reached the ATL, and in fact, the report labels these contaminants as very low, as compared to the other higher priority contaminants. Absent such comparison, it is difficult to assess the appropriateness for such listings.	The Basin Plans contains narrative objectives for toxics pollutants that bioaccumulate within the biotic and result in adverse impacts to aquatic life or human health. Section 6.1.3 of the Listing Policy states that evaluation guidelines shall be used to interpret those objectives. Each LOE identifies the water quality objective/criterion and the evaluation guideline that was used in the assessment. Depending on the beneficial use being assessed, these evaluation guidelines are the National Academy of Science (NAS) guidelines for protection of aquatic life from bioaccumulation and Fish Contaminant Goals (FCGs). The policy allows for the use of evaluation guidelines published by the Office of Environmental Health Hazard Assessment (OEHHA) for the purposes of protection of human health from fish consumption. Water Board staff chose to use the FCGs values because they were the most protective values for fish consumption. There is no need to list a comparison of all three values rather than just selecting the most appropriate, protective, value. Furthermore, OEHHA screening values have been used as numeric targets in TMDLs within the Los Angeles region.
20.2	2) The PCB data in Table 11 (Summary Report) for Elderberry Forebay does not seem to match that of the proposed listing status. Elderberry Forebay is absent	Staff assumes the commenter is referring to Staff Report Appendix A: Summary of Regional Board

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	from this Table.	Recommended Changes to the 2012 303(d) List. Elderberry Forebay dieldrin and PCBs are appropriately listed as new listings, which also matches the listing in Appendix B (Category 5).
20.3	3) Insufficient details are provided for dieldrin, chlordane and DDT. A more comprehensive effort that specifically focuses on these contaminants should be conducted before they are proposed for Pyramid Lake additions to the 303(d) list.	"LIST" is the appropriate recommendation for dieldrin, chlordane and DDT. Listed waterbodies are evaluated and listing decisions are made based on Section 3 of Listing Policy. Based on readily available data and Section 3.5 and Table 3.1 of the Listing Policy and there are sufficient samples to list based on the binomial distribution. Greater detail regarding those listings is provided in Decision 62840, 62841, and 65950 in Appendix G. Also see response to comment 32.3 regarding readily available data.
20.4	4) Further analysis, including statistical analysis, should be conducted to support this proposed listing. Given the proposed listing recommendations are based on sample analytical data, a statistical analysis to show that sufficient sample size has been obtained for each lake should be provided. Additional considerations for analysis should also include: • Increasing sampling locations. Were the samples obtained truly representative of the entirety of the lakes, especially those that are the subject of this letter? • Do the composite samples truly represent averages of the fish caught, or are they additive? Can composites identify anomalies? Can a lake-wide composite be skewed, as a result of one very high data point? • One-time study involving one year seems insufficient. Studies with longer duration are more appropriate to accurately determine the pollutant levels.	While the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. At the time a TMDL is developed, or other regulatory program is developed, a more refined geographic scope can be identified considering collection sites and fish movement. See response to comment 32.3 regarding readily available data.

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21.	Earth Law Center (ELC) , March 30, 2017	
21.1	**<u>1. Full Compliance with Clean Water Act Sections 305(b) and 303(d) Requires Identification of All Hydrologically Impaired Waterways</u>** *a. CWA Section 303(d)* Clean Water Act (CWA) Section 303(d)(1)(A) requires California to "identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters." This must be a robust listing, with sufficient details about the waterways (including flow) to allow the state to "establish a priority ranking" for the waterways, also required by Section 303(d)(1)(A). In other words, California's 303(d) list must provide a comprehensive list of all impairments. The state's Listing Policy provides some mixed direction, stating on the one hand that 303(d) list only covers impairments by "pollutants" (rather than also by "pollution," such as flow),[2] but on the other hand stating that Regional Water Board Fact Sheets supporting Section 303(d) listings "shall contain...Pollutant or *type of pollution* that appears to be responsible for standards exceedance."[3] The latter path is the appropriate course. No objection, further, can be made to including flow-impaired waterways on the Section 303(d) list on the basis that the state is not required to prepare TMDLs to address "pollution." First, Section 303(d)(1)(A) makes no mention of limiting the 303(d) list to those waterways requiring Total Maximum Daily Loads (TMDLs). In fact, no mention of TMDLs is made until Section 303(d)(1)(C), which sets requirements on how to manage impaired waterways. Moreover, the state itself does not take this position for waterways impaired by pollutants. Instead, the state lists in Category 5 (what it deems its Section 303(d) list) pollutant-impaired waterways that do, and do not, require TMDLs by state evaluation.[4] Accordingly, the state must include hydrologically impaired waterways, including those impaired by altered flow, on its 303(d) list. This is the path the Los Angeles RWQCB correctly took in listing the Ventura River (Reaches 3 & 4) for "pumping" and "water diversion" impairments.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with State Board's response to *American Rivers*. The State Water Board response is provided below: *Sufficient flow is necessary to protect water quality and beneficial uses of water. "Pollution," such as lack of adequate flow, may cause impairments to water quality standards. Specifically, reduced flows can cause or contribute to impaired water quality conditions, such as elevated water temperatures, increased pollutant concentrations, degraded recreational opportunities, and reduced habitat area and/or volumes.* *State law recognizes the connection between flow and water quality. The Legislature specifically identified its intention to "combine the water rights and water pollution and water quality functions of state government to provide for consideration of water pollution and water quality, and availability of unappropriated water whenever applications for appropriation of water are granted or waste discharge requirements or*

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	However, rather than continuing to follow the clear intent of CWA Section 303(d), the Los Angeles RWQCB instead proposes to delist the Ventura River (Reach 3) for "pumping,"[5] despite this listing having been properly included on the 303(d) list since 1998. The primary reason given is that "[t]he listing is for a non-pollutant and therefore should be delisted."[6] However, as established above, the CWA requires the listing of both pollutants and pollution on the 303(d) list, regardless of whether a TMDL is required. Therefore, we ask that the Ventura River (Reach 3) remain on the 303(d) list.	*water quality objectives are established" when it created the State Water Resources Control Board. (Wat. Code, § 174.)* *The State Water Board has broad authority to consider water quality and pollution when it makes water allocation determinations. (Wat. Code, §1258.) The State Water Board has significant experience both setting and implementing flow criteria through water right actions, including its Bay-Delta Program and its Policy for Maintaining Instream Flows in Northern California Coastal Streams. The State Water Board also has experience setting flow requirements as part of its responsibility to certify that the operation of hydropower facilities subject to Federal Power Act licensing meet water quality standards. Those actions are always controversial and frequently involve differences of opinion among scientists, who testify under oath, as to appropriate flow criteria in those proceedings. The State Water Board has previously recognized that its major rivers are over-allocated and adversely impacted by flow alterations (see for instance Strategic Plan Update 2008-2012, State Water Resources Control Board, September 2, 2008, p.10). However, the extent of the impact on instream beneficial uses of a stream depends on the unique circumstances of each situation and requires knowledge of other factors impacting the physical and biological integrity of the watercourse, including physical impediments to fish passage and sediment recruitment (dams and culverts, in addition to natural impediments such*

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		as waterfalls and landslides), the source of the water accreting to the stream (is it cool groundwater or is it warm runoff from open lands), the location and physical effect of diversions relative to habitat, and other factors that affect pollution. *Pursuant to the above-cited state law, the State Water Board is expressly required to consider water quality and pollution when making water rights determinations. The converse is not true, however, with regard to the federal law directly applicable to developing the Integrated Report. The federal statutory directives pursuant to CWA 303(d) and 305(b) require states to report on the water quality necessary to provide for fish, wildlife, and recreational opportunities and other beneficial uses. In fulfilling its reporting obligations pursuant to CWA 303(d) and 305(b), the federal statutes do not expressly require the states to consider flow, pollution, or allocation of water rights, when reporting on standards attainment. Clean Water Act (CWA) section 305(b), combined with the section 303(d) reporting requirements, comprises the California Integrated Report (Integrated Report). Those reporting requirements establish a process for states to use to develop information on the quality of their state's waters.* *CWA section 305(b) is the principle [sic] means by which U.S. EPA and the public assess whether waters meet water quality standards. The report is used by U.S. EPA to inform Congress on the*

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		quality of navigable waters and their tributaries nationwide. *CWA section 305b requires states to report on:* *"[A] description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be required to take into account seasonal, tidal, and other variations, correlated with the quality of water […]."[A]n analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water."* *"[A]n analysis of the extent to which the elimination of the discharge of pollutants and a level of water quality which provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreations activities in and on the water, have been or will be achieved by the requirements of this chapter, together with recommendations as to additional action necessary to achieve such objectives and for what waters such additional action is necessary."*

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		(CWA § 305(b)(1)(A)-(C); see id. at § 305(b)(1)(D) & (E) (describing economic and environmental reporting requirements).) U.S. EPA describes the section 305(b) reporting goals at: http://water.epa.gov/type/watersheds/monitoring/upload/2003_07_24_monitoring_305bguide_v1ch1.pdf , *and provides 2006 Integrated Report Guidance here:* *http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2006IRG_index.cfm.* *As provided in the above U.S. EPA reference material, the primary purpose of the 305(b) and 303(d) reporting requirements is to determine the extent waters are attaining standards, identify waters that are impaired and need to be added to the 303(d) list and placed in Category 5 for the development of a total maximum daily load (TMDL), and identify waters that can be removed from the list when standards are attained.* *The guidance U.S. EPA developed for states to implement the Integrated Report consistently provides that segments should be placed in Category 4c when "the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution" such as lack of adequate flow. (See Guidance for 2006 Assessment, Listing and Reporting Requirements*

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		Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005). *In making decisions concerning standards assessment, it is imperative that the State Water Board undertakes a structured framework regarding its assessment and listing methodology and also provides information on the content of such methodologies.* *It may be appropriate to assess flow alteration pursuant to section 305(b) to the extent it could be used to support water quality decision-making. However, without a defined methodology for assessing non-pollutant related pollution, Water Board staff does not have a consistent and transparent approach to analyzing the extent to which flow-related alterations cause or impact water quality standards. The decisions made by the State and Regional Water Boards must be based on a methodology that provides all stakeholders with the opportunity to understand exactly how assessment decisions are made. The State Water Board's listing determinations must be supported by documentation that explains the analytical approaches used to infer true segment conditions. (See U.S. EPA's 2006 Guidance for Assessment and Listing, p. 29 (explaining what constitutes an assessment methodology and U.S. EPA's review of a state's methodology for consistency with the CWA and a state's water quality standards).) In addition to recognizing U.S. EPA's recommendation that segments be placed in Category 4c when the cause is solely*

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		due to pollution, and given the uncertainties associated with determining appropriate flow criteria to be used as a threshold for determining impairment, the State Water Board does not believe that placing segments in Category 4c of the Integrated Report results is warranted. Neither is such a reporting format an appropriate use of its limited resources, particularly considering the State Water Board's broad authority to address flow issues through its other legal authorities, which unlike information provided in the Integrated Report, have the potential to result in flow improvements through voluntary or regulatory action. However, in this 303(d) list, the Los Angeles Water Board has assigned the Ventura watershed pumping and water diversions to "being addressed by a TMDL" (Category 4a). In EPA's approval letter for the Ventura River Algae, Eutrophic Conditions and Nutrients TMDL, EPA stated "Based on EPA's approval of the State' s TMDLs addressing the algae, eutrophic conditions and nutrient impairments, together with other available information regarding Reaches 3 and 4 of the Ventura River, EPA has determined that it is unnecessary at this time to establish separate actions for the pumping and water diversion in Reaches 3 and 4 of the Ventura River." Decision ID 33817 Ventura Reach 3, water diversion Decision ID 44534 Ventura Reach 4, water diversion

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		Decision ID 34271 Ventura River Reach 3, pumping Decision ID 44793 Ventura Reach 4, pumping
21.2	*b. CWA Section 305(b)* The state must also include hydrologically impaired waters in its broader, CWA Section 305(b) report. Section 305(b) requires states to submit biennial reports[7] that "shall" describe the "water quality of all navigable waters," including an analysis of the extent to which the waters protect fish and wildlife, for compilation and submission to Congress.[8] Federal regulations describe this requirement and its purpose, stating that **the Section 305(b) report "serves as the primary assessment of State water quality" and the basis of states' water quality management plan elements, which "help direct all subsequent control activities."**[9] States must use the Section 305(b) report to develop their annual work program under Sections 106 and 205(j).[10] California's Integrated Report accordingly must include an adequate Section 305(b) report if the state is to develop meaningful water quality plans that appropriately direct staff and resources to the most important control activities. The Section 305(b) report must particularly include information regarding waterway flows to ensure that the fundamental purpose of Section 305(b) in guiding workplanning is met. The provision of information regarding waterway flow is also called for by CWA Section 101, which sets **the national objective of restoring and maintaining the "chemical, *physical*, and biological integrity of the Nation's waters."** (Emphasis added.) The U.S. Supreme Court itself explicitly affirmed the importance of addressing physical elements of waterway health such as flow, stating **that the distinction between water quality and quantity under the CWA is "artificial."**[11] The Staff Report runs afoul of the CWA by ignoring Category 4C entirely for inclusion in either its 303(d) list or its 305(b) report, reporting that *zero* water bodies in the Los Angeles Region are impaired due to altered hydrology under Category 4C.[12] As with other regional water boards, the Los Angeles RWQCB	The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board staff concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *It is State Water Board staff's interpretation that waterbodies currently listed for pollutant based impairments should not be included for pollution based impairments as well. The pollution based impairments should be addressed via the TMDL or other regulatory process. If all pollutant based impairments are eventually addressed and the pollution impairments still exist, then placement into Category 4c could be appropriate.* In addition, the State Water Board states: *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address nonpollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes*

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	appears to rely on the Listing Policy for this decision, which states that the 303(d) list only includes those water segments that require the development of a TMDL.[13] Here, again, the Staff Report assumes an illegally narrow definition of its requirements under the CWA. The Integrated Report is supposed to include *both* a robust and legally adequate 303(d) list *as well as* a robust and legally adequate 305(b) report. These requirements are combined; they are not the same (*see also* sec. 8). If the State Water Board and Regional Water Boards take the position that pollution-impaired waterways (including flow-impaired waters) cannot be included in the Section 303(d) list, then the Listing Policy – which by definition applies *only* to the Section 303(d) list – is irrelevant. It cannot be used as an excuse to ignore flow impairments entirely. The state in that case must then turn to its requirements under Section 305(b), which broadly require it to report on water quality, including as impacted by altered flow. Indeed, the Staff Report recognizes that it must consider flow-impaired waterways in its assessment, describing Category 4C as being applicable if "[t]he non-attainment of any applicable water quality standard for the waterbody is the result of pollution and is not caused by a pollutant."[14] No legitimate reason is given for failing to comply with this requirement, however. A legally adequate Section 305(b) report must include waterways impaired by pollution, including hydrologically impaired waterways, whether or not the waterways are also impaired by a pollutant. This information is also critical for the state to set waterway protection priorities properly. Proper identification of hydrologically impaired waterways is also important if the state is to fully comply not only with Section 305(b), but with CWA Section 303(d) as well. This section not only calls for identification of impaired and threatened waterways, but also requires the state to prepare a "*priority ranking*" of such waters, "taking into account the severity of the pollution" and waterway uses.[15] Flow and other hydrologic alteration data and information are critical to proper prioritization of impaired waters for further staff and resource attention. Specifically in regards to the Ventura River (Reach 3), in addition to misguidedly delisting this water segment from the 303(d) list for its impairment due to	*into account the flow impairments as a causative factor*. While these listings are not strictly flow-related, in this 303(d) list, the Los Angeles Water Board has assigned the Malibu Creek and the Matilija Creek fish barriers listing to Category 4c. However, the Los Angeles Water Board recognizes that the issue of Statewide consistency may become more important as the State Water Board approves the Los Angeles Region 303(d) list combined with lists for other Regions. See: Decision ID 34814 Malibu Creek fish barriers Decision ID 35724 Matilija Creek reach 1 Fish Barriers Decision ID 34162 Matilija Creek reach 2 Fish Barriers Decision ID 34241 Matilija Creek reservoir Fish Barriers Also, see response to comment 21.1.

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	"pumping," the Los Angeles RWQCB staff also fails to reclassify this water segment under Category 4C, finding that "[t]here is no established method for determining impairment due to pollution like pumping so a Category 4C finding is also inappropriate."[16] Once again, this response is misguided, as the state must at minimum include hydrologically impaired waters in its broader, CWA Section 305(b) report, as described above, whether or not there are flow standards or a formal methodology to do so. See Sec. 6, below. Finally, we reiterate that because Section 303(d)(1)(A) broadly requires identification of impairments *regardless* of whether TMDLs are needed, the state's Section 303(d) list should include a robust Category 4C set of listings. State law cannot weaken the requirements of the CWA by artificially limiting the scope of this list.	
21.3	**<u>2. U.S. EPA Guidance and Reports, and the State Water Board Itself, Have Called for Identification of Hydrologically Impaired Waterways in Category 4C of the Integrated Report</u>** U.S. EPA issued formal Integrated Report Guidance (i.e., for the combined Sections 303(d) and 305(b) reports) to states and territories in August 2015; in it, EPA specifically addresses the topic of hydrological impairment.[17] The U.S. EPA Guidance clearly states that: > If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life[18] use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C.[19] The Guidance specifically references hydrologic alteration as an example of a Category 4C listing.[20] It further references EPA Guidance going back at least to 2006, which similarly said that flow-impaired waters should be identified in the Integrated Report under Category 4C (the 2010 CCKA et al. Letter references this 2006 Guidance in support of flow listings; see attachment 3).	There is not clear evidence supporting the fact that beneficial uses are impaired solely due to the lack of or excess of perennial or ephemeral flows. The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The State Water Board and North Coast Regional Water Board (North Coast Water Board) staff could not clearly determine if the beneficial uses*

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	U.S. EPA and USGS reinforced this mandate in a joint report in February 2016 on flow, stating in part that "EPA recommends reporting impairments due to hydrologic alteration in Category 4c, which are those impairments due to pollution not requiring a TMDL."[21] Even more specifically, U.S. EPA Region 9 has directly told the State Water Board that the Board is "well aware of [EPA's] interest toward listing selected streams for 'flow impairments' (at least under 305(b)) where lines of evidence are strong."[22] Further, the State Water Board Executive Director himself decided that the state should identify flow-impaired waters in its Integrated Reports, stating that California "would now list for flow alterations" and that "[l]istings would be made under category 4C for impaired [sic] by pollution not a pollutant, and be based on staff's professional judgment as well as the evidence submitted by the data."[23] Again, no reason is given in the Staff Report for ignoring the clear flow impairments throughout the region in light of the CWA, guidance, and state direction.	*of a water quality segment were impaired solely due to stream flow or lack thereof. In many water segments, flow is seasonal resulting in dry periods during the summer months. If interpretive guidance or a clear methodology was developed to examine flow and other forms on non-pollutant related pollution, Water Board staff would have a transparent and consistent way to characterize beneficial use impairments caused by such pollution.* Also see response to comment to comment 21.1 and 21.2.
21.4	**<u>3. The San Diego RWQCB Has Adopted Numerous Listings for Hydrologic Impairment for Its Current Integrated Report</u>** The SD RWQCB recently adopted an Integrated Report and Staff Report[24] that **identified 30 waterway segments for listing in Category 4C, either with a Category 5 pollutant listing or alone**.[25] Consistent with U.S. EPA Guidance, the SD RWQCB recognized that identifying all pollutant and pollution impairments provides a far more accurate picture of the challenges before the state than ignoring key impairments. For example, the Staff Report found that "over 96 percent of streams that exhibited biological degradation had both an associated pollutant(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration (hydromodification, Table 3)." If the Regional Board had ignored such pollution impairments, then virtually all of the impaired streams in the San Diego Region would have been under-assessed, likely resulting in misallocation of limited	As the commenter states and the San Diego Regional Board mentioned in their staff report, "*…streams that exhibited biological degradation had both an **associated pollutant**(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration …*"

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	resources and attention. ELC commented to the San Diego Board in support of these listings; these comments are attached.[26]	
21.5	4. **California Has Identified Hydrologically Impaired Waterways in the Past** In California, "pumping" and "water diversion" are currently listed as causes of impairment for Ventura River Reaches 3 and 4, in the Los Angeles Region. Additionally, Ballona Creek Wetlands is currently listed as impaired by "Hydromodification," among other impairments. All three water body segments are currently listed for these specific flow-related impairments in Category 5.[27] California's history of identifying flow-related impairments under Section 303(d) should be considered precedential. And as explained herein and by Santa Barbara Channelkeeper in its comment letter, there is no basis for delisting Reach 3 of the Ventura River.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The Staff Report (at p. 9-10) states that the Water Boards have not considered the direct assessment of flow data since the adoption of the Listing Policy in 2004. The Staff Report acknowledges, however, that there were 4 listings on the existing 303(d) List related to flow-related alterations in the Ballona Creek and Ventura River watersheds (Region 4) but that those decisions were made prior to the adoption of the Listing Policy.* *The Listing Policy provides listing factors based solely on pollutant impairments. As a result, any section 303(d) listings related to flow alterations are contrary to the Listing Policy and U.S. EPA guidance and would be appropriate for reconsideration. Because the 4 segments were included on the 303(d) list due to pollution-related impairments, and not a pollutant, the Staff Report*

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		explains that the 4 listings for flow will likely be proposed for delisting in the next listing cycle. *However, it is important to note that the 4 segments were also listed on the 303(d) List for pollutant impairments for which TMDLs have been developed: Ventura River Reaches 3 and 4 – are identified as impaired due to pumping and water Diversion. The Regional Water Board and U.S. EPA have found that those flow related impairments were addressed via the Ventura River Algae TMDL. Regarding the listings for Ballona Creek Wetlands, identified as impaired due to hydromodification and reduced tidal flushing, the Regional Water Board and U.S. EPA have found that the Ballona Creek Sediment and Exotic Vegetation TMDL are addressing the stressors involved with the hydromodification and reduced tidal flushing.* *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address non-pollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes into account the flow impairments as a causative factor.* However, as noted in response to comment 21.1, the Los Angeles Water Board has assigned the Ventura River watershed pumping and water diversions to “being addressed by a TMDL” (Category 4a).

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21.6	**<u>5. Numerous Other States Have Identified Hydrologically Impaired Waterways in Categories 4C and 5</u>** Many states around the country have followed U.S. EPA Guidance and the CWA by properly identifying flow-impaired waterways in their Integrated Reports. These include, but are not limited to, Western states such as Idaho, Montana, Wyoming, Washington and New Mexico.[28] One listing methodology that may be of particular interest to the Los Angeles is that used by Ohio, which identifies waters impaired by flow alteration by linking biological community degradation with upstream dams. Notably, a number of these states regularly include flow-impaired waterways on their 303(d) list as well as their 305(b) Report. ELC has collected a significant amount of information on other states' hydrologic impairment listings and processes (and provided this to the State Water Board); this can be made readily available to the Los Angeles Board if desired.	See response to comment 21.1 and 21.2.
21.7	**<u>6. Flow Standards Are Not Required to Identify Hydrologically Impaired Waterways in Category 4C</u>** Most, if not all, of the states that identify hydrologic (including flow) impairments make those listing decisions based on best professional judgment and the information before them. Flow standards are not required to be developed first. Even the State Water Board has stated that flow listings could be done "based on staff's professional judgment as well as the evidence submitted by the data," and that they "would likely be mostly narrative...unless there are specific numeric targets for flow in place."[29] In other words, the state itself has recognized that flow criteria are not necessary for flow impairment listings. ELC has compiled significant information collected on various states' hydrologic impairment listing strategies and would be pleased to provide this additional information if desired. U.S. EPA addresses the process of identifying hydrologically impaired waters in its 2015 EPA Listing Guidance, stating that: If States have data and/or information that a water is impaired due to	See response to comment 21.1 to 21.4.

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	pollution not caused by a pollutant (e.g., aquatic life use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C. Examples of hydrologic alteration include: a perennial water is dry; no longer has flow; has low flow; has stand-alone pools; has extreme high flows; or has other significant alteration of the frequency, magnitude, duration or rate-of-change of natural flows in a water; or a water is characterized by entrenchment, bank destabilization, or channelization. Where circumstances such as unnatural low flow, no flow or stand-alone pools prevent sampling, it may be appropriate to place that water in Category 4C for impairment due to pollution not caused by a pollutant. In order to simplify and clarify the identification of waters impaired by pollution not caused by a pollutant, States may create further subcategories to distinguish such waters.[30] Note that this description of the process for identifying flow impairments does not require adoption of flow standards as a prerequisite for listing. The SD RWQCB Staff Report also addressed this topic in their just-approved Staff Report and Integrated Report, similarly stating that: where a water segment exhibited significant degradation in biological populations and/or communities as compared to reference site(s) the San Diego Water Board assessed the segment for inclusion in Category 4c using data and information as prescribed in USEPA's 2015 Guidance...Where in-stream data was lacking, stream segments were evaluated using desktop aerial reconnaissance for potential in-stream habitat and hydrologic alteration associated with channel modifications, stream diversion or augmentation, and to evaluate the level of associated development and use of best management practices to mitigate hydromodification.[31]	
21.8	**<u>7. Sound Public Policy Dictates that Flow-Impaired Waterways Must Be Identified</u>**	The Los Angeles Water Board agrees with the value of identifying waterbodies that are impacted

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	States, including California, have identified and are identifying flow-impaired waterways in their Integrated Reports not only because the Clean Water Act calls for it and U.S. EPA Guidance reinforces it. They also do so because it makes smart policy sense. Why would a state limit the amount of information it releases, information that could help it make better decisions about how to prioritize its resources? If the main problem with a waterway is not temperature or dissolved oxygen but flow, for example, then that information should be available so the best permitting and resource allocation decisions can be made to protect affected waterways. Identification of flow-impaired waterways is also important because those listings help the public exercise their own responsibility to help improve waterway health. U.S. EPA agreed in its Guidance, stating that "a variety of watershed restoration tools and approaches to address the source(s) of the impairment" exist even in the absence of TMDLs, increasing the importance of full and complete identification for impaired waterways.[32] Hydrologic impairment listings also can and should be used in CEQA analyses of proposed projects that could further impact the flow of identified waterways, thus preventing additional damage to already-impacted waterways and fish. ELC has prepared and submitted extensive comments to the state on the numerous policy benefits of properly identifying flow-impaired waterways.[33]	by pollution, including flow alteration, that are not otherwise impaired by other pollutants. Given the complex characteristics of climate and hydrology in the Los Angeles region, determining natural baseline flow conditions that are necessary to support aquatic habitat based on comparable reference conditions that resemble the conditions within our region and finding a defensible methodology for applying that information to determine impairment is a challenging endeavor that may be pursued in subsequent assessments.
21.9	**<u>8. Water Bodies Can and Should Be Placed in All Relevant Categories of Identification</u>** The Staff Report states that "[t]o meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment…."[34] This statement appears to limit the RWQCB to placing water bodies in only one category, an interpretation presumably reflected in the recommendation to include zero listings in Category 4C.	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*.

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	This approach is simply incorrect. U.S. EPA has been quite clear that water bodies can be placed into multiple categories, and in fact should be in order to provide the best available information to U.S. EPA and Congress. As explained by the SD RWQCB in its Staff Report: It is important to note that USEPA recommended in its 2015 guidance that "States assign all of their surface water segments to ***one or more of five reporting categories***"....[35] U.S. EPA reiterated this point in its joint report with USGS, stating that "EPA's guidance has noted that **assessment categories *are not mutually exclusive*, and waters may be placed in more than one category (for example, categories 4C and 5)**."36 Accordingly, flow impairments should be reflected in Category 4C whether or not there is a pollutant present, the approach taken recently by the SD RWQCB. Otherwise, the state is conflating the Section 303(d) and 305(b) reports rather than combining them, ignoring its Section 305(b) responsibilities in the process.[37] Because the state must comply with both Sections 305(b) and 303(d), it must provide information relevant to all categories applicable to a single water body.[38] The Integrated Report does not meet these mandates.	The State Water Board response is provided below: *The State Water Board has not indicated that it is bound to U.S. EPA's guidance. Additionally, the State Water Board disagrees with the commenter's interpretation of U.S. EPA's Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act, which is excerpted in the Staff Report at page 10.* *U.S. EPA's guidance at section V.G.3 (pg. 56) states:* *Segments should be placed in Category 4c when the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is* ***not caused by a pollutant****, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is 'the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water' (section 502(19)). In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard*

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		*and to support water quality management actions necessary to address the cause(s) of the impairment. Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired **solely** due to lack of adequate flow or to stream channelization.* *(Page 56, emphasis added.) In California waterbody-pollutant combinations are assessed consistent with the Water Quality Control Policy for developing the California's Clean Water Act Section 303(d) List (Listing Policy) to determine the overall use support rating. That overall use support rating is used by the California Water Quality Assessment Database (CalWQA) to determine the overall Integrated Report Category for the waterbody as a whole.* *The State Water Board interprets the U.S.EPA guidance to indicate that a waterbody should not be placed into Category 4c if there is a pollutant based impairment identified to be impairing water quality that requires a TMDL. The waters for which flow information has been submitted for inclusion into Category 4c are all identified in the Integrated Report as impaired due to pollutants under Category 5, 4a, or 4b. Waterbodies impaired by pollutants, such as temperature, and also by flow modifications will be addressed by TMDLs for the pollutant. To the extent that the pollutant is affected by flow, the Regional Water Boards will work with the State Water Board through its Division of Water Rights to determine*

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		the extent to which a water right action can improve the pollution impairment and the appropriate implementation action. *Additionally, U.S. EPA submitted a comment letter regarding the State Water Board's consideration of the CWA 303(d) List stating:* *"EPA commends the Regional Board and State Board staff for the transparency of the process with respect to data used in the assessment and the applicable standards." U.S. EPA also explained that the purpose behind its substantive listing recommendations to the State Water Board was designed to ensure that U.S. EPA's approval of the CWA 303(d) list could occur without U.S. EPA making changes subsequent to the State Water Board's approval. Notably, while U.S. EPA noted disagreement with certain listings or delistings proposed in the Staff Report, U.S. EPA stated no disagreement with the Staff Report's assessment of flow related data and information. U.S. EPA has final review and approval authority of California's CWA 303(d) List before it becomes effective.* Also see response to comment 21.1 and 21.4.
21.10	**9. Readily Available Data Exist and Have Been Provided in Support of the Listing of Waterways as Hydrologically Impaired** As evident based on substantial, readily available information, the lines of evidence for hydrologic impairment are strong for numerous Los Angeles Region waterway segments, including but not limited to Reach 3 of the Ventura River	Also see response to comment 21.1, 21.2, and 32.3 regarding readily available data.

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	(specifically for "pumping," as currently listed) as well as the Santa Clara River (particularly Reaches 1 and 2).[39] Federal regulations state that states must evaluate "all existing and readily available information" in developing their 303(d) lists and prioritizations.[40] The SWRCB's Executive Director reinforced the breadth of this requirement in a memorandum on the scope of listing regulations at 40 CFR § 130.7(b)(5).41 This information must include flow, a position recently reinforced by U.S. EPA, who stated that the integrated reporting format is key to "acknowledge the important role of flow in contributing to water-body impairments."[42] <u>Data Supporting Listing of the Ventura River (Reaches 3 and 4)</u> Excessive pumping contributes to the severe dewatering of the Ventura River (Reach 3), imperiling endangered steelhead trout and other aquatic species. Therefore, the Los Angeles RWQCB must not delist this waterway for "pumping" as is currently proposed. As support, ELC incorporates by reference those comments prepared by Santa Barbara Channelkeeper on the Los Angeles Region's 2012 Integrated Report[43] and 2016 Integrated Report,[44] both of which summarize the extensive body of evidence establishing the link between pumping on Reach 3 (as well as Reach 4) of the Ventura River and resulting negative biological impacts, including to steelhead trout. ELC also incorporates by reference numerous additional documents that highlight the negative effects of excessive pumping on Reach 3 (as well as Reach 4) of the Ventura River, including from U.S. EPA Region 9 (finding in its Draft TMDL for Reaches 3 and 4 of the Ventura River that "low flows due to pumping and diversion activities likely exacerbate the flow and water quality conditions in Reaches 3 and 4"),[45] the National Marine Fisheries Service (NMFS) (finding in a 2007 Draft Biological Opinion that "[w]ater withdrawals from surface diversions and subsurface pumping have affected the timing and magnitude of the Ventura River flows ... and has decreased the quantity and quality of critical habitat for steelhead")[46], and the Los Padres National Forest Ojai Ranger District (describing the historic impacts low flows have upon steelhead trout populations in the Ventura River watershed in a report on steelhead	

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	restoration).[47] Together, this data demonstrates that pumping impairs beneficial uses in Reach 3 of the Ventura River, particularly those beneficial uses related to aquatic life and habitat. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. Reach 3 of the Ventura River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based on the readily available data and information, the evidence is sufficient to support the continued listing of Reach 3 of the Ventura River on the 303(d) list due to "pumping." Thus, the proposed delisting of the "pumping" impairment on Reach 3 must not proceed. The Los Angeles RWQCB staff has not provided sufficient information to justify this delisting, nor have they addressed the above evidence that clearly validates the "pumping" listing as it originally occurred. Similarly, this evidence supports the continued listing (as currently proposed) of Reach 3 as impaired due to "water diversion," and of Reach 4 as impaired due to both "water diversion" and "pumping." **<u>Data Supporting Listing of the Santa Clara River</u>** Since at least 2013, ELC and partners have submitted detailed information establishing a clear impairment due to altered flows on the Santa Clara River (in particular Reaches 1 and 2, located downstream of the Vern Freeman Diversion Dam). In May 2013, we submitted a "shortlist" of ten California waterways being drained dry for inclusion on the 303(d) list, along with supporting evidence (see Attachment 2). The Santa Clara River was one of those waterways.	

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	As described in the submitted evidence: The Santa Clara River is Southern California's last major free flowing waterway and is home to 17 species listed as threatened or endangered under the state and federal Endangered Species Acts. At River mile 10.5, United Water Conservation District (United) diverts almost all of the River's flows outside of large storm events. United, USGS, and local agency data show that water diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses, deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds.48 In addition to impacting beneficial uses associated with the provision of adequate steelhead habitat, surface water withdrawals also destroy downstream native riparian and endangered bird habitat, degrade the ecological integrity of the River's estuary, and impair a plethora of cultural and recreational beneficial uses downstream.[49] Additional readily available information further supports the imperative to list the Santa Clara River as impaired due to altered flows. This includes documents published by NMFS (describing in a Final Biological Opinion the negative biological impacts of the Vern Freeman Diversion Dam, which can deplete the Santa Clara River of all its flows and jeopardizes the existence of endangered Southern California steelhead trout),[50] the Santa Clara River Trustee Council and The Nature Conservancy (describing Santa Clara River flow reductions caused by water diversions and groundwater pumping and the resulting impact on steelhead trout),[51] the Los Angeles RWQCB (describing the historic decline of steelhead trout in the Santa Clara River, as well as flow impacts from water diversions and hydromodification in its "State of the Watershed" report),[52] and others. Together, this data demonstrates that reduced flows impair beneficial uses in the Santa Clara River, particularly those beneficial uses related to aquatic life and habitat. This is most clearly true in Reaches 1 and 2 of the Santa Clara River, where over-diversion and other flow impacts (due in large part to the Vern	

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	Freeman Diversion Dam) can cause the waterway to go completely dry. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. The Santa Clara River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based on the readily available data and information, the evidence is sufficient to support the listing of the Santa Clara River (particularly Reaches 1 and 2) on the 303(d) list for impairment caused by altered flow. This evidence also supports including Santa Clara River on the 305(b) report.	
21.11	In sum, we once again urge the Los Angles RWQCB to follow the lead of the SD RWQCB, as well as U.S. EPA and numerous other states, in identifying flow- and otherwise hydrologically-impaired waters in the region's Integrated Report. To do so, the staff report must be revised to support the continued listing of Reach 3 of the Ventura River as impaired due to pumping (as done in previous years), as well as by listing the Santa Clara River (particularly Reaches 1 and 2) as impaired due to altered flows.	See response to comment 21.1, 21.2, and 21.4.
22.	Heal the Bay (HtB) , March 30, 2017	
22.1	**Data/Information Collection and Timing Delay** In late 2014, Heal the Bay commented on the State Water Resources Control Board's (State Board's) *Proposed Amendment to the Water Quality Control Policy for Developing the Clean Water Act Section 303(d) List*. While we appreciated the chance to comment and the State Board's explanations in their Response to Comments, there are a few concerns that we continue to have regarding the new amendment and its effect on the Revised List. First, we understand that California is an expansive state and that the State	The State Water Board established what the commenter calls the "Rotating Basin Approach" in consideration of the large size of the State, the extensive amount of data to evaluate, and the increasing complexity of data analysis. Simply not delisting any waterbody ignores those areas where water quality may have improved albeit only as demonstrated with pre-2010 data. The Los Angeles Water Board anticipates that

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	Board's resources are limited in comparison. In this sense we understand but are disappointed that California must implement the "Rotating Basin Approach," when coming into compliance with requests for biennial updates for the federal Clean Water Act's Section 303(d). This will effectively reduce regional updates on impaired waters from every two to every six years. Compounded on this is the surprising discovery that the State Board is discussing either listing or delisting bodies of water in Region 4 with information and data collected prior to *August 30, 2010* – almost seven years ago. This would be on par with a college admissions officer selecting a prospective student for a university based on their academic performance in 5th Grade. It would have seemed wiser to have at least updated and appended further data and information and possibly re-solicited water quality data from regional stakeholders during the years long interim with respect to whether water bodies are placed on or removed from the Revised List. Considering this discrepancy in timing from data submittal to listing and delisting proposals, we ask that the State Board and Environmental Protection Agency (EPA) not delist any bodies of water that are currently on the *2010 Integrated Report* until more current data is received. This will eliminate the possibility of delisting a water body that is currently impaired, as there is no way to know the condition of the waters in question using data solely from 2010 or before. To err on the side of caution when dealing with our state waters will be in the best interest of our water quality standards and beneficial uses. This seems like a reasonable, precautionary request and is supported by the State Board during the adoption of the policy. Taken from the State Board Hearing Transcript from Sept. 30, 2004, Board Member Nancy H. Sutley states, "If it's on the list . . . then you have to have some information that says that they [fish] are not dying now and the waterbody is not currently impaired . . .." Though Board Member Sutley is referring to listings that were made by mistake, the principle behind it should still hold true. The intent was to say that information and data on waters should currently show that water quality standards are met and that the body of water is not currently impaired	there may be waterbodies that are listed one listing cycle and delisted the next, perhaps to be re-listed in a later cycle. The Integrated Report and the 303(d) list should remain the State's best assessment based on water quality data evaluated, even as we recognize the limitations to the 303(d) list. In addition, beginning with the 2018 303(d) list, all data to be evaluated by the Water Boards for the Integrated Report and 303(d) list must be submitted to the California Environmental Data Exchange Database (CEDEN). See, also, response to comment 32.3.

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	before being removed from the list. Board Member Sutley goes further to suggest that boards should affirm a lack of current impairment before delisting bodies of water by stating she was "Okay with not adding [additional] language [to the Listing Policy] as long as we're all in agreement and that's the direction of the regional boards that you have to look at the current conditions as well [before de-listing]." This very point is represented in the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (State Listing Policy)(Adopted Sept. 30, 2004 and Amended February 3, 2015) in Section 4.11, which states, "When making a delisting decision based on the situation-specific weight of evidence, the Regional Water Board must justify its recommendation by [Bullet 1] Providing any data or information including current conditions supporting the decision." We argue that there is no way to demonstrate current conditions with information and data that is aged seven years or more. Because of this it seems in line with State Listing Policy that no waterbodies be delisted for the current 303(d) List. During the next listing/delisting cycle, which will be in 2022, staff will be able to make a more accurate judgement on impairment simply because their information will be more up to date.	
22.2	**It is Misleading to Entitle this Current Edition the "2016" 303(d) List** It seems off-track and misleading to title this 303(d) list the *2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters* (Integrated Report) when it only contains information from 2010. Since the State Water Board's original 2010 solicitation for data was intended for the 2012 list we think it would be much more constructive and accurate to have the current list in question labeled exactly as such and be called the *2012 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters.* If any individual was filing their income taxes using tax information from a certain year, it would remain labeled as the tax return from the original time period, regardless of how long of an extension the individual received. Considering compliance with state and federal law, we could find no mention within the	The Los Angeles Water Board is complying with the naming convention as established by the State Water Board. The naming convention facilitates accounting of which Regions have updated listing decisions for that listing year. Also see response to comment 32.3.

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	Federal Clean Water Act or the State Listing Policy of how the Integrated Report should be named, only how often it should submitted. Since the EPA is well aware of the new "rotating basin approach," and due to the fact that California has successfully amended its own State Listing Policy, we believe there to be no compliance issues for the more accurate renaming. In addition, it was made clear in the Integrated Report's "Staff Report" (February 2017) that the 303(d) List for Regions from Group 2 (Regions 3, 5, and 9), which was intended to be passed in 2014, has yet to be approved by the State Board or the EPA. If the State Board were to rename the 2014 Integrated Report the 2012 Integrated Report as well because it has yet to be approved, this would make clear to everyone exactly where the listing's value lies—by titling both lists from Basin Group 2 and 3, the revised 2012 Integrated Report. This would file nicely with California's Basin Group 1 (Regions 1, 6, and 7), which would identically be called the 2012 Integrated Report. This is also consistent with the original notice and request for data, titled "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report—Surface Water Quality Assessment and List of Impaired Waters." Further advantages of this titling would be that future inspection researchers unfamiliar with past reports would know that the listings would correspond much closer to the data from 2010. Looking towards the future, this more accurate labeling will help in clarifying reporting methods. It signifies when agencies made a clean break from when small windows of data were analyzed in favor of the current California Environmental Data Exchange Network (CEDEN) system, which uses a constant, up-to-date stream of information and allows for a more thorough and accurate 303(d) list for Region 4 in 2022. This would also make it crystal clear when the State of California "changed over" to the new "Rotating Basin Approach" in regards to fulfilling their obligations to Section 305(b) of the Clean Water Act.	
22.3	**The Optimistic Possibilities of CEDEN in 303(d) Listings** As mentioned above, the State Board does have an opportunity going forward with	The Los Angeles Water Board agrees and will work with State Board to provide workshops or other CEDEN training materials for Los Angeles

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	CEDEN concerning water bodies in California. We are heartened to see that despite the fact that Region 4's 303(d) list will not be updated until 2022, that the list will be based on information up until 2021. This reduced lag time will only work to benefit the waters and beneficial uses of California's bodies of water. Further, as the State Board mentions in its *Comment Summary and Responses for the Proposed Amendment to the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* from January 26, 2015, "Requiring the use of CEDEN will ensure the data used for the 303(d) listing process is of a high quality and includes the necessary information for efficient assessments." It is true that the use of this database is likely to streamline the process for the staff of the Regional Boards, the State Board, the EPA, and any agency that wants to submit pertinent data. Heal the Bay noticed that the State Board scheduled CEDEN workshops in 2015 to "facilitate greater understanding of the needs of CEDEN users, develop tools to enhance the utility of CEDEN, and provide training on using the CEDEN system." We ask that the State Board provide more workshops now and in the coming years in anticipation of the current and future use of CEDEN by Region 4 Stakeholders. The people and water environment of California only stand to gain from thorough instruction given to invested stakeholders and the data they will provide.	Region stakeholders.
22.4	**Concerns with Individual Category 4a Delistings from the 303(d) List** *Delisting Hermosa Beach and Manhattan Beach for Indicator Bacteria* Beyond our concerns mentioned above with any impaired water delistings from the prior 2010 303(d) List, Heal the Bay feels strongly that both Hermosa and Manhattan Beach should remain on the 303(d) List and maintain their current TMDL for Indicator Bacteria. Looking at our past Beach Report Card data, even data solely from the supposed window ending on August 30, 2010 and before, we find it puzzling that either beach would be in consideration for delisting. In 2010 itself, our Hermosa Beach site by Herondo Street outfall was noted for single sample exceedances for *Enterococcus* for 17.6% of samples taken. Averaging	The delistings of Hermosa Beach and Manhattan Beach for Indicator Bacteria are in compliance with the Listing Policy. Although these beaches are being recommended for delisting, they are still subject to the Santa Monica Bay Beaches Bacteria TMDLs and 303(d) listing decisions do not change or eliminate effective TMDLs. The TMDL allocations that have been assigned to those beaches still apply and are incorporated into various NPDES permits/waste discharge requirements. In fact,

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	exceedances from 2008 to present 2016, the Herondo storm drain outfall has shown *Enterococcus* exceedances 12% of the time. Concerning Manhattan Beach, their 28th Street outfall has shown *Enterococcus* exceedances 10% of the time since 2008. Both of these beaches are popular swimming and recreation areas and eliminating the TMDL would create the potential for impacts on human health and aquatic life. We would highly recommend waiting to remove both beaches from the 303(d) list until data from the past decade can be assessed. Like we discussed above, where uncertainty exists with regards to delisting bodies of water, decisions should be made in favor of protecting water quality, human health and the environment.	both beaches are classified as 'anti-degradation' beaches, which are subject to more stringent requirements compared to the reference beach. Also see response to comment 32.3 regarding readily available data.
23.	Los Angeles Department of Water and Power (LADWP) , March 30, 2017	
23.1	LADWP's detailed comments can be found below. **1.** Elderberry Forebay should not be listed for dieldrin or PCBs**.** LADWP's largest hydroelectric facility is the Castaic Power Plant, which is critical to the reliability of the electrical grid in the Los Angeles Basin. This facility along with the Elderberry Forebay was built in 1960 as part of a Federal Energy Regulatory Commission (FERC) project with the Department of Water Resources, and is operated under a FERC license. The Elderberry Forebay was built strictly for the operation of the plant as a storage component for the water that passes through the plant to generate electricity. This hydroelectric plant is known as a pass-through facility. Water from Pyramid Lake flows down a gradient through the Los Angeles Tunnel and seven penstocks to turn seven turbines in order to produce electricity. The water enters Elderberry Forebay after the turbines where it is then either discharged to Castaic Lake or pumped back to Pyramid Lake. LADWP has noted that the LARWQCB has proposed to add Elderberry Forebay to the revised 303(d) list for dieldrin and PCBs. However, activities at the plant do not use or add products that would contribute dieldrin or PCBs to its discharges into Elderberry. In fact, Elderberry Forebay is not open to the public and therefore does not have any beneficial uses beyond being an operating body of water for the	Elderberry Forebay is surface waterbody which is identified in Table 1 of Chapter 2 in the Los Angeles Region Basin Plan as having the beneficial uses of MUN, IND, PROC, AGR, GWR, FRSH, POW, WARM, COLD, WILD, RARE, and SPWN. Restricted access does not preclude a waterbody from possessing beneficial uses. For the 303(d) list, readily available water quality data are assessed for all beneficial uses that may be impaired by excess amounts of pollutants. No source analysis has been conducted and the 303(d) list identifies the source as "unknown." Source analysis, linkage, and allocations are typically determined during TMDL development or during the development of another regulatory program. See response to comment 32.3 regarding readily

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	hydro plant. Its only use is for the pushing of the turbine blades to generate electricity. In 2008 the United States Environmental Protection Agency (USEPA) released its final version of its "National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule" (Water Transfer Rule) codifying (40 CFR 122.3(i)) that water transfers are excluded from the regulation of the Clean Water Act (CWA). The 40 CFR 122.3 (i) expressly states "Water transfers mean an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. USEPA's legal interpretation of the CWA concluded that Congress did not intend to subject water transfers where there is "no addition" of pollutants to the NPDES permit process because the pollutants were already in the waters being transferred and are not added. This ruling was put in place precisely for hydroelectric plants like the Castaic Power Plant that are considered pass-through facilities. Since this body of water is isolated from all public recreation and access and the water that passes through the Castaic Power Plant is used only to generate electricity, it seems inappropriate to include the Elderberry Forebay in the new 303(d) listing. With respect to Dieldrin, as stated in LADWP's Castaic Dieldrin Source Control Study sent to the LARWQCB in May 2010, LADWP contends that since the Castaic Power Plant has never used nor ever had a use for dieldrin, it cannot be the source of dieldrin in Elderberry Forebay. The source study points out that many of the tributaries that flow into the State Water Project, specifically those in the San Joaquin Valley, are agricultural areas where for years traditional pesticides (including dieldrin) have been used. Dieldrin was also an ingredient in several types of vector control measures used to mitigate vectors residing subsurface. These components, termed "legacy pesticides," primarily reside in the sediment/soil and are believed to be periodically liberated into the surrounding waterways. *Catskill Mountains Chapter of Trout Unlimited, Inc. v. EPA (Catskill III*) (2nd Cir. 2017), states that a water being transferred through a hydroelectric plant is not a discharge of a pollutant. In addition, as has been mentioned earlier, the Elderberry Forebay is only used for the operations of the plant, and therefore discharges from the Forebay would not be considered a discharge of a pollutant. Additionally, LADWP ceased the use of PCBs in the electrical equipment at	available data.

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	Castaic Power Plant in the 1980s, and thus the hydroelectric plant is not a source. Furthermore, the NPDES Annual Monitoring Reports for Castaic Power Plant have shown "non- detect" for all PCB sampling over the last 20 years. Since the Elderberry Forebay is used and was built solely for the operation of the Castaic Power Plant hydroelectric facility, and since it is a pass-through that transfers water without any addition of pollutants, it would seem appropriate to remove the Elderberry Forebay from this 303(d) list. Therefore, LADWP respectfully requests that the Elderberry Forebay be removed from the current 303(d) list.	
23.2	2. The 303(d) listing recommendations should be updated to include current data and information. The LARWQCB Staff Report supporting the current listing recommendations notes that "Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed.[...] Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021." (Staff Report at p. 6) LADWP is concerned that many of the data upon which proposed listings are based are more than ten (10) years old. However, some of the proposed listings are based on only two or three data points. Although LADWP understands and recognizes the resource limitations faced by the LARWQCB, we respectfully suggest that basing listings on datasets that do not include the most recent information, particularly when only a couple of samples are available to describe conditions in the region's water bodies, does not seem to be effective. Such limited data cannot be considered to describe current conditions appropriately.	See response to comment 32.3 regarding readily available data. Per the Listing Policy, waterbody-pollutant combinations are included on the 303(d) list with as few as two samples.
23.3	3. The proposed listings for "benthic community effects" are premature at this time, particularly for proposed listings in modified channels. LADWP notes that several of the proposed listings for "benthic community	See response to comment 11.19 and 11.24 regarding Benthic Macroinvertebrate listings.

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	effects" are based upon limited data (2 or 3 samples) that were collected nine or more years ago, and that some of the proposed listings are based upon "index of biotic integrity" (IBI) scores. More importantly, many of the water bodies proposed for listing for benthic community effects are engineered or modified channels, and it is not scientifically or technically appropriate to expect that modified channels will achieve the CSCI or IBI scores that are observed in reference channels. The proposed listings do not consistently or clearly establish a link between the biological condition and the pollutant(s) that may be responsible for the biological condition; in fact, it is not clear that the pollutant measurements (available only for some proposed listings) were collected at the same time as the biological data. Finally, some of the samples upon which the proposed listings are based were collected downstream of and shortly after major wildfires; these data are likely representative of temporary disturbed conditions and may not be representative of typical conditions. State Water Board staff are currently working on developing a statewide policy or plan for biological integrity. This process has moved away from using the 181 and is now developing metrics for the California Stream Condition Index (CSCI) and an Algae Stream Condition Index (ASCI). This process has not reached consensus on how engineered or modified channels should be assessed, or what appropriate expectations for these channels should be. In fact, the State Water Board is currently convening a Science Advisory Panel to address this issue and many others, and the State Water Board's "Wadeable Stream Biostimulatory and Biointegrity Science Plan," dated February 2017, acknowledges that "Developed landscapes are associated with an increase of many stressors in streams, such as elevated contaminant and nutrient concentrations, altered flow regimes , sedimentation, and habitat degradation. Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards. In these circumstances, the range of CSCI or ASCI scores may be constrained in channels in developed landscapes." Because the State's policy is in development, no longer uses the IBI, has not clearly established a link between the presence of pollutant(s) and the biological condition, and has not produced direction regarding how benthic integrity should	

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	be assessed in modified streams, LADWP respectfully suggests that it is premature to list the region's water bodies for "benthic community effects". LADWP therefore requests that the LARWQCB decline to list the region's water bodies for benthic community effects at this time.	
24.	Lower Los Angeles River (LLAR) Watershed Committee, March 30, 2017	
24.1	The LLAR Watershed Committee requests the Regional Board suspend the recommendation on Iron because of the following: • Reliance on data gathered during 2006-2010 is not appropriate when more recent data collected as part of the extensive monitor programs of the CIMPs is now available. • Dissolved concentrations of iron do not exceed the narrative objectives.	Under the Listing Policy, waterbodies are included on the 303(d) list where standards or guidelines are exceeded. The Los Angeles Region Basin Plan contains a narrative objective for "…chemical constituents in amounts that adversely affect any designated beneficial use…," which may be used in assessments by relying upon numerical guidelines. However, review of the decision for Coyote Creek iron is in process at this time. Also see response to comment 32.3 regarding readily available data.
25.	Lower San Gabriel River (LSGR) Watershed Committee , March 30, 2017	
25.1	The LSGR Watershed Committee recognizes the recommendation regarding Temperature in Reach 1 and Reach 2 of the San Gabriel River and requests that the Regional Board take into consideration the characterization the of these Reaches of the San Gabriel River in its determination of temperature as a pollutant. As described as a Water Quality Objective: *"the natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses."*	See response to comment 17.4.

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	Beginning upstream, Reach 2 is a 7-mile stretch from the outlet of the Whittier Narrows Dam and ends where the Sab Gabriel River crosses Firestone Blvd. Reach 2 is confined by engineered levees and rip-rap. The river remains a soft-bottom channel and during dry-weather has no measurable flow reaching Reach 1 due to having the most productive spreading grounds in Los Angeles County. Reach 1 is a 10-mile stretch beginning at Firestone Blvd in Downey and extends to the confluence of the San Gabriel River with Coyote Creek. It is a heavily urbanized reach with a concrete bottom. Two significant POTWs discharge into this Reach. During dry weather, these POTWs discharge vastly more water than enters the river channel though the combined MS4 outfalls. The volume of the POTW discharge will quickly render any potentially elevated temperature from discharges of MS4 outfalls as negligible. The Committee believes that a Water Quality Objective for Temperature in these Reaches is not applicable.	
25.2	In regards to Iron and Malathion in Coyote Creek; the LSGR Watershed Committee requests the Regional Board suspend the recommendation of Iron and Malathion due to monitoring data inconsistent with recent water body improvements. The LSGR Watershed has made a considerable effort in developing and implementing its Coordinated Integrated Monitoring Program (CIMP) and suggest monitoring data should reflect more recent and current outfall conditions and that any conclusions should be drawn from a more current and comprehensive data set. The LSGR believes this request is justified when considering that Iron and Malathion are derived from nationally Recommended Water Quality Standards and not based on an established EPA TMDL or conditions characteristic of Southern California waters.	See response to comment 24.1 and 32.3.
26.	Sanitation Districts of Los Angeles County (Sanitation Districts) , March 30, 2017	
26.1	The Sanitation Districts have concerns on some aspects of the Draft List, particularly where the listing thresholds used in the Staff Report appear to differ from receiving water quality objectives contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) or other regulatory	See responses to comments 26.2 – 26.19.

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	programs. Additionally, there appear to be data errors that impact some listing decisions. General comments relating to these concerns are provided below and detailed specific comments for each listing are provided in Attachment 1 and appendices to this letter.	
26.2	***1. Data Were Incorrectly Attributed to Some Reaches*** The Draft List contains a number of newly proposed listings based, in part, on data collected from incorrect reaches. Specific listings where this appears to have occurred include the benthic community and toxicity listings for Santa Clara River Reach 5; the temperature listing for Santa Clara River Reach 6; the toxicity, DO, and iron listings for Rio Hondo Reach 2; and the toxicity listing for San Jose Creek Reach 2.	Los Angeles Water Board and State Water Board staff are aware of these areas where the reach mapping that underlies the CalWQA database (which maps the 303(d) list) and the Los Angeles Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region. For additional specific responses, see response to comment 26.10 and 26.19.
26.3	***2. Not All of the Data Submitted for Listing Consideration Were Used in Making the Listing Decision*** The Draft List contains a number of newly proposed listings where only a subset of the data submitted for listing consideration were evaluated; these data are included in the data files appended to the Staff Report but were not used in the listing analysis. Specific listings where this appears to have occurred include the toxicity listing for Santa Clara River Reach 5 and the temperature listing for Santa Clara River Reach 6.	See response to comment 26.12 for the Santa Clara River Reach 5 toxicity listing and response to comment 26.19 for the Santa Clara River Reach 6 temperature listing.
26.4	***3. The Draft List Includes Inappropriate Impairment Listings for "Benthic-Macroinvertebrate Bioassessments"*** The Draft February 2017 version of the 2016 303(d) List contains a number of	Listings based on the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites.

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	newly proposed listings for "Benthic-Macroinvertebrate Bioassessments." The proposed listings are based on application of the Southern California Coastal Index of Biological Integrity (SCIBI) and, in some cases, the California Stream Condition Index (CSCI). These include listings for Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1. The Sanitation Districts believe these proposed listings should be removed, for the reasons listed below. <u>Listings Based on the SCIBI and CSCI Are Inconsistent With State Policy.</u> The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) indicates that water bodies should only be listed for degradation of biological populations if they have significant degradation **<u>relative to reference sites</u>** [emphasis added]. Although the scientists that developed the SCIBI attempted to incorporate reference conditions into the index itself, the reference conditions used to develop the index did not include any low elevation, low gradient locations in Los Angeles County similar to the Los Angeles River and the Santa Clara River reaches of concern. Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Section 6.1.5.8 of the Listing Policy also states that when "evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall…**<u>evaluate physical habitat data</u>** and other water quality data, when available, to support conclusions about the status of the water segment." [Emphasis added.] All of the reaches mentioned in this comment letter represent reaches that have undergone various levels of physical habitat modifications and there is no indication that an evaluation of the physical habitat was conducted. It is well recognized by the scientific community that a single standard or threshold is not applicable to all waterbodies of the State due to unmanageable non-pollutant physical habitat alterations that would preclude many streams from ever having biological assemblages similar to reference. The threshold used as the listing criterion for these reaches is therefore likely	Both the IBI and the CSCI assess benthic community relative to reference sites. The SCIBI was developed using data from 275 sites, ranging from Monterey County to the Mexican border. Eighty-eight sites were used as reference sites based on land use and local conditions. The CSCI employs a modeled reference condition as opposed to the regional reference pool used by the SCIBI. The proposed listings evaluate the physical habitat data in the determination of the reference and each listing decision includes associated water quality impairments. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the science progresses, improved methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. The discussion of the strengths and weaknesses of scoring methods and additional areas needing additional research, are appreciated, but are not a justification to delay making 303(d) listing decisions. The use of the SCIBI and CSCI for 303(d) listing was done in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy with biological data and impairment related to associated pollutants and/or pollution.

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	inappropriate for these modified waterbodies.	Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1 are discussed in more detail in response to comments 26.13, 26.14 and 26.15.
26.5	Appropriate Thresholds for Interpretation of the CSCI Have Not Yet Been Determined. The State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 used in the Draft List is the 10th percentile of the reference pool and was used as an arbitrary point of reference for a regional monitoring program with no regulatory vetting. Use of this threshold for impairment listings would result in 10% of the unimpaired reference streams being erroneously listed as impaired. Additionally, it is well recognized by the scientific community that a single standard or threshold will not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition/modifications are likely to preclude many streams from ever having biological assemblages similar to reference. The Sanitation Districts believe that it is inappropriate to make impairment decisions using the SCIBI and premature to rely on the improved, but still limited CSCI for making impairment decisions, particularly in reaches where surrounding development and instream physical habitat limitations are recognized. Therefore, the Sanitation Districts respectfully recommend that the Regional Board delay making decisions regarding benthic macroinvertebrate community impairments in this listing cycle, and instead continue to work with stakeholders, scientists, and the State Board that are currently engaged in efforts to address these and other issues as part of the Biointegrity/Bio-stimulatory Policy.	Selection of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. The selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be "reference" due to localized impacts not discernable on a desktop basis or by field crews when sampling. For example, known upstream illegal marijuana grow operations could remove a site from reference status due to impacts on water quality. However, accurately identifying active grow sites in the tributary watershed by desktop is largely infeasible. With the CSCI, any given test site gets matched to a subset of reference sites from the statewide pool that are most similar in terms of elevation, watershed size, annual precipitation, geology, etc., and those most-similar reference sites may come from other regions. The benthic macroinvertebrates that were observed in the most-similar group of reference sites are then used to predict what should be observed at the test site if it were in reference condition. Because the statewide reference pool adequately represents important environmental gradients, and because predictive modeling matches test sites to their most environmentally similar reference sites, the

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		CSCI is appropriate for use.
26.6	***4. The Draft List Includes Inappropriate Impairment Listings for Temperature*** The Draft List contains a number of newly proposed listings for temperature. The Sanitation Districts believe the proposed temperature listings for San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 should be removed because the impairment listings are inconsistent with the Basin Plan water quality objective for temperature, which states, "at no time shall these WARM-designated waters be raised above 80˚F **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80˚F standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80˚F are not caused by wastes discharged but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change. Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. Additionally, the Sanitation Districts believe that the proposed temperature listing for Santa Clara River Reach 6 is inappropriate. Measurements for this listing were taken immediately downstream of the Saugus Water Reclamation Plant (WRP), where tertiary treated effluent is discharged along one bank of the Santa Clara River bed. The flow remains isolated from the main channel of the Santa Clara River and percolates rapidly into the soil; groundwater resurfaces downstream near Reach 5 of the Santa Clara River. The predominant natural condition of this stretch of river is dry and would not be expected to support aquatic life without the Saugus WRP discharge; therefore, application of the 80˚F water quality objective is unnecessary and inappropriate. The only reasonable alternative for meeting the water quality objective would be to eliminate the discharge flows; however, the California Department of Fish and Wildlife would likely prohibit that option, due to the effluent's contribution to the groundwater and subsequent downstream flows. Upon resurfacing near Reach 5, the water temperature averages 69˚F,	The 303(d) list appropriately identifies temperature impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances in temperature may be caused in part by ambient temperatures or exacerbated by the lack of tree cover in some reaches; exceedances may also be caused in part by waste discharge. The relative contribution of the causes of temperature exceedances is largely speculative, at this time. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority Project. Los Angles Water Board staff may consider the development of more specific numeric temperature objectives for various waterbody classes and aquatic life beneficial uses

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	demonstrating that elevated temperatures in this isolated discharge area are not detrimental to beneficial uses in reaches where water occurs naturally in the river. Finally, elevated ambient temperatures regularly exceed 90˚F during the summer months, and heavily influence both the Saugus WRP discharge and the immediate downstream receiving water location. As indicated for the other temperature listings, the water quality objective for temperature in the Los Angeles Region Basin Plan clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. However, the Draft List does not contain any analysis to distinguish the relative contributions by the temperatures of the ambient air and wastes discharged on the receiving water.	in the future. See also responses to comments 26.16, 26.17, 26.18 and 26.19.
26.7	***5. Thresholds Used For Toxicity Impairment Listings Are Inconsistent With Basin Plan Objectives*** The Draft List contains a number of newly proposed listings for toxicity that include San Gabriel River Estuary, San Gabriel River Reach 3, Rio Hondo Reach 2, and Santa Clara River Reach 5. These listings should be removed for the reasons below. <u>The Acute Toxicity Impairment Criterion is Inconsistent With the Basin Plan Water Quality Objective for Acute Toxicity</u> The Staff Report fact sheets for the specific listings mentioned above state that "<100% survival (acute) was considered an exceedance." However, the Basin Plan states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. <u>The Chronic Toxicity Impairment Criterion is Inconsistent With Water Quality Objective Interpretations Provided in NPDES Permits</u>	The acute toxicity and chronic toxicity data was included in the original data submission to State Board by the August 30, 2010 deadline. However, the necessary control data were not included. Los Angeles Water Board staff agrees that the existing evaluation guideline, *"Toxicity data was not reported with a control, therefore anything reported as <100 (chronic) or <100% survival (acute) was considered an exceedance"* for LOE 87842, LOE87970, LOE88019, and LOE87452 is not appropriate. For acute toxicity, the Los Angeles Water Board agrees that the use of the specific numeric target included in the Los Angeles Regional Basin Plan is appropriate. More specifically, "*there shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less*

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	The Staff Report fact sheets for the specific listings mentioned above indicate that a single NOEC result of less than 100% receiving water represents an exceedance of the water quality objective. Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In a number of these permits, a footnote associated with the Receiving Water Monitoring Requirements Table of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail'."[2] [Emphasis added.] In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would eventually result in more and more non-toxic stream reaches being erroneously listed over time. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false positive chronic toxicity results to less than 1 %.	*than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.*" For chronic toxicity, as stated in the Basin Plan, "*there shall be no chronic toxicity in ambient waters outside mixing zones. To determine compliance with this objective, critical life stage tests for at least three species with approved testing protocols shall be used to screen for the most sensitive species. The test species used for screening shall include a vertebrate, an invertebrate, and an aquatic plant. The most sensitive species shall then be used for routine monitoring. Typical endpoints for chronic toxicity tests include hatchability, gross morphological abnormalities, survival, growth, and reproduction.*" However, there is no specific numeric target for chronic toxicity in the Basin Plan. In light of this, it may also be that the use of the monthly median of chronic toxicity to assess the chronic toxicity is appropriate since this method is used in recently adopted Los Angeles Region NPDES permits. As data was reassessed per the discussion above, the decision recommendations have been changed to "do not list" due to insufficient information (poor QAQC).
26.8	***6. Specific Comments on Individual Reach/pollutant Listing Decisions*** In addition to these general comments, the Sanitation Districts have comments on some specific listing decisions. As stated above, detailed comments are provided	LOE 87842 and Decision 66269 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7.

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<tr><td></td><td>in the appendices to this letter. Because the implications of erroneous listings are substantial, the Sanitation Districts urge the Regional Board to consider this information in making the appropriate changes to the Draft List.

Fact Sheet #1
Water Body: San Gabriel River Estuary
Pollutant: Toxicity
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for toxicity be made to the 303(d) list for the San Gabriel River Estuary, based on one line of evidence: 14 of 113 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.
Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Using the temporal range indicated (June 2006 through May 2010), only six of 120 samples failed the thresholds specified in the fact sheet. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 11 or more exceedances are observed when 120 samples are available.
Although the Staff Report fact sheet states that “<100% survival (acute) was considered an exceedance,” the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that “the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State</td><td>The listing decision will be changed to “Do Not List” due to insufficient information as the control data was not submitted.

The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.</td></tr>
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	Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin Plan objective. Applying a 90% threshold, none of the 120 samples would have exceeded the water quality objective. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data appended to Appendix G of the Staff Report, including those that fell outside the indicated temporal range, contain a total 151 discrete toxicity tests. Sixteen failed the <100% acute survival threshold. Using a conservative 90% acute survival threshold, there are no toxicity exceedances, and the number of measured exceedances is insufficient to place this water segment on the section 303(d) list. • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.9	**Fact Sheet #2** **Water Body: San Gabriel River Reach 3** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved**	LOE 87970 and Decision 32521 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to "Do Not List" due to insufficient information as the control

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	The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 3 of the San Gabriel River, based on one line of evidence using two datasets: 2 of 38 samples exceeded the objective in a dataset related to a previously conducted TMDL study and 13 of 75 samples exceeded the objective in a second dataset comprised of routine receiving water tests conducted as part of an NPDES permit. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. No data related to the TMDL study were provided; therefore, the number of tests and exceedances reported (2 of 38) could not be independently verified and were assumed to be accurate. For the dates indicated (June 2006 through May 2010), 13 exceedances were associated with only 66 samples. Combining the two datasets resulted seven acute and eight chronic toxicity exceedances out of 104 samples. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no acute toxicity samples in the dataset exceeded the water quality objective and 8 of 104 total samples exceeded the objective. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when	data was not submitted. The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.

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	104 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The Staff Report considered each chronic toxicity test result as an independent data point, even when multiple bioassays were conducted within a single month. However, the San Jose Creek (SJCWRP) and Whittier Narrows Water Reclamation Plant (WNWRP) permits state that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 6 toxicity exceedances out of a total of 96 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 96 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data (sets 1 and 2) appended to Appendix G of the Staff Report for all dates, including those outside the indicated temporal range, contain a total of 119 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 6 chronic exceedances out of 110 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. • *Use of a <100% Survival Effect Water Quality Objective Threshold Is Inappropriate and Unsupported for Acute Toxicity Testing.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.*	

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	• *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.10	**Fact Sheet #3** **Water Body: San Jose Creek Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Apply Data to Reach 1** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the San Jose Creek, based on one line of evidence: 8 of 24 samples exceeded the objective. The Sanitation Districts believe this proposed listing is inappropriate and should be moved to Reach 1. All cited toxicity data is from receiving water station RC (N 34° 01' 8.6" W 117° 50' 27.7") for the Pomona Water Reclamation Plant, which is located in Reach 1 of San Jose Creek (Figure 1). This reach is already listed for toxicity under section 303(d). *Figure 1. Station Pom-RC (Blue Symbol) and San Jose Creek Reach 1 (Aqua Line)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	Los Angeles Water Board and State Water Board staff are aware of several areas where the reach mapping that underlies the CalWQA database (which maps the 303(d) list) and the Los Angeles Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.
26.11	**Fact Sheet #4** **Water Body: Rio Hondo Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved**	LOE 87452 and Decision 66146 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to “Do Not List” due to insufficient information as the control data was not submitted.

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	The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the Rio Hondo, based on one line of evidence: 5 of 31 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. All cited toxicity data are from receiving water station RD1 for the Whittier Narrows Water Reclamation Plant (WNWRP). This sampling location (N 34° 02' 26.5" W 118° 04' 27") is in Reach 3 of the Rio Hondo, not Reach 2 (Figure 1). • Using the data for the temporal range indicated (June 2006 through May 2010), 7 of 33 samples failed the thresholds specified in the fact sheet. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no samples exceeded the acute toxicity water quality objective. • The Staff Report considered each chronic toxicity test result as independent data, even when multiple bioassays were conducted within a single month. However, the WNWRP permit states that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water	The review of the decision for Rio Hondo Reach 2 toxicity is in process at this time.

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	quality objective (and a 90% acute toxicity threshold), there were 2 toxicity exceedances out of 31 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 3 or more exceedances are observed when 31 samples are available. Therefore, Reach 2 of the Rio Hondo fails to meet the listing criteria for toxicity. • The full set of data appended to Attachment G of the Staff Report, including those that fell outside the indicated temporal range, contains a total 38 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 2 chronic exceedances out of 36 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Monitoring Station WN-RD1 (Blue Symbol) and Rio Hondo Reach 3 (Aqua Line)* • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.12	**Fact Sheet #5** **Water Body: Santa Clara River Reach 5**	Los Angeles Water Board staff will work with the State Board staff to address the issues related to

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	Pollutant: Toxicity **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 5 of the Santa Clara River, based on one line of evidence: 2 of 2 samples exceeded the objective. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Inappropriate data were utilized. Toxicity results were reported for sites SCR 1272 and SCR 14156. However, SCR 14156 is in Reach 6 of the Santa Clara River and should not be included in an evaluation of Reach 5 (Figure 1). • Incomplete data were utilized. The "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County 2005-2010" dataset should be included in this analysis as it was provided in response to the call for data, readily available, and used in other current listing recommendations. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. • The Los Angeles Region Basin Plan states, "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments. Applying this threshold (or even a more conservative 90% threshold) to the appropriate and complete dataset that excludes site SCR 14156 and includes Sanitation Districts data, there were five chronic toxicity exceedances out of 90 valid toxicity tests. This total does not	the spatial representation of samples. Los Angeles Water Board staff will also work with the State Board staff to address the missing data from the development of LOE 88730. LOE 88730 and Decision 67031 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.

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	meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Santa Clara River Reach 5 and RWB4 Stormwater Monitoring Council CY2008 CY2009 Sampling Locations* • *The Los Angeles Region Basin Plan Establishes Acute Toxicity Thresholds* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.13	**Fact Sheet #6** **Water Body: Santa Clara River Reach 5** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 5 of the Santa Clara River, based on two lines of evidence: Southern Coastal California Index of Biotic integrity (SCIBI) and California Stream Condition Index (CSCI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to the reaches in the upper Santa Clara River. For this and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool.	For additional discussion on the use of IBI and/or CSCI in listing decisions see response to comment 26.4. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use both IBI and CSCI scores in 303(d) listing decisions. The State Water Board has not 'rejected' the use of the SCIBI. The State is transitioning into using the CSCI because it is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. While, eventually, the State may assess waterbodies only by CSCI scores, it will take time to replace IBI scores with CSCI scores and this does not in any way mean that IBI scores (and assessments using them) are no longer valid. The commenter has provided several documents

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	• Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Specifically, several Santa Clara River sites have been shown to fall outside the experience of the CSCI model. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • The CSCI analysis for this listing used data from both Reach 5 and Reach 6 of the Santa Clara River. The CSCI analysis of the data collected from the Reach 5 location actually met the 0.79 threshold proposed by the Regional Board. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • The proposed listing fails to associate the alleged impairment with other pollutants, namely toxicity and iron, which were listed as co-occurring. • *SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.* • *CSCI Improves on the SCIBI But Some Limitations Remain*	that review and discuss the development of, and challenges with, aquatic life bio-criteria including IBI, CSCI and TALU (tiered aquatic life criteria). However, it appears that the principal evidence for the commenter's "inadequate for low elevation/lack of an appropriate reference site" argument is the CSCI Reference Density Cloud from a presentation of the California Bioassessment Workshop from 2012. The text accompanying the Reference Density Cloud in the presentation states, "*Could be used to establish exceptions for truly unique environmental settings.*" Nonetheless, it does not appear that any "truly unique environmental settings" have been established or are recognized by the State Bioassessment workgroup or other authority. The development of alternative thresholds via State Water Board efforts does not have a firm schedule to provide more useful guidance in the near future. It is appropriate to make listing decisions based on the best available data and science at this time. For the CSCI, the 10th percentile of reference pool is an appropriate evaluation guideline. Selection of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. As previously noted, the selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be "reference" due to localized impacts not discernable on a desktop basis or by field crews

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	• *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *CSCI Data from Within Reach 5 of the Santa Clara River Show No Impairment* *Figure 1. CSCI Reference Density Cloud (Santa Clara River Sites Within Green Circle).* *Figure 2. Santa Clara River Reach 5 and Monitoring Stations Used in Listing* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	when sampling. The data considered in the LOE and for the listing decision for Reach 5 included IBI assessments from station Old Rd. on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding). The CSCI assessment was from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of one exceeding). The two sampling sites have now been “dis-aggregated” such that now, the data considered in the LOE and decision for Reach 5 includes IBI assessments from the Old Rd. station, on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding) and the CSCI assessments from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of two exceeding). Staff will review the inclusion of the second site (identified as SCR 14156) with State Water Board to determine whether it should be in Reach 5 or Reach 6, as part of resolving our mapping issues, see comment 26.2 The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. In addition, a Causal Assessment (Causal Assessment Evaluation and Guidance for California, K. Schiff,

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		D. Gillett, A. Rehn and M. Paul, Southern California Coastal Water Research Project Technical Report 750, April 2015) concluded that elevated conductivity was the likely cause of biological conditions at the site and not the physical features of habitat simplification or river discontinuity. The proposed listing is associated with the documented impairments of other pollutants, including iron, toxicity and zinc. Furthermore, the Causal Assessment demonstrated that the impairment is associated with chloride. In summary, at this time, we know that the reach is impaired and that it is appropriate to list it per the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).
26.14	**Fact Sheet #7** **Water Body: Los Angeles River Reach 3** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 3 of the Los Angeles River, based on a weight of	For the “inadequate for low elevation/lack of an appropriate reference site” argument, see response to comment 26.13. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. At this time, we know that the reach is impaired and that it is appropriate to list it per the Listing

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>evidence approach using Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow.

• The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to Los Angeles River Reach 3. For this, and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool. No CSCI results have been used for this listing, but a more detailed assessment of the CSCI can be found in Fact Sheet #6.

• Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.

• SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.
• CSCI Improves on the SCIBI But Some Limitations Remain
• The Proposed Listing Fails to Evaluate Physical Habitat Data

[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]</td><td>Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).</td></tr>
<tr><td>26.15</td><td>Fact Sheet #8
Water Body: Medea Creek Reach 1
Pollutant: Benthic Community Effects
Listing: List on 303(d) List (TMDL Required List)
Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved

The California Regional Water Quality Control Board, Los Angeles Region</td><td>Appropriate water quality standards have been established, see response to comment 26.4. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites.

The impairments of both trash and selenium are associated with the benthic community effects</td></tr>
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	(Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 1 of the Medea Creek, based on a weight of evidence approach using California Stream Condition Index (CSCI) and Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • The proposed listing fails to associate the alleged impairment with other pollutants, namely trash and selenium, which were listed as co-occurring. • *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* *Figure 1. Medea Creek Channel Modifications* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants*	listing. The Medea Creek Reach 1 decision is supported by exceedances of both IBI and CSCI scores and is in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).

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	[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]	
26.16	**Fact Sheet #9** **Water Body: San Jose Creek Reach 1** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of San Jose Creek. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged.	The water quality standard has been exceeded in 42 of 301 samples; even with the commenter's purported corrections to the database, 46 out of 339 or 32 out of 339 samples exceeded, in both cases, the data still exceed the allowable number of exceedances per the Listing Policy. Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore Category 5 is the appropriate category. Temperature is conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*At no time shall these WARM designated waters be raised above 80 degrees F…"* See also response to comment 17.4 for additional discussion of temperature as a pollutant.

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	The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 42 of 301 samples from Pom-RD, Pom-RC, SJC-C1, and SJC-C2 exceeded the objective from July 2005 to November 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Based on a review of the dataset utilized for the listing evaluation, the Sanitation Districts identified 339 discrete temperature measurements, not 301. The dataset contains 368 results (Appendix 1); however, 29 samples were duplicates. Of the 339 unique temperature measurements, 46 exhibited a temperature that exceeded 80 ºF, not 42. However, 14 of the 46 temperature exceedances were demonstrably caused by conduction and radiation (details below), not waste discharges. Conduction and radiative heating likely also caused the remaining 32 exceedances out of 339 measurements; this total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. ***Pom-RC and Pom-RD Excursions Above 80 ºF Are Demonstrably Not a Result of Waste Discharges*** Tertiary treated water from the Pomona Water Reclamation Plant is discharged to the south fork of San Jose Creek and flows into Reach 1. Receiving water stations Pom-RC, Pom-RD, and SJC-C1 are located approximately 3, 12, and 12.5 miles from the upstream border of Reach 1, respectively. Reach 1 is fully lined in concrete from the upstream border to just upstream of SJC-C1 (Figure 1). As observed by Sanitation Districts staff and corroborated by EPA staff, groundwater exudes from relief structures distributed throughout the concrete-lined bottom, even in mid-summer (August) after several years of drought (Figure 2).[1] In the absence of discharge from the Pomona Water Reclamation Plant or other observed discharges, flows in SJC between Pom-RC and Pom-RD increase by 200% to greater than 400% (Figure 3) due to the release of this	

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	groundwater, which has a localized average temperature of approximately 67 ºF.[2] As this groundwater-dominated flow travels downstream, the temperature naturally rises (Figure 4) due to heat conduction through the warm concrete lining and solar radiation exposure in the unshaded channel (Figure 5 shows ambient air temperature as a proxy for solar radiation[3]). When the concrete channel ends upstream of SJC-C1, the water leaves the heat source (concrete channel) and mixes with additional groundwater, resulting in consistently cooler temperatures. The observed spatial and temporal temperature profile, coupled with no identifiable waste discharges and substantial groundwater contributions, clearly demonstrates that the temperature excursions in Reach 1 of San Jose Creek are not a result of waste discharges. *Figure 2. Manhole Exuding Groundwater into San Jose Creek* *Figure 3. Measured Flow at Pom-RC and Pom-RD in the Absence of Discharge from Pomona WRP* *Figure 4. Monthly Average Water Temperatures Between July 2005 and November 2010 in the Absence of Discharge from the Pomona WRP* *Figure 5. 30-Year Normal Monthly Maximum Air Temperature at Pom-RD3* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.17	**Fact Sheet #10** **Water Body: San Gabriel River Reach 1** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved.	The water quality standard has been exceeded in 93 of 234 samples; even with the commenter's purported corrections to the database, 117 of 288 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy. Exceedance do happen more frequently in the summer months when air temperatures, radiative heating and the temperature of waste discharges are greater. However, the Los Angeles Water Board does not have alternative maximum

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	Failure to Meet Water Quality Objectives Has Not Been Demonstrated The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 93 of 234 samples from LC-R4, R3-1, and R3-1b exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 288 discrete temperature measurements, 117 of which exhibited a temperature that exceeded 80ºF. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed. ***San Gabriel River Reach 1 Excursions Above 80 ºF Are a Result of Radiative***	temperature objectives for the different seasons. See, also, response to comment 17.4.

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	and Conductive Heating Tertiary treated water from the San Jose Creek and Los Coyotes Water Reclamation Plants (WRPs) is discharged to the main stem of the San Gabriel River. Reach 1 is a fully lined concrete channel from approximately 0.25 miles downstream of the San Jose Creek WRP discharge point 001 to the San Gabriel River estuary. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 1. This is supported by a significant correlation between ambient air temperature and receiving water temperature (R2 = 0.61) and the fact that 90% of excursions above 80ºF in the receiving water environment occurred during summer months, between June and September. The weight of evidence supports the contention that receiving water temperatures above 80ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.18	**Fact Sheet #11** **Water Body: San Gabriel River Reach 2** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 2 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality	The water quality standard has been exceeded in 81 of 224 samples; even given the commenter's purported corrections to the database, 81 of 232 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy. See, also, response to comment 17.4.

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	objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 81 of 224 samples from SJC-R2 and SJC-R12 exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 81 excursions above 80 ºF out of 232 discrete temperature measurements, not 224. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed.	

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	San Gabriel River Reach 2 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating Tertiary treated water from the San Jose Creek Water Reclamation Plant (WRP) is discharged to the main stem of the San Gabriel River. The uppermost ¼ mile of Reach 2 is a fully lined concrete channel, containing the R2 receiving water station. Data from this station represents 215 of 232 data points. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 2. This is supported the fact that 99% of excursions above 80 ºF in the receiving water environment occurred during summer months, between June and October. The weight of evidence supports the contention that receiving water temperatures above 80 ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
26.19	**Fact Sheet #12** **Water Body: Santa Clara River Reach 6** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 6 of Santa Clara River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing.	Staff will review the inclusion of the site identified as SCR-14 with State Water Board staff to determine whether it should be in Santa Clara Reach 6 or Bouquet Canyon Creek, as part of resolving our mapping issues; see also comment 26.2. With respect to the sites identified as SA-RA and SA-RB, only the temporally overlapping samples from these stations have been averaged such as during extreme rainfall events when the sites were hydrologically connected. The commenter does

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	Incorrect Datasets Were Used for Listing The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 40 of 152 samples from Sa-RA, Sa-RB, and SCR-14 exceeded the objective from June 2005 to October 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Temperature data from location SCR-14 (34.42833333N 118.5394444W) was evaluated as part of Reach 6 of the Santa Clara River. However, SCR-14 is located on Bouquet Canyon Creek, which is recognized as a distinct waterbody by the Region 4 Basin Plan. Figure 1 utilizes a reach delineation layer provided to the Sanitation Districts by Regional Board staff that clearly places SCR-14 in the Bouquet Canyon Creek Reach and not Reach 6. Therefore, temperature measurements from SCR-14 should not be included in the Reach 6 evaluation. *Figure 1. Stations Sa-RB (1), Sa-RA (2), SCR-14 (14), and Bouquet Canyon Creek (Aqua Line)* Locations Sa-RA and Sa-RB were correctly associated with Reach 6, but results were averaged in the listing evaluation based on the assessment that they were "not spatially independent." However, as highlighted in Figure 2, Sa-RA is located within the main channel of the Santa Clara River and is typically dry; all 25 temperature measurements at Sa-RA utilized in the Staff Report were associated with upstream dewatering activities or extreme storm events. Sa-RB is located in an isolated pool at the southern edge of the Reach 6 channel that receives recycled water discharges from the Saugus Water Reclamation Plant (WRP). Surface flows from this location travel less than a half-mile downstream in a disconnected side channel before percolating into the dry riverbed. Therefore, even though the two locations are relatively close to each other, Sa-RA is hydrologically isolated from Sa-RB except during extreme rainfall events. Consequently, the two locations would be expected to have very different temperature profiles and should therefore be considered spatially independent, with no averaging of results.	not adequately describe "upstream dewatering activities" for the Los Angeles Water Board staff to be able to discern the significance of these to the comment. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. See, also, response to comment 17.4.

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	Figure 2. Satellite Imagery of Saugus WRP Ambient Monitoring Stations ***The 80ºF Water Quality Temperature Objective Is Unnecessary and Inappropriate for Santa Clara River Reach 6*** The only dry weather surface flows within this stretch of Reach 6 are associated with recycled water discharges from the Saugus WRP, which percolate into the dry riverbed and eventually resurface downstream near the Reach 5 boundary. At the point of resurfacing, the water temperature averages 69ºF and this perennial surface flow supports a diverse aquatic life community in Reach 5.1 However, the predominant natural condition of Reach 6 is dry and would not be expected to support any aquatic life without the Saugus WRP discharge. In addition, the cool temperatures in the water that resurfaces near the Reach 5 boundary demonstrate that elevated temperatures in the isolated discharge area are not detrimental to beneficial uses. Therefore, application of the 80ºF water quality objective in Santa Clara Reach 6 is unnecessary and inappropriate, as the presence of water exceeding the 80ºF water quality objective would not result in any impairment to naturally occurring aquatic life. ***Mitigating the Elevated Temperature at Sa-RB Is Not Feasible*** The only reasonable alternative to address the temperature water quality objective below the Saugus WRP at location Sa-RB during dry weather would be to eliminate the discharge. However, it is highly unlikely that the California Department of Fish and Wildlife would support any discharge reductions or elimination, because this action would remove all dry weather surface flows in that stretch of Santa Clara Reach 6 and could potentially reduce the amount of resurfacing groundwater flows that actually support a diverse aquatic community in Santa Clara River Reach 5. ***An Evaluation of the Relative Contribution of Radiative and Convective Heating Was Not Conducted*** Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and	

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	Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This objective clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. Both the Saugus WRP discharge and the immediate downstream receiving water location (Sa-RB) are heavily influenced by ambient air temperature. Figure 3 includes a plot of the 15-day average values of the maximum air temperature along with the individual water temperature measurements collected at the Sa-RB location. Nearly all of the 80ºF temperature exceedances were associated with the higher summer time air temperatures and the two have a statistically significant correlation (R2 = 0.76). Because exceedances of the Basin Plan temperature objective are limited to those "as a result of waste discharges," an evaluation of the contribution of ambient air temperature to the receiving water should have been conducted before identifying receiving water excursions above 80ºF as exceedances of the objective. *Figure 3. Sa-RB Temperature vs. Maximum Ambient Air Temperature (15-Day Average Value)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	
27.	Santa Barbara Channelkeeper (SBC), March 30, 2017	
27.1	Please accept the following comments on the Los Angeles Regional Water Quality Control Board's (Regional Board's) 2016 Integrated Report, which are hereby submitted by Santa Barbara Channelkeeper. Santa Barbara Channelkeeper is a non-profit environmental organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement. We have been conducting water quality monitoring in watersheds from Gaviota to the Ventura River since 2001. We have engaged more than 1,200 volunteers in our monitoring	See response to comment 32.3.

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	efforts and represent over 750 members. Our comments address the following concerns: • Procedural issues related to data solicitation gaps • Category 4C and Hydrologically Impaired Waterways • Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment Generally, Channelkeeper supports the Regional Board's ongoing efforts to document water quality impairments on the 303(d) List. Specific concerns regarding the Draft 2016 Integrated Report are summarized below. **Procedural Concerns Related to Data Solicitation Gaps** Channelkeeper is troubled that the Regional Board has fallen so far behind on data solicitations and review of 303(d) listings. 40 C.F.R. § 130.7(d)(1) mandates that: Each State shall submit biennially to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section. The 2016 Integrated Report is based on data submitted in 2010 and will not be finalized until the middle of 2017. Based on EPA Guidance, the 2016 Integrated Report was due in April 2016. Clearly, the Regional Board has failed to achieve pertinent milestones and mandates related to the biennial review process. The lack of any recent data solicitation is particularly troubling as a fully accurate and current depiction of water quality is not available for the 2016 Integrated Report. The Regional Board has a mandate to "assemble and evaluate all existing and readily available water quality-related data and information to develop the list."[2] Accordingly, the Regional Board should base 2016 Integrated Report decisions based on "all existing and readily available" data, which includes data collected since the 2010 data solicitation. Six years of additional data is available	

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	to the Board and should be appropriately utilized for the Region's listing, de-listing and planning purposes. Channelkeeper questions how such determinations can reasonably or legally be made without consideration of the last six years of existing and readily available data. It is additionally concerning that due to the State's new staged approach to 303(d) List review, further data solicitation will be delayed until the Los Angeles Regional Board's 2022 report, which will include data submitted through 2021. This means that the Regional Board will not have reviewed existing water quality data for our region for more than a decade. This is clearly unacceptable from a legal standpoint.	
27.2	**Category 4C and Hydrologically Impaired Waterways** Channelkeeper echoes and supports comments submitted to the Regional Board on March 30, 2017 by *Earth Law Center* regarding the necessity for evaluation and listing for hydrologically impaired waterways to fully comply with Clean Water Act Sections 305(b) and 303(d). Such evaluation and listing is clearly called for under the Clean Water Act, is supported by EPA Guidance, and paves the way for sound public policy and planning. Many other states around the country follow such Guidance to properly identify flow impaired waterways in their Integrated Reports. Recently, the San Diego Regional Water Quality Control Board notably identified 30 waterway segments for listing in Category 4C. Channelkeeper notes with concern that the Los Angeles Region has apparently forgone assessment of Category 4C impairments altogether in the Draft 2016 Integrated Report. We question the legality of such an oversight.	See response to comment 21.1, 21.2, 21.3, and 21.4.
27.3	**Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment** The Los Angeles Regional Board currently proposes to delist Reach 3 of the Ventura River for "Pumping" impairment. Channelkeeper strongly opposes this delisting decision. On February 5, 2015 Channelkeeper submitted detailed comments (Attachment 1) and data to the State Water Resources Control Board regarding its stated intent to delist Reaches 3 and 4 of the Ventura River for	See response to comment 21.1, 21.2, 21.3, and 21.4.

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	pumping and diversion impairments. These comments were submitted in response to the State Water Board's Draft Staff Report for the 2012 Integrated Report dated December 31, 2014, which stated that the four listings on the existing 303(d) list due to flow related alterations in the Ballona Creek and Ventura River watersheds "will likely be proposed for delisting as part of the next Listing Cycle." Channelkeeper's submittal outlined in detail why Reaches 3 and 4 of the Ventura River may not be delisted from the 303(d) list as impaired for flow by pumping and diversion. The existing listings for Reaches 3 and 4 of the Ventura River accurately reflect the current diminished flows and resulting impairments to designated beneficial uses in those Reaches. The listings are legally valid, and consistent with the State Water Board's Listing Policy. In contrast, delisting Reaches 3 and 4 from the 303(d) list as impaired for flows due to excessive pumping and diversion is inconsistent with the Listing Policy, the Clean Water Act, and facts on the ground. We refer the Los Angeles Regional Board to our February 5, 2015 letter as its legal and technical merits remain unchanged. Channelkeeper additionally submitted multiple years of continuous monitoring data (submitted electronically via file "*MasterData_2013-2014.xls*") along with our 2015 comment letter. These data were summarized in tables as well as within an example "Listing Line of Evidence" provided with our 2015 letter. Lacking any formal data solicitation by the Los Angeles Regional Board since 2010, these submittals represent existing and readily available water quality-related data and information, which should have been used to develop the Draft 2016 Integrated Report. Since the submittal of our 2015 comment letter, Channelkeeper has collected additional water quality data that supports the existing listings for pumping and diversions in Reaches 3 and 4. We are submitting an updated data file ("*MasterData_2013-2016*") electronically along with this comment letter. **<u>Conclusion</u>** When Reaches 3 and 4 of the Ventura River were identified as flow-impaired by	

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	pumping and diversions on California's 1998 303(d) list, the State Water Board took an important first step towards restoring the chemical, physical, and biological integrity of these waters. However, there is ongoing documentation that flow alterations from pumping and diversions continue to degrade Reaches 3 and 4 such that these waters cannot support their designated beneficial uses and water quality standards are not attained. Reaches 3 and 4 of the Ventura River are impaired for pumping and diversions based on the "Numeric Water Quality Objectives for Conventional or Other Pollutants in Water" listing factor, the "Situation-Specific Weight of Evidence" listing factor, as well as the "Degradation of Biological Populations and Communities" listing factor. Removing the pumping impairment listing for Reach 3 is not only illegal but will also impede existing and future efforts to remedy the ongoing flow impairments in the Ventura River. Channelkeeper strongly urges the Los Angeles Regional Board to comply with the Clean Water Act by continuing to identify Reach 3 on the 303(d) list as flow- impaired by pumping.	
28.	Sherwood Valley Homeowners Association, March 30, 2017	
28.1	We thank you for this opportunity to comment on the proposed changes to the 303(d) list prior to the upcoming public hearing on May 4, 2017. Representatives from the Lake Sherwood Joint Lake Advisory Committee plan to attend this meeting to discuss these important issues. We appreciate the proposed removal of the two pollutants, Ammonia and Organic Enrichment/Low Dissolved Oxygen. This is gratifying and recognizes the positive results produced by the time, effort and expense the Association has put forth over many years to mitigate these concerns. Respectfully, however, we are troubled to see that Algae and Eutrophic remain on the list. To help understand why these are still considered pollutants in Lake Sherwood, we reviewed the Los Angeles Water Board's website of the Draft 2016 303(d) List, and specifically Appendix G – Fact Sheets of the Draft. Here we see that the listing of Algae and Eutrophic are noted as "placeholders" to support decisions made prior to the 2006 Clean Water Act, and further that no evidentiary data	Lake Sherwood was as listed impaired for algae, ammonia, eutrophic conditions and organic enrichment/low dissolved oxygen in the 2010 Integrated Report. On the 2016 303(d) list, the Los Angeles Water Board has recommended delisting "organic enrichment/low dissolved oxygen" and ammonia, based on data showing there is not an impairment. "Placeholder" LOEs are those LOEs derived prior to the 2006; they are 'placeholder" in the sense that the raw data is not included in the CalWQA database. Per the Listing Policy, section 4.71.1, impairments are delisted when, based on all the readily

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	samples were collected which could be used to assess these pollutants relative to the 2006 standards. Clearly there are zero measured exceedances of these standards at this point yet they remain on the list. It seems to us somewhat arbitrary to continue to consider these as "pollutants" in Lake Sherwood especially where there is a consistently good dissolved oxygen level, a continuous effort to remove excess plant growth via a special harvester with a full time crew, monthly monitoring of water chemistry, and special attention to and approved treatment of any algae that occurs as needed throughout the year. If sufficient justification does exist to continue to include these on the 303(d) list, we would appreciate having the reasons and rational detailed to us in writing so we may take any necessary actions to remove them in the future.	available data, there is sufficient evidence or data to justify a recommendation for delisting. The USEPA established a TMDL for the Malibu Creek watershed for nutrients to address these listings on March 21, 2003. The assessment of whether or not it is appropriate for the Lake to be removed from the 303(d) list for algae and eutrophic conditions must consider how those conditions interact with nitrogen and phosphorus levels, as discussed in the TMDL, and whether the TMDL targets are being met.
29.	Stakeholders Implementing TMDLs in the Calleguas Creek Watershed, March 30, 2017	
29.1	The development and implementation of TMDLs is a significant investment of resources and it is critical that the 303(d) List be based on sound science and methodologies. The Stakeholders understand that the Los Angeles Regional Water Board (Water Board) is proposing over 200 new waterbody-pollutant segment combination 303(d) listings, of which 95 changes fall within the Calleguas Creek Watershed (CCW). The Stakeholders have developed and implemented six effective TMDLs in the CCW and thus have extensive experience in the area. The Stakeholders have serious concerns with the Region's Proposed 303(d) List and feel that it requires significant review and modification before adoption. The Stakeholders request that the issues identified in this letter be addressed and the proposed 303(d) List be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) List to be fully vetted and reviewed by the Stakeholders. The requested modifications fall into four general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g., mismatched units, incorrectly assigned sample locations) 2. Potential delistings that may exist if all watershed data were evaluated (e.g.,	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and the readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend exclusively on the 303(d) list or the data contained therein (currently through 2010 only). Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and revise, as appropriate, listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region. See response to comment 29.2-29.67 for specific

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	TMDL monitoring program and all wastewater treatment plant NPDES monitoring). 3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants. 4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) List (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide the detailed list of requested changes to the 303(d) List and the rationale for the requests. In summary, the Stakeholders request that all waterbody-pollutant combinations in Table 1 not be listed on the 303(d) List, the waterbody-pollutant combinations in Table 3 be considered for delisting through analysis of all available watershed data, waterbody-pollutant combinations in Table 4 and Table 5 be designated as being addressed by a TMDL if they remain on the 303(d) List after the reassessment and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies.	responses.
29.2	1. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody-pollutant combinations, the Stakeholders have identified a number of waterbodies that we feel should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.	Comment noted. See detailed responses below and response to comment 29.1.
29.3	**Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification:	See response to comment 7.14

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.4	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.15.
29.5	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.16.
29.6	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.17.
29.7	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.18.

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	• Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.8	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.19.
29.9	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.20.
29.10	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.	See response to comment 7.21.
29.11	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.22.
29.12	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride	See response to comment 7.23.

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	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	
29.13	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.24.
29.14	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.25.
29.15	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Malathion Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.26.
29.16	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	See response to comment 7.27.
29.17	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.28.

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	applicable to waterbody.	
29.18	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.29.
29.19	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.30.
29.20	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.31.
29.21	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.32.
29.22	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo**	See response to comment 7.33.

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	Conejo North Fork) Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	
29.23	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.34.
29.24	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Malathion Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.35.
29.25	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	See response to comment 7.36.
29.26	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.39.
29.27	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.40.

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	applicable to waterbody.	
29.28	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.41.
29.29	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.	See response to comment 7.42.
29.30	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.47.
29.31	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.49.
29.32	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.50.

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	applicable to waterbody.	
29.33	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.51.
29.34	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	See response to comment 7.52.
29.35	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	See response to comment 7.53.
29.36	**La Vista Drain (Ventura County)** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.54.
29.37	**La Vista Drain (Ventura County)** Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.55.
29.38	**La Vista Drain (Ventura County)**	See response to comment 7.56.

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	Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.39	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.57.
29.40	**La Vista Drain (Ventura County)** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.58.
29.41	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.59.
29.42	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. μg/L); data do not exceed objectives.	See response to comment 7.60.

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29.43	Waterbody segment: **Santa Clara Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.
29.44	**Santa Clara Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.62.
29.45	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.63.
29.46	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.64.
29.47	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.65.

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29.48	**Santa Clara Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates,	See response to comment 7.66.
29.49	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.67.
29.50	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.68.
29.51	**Santa Clara Drain** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.69.
29.52	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification:	See response to comment 7.70.

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	
29.53	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.71.
29.54	**1. Agricultural Drain monitoring data incorrectly used as basis for listing decisions.** There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been	See response to comment 7.88.

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	collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. **Requested Action:** • **Remove all listings shown in Table 1 that were based on Ag monitoring data from agricultural drains not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.** • **Remove the La Vista Drain and the Santa Clara Drain from the List as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) List.**	
29.55	***2. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using water quality objectives for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings.	See response to comment 7.89.

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	Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards... [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*'? in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."*[1]	

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	In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1: *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty."* Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment	

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	Toxicity for Oxnard Drain 3",[2] where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in **Table 1** should not be listed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which as described above, cannot be used to justify a listing. Furthermore, the Fact Sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** • **Revise all of the new listings in the Fact Sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** • **Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) List.**	
29.56	***3. Reassess mercury listings using correct objective and correct units*** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, and La Vista Drain are in ng/L and the objective is µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. The Stakeholders expect that after this calculation has been performed the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally	See response to comment 7.90.

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	recommended criterion was used for the assessment. An explanation for the use of a recommended criterion when an established water quality objective exists should be provided. **Requested Action:** • **Repeat the mercury analysis after correcting the units error.**	
29.57	***4. Incorrect location and data were used for listings in Reach 12*** The name of the monitoring site presented in the Fact Sheet for the chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12 and T01 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, T01 should not be used for a 303(d) listing decision and University data is not from Reach 12. A review of the datasets provided in the link on the Fact Sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the Fact Sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, the Stakeholders request that only data collected after the implementation of applicable pesticide use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrates a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide use restrictions, monitoring data collected prior to 2009 is not representative of waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates a continued impairment. **Requested Action:** • **Remove listings for Reach 12 that are not based on receiving water data from that reach.**	See response to comment 7.92

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	• **Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide use restrictions.**	
29.58	***5. Correct the proposed temperature listing for Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list) which is based on incorrect criteria.*** The temperature listing for Reach 12 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Reach 12 is WARM. The rainbow trout growth range threshold used for the listing is only applicable to the COLD beneficial use. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. The basin plan criteria for WARM beneficial uses states the following: "For waters designated as WARM, water temperature shall not be altered more than 5 degrees F above the natural temperature. At no time shall these WARM designated waters be raised above 80 degrees F as a result of waste discharges." The Fact Sheet states that of 567 samples there were 3 instances of the downstream sample exceeding 80°F and in some cases a 30°F difference between upstream and downstream reaches. The Fact Sheet statement is unclear because Reach 12 is the upstream location and is not downstream of a waste discharge. Reach 12 drains a portion of the City of Thousand Oaks and open space areas and is located upstream of the Thousand Oaks Wastewater Treatment Plant. Therefore, it is unclear if the exceedances discussed in the Fact Sheet actually occur in Reach 12 and if exceedances do occur, whether they are a result of waste discharge or are a natural condition. The data provided for review was not compiled in a way that made it possible to easily review the assessment to determine if the exceedances were observed in Reach 12 (upstream) or Reach 10 (downstream). Regardless of the location of the samples, if there were 3 instances of temperature above 80°F and if they can be confirmed to be a result of waste discharge and not natural temperature conditions, according to the SWRCB 2015 303(d) Listing Policy three samples out of 567 would not meet the minimum number of measured	A review of the Calleguas Creek Reach 12 decision for temperature is in process at this time.

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	exceedances needed to place a water segment on the 303(d) List (see Listing Policy table 3.2). According to the binomial test, with a sample size of 500+ there would need to be well over 20 exceedances in order to be added to the 303(d) List, however, the Fact Sheet mentions only three exceedances of the Basin Plan criteria. According to the SWRCB's own guidance, this proposed listing should be removed. **Requested Action:** • **Do not use the 13-21°C rainbow trout evaluation guideline which only applies to COLD beneficial use segments.** • **Remove the temperature listing for Reach 12 as it does not meet the minimum listing requirements based on the binomial test described above and ensure that the analysis is applied to the correct reach.**	
29.59	***6. Ensure no J-flagged data were used in the assessment.*** The Listing Policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states: *"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit."* All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) List. Specific instances are included in **Table 1** and further explained in **Table 2** below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings. Table 2. Incorrect use of J-flagged data [See the posted letter for Table 2] **Requested Action:**	See response to comment 7.93.

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	• **Review all Fact Sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** • **Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain, and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**	
29.60	***7.*** **Remove listings where a waterbody assessment does not meet listing thresholds based on data provided.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) List. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) List. **Requested Action:** **Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 based on meeting listing threshold requirements in the Listing Policy.**	See response to comment 7.52.
29.61	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. In 2013, the Stakeholders did an assessment of the watershed using all watershed	See response to comment 32.3.

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	data through 2012 and found that multiple waterbody-pollutant combinations could potentially be delisted as shown in Table 3. A summary of the assessment is included as an attachment to this letter and the datasets used in the analysis as well as all of the TMDL annual monitoring reports are available upon request. **[See the posted letter for Table 3]** While we recognize that this assessment uses two additional years of data than the current 303(d) listing analysis, a number of these waterbodies had many more samples than were necessary for delisting. As a result, we feel if all the watershed data were used in the assessment, a number of these waterbodies (particularly for metals) would be delisted. We also feel this assessment would demonstrate that several of the proposed listings, particularly for diazinon and chlorpyrifos and a number of organochlorine pesticides, are not warranted. A large number of new proposed listings are being added that are already covered by a TMDL. While the list acknowledges that a TMDL does not need to be developed by categorizing these new listings in Category 5B, in several cases, the watershed now has sufficient data to delist, whereas the listing is an artifact of old data being used to make the listing decision. These listings should not be added to the current list only to be removed during the next listing cycle as an artifact of the timing of the listing assessments. **Requested Action:** **Reassess all Calleguas Creek waterbodies using all available data.**	
29.62	**III. REQUESTED CATEGORY ASSIGNMENT CHANGES** ***8. Correct pollutants listed as Category 5A which should be 5B based on coverage by an existing TMDL.*** There are a number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. While the Stakeholders maintain that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B, as applicable.	See response to comment 7.96.

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	A nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DOE, ODD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), which is already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, and the Metals TMDL and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for Chlorpyrifos - Honda Barranca and Duck Pond Agricultural Drains - but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL. The Stakeholders request that any listings in **Table 4** and **Table 5** that are maintained after addressing the issues in Comment I should also be corrected to be designated as Category 5B. **[See the posted letter for Table 4]** In addition, we feel that the Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion) if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity and the Stakeholders have already begun actions to address these pesticides in addition to the organophosphate pesticides included in the TMDL. The structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. There are already sufficient controls in place through the agricultural waiver and MS4 permit. As a result, if the waterbodies are placed on the 303(d) List as new listings, we request that the waterbodies in Table 5 be changed from 5A to 5B. **[See the posted letter for Table 5]** **Requested Action:** • **Change all pollutant-waterbody segment combinations in Table 4 and**	

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	Table 5 from SA to 5B or 4A based on coverage by an existing USEPA approved TMDL.	
29.63	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** In reviewing the list the Stakeholders identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified and is not a comprehensive list as in many cases the information provided made it challenging to provide comprehensive comments. **9.** ***Correct Appendix G Fact Sheets.*** The Appendix G Fact Sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include: • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally-influenced waterbody (e.g., Duck Ponds Agricultural Drain). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in Fact Sheets, including 3 samples with results of "ND". Stating that a pollutant actually exceeds criteria in only 40% of samples, versus 100% exceedances as presented in Fact Sheets, provides a more accurate picture of the degree of impairment for that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.	See response to comment 7.98.

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	Requested Action: **Correct the Appendix G Fact Sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples/number of exceedances.**	
29.64	**10.** ***Correct the Appendices and Fact Sheet Categories.*** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow the Stakeholders to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are not associated Fact Sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The Fact Sheets for the following name changes should provide justification or explanation for the name change as many appear to be switching tissue or sediment listings to water listings. If this is, in fact, the change being made, the justification for the water listing needs to be provided in the Fact Sheet. It is not appropriate to modify the medium that is the basis for the listing as a name change. **[See the posted letter for Table 6]** There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies. **[See the posted letter for Table 7]** There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) List were not stated as delisted in Appendix A and do not	See response to comment 7.99.

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	appear in Appendix B, C, or G under the waterbodies to delist. The Stakeholders would like clarification if these listings are in fact being delisted as some align with the assessment shown in Table 3. **[See the posted letter for Table 8]** **Requested Action:** **Correct the numerous inconsistencies described above in Table 6, Table 7, and Table 8 and ensure that all of the proposed 303(d) List appendices are internally consistent.**	
29.65	**11**. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Ca/water numbers to reflect those listed in the Basin Plan*.** There are multiple instances of what appear to be incorrectly Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) List to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**	See response to comment 7.100.
29.66	**12**. ***Correct or clarify inconsistencies in the staff report*.** There is inconsistent discussion in the staff report about some proposed listings that should be clarified to avoid confusion about the listings. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants " For example, the proposed new listings for DOE and DOD in Calleguas Creek	See response to comment 7.101.

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	Reach 3 ... are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL ... and would then be in Category 4A." However , we could find no listings of ODE and ODD for Reach 3 in any Appendix of the report including Appendix C - Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that ODE and DOD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement and clarify any other inconsistencies between the staff report and the list. **Requested Action:** **Correct or remove language cited on page 10 of the staff report regarding DOE and ODD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**	
29.67	**13**. ***Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy*****.** In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment, which is inconsistent with the Listing Policy which states that it must be demonstrated that an evaluation guideline is "applicable to the beneficial use, protective of the beneficial use, scientifically-based and peer reviewed, and well described". Because it has not been demonstrated that the individual species response to these pollutants is applicable and protective of the beneficial use these guidelines should not be used to make a listing. The Stakeholders ask that the Board review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin) as well as applicability to the beneficial use as described in the Listing Policy. **[See the posted letter for Table 9]** The 303(d) List includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in CCW. Currently, no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all	See response to comment 7.102.

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	listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 is inappropriate. LC50s do not meet the standard set forth in the Listing Policy as stated on page 20 *"the evaluation guideline ... identifies a range above which impacts occur and below which no or few impacts are predicted."* By definition, an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis[12] criteria. However, upon reviewing the UC Davis source the listed chronic standard for permethrin is 2 ng/L (page 92) which is 0.002µg/L, not 0.0002µg/L as listed in the 303(d) List. • In many instances the incorrect evaluation guideline and guideline reference are used. For example, the evaluation guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200, and 88712 is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited guideline reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final Fact Sheets and 303(d) List. **Requested Action:** • **Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit**	

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	conversions. • **Remove all guidelines that do not comply with the stated Listing Policy as described above.** **[See the posted letter for Attachment A]**	
30.	TECS Environmental Compliance Services, March 30, 2017	
30.1	TECS Environmental is pleased to comment on the Regional Board's proposed 2016 303(d) list revisions. Because there are almost 900 listing revisions for water quality segments in the Los Angeles County Basin, it would be impossible to address each one. Therefore, I will restrict my comments to general issues. To begin with, I am sure that a number of MS4 Permittees and industrial dischargers will be pleased to know that many of the pollutants proposed on the 303(d), which are current TMDLs or are scheduled to become ones, have been placed on the "de-list" or placed on the "do not list" category. Most conspicuous are metals for Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River. Although the 2010 303(d) list did not list any of these reaches for metals-related impairment, they were nevertheless required to comply with metals TMDLs (Los Angeles River Metals TMDL for Reach 2 of the Rio Hondo and the San Gabriel River Metals TMDL for Reach 3 of the San Gabriel River). The 2016 303(d) list proposes to rectify this mistake by placing both of these reaches under the "do not list" category for copper, lead, selenium and zinc, which form the basis for both of the TMDLs. However, the proposed 2016 303(d) list did not place any of the Arroyo Seco reaches on the "do not list." Like Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River, Arroyo Seco Reaches 1 and 2 were not on 2010 303(d) list, nor were they on the 2012 303(d) list, which did not make it to Los Angeles Basin Plan as an amendment. Nevertheless, the Los Angeles MS4 Permit subjects MS4 Permittees by extending the Los Angeles River Metals TMDL to Arroyo Seco reaches. The 2016 303(d) list should place these reaches on the "do not list" category for metals.	See response to comment 3.4.

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<tr><td></td><td>Recommendation: place Arroyo Seco Reaches 1 and 2 on the “do not list” for any metal.</td><td></td></tr>
<tr><td>30.2</td><td>I. CTR and 303(d) Listing Policy

Nevertheless, additional pollutants should be considered for exclusion because they were not established in accordance with the California Toxics Rule (CTR) adopted in 2000; and/or did comply with the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.

• California Toxic Rule

CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects.

First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish <u>ambient</u> water quality standards: This final rule establishes ambient water quality for priority toxic pollutants. USEPA defines ambient as:

Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.

In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured</td><td>See response to comments 3.2.</td></tr>
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	against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program.	
30.3	Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of metals and toxics more accurate. Generally, the higher the hardness value the higher the toxic/metal pollutant expressed as a numeric limit. And, the higher the limit there less difficult it is to meet. The metals and toxics TMDLs rely on differing hardness values. For the Dominguez Channel/Harbor Toxics TMDL an average hardness value of 50 mg/l is used. For Ballona Creek hardiness values for setting the wet weather TMDLs metals are varied, based on an average or median hardness that ranged from 77 mg/l to 108 mg/l. For dry weather, a median hardness value of 300 mg/l was applied. As mentioned, CTR is expressed exclusively as ambient and not wet weather standards. Thus the77 mg/l to 108 mg/l hardness values relative to wet weather are meaningless. For dry weather, a median value of 300 mg/l was used. For the Los Angeles River Metals TMDL variable hardness values were also used for wet and dry weather. The same is true to the San Gabriel River Metals TMDL. In any case, CTR requires actual hardness value to be determined at the time samples of metals/toxic pollutants are taken. Thus, in the final analysis, each of the metals/toxics pollutants that was placed on the "list" or "do not de-list" category should be placed on the "de-list" or "do not list" category because they were not established in ambient terms only and failed to use an actual hardness value.	Comments on TMDLs are outside the scope of this proposed action.
30.4	• 303(d) Listing Policy The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see	See response to comment 3.3.

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	attachment #1). A review of the 2016 303(d) list fact sheets reveals that many of the metals and toxics placed on previous 303(d) lists did not conform to the Listing Policy. Those that do not should be placed on the "de-list" or "do not list" category.	
31.	Ventura Countywide Stormwater Quality Management Program, March 30, 2017	
31.1	On behalf of the Ventura Countywide Stormwater Quality Management Program (Program), which includes the Watershed Protection District, the County of Ventura and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, we thank you for the opportunity to provide input on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list] which was distributed for public review on February 8, 2017. The Program has many concerns with the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waters. Several errors and inconsistencies hampered our ability to fully vet and review the proposed 303(d) list. It is our opinion that significant review and modifications must be made before adoption and additional public review after modifications will be necessary. Requested Action: After full consideration of all comments, revise draft 303(D) list, and allow for another 60-day comment period prior to adoption. It is critical that the Los Angeles Water Board's proposed revisions to the 303(d) list follow the State Water Resources Control Board (SWRCB) Listing Policy and be based on sound science and methodologies. The development and implementation of Total Maximum Daily Loads (TMDLs) is already a significant investment of resources, and the 303(d) list will drive pollutant waterbody prioritization under the potential Watershed Management Plan option in our next NPDES MS4 Permit.	See response to comment 32.1 and 7.2.
31.2	Data from a single point in time, or which is not representative of the receiving	It is in accordance with the Listing Policy to use

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	water, should be excluded from this effort as should data with results reported below reporting limits (J-flagged). It appears the Program's outfall data was erroneously included for the Santa Clara River. This sampling location represents the runoff discharging from an MS4, not the receiving water quality, and is mostly from infrequent and short-term rain events. Of special concern is where the beneficial use MUN is driving 303(d) listings even though it should not be applied because it is identified as P* and is a conditionally applicable beneficial use. **Requested Action:** **Strictly comply with the State Water Resources Control Board (SWRCB) Listing Policy on identifying beneficial uses, impairments due to natural sources, and the appropriate data to support a listing.**	samples collected on the same day to assess waterbody condition if the samples are from different locations. The Listing Policy does provide for consideration of circumstances in which the samples represent an unusual condition (see Listing Policy, Section 6.1.5.3, *If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set.)* LOEs and decisions which included “J-flagged” data are being reassessed, as identified. Decisions based on protection of a P*MUN beneficial use are being reassessed, as identified.
31.3	The Program supports the comments from the County of Ventura where a more detailed description of the issues identified here is discussed. The Program also supports the comments from the Calleguas Creek Watershed Stakeholders, as well as the Ventura County Irrigated Lands Group (VCAILG) who will be submitting separate comment letters regarding the proposed listing changes in the Calleguas Creek Watershed and VCAILG- affected waterbody segments. Significant resources are expended when a pollutant is included on the 303(d) list. Errors in this process, and the challenges of delisting a pollutant, divert our limited funding and staff time away from improving water quality. We greatly appreciate your attention to these requests and look forward to a 303(d) list that appropriately identifies the water quality issues within Ventura County.	Comment noted.
32.	Ventura Water Department of the City of San Buenaventura, March 30, 2017	
32.1	The specific focus of this comment letter by Ventura Water is on the Santa Clara River Estuary (SCRE) proposed listings. New constituents on the list for the SCRE include ammonia and pH. Constituents that are proposed to remain on the	See response to comments, below, for specific responses: 32.4 for ammonia,

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	list of particular note include nitrate and toxicity. Ventura Water specifically requests the Los Angeles Regional Water Quality Control Board (Regional Board): • Reconsider proposed ammonia listing by recalculating the exceedances and using more recent data sets currently available to the Regional Board. • Reconsider the proposed pH listing based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries. • Delist nitrate based on a recalculation using appropriate data and correct use of averaging periods for the data. • Reevaluate toxicity listing once the data is appropriately aggregated and averaged. • Reevaluate ChemA, Toxaphene, and Indicator Bacteria listings once more recent data is taken into consideration. • Address the issues identified in this letter and release a revised, proposed 303(d) list for another 60-day comment period prior to adoption.	32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria The public has had a 50-day comment period prior to the Los Angeles Water Board meeting. In addition, the State Water Board will provide an additional 30-day comment period so that the public may comment on the Los Angeles Region 303(d) list (in combination with five other Regional 303(d) lists) prior to bringing the list to the State Water Board for approval. Lastly, commenters will have an opportunity to comment to USEPA Region 9 regarding the California 303(d) List portion of the Integrated Report prior to final approval by USEPA.
32.2	**Relevant Background Information.** It is important to our overall comments on the 303(d) list to understand the context of the Santa Clara River and SCRE. Like many southern California rivers, the Santa Clara River has very minimal flows in the dry months leading to stagnant conditions in the SCRE that encourage algae growth and variations in both dissolved oxygen (DO) and pH due to the algae respiration cycles, as is the case to some extent even in more natural estuaries where conditions have not been modified. The river ends in the SCRE, which experiences both open and closed mouth periods due to beach berm formation and periodic, typically wet weather breaches. The SCRE is wind-mixed and mostly uniform in water quality, especially during closed mouth conditions. The Ventura Water Reclamation Facility (VWRF) discharges approximately 8 million gallons per day (mgd) of disinfected, tertiary effluent first to wildlife/water quality ponds, and then to the SCRE. During dry weather, the tertiary treated flows can be the	Comment noted.

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	dominate supply of water to the SCRE to support wildlife species that utilize it. Species that utilize the SCRE include the following state and federally listed species: steelhead trout, tidewater goby, snowy plover, and California least tern. Ventura Water has spent many years studying the SCRE both independently, and pursuant to requirements of its NPDES permits. Ventura Water has invested more than $21,000,000 dollars in treatment process upgrades of the Ventura Water Reclamation Facility (VWRF) to improve the quality of the tertiary treated flows discharged to the SCRE. Ventura Water also currently recycles approximately 1 mgd for urban irrigation. Ventura Water is also currently working on implementing a potable reuse program that would divert up to 100% of its discharges to water reclamation uses, and identifying how much effluent can be diverted from the SCRE while still protecting its ecology and ecology-related beneficial uses and without "taking" (as that term is defined under the state and federal Endangered Species Acts, as applicable) any of the listed species that use or occupy the SCRE.	
32.3	**General Comments.** Of particular concern to Ventura Water with regard to the proposed 303(d) list is that much of the data used to determine water quality impairment for the SCRE is older data that is not representative of current conditions. The Staff report states, "Data used as part of the 2016 Integrated Report were received through August 30, 2010." The report then goes on to later say, "All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report." These statements are at odds with each other as by choosing to only rely on data collected through 2010; quite clearly the 303(d) list was not developed with all readily available data as required by the Listing Policy. Significant plant improvements have be implemented since 2010. VWRF monitoring data since the plant upgrades are readily available and should be included within the 303(d) list determination analyses. The SCRE has also been heavily regulated by the VWRF's NPDES permits. Many of those permit requirements have become more stringent since 2010, with the application of technology based limitations. By Ventura Water's estimation, many	The Los Angeles Water Board staff has developed the Integrated Report consistent with project plans and timelines established by the State Water Resources Control Board. Staff is working closely with the State Water Board to ensure that the remaining steps in the process for State Water Board approval go smoothly and meet the State Water Board's schedule. Los Angeles Water Board staff considered all readily available data and information in the administrative record in the development of the 2016 California Integrated Report. The State Water Board defined readily available data as those data submitted during the 2010 public data solicitation period, which began on January 14, 2010 and concluded on August 30, 2010. The

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<tr><td></td><td>of constituents on the proposed 303(d) list are not appropriate given recent water quality data.

Lastly, based on current data and the State Water Resources Control Board's "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List" ("Listing Policy") requirements to aggregate the data by appropriate reach or area and to use appropriate averaging periods, Ventura Water disagrees with some of the constituent listings and requests recalculation of exceedances. This letter addresses the proposed 303(d) listings and presents current data for each proposed SCRE impairment listing.</td><td>State Water Board issued a memo dated November 12, 2013, which explains the strategy of handling the data assessment for the 2014 Integrated Report as follows:

Due to the volume of data received during the 2010 data solicitation period, the State Water Board will not solicit additional data until all of the current data is assessed and migrated to the California Water Quality Assessment Database (CalWQA) for Regional Water Board listing and delisting recommendations.

Consequently, at the direction of the State Water Board and consistent with the other Regional Water Boards, Los Angeles Water Board staff did not include data after the 2010 solicitation period in the development of the 2016 Integrated Report for the Los Angeles Region.

Further, the State Water Board adopted Resolution No. 2015-0005, to amend the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) on February 3, 2015. The revisions to the Listing Policy were available for public comment prior to the public hearing to adopt those changes. Finding number eight in the Resolution states the following:

State Water Board staff anticipates that next notice of solicitation will be sent out to solicit data and information for the 2018 Integrated Report (the CWA section 303(d) and 305(b)</td></tr>
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		reporting requirements). For the upcoming 2012, 2014 and 2016 Integrated Reports, the data and information submitted in response to the 2010 notice of solicitation shall be assessed and considered. Notwithstanding the above information, Los Angeles Water Board staff appreciates the concern that data must be is as up-to-date as possible and reviewed frequently in order to implement our various programs. Staff reviews all types of water quality data on an ongoing, real-time basis separately from the Integrated Report process to develop TMDLs or other regulatory programs. Staff strives to increase its use and application of current data, and improving in this manner is one of our highest priorities. Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.
32.4	**Ammonia Comments** The new ammonia listing cites that it is based on 4 exceedances out of 42 samples based on un-ionized ammonia concentrations using data collected from 1997 to 2010. While this meets the technical, formulaic requirements for number of exceedances set forth in the Listing Policy Table 3.1 for placing a waterbody on the 303(d) list, the methods and data used to calculate the exceedances are not clear. To calculate the concentration of un-ionized ammonia, total ammonia must be converted to un-ionized ammonia using site specific pH and temperature conditions within the SCRE at the time of the ammonia sampling. No conversion calculations for total ammonia were provided in the data set provided in the fact sheet; therefore, it is difficult to determine which pH and temperature data were used to correlate to corresponding total ammonia data. An accurate analysis	The data used to determine the listing can be found from a link on the factsheet "Decision ID 66589 Santa Clara River Estuary" for ammonia. The data is linked as Data for Various Pollutants from the city of Ventura, 1997-2010. Commenter does not explain why grab data would not reliable for purposes of determining the one-hour maximum values for temperature and pH. See response to comment 32.3 for a discussion of the "readily available" data considered for this

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	should ideally connect pH, temperature, and ammonia data with a reasonable averaging criteria or statistical determination if multiple data points were used. Ventura Water requests recalculation of the exceedances based on current total ammonia data as well as proper calculations of un-ionized ammonia that take into account temperature and pH conditions that occurred, or should have been expected during the total ammonia sampling events. More specifically, closer inspection of the 1997 through 2010 data set used to determine the 4 exceedances indicates that the pH data used to calculate un-ionized ammonia was potentially data retrieved from a continuous monitoring, multiparameter Sondes (2009-2010) deployed for the City's Phase 1 Estuary Study (Stillwater Sciences 2011), among other data. The only total ammonia data collected as part of the Phase 1 study were collected on 6 days in 2009 and 2010. Corresponding pH and temperature were collected along with these samples. However, Ventura Water is concerned that these data do not represent the SCRE as a whole, specifically after the improvements to the VWRF (after November 2011). Moreover, only total ammonia is shown in that data set, and the data set does not include the calculation of un-ionized ammonia. Monthly grab sample temperature and pH data for the receiving water exists for some of the monitoring years cited (1997 - 2010), but grab data is not reliable for purposes of determining the one-hour maximum values for temperature and pH. In light of the aforementioned issues with the methods that appear to have been used to calculate unionized ammonia using a 1997 to 2010 data set, Ventura Water requests the Regional Board provide the calculation for the un-ionized ammonia, and update the calculation as appropriate to include more recent and more valid total ammonia, pH, and temperature assumptions from other data sets readily available to the Regional Board. Based on Ventura Water's more recent monitoring results, all of which constitute data readily available to the Regional Board, it does not appear that the SCRE un-ionized ammonia water quality objective is likely to have been exceeded a sufficient number of times to warrant a listing. Ventura Water requests the Regional Board utilize the data submitted to it by Ventura Water more recently than 2010 to assure that the evaluation of receiving water conditions in the SCRE is reasonably representative of current	Integrated Report and 303(d) list.

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	conditions. The Regional Board imposed stringent ammonia limits and a time schedule to attain those limits on VWRF discharges of tertiary treated flows in both its 2008 and 2013 NP DES permits. To comply with these limits and to better control nitrates, Ventura Water invested more than $21 million in a VWRF plant improvement project to implement nutrient removal in its biological processes. This treatment upgrade project undertaken to meet the stringent NPDES permit ammonia effluent limits came online in November 2011. Since then, VWRF NPDES permit effluent limits for ammonia, including its water quality based effluent limits, have only been exceeded once, indicating that ammonia conditions in the SCRE have changed since November 2011, and the data relied upon in developing the proposed 303(d) list is not representative of conditions within the SCRE. The receiving water standards for the SCRE (used to establish the NPDES effluent limitation) are set based on un-ionized ammonia for saltwater criteria. The limits used to determine the 303(d) listing are the same criteria that are used to calculate limits in the NPDES permit (1999 Update of Ambient Water Quality Criteria for Ammonia): • One Hour Concentration = 0.233 mg/I unionized ammonia, based on fish spawning, and • 4 day average of 0.035 mg/L of unionized ammonia The total ammonia NPDES effluent limit calculated to meet this water quality objective is total ammonia of 1.07 mg/l average monthly and 1.17 mg/l max daily in the summer. Limits in the winter months are slightly higher. The limits were determined in accordance with EPA standards by considering the 50th and 90th percentile pH and temperature for considering chronic and acute toxicity. As shown in Figure 1 below, the total effluent ammonia from 2012 to 2016 only exceeded 1 mg/l once out of 59 samples, thus not exceeding the Listing Policy's binomial distribution null hypothesis Table 3.1 criteria for listing a constituent on	

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	the 303(d) list (i.e., would need at least 5 exceedances). Similarly, the receiving water samples from 2012 to 2016 only exceeded 1 mg/l total ammonia twice out of 60 samples, so also not meeting the Table 3.1 criteria for listing a constituent on the 303(d) list. *Figure 1 Historical Effluent and Receiving Water Ammonia Monitoring* **[See the comment letter for Figure 1]** The effluent compliance point for all constituents except for flow in the 2013 NPDES permit for the VWRF is station MOOl, which is located at the Effluent Transfer Station (ETS) right before discharge into the wildlife ponds. Station MOOlA is located downstream of the wildlife ponds. It is only used for compliance with flow, but ammonia levels have been monitored there, starting in December 2013. Total ammonia actually drops from the compliance point to MOOlA as water passes through the wildlife ponds, likely due to a combination of volatilization and vegetative uptake. Therefore, the ammonia concentrations in the discharges into the SCRE are well below the permit standards that were set up to meet the ammonia receiving water quality objectives for saltwater, which are more stringent than freshwater standards. The comparison of ETS versus MOOlA data is shown in Figure 2. *Figure 2 Historical Effluent Ammonia Before and After Wildlife Ponds* **[See the comment letter for Figure 2]** **In light of the treatment plant upgrades implemented to reduce ammonia, and the fact that more recent data indicates only 1 exceedance in 59 samples, Ventura Water requests recalculation of the exceedances for ammonia and reconsideration of the listing decision based on the more recent data set currently available to the Regional Board.**	
32.5	pH Comments It is important to understand that many estuaries exhibit wide daily variations in pH mediated by algae as the result of daily photosynthesis and nighttime respiration (Park et al 1958). Beyond potential connections between algal	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not

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	productivity with the multiple nutrient sources to the SCRE (e.g., VWRF, agricultural runoff, groundwater, riverine, VWRF, ocean exchanges), algal growth and pH variations in the SCRE are exacerbated by physical factors as well (e.g., shallow waters, lack of consistent riverine flows, intermittent breaching and limited tidal exchange with the ocean). Consideration of the estuarine conditions likely to induce large pH swings is supported by recent monitoring data fully available to the Regional Board that shows that the VWRF plant tertiary treated flows are always in compliance with pH effluent limits (shown as a black dot on Figure 3). However, despite the very steady and compliant pH values for the tertiary treated flows, the receiving water does experience wide swings in pH as shown in Figure 3 below even when data collected from 2012 through 2016 is analyzed. However, it is important to note that the receiving water pH data is collected by grab samples (via boat) in the SCRE, likely at similar times of day and therefore does not necessarily reflect actual conditions in the estuary over the course of the day or the month. The receiving water data collected could theoretically meet the Listing Policy formulaic criteria. However, the determination whether to list should not be considered in a vacuum, but rather must also take into account the "type of waterbody (Bay and Harbors, Coastal Shoreline, *Estuary*, Lake/reservoir ...)" being considered for impairment. One way to take into account the type of waterbody considered for a 303(d) listing is to consider "reference conditions" as defined in Section 7 of the Listing Policy to understand the characteristics of estuarine water bodies that are least impaired by human activities to determine attainable biological conditions for such waterbodies in southern California. As discussed earlier, studies of pH variation in estuaries reveals that wide swings in pH due to the presence of algae constitute reference conditions for typical estuaries. The proposed listing does not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan). As stated in the Fact Sheets and according to the Basin Plan, "The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges." However, it was not demonstrated for the SCRE that	completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Estuary including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances of pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. The way to "take into account" the type of waterbody, or reference conditions, or the interaction between pH and other factors such as algae, is during the development of a TMDL. See also, response to comment 16.2.

No.	Comment	Response
	the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if not such evidence exists, the Regional Board should remove this proposed listing. **Ventura Water requests reconsideration of the proposed pH listing for the SCRE based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries.** *Figure 3 pH at VWRF and Receiving Water Locations* **[See the comment letter for Figure 3]**	
32.6	**Nitrogen and Nitrate Comments** Nitrogen/nitrate (collectively "nitrate") was originally listed on the 303(d) list adopted in 2012. The nitrate listing is based on receiving water samples collected between 2002 and 2007. Given that Ventura Water implemented a nitrification and denitrification project in November 2011, nitrate data collected before 2011 is no longer representative of SCRE conditions, and is therefore not reliable for determining current SCRE exceedance estimates. In reviewing receiving water data collected monthly from 2012 through 2016 (60 sample dates}, which is submitted to the Regional Board as part of NPDES reporting and is therefore readily available data under the Listing Policy, there were only 5 days during which SCRE water quality exceeded the nitrate receiving water quality objective of 10 mg/I . Because the SCRE is wind-mixed and fairly uniform (Phase 1 Estuary Subwatershed Study, Stillwater 2011}, we would argue that on any given day, sampling at a given location is strongly influenced by conditions at other nearby locations. The Listing Policy states: "Based on these evaluations of the water body setting, the Regional Water Boards should aggregate the data by appropriate reach or area . ... To be considered temporally independent, samples collected during the	The data used to list the Santa Clara River Estuary for Nitrogen Nitrate was NPDES receiving water monitoring from the City of San Buenaventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list. The Listing Policy does allow for not using older data; Section 6.1.5.3 states, in part, "If the implementation of a management practice(s) has resulted in a change in the water body segment, only recently collected data {since the implementation of the management measure(s)) should be

No.	Comment	Response
	averaging period shall be combined and considered one sampling event. ... If the averaging period is not stated for the standard, objective, criterion, or evaluation guideline, then the samples collected less than 7 days apart shall be averaged." As shown in Figure 4 below, exceedances in multiple locations occurring in the SCRE on the same sampling date should be considered a single event because the multiple sampling results are designed to provide a spatial representation of the estuary during any particular event of exceedance. According to the binomial distribution null hypothesis (Listing Policy Table 3.1), the listing requirement for 60 to 71 data points is 6 exceedances, which is more than the current 5 exceedances demonstrated by the more recent data set developed after Ventura Water's implementation of treatment plant and treatment process upgrades. Section 4 of the Listing Policy states that a water segment shall be removed from a 303(d) listing if the water meets the water quality standards. Using Policy Table 4.1, the null hypothesis indicates that for 60 to 71 data points, if there are 5 exceedances or less, then the water segment can be delisted. **Based on current data, the number of exceedances (S) meets the delisting criteria, and given that VWRF already has an NPDES permit limit for nitrate, Ventura Water requests recalculation of the exceedances based on current data and correct use of averaging periods for the data (data collected on the same day to be averaged}. Ventura Water requests that based on this recalculation, nitrate be removed from the 303(d) list for the SCRE.** *Figure 4 Receiving Water Nitrate Levels* **[See the comment letter for Figure 4]**	considered…" In the next listing cycle, when Water Board staff is able to consider the more recent data, staff can consider the implementation of nitrification and denitrification in 2011 and the appropriateness of averaging the more recent data.
32.7	**Toxicity Comments** The City monitors chronic toxicity using Selanstrum for both effluent and receiving water. Using readily available data collected by Ventura Water from 2012 - 2016 and submitted to the Regional Board, the VWRF tertiary treated flows consistently met toxicity criteria of 1 TUc for the 60 samples, as shown in Figure 5. However, receiving water monitoring data does not similarly show consistent and full attainment of toxicity criteria. The receiving water monitoring	The data used to list the Santa Clara River Estuary for toxicity was NPDES receiving water monitoring from the City of San Buenaventura Ventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data

No.	Comment	Response
	locations have a data set of 25 sample dates. **Using the argument presented above that the data should be aggregated and appropriate averaging should be used, Ventura Water requests that each sampling event (day) be considered separately and the data points be averaged.** To meet the Listing Policy Table 4.1 requirements for delisting, with 26 data points there would need to be 2 or fewer exceedances of toxicity objectives for the SCRE. Even considered as single events, there have been more than 2 exceedances of a 1 TUc, although those exceedances are unrelated to toxicity of tertiary treated flows, which did not show exceedances. Therefore, it does not appear that de listing the SCRE for toxicity would be appropriate at this time, even though toxicity exceedances are unrelated to VWRF tertiary treated flows. **However, Ventura Water requests this listing be reevaluated once the data is appropriately aggregated and averaged.** *Figure* 5 *Effluent and Receiving Water Toxicity* **[See the comment letter for Figure 5]**	collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.8	**ChemA** ChemA is being included on the 303(d) list without any supporting data. The reasons for its listing are that the U.S. EPA approved a TMDL for the estuary in 2011. However, no data, historic or otherwise, were used to support the continued placement on this list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of ChemA on the 303(d) list.**	ChemA is a suite of bio-accumulating pesticides that includes aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorocyclohexane (HCH) (including lindane), endosulfan, and toxaphene. ChemA was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. The 1998 303(d) listing (and subsequent listings) for Chem A were predominately based on fish tissue concentrations of toxaphene. Los Angeles Water Board developed a TMDL for toxaphene in

No.	Comment	Response
		fish tissue in the Santa Clara River Estuary in 2010, which was approved by EPA in 2011. Source analysis showed that the source of toxaphene was irrigated agriculture and the TMDL was adopted as a single regulatory action through the renewal of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands. The agricultural discharges regulated by the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands monitor for toxaphene and chlordane. During the next listing cycle, when Water Board staff is able to review this more recently collected monitoring data, staff may recommend revision of the 303(d) list including, potentially, a simplification of the list, by removing Chem A because the toxaphene and chlordane data more appropriately represent the impairment or non-impairment of the Estuary.
32.9	**Toxaphene** Similar to ChemA, toxaphene was included on the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. Based on data collected semiannually by the VWRF, toxaphene has not even been detected in either the effluent or the receiving water in recent memory. **Ventura Water requests that recent readily available data be taken into consideration when assessing the placement of toxaphene on the 303(d) list.**	Similar to ChemA, toxaphene was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.10	**Indicator Bacteria** Similar to ChemA and toxaphene, indicator bacteria was included in the 303(d)	Indicator Bacteria was placed on the 303(d) list for

No.	Comment	Response
	list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of indicator bacteria on the 303(d) list.**	the Santa Clara River estuary prior to 1998 (this impairment was originally called "coliform bacteria"). Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. The Los Angeles Water Board developed a TMDL for indicator bacteria in 2010, which was approved by USEPA in 2012. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.
32.11	Summary/Conclusion Ventura Water appreciates the opportunity to comment on the proposed 303(d) list. Based on the analysis presented above using more recently collected, readily available data that properly represents existing conditions in the SCRE (2012 - 2016), our findings include: • Appropriate ammonia data were not considered in the proposed listing and current data do not meet the Listing Policy criteria for 303(d) listing. • A listing for pH is not warranted in light of reference conditions for pH within estuaries, which indicates that steady state pH values in compliance with water quality objectives are not biologically attainable even in high functioning estuaries. • Nitrate should be delisted based on relevant Listing Policy criteria. • Toxicity is unrelated to VWRF discharges of tertiary treated water to the SCRE, and the listing should be reevaluated once the data is appropriately aggregated and averaged.	Comments noted. See response to comment 32.4 for ammonia, 32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.

No.	Comment	Response
	• Chem A, Toxaphene, and Indicator Bacteria listings did not include recent data and should be reevaluated based on current data. It is important to note the City has been conducting studies on the SCRE since 2009 per the special studies requirements in the NPDES permits for the VWRF. These studies analyze the existing discharge impacts/benefits to aquatic habitat, and evaluate alternatives that include a reduction in discharge, improvement in discharge water quality, or a combination of both, for the purpose of improving aquatic habitat. These studies are site specific, taking into account the listed species using or occupying the SCRE, and the associated physical/chemical parameters that contribute to site specific aquatic habitat conditions. The results of the studies will be presented in the Phase 3 Estuary Studies Report (expected January 2018), and will provide a detailed understanding of the SCRE and information relevant to the 303(d) listing process.	

Revised
Notice of Public Meeting
Thursday, May 4, 2017
9:30 a.m.

Meeting Location:
City of Pasadena
Council Chambers
100 North Garfield Avenue
Pasadena, California 91101

Agenda

The Los Angeles Regional Board strives to conduct an accessible, orderly, and fair meeting. The Chair of the Board will conduct the meeting and establish appropriate rules and time limitations for each agenda item. The Board will only act on items designated as action items. Action items on the agenda are staff proposals, and may be modified by the Board as a result of public comment or Board member input. Additional information about Board meeting procedures is included after the last agenda item.

Generally, the Board accepts oral comments at the meeting on agenda items and accepts written materials regarding agenda items in advance of the meeting. For some items requiring public hearings, written materials and oral comments will be accepted only according to the procedures set forth in a previously issued public notice for the particular agenda item. To ensure a fair hearing and that the Board Members have an opportunity to fully study and consider written material, unless stated otherwise, written materials must be provided to the Executive Officer ***not later than 5:00 p.m. on May 18, 2017. Please consult the agenda item description because certain items may have an earlier deadline for written submissions. If you are considering submitting written materials, please consult the notes at the end of the agenda. Failure to follow the required procedures may result in your materials being excluded from the hearing record; however, failure to timely submit written materials does not preclude a person from testifying before the Board.***

INTRODUCTORY ITEMS

1. **Roll Call.**

2. **Order of Agenda.** Note that the agenda items are numbered for identification purposes only and may not necessarily be considered in this order.

3. **Approval of draft meeting Minutes for the May 4, 2017 meeting.** [Ronji Moffett, (213) 576-6612]

4. **Board Member Communications.**
   4. a. Ex Parte Disclosure. Board Members will identify any discussions they may have had requiring disclosure pursuant to Government Code section 11430.40.

   4. b. Board Member Reports. The Board Members may discuss communications, correspondence, or other items of general interest relating to matters within the Board's jurisdiction.

UNCONTESTED ITEMS

(Items marked with an asterisk are expected to be routine and noncontroversial. The Board will be asked to approve these items at one time without discussion. Any Board member or person may request that an item be removed from the Uncontested calendar. ***Items removed from the Uncontested calendar may be heard at a future meeting.****)*

*5. **Non-NPDES State Discharge Requirements**
Termination-
Consideration of tentative termination of Waste Discharge Requirements for former Northrop Grumman Corporation, East Complex Facility, Hawthorne; File No. 06-089. (Comment submittal deadline was April 10, 2017) [Peter Raftery, (213) 620-6156]

BOARD BUSINESS REPORTS

6. **Executive Officer's Report.** [Samuel Unger, (213) 576-6605]
7. **Update from State Board.**

PUBLIC FORUM

8. Any person may address the Board regarding any matter within the Board's jurisdiction provided the matter does not appear elsewhere on this agenda, has not been scheduled to appear on a future agenda, and is not expected to be imminently scheduled for the Board's consideration. Remarks will be limited to three (3) minutes, unless otherwise directed by the Chair. If a person intends to use a PowerPoint presentation or other **visual aids, you must contact Ronji Moffett, (213) 576-6612, at the Regional Board at least 48 hours prior** to the meeting to arrange for equipment use and be prepared to load any PowerPoint presentation on the computer prior to the meeting to assure the orderly conduct of the meeting.

CONTESTED ACTION ITEMS

Basin Planning–TMDL

9. Consideration of the proposed revisions to the Clean Water Act section 303(d) List of impaired waterbodies in the Los Angeles Region. (Comment submittal deadline was March 30, 2017. [Dr. Jun Zhu, (213) 576-6681; Dr. Kangshi Wang, (213) 576-6780; and Dr. L.B. Nye, (213) 576-6785]

Information Items

(These items are for informational purposes only.
No voting will take place on these matters.)

10. Update on recycled water projects associated with Publicly Owned Treatment Works (POTWs) [Cris Morris, (213) 620-2083]

11. Discussion of the Regional Board's process for Settlement of Enforcement Actions. [Paula Rasmussen, (213) 576-6607]

13. Update on groundwater cleanup at the National Aeronautics and Space Administration, Jet Propulsion Laboratory in Pasadena. [Samuel Unger, (213) 576-6605]

CLOSED SESSION

14. As authorized by Government Code section 11126, the Regional Board will be meeting in closed session. Closed session items are not open to the public. Items the Board may discuss include the following: [Jennifer Fordyce (JF) (916) 324-6682; Frances McChesney (FM) (916) 341-5174; David Coupe (DC) (510) 622-2306]

    Litigation filed against the Los Angeles Regional Water Quality Control Board (Gov. Code, § 11126, subd. (e)(2)(A).):

    14.1 *City of Redondo Beach v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board,* California Court of Appeal, Second Appellate District, Case No. B271631 [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2008-0058M]. (FM)

    14.2 *Balcom Ranch v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board*, Ventura County Superior Court, Case No. 56-2012-00419048-CU-MC-VTA [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2010-0023]. (DC)

    14.3 *City of Duarte v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Orange County Superior Court, Case No.30-2016-00833614-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    14.4 *Natural Resources Defense Council and Los Angeles Waterkeeper v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS156962 [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    14.5 *City of Gardena v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board,* Orange County Superior Court, Case No. 30-2016-00833722-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    14.6 *Barclay Hollander Corporation v. California Regional Water Quality Control Board, Los Angeles Region, et.al.,* Los Angeles County Superior Court, Case No. BS158024 [Challenging issuance of Revised Cleanup and Abatement Order No. R4-2011-0046 (Revised April 30, 2015)]. (DC)

14.7 *Wayne Fishback v. Michael D. Antonovich et al.*, United States District Court for the Central District of California, Case No. 2:15-cv-05719 [Seeking preliminary injunction, alleging violations of procedural and substantive due process and other claims for relief]. (DC)

14.8 *Wishtoyo Foundation v. State Water Resources Control Board and California Regional Water Quality Control Board, Los Angeles Region*, Los Angeles County Superior Court, Case No. BS159479 [Challenging issuance of waste discharge requirements water reclamation requirements, Order No. R4-2011-0079-A01]. (DC)

14.9 *Tesoro Refining & Marketing Company LLC and Tesoro SoCal Pipeline Company LLC v. Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS160502 [Challenging issuance of Cleanup and Abatement Order No. R4-2013-0064]. (JF)

14.10 *Los Angeles Waterkeeper v. California State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS163391 [Challenging Resolution No. R15-004 establishing site specific water quality objectives for copper and lead in the Los Angeles River and tributaries]. (JF)

14.11 *Fishback et al. v. County of Los Angeles et al.,* Los Angeles County Superior Court, Case No. PC056481 [Alleging violations of procedural and substantive due process, violations of the state and federal takings clauses, and other claims for relief]. (DC)

Litigation filed by the Los Angeles Regional Water Quality Control Board against other parties (Gov. Code, 11126, subd. (e)(2)(A).):

14.12 *State Department of Finance, State Water Resources Control Board and Los Angeles Regional Water Quality Control Board v. Commission on State Mandates,* Los Angeles County Superior Court, Case No. BS13070 [Challenging the Commission s decision that portions of the 2001 Los Angeles County MS4 permit created unfunded state mandates]. (JF)

14.13 *California Regional Water Quality Control Board, Los Angeles Region v. United States Army Corps of Engineers; Lieutenant General Thomas P. Bostick, In his Official Capacity*, United States District Court for the Central District of California, Case No. 2:16-cv-01091 [Alleging unauthorized discharges of dredge and fill materials and other pollutants into waters of the United States in violation of Clean Water Act sections 301, 401, and 404]. (JF)

14.14 *People of the State of California ex rel. Regional Water Quality Control Board Los Angeles Region v. The Boeing Company,* Ventura County Superior Court Case No. 56-2010-00371686-CU-MC-SIM [Consideration of extension of Consent Judgment for stipulated penalties for future violations of Boeing s NPDES permit for the Santa Susana Field Laboratory]. (JF)

Petitions for Review of Los Angeles Regional Water Quality Control Board actions filed with the State Water Resources Control Board (Gov. Code, 11126, subd. (e)(2)(A).):

14.15 *In re: Petition of Natural Resources Defense Council, Los Angeles Waterkeeper, and Heal the Bay for Review of Executive Officer's Action to Conditionally*

Approve nine WMPs Pursuant to the 2012 MS4 Permit, SWRCB/OCC File A-2386 [Challenging the Executive Officer's approval, with conditions, of nine Watershed Management Programs (WMPs) pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

14.16 *In re: Petition of Los Angeles Waterkeeper and NRDC for Review of Executive Officer's Action to Approve the North Santa Monica Bay EWMP,* SWRCB/OCC File A-2477 [Challenging the Executive Officer's approval of the North Santa Monica Bay EWMP pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

14.17 *In re: Petition of Natural Resources Defense Council and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's September 7 Vote to Take No Further Action to Review Executive Officer's Approval of the North Santa Monica Bay Enhanced Watershed Management Program Pursuant to the L.A. County MS4 Permit,* SWRCB/OCC File A-2508 [Challenging the Regional Board's decision to not review the Executive Officer's approval of the North Santa Monica Bay EWMP pursuant to the Los Angeles County MS4 Permit Order No. R4-2012-0175]. (JF)

14.18 *In re: Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Hyperion Treatment Plant Discharge to the Pacific Ocean;* Order No. R4-2017-0045. (FM)

14.19 *In re: Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Donald C. Tillman Water Reclamation Plant Discharge to the Los Angeles River;* Order No. R4-2017-0062. (FM)

14.20 *In re: Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Burbank, Burbank Water Reclamation Plan and its associated wastewater collection system and outfalls, discharging to the Burbank Western Channel;* Order No. R4-2017-0064. (FM)

14.21 *In re: Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Los Angeles-Glendale Water Reclamation Plan and its associated wastewater collection system and outfall discharge to the Los Angeles River;* Order No. R4-2017-0063. (FM)

<u>Test Claims filed with the Commission on State Mandates (Gov. Code, § 11126, subd. (e)(2)(A).)</u>:

14.22 *In re: Los Angeles Region Water Permit – Ventura County,* Commission on State Mandate Test Claim No. 110-TC-01 [Regarding a test claim filed by Ventura County Watershed Protection District and the County of Ventura alleging that portions of Order No. R4-2010-0108 created unfunded state mandates]. (JF)

14.23 *In re: Los Angeles Region Water Permit – Cities of Los Angeles County,* Commission on State Mandate Test Claim No. 13-TC-01 [Regarding a test claim filed by several cities within Los Angeles County alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

14.24 *In re: Los Angeles Region Water Permit – County of Los Angeles,* Commission on State Mandate Test Claim No. 13-TC-02 [Regarding a test claim by the County of Los Angeles and Los Angeles County Flood Control District alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

Other matters:

14.25 Consultation with counsel about:

(a) A matter which, based on existing facts and circumstances, presents significant exposure to litigation against the Regional Board (Government Code section (Gov. Code, §11126, subd. (e)(2)(B).); or

(b) A matter which, based on existing facts and circumstances, the Regional Board is deciding whether to initiate litigation (Gov. Code, § 11126, subd. (e)(2)(C).) (JF/FM/DC)

14.26 Consideration of the appointment, employment, or evaluation of performance about a public employee. (Gov. Code, §11126, subd. (a).) (JF/FM/DC)

15. **Adjournment of current meeting.** (The next regular meeting of the Board will be held on June 1, 2017 at the Metropolitan Water District City of Southern California, Board Room, located at 700 North Alameda Street, Los Angeles, CA, 90012, and beginning at 9:00 a.m.)

Ex Parte Communications: An ex parte communication is a communication to a board member from any person, about a pending matter, that occurs in the absence of other parties and without notice and opportunity for them to respond. The California Government Code prohibits the board members from engaging in ex parte communications during permitting, enforcement, and other "quasi-adjudicatory" matters. Ex parte communications are allowed on pending general orders (such as general waste discharge requirements, general waivers, and general Clean Water Act section 401 water quality certifications) subject to the disclosure requirements of Water Code section 13287 (for further information and disclosure forms, please visit http://www.waterboards.ca.gov/losangeles/laws_regulations/). The Regional Board discourages ex parte communications during rulemaking and other "quasi-legislative" proceedings. The ex parte rules are intended to provide fairness, and to ensure that the board's decisions are transparent, based on the evidence in the administrative record, and that evidence is used only if stakeholders have had the opportunity to hear and respond to it. Ex parte rules do not prevent anyone from providing information to the water boards or requesting that the water boards take a particular action. They simply require that the information come into the record through proper channels during a duly noticed, public meeting. A board member who has engaged or been engaged in a prohibited ex parte communication will be required to publicly disclose the communication on the record and may be disqualified from participating in the proceeding. For more information, please look at the ex parte questions and answers document found at www.waterboards.ca.gov/laws_regulations/docs/exparte.pdf.

Procedures: The Regional Board follows procedures established by the State Water Resources Control Board. These procedures are established in regulations commencing with section 647 of title 23 of the California Code of Regulations. The Chair may establish specific procedures for each item, and consistent with section 648, subdivision (d) of title 23 of the California Code of Regulations may waive nonstatutory provisions of the regulations. Generally, all witnesses testifying before the Regional Board must affirm the truth of their testimony and are subject to questioning by the Board Members. The Board does not, generally, require the designation of parties, the prior identification of witnesses, or the cross examination of witnesses. Generally, speakers are allowed three minutes for comments. Any requests for an alternate hearing process, such as requesting additional time to make a presentation, should be made to the Executive Officer in advance of the meeting, and under no circumstances later than 5:00 p.m. on the Thursday preceding the Board meeting. The provisions of this paragraph shall be deemed superseded to the extent that they are contradicted by a hearing notice specific to a particular agenda item.

Written Submissions: Written materials (whether hand-delivered, mailed, e-mailed, or facsimiled) ***must be received prior to the relevant deadline*** established in the agenda and public notice for an item. If the submitted material is more than 10 pages or contains foldouts, color graphics, maps, or similar items, 12 copies must be submitted prior to the relevant deadline.

Failure to comply with requirements for written submissions is grounds for the Chair to refuse to admit the proposed written comment or exhibit into evidence. (Cal. Code Regs., tit. 23, §648.4, sub. (e).) The Chair may refuse to admit written testimony into evidence unless the proponent can demonstrate why he or she was unable to submit the material on time or that compliance with the deadline would otherwise create a hardship. In an adjudicatory matter, where there is a showing of prejudice to any party or the Board from admission of the written testimony, the Chair may refuse to admit it.

Administrative Record: Material presented to the Board as part of testimony that is to be made part of the record must be left with the Board. This includes photographs, slides, charts, diagrams, etc. All Board files pertaining to the items on this Agenda are hereby made a part of the record submitted to the Regional Board by staff for its consideration prior to action on the related items.

Accessibility: Individuals requiring special accommodations or language needs should contact Rosie Villar at (213) 576-6630 or rvillar@waterboards.ca.gov at least ten working days prior to the meeting. TTY/TDD Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

Availability of Complete Agenda Package: A copy of the complete agenda package is available for examination at the Regional Board Office during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday) beginning 10 days before the Board meeting. Questions about specific items on the agenda should be directed to the staff person whose name is listed with the item.

Continuance of Items: The Board will endeavor to consider all matters listed on this agenda. However, time may not allow the Board to hear all matters listed. Matters not heard at this meeting may be carried over to the next Board meeting or to a future Board meeting. Parties will be notified in writing of the rescheduling of their item. Please contact the Regional Board staff to find out about rescheduled items.

Challenging Regional Board Actions: Pursuant to Water Code section 13320, any aggrieved person may file a petition to seek review by the State Water Resources Control Board of most actions taken by the Regional Board. A petition must be received within 30 days of the action.

Petitions must be sent to State Water Resources Control Board, Office of Chief Counsel; Attn: Phil Wyels, Assistant Chief Counsel; 1001 I Street, 22nd Floor; Sacramento, CA 95814.

Second Revised
Notice of Public Meeting
Thursday, May 4, 2017
9:30 a.m.

Meeting Location:
City of Pasadena
Council Chambers
100 North Garfield Avenue
Pasadena, California 91101

Agenda

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UNCONTESTED ITEMS

(Items marked with an asterisk are expected to be routine and noncontroversial. The Board will be asked to approve these items at one time without discussion. Any Board member or person may request that an item be removed from the Uncontested calendar. ***Items removed from the Uncontested calendar may be heard at a future meeting.****)*

*5. **Non-NPDES State Discharge Requirements**

Termination-

Consideration of tentative termination of Waste Discharge Requirements for former Northrop Grumman Corporation, East Complex Facility, Hawthorne; File No. 06-089. (Comment submittal deadline was April 10, 2017) [Peter Raftery, (213) 620-6156]

BOARD BUSINESS REPORTS

6. **Executive Officer's Report.** [Samuel Unger, (213) 576-6605]
7. **Update from State Board.**

PUBLIC FORUM

8. Any person may address the Board regarding any matter within the Board's jurisdiction provided the matter does not appear elsewhere on this agenda, has not been scheduled to appear on a future agenda, and is not expected to be imminently scheduled for the Board's consideration. Remarks will be limited to three (3) minutes, unless otherwise directed by the Chair. If a person intends to use a PowerPoint presentation or other **visual aids, you must contact Ronji Moffett, (213) 576-6612, at the Regional Board at least 48 hours prior** to the meeting to arrange for equipment use and be prepared to load any PowerPoint presentation on the computer prior to the meeting to assure the orderly conduct of the meeting.

WORKSHOP

Basin Planning–TMDL

9. Workshop on the proposed revisions to the Clean Water Act section 303(d) List of impaired waterbodies in the Los Angeles Region. (Comment submittal deadline was March 30, 2017). [Dr. Jun Zhu, (213) 576-6681; Dr. Kangshi Wang, (213) 576-6780; and Dr. L.B. Nye, (213) 576-6785] *(The Board may provide feedback and direction to staff; however, no action or voting will take place at this workshop.)*

Information Items

(These items are for informational purposes only.
No voting will take place on these matters.)

10. Update on recycled water projects associated with Publicly Owned Treatment Works (POTWs) [Cris Morris, (213) 620-2083]

11. Discussion of the Regional Board's process for Settlement of Enforcement Actions. [Paula Rasmussen, (213) 576-6607]

12. Update on groundwater cleanup at the National Aeronautics and Space Administration, Jet Propulsion Laboratory in Pasadena. [Samuel Unger, (213) 576-6605]

CLOSED SESSION

13. As authorized by Government Code section 11126, the Regional Board will be meeting in closed session. Closed session items are not open to the public. Items the Board may discuss include the following: [Jennifer Fordyce (JF) (916) 324-6682; Frances McChesney (FM) (916) 341-5174; David Coupe (DC) (510) 622-2306]

    Litigation filed against the Los Angeles Regional Water Quality Control Board (Gov. Code, § 11126, subd. (e)(2)(A).):

    13.1 *City of Redondo Beach v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board,* California Court of Appeal, Second Appellate District, Case No. B271631 [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2008-0058M]. (FM)

    13.2 *Balcom Ranch v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board*, Ventura County Superior Court, Case No. 56-2012-00419048-CU-MC-VTA [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2010-0023]. (DC)

    13.3 *City of Duarte v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Orange County Superior Court, Case No.30-2016-00833614-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    13.4 *Natural Resources Defense Council and Los Angeles Waterkeeper v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS156962 [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    13.5 *City of Gardena v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board,* Orange County Superior Court, Case No. 30-2016-00833722-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

    13.6 *Barclay Hollander Corporation v. California Regional Water Quality Control Board, Los Angeles Region, et.al.,* Los Angeles County Superior Court, Case No. BS158024 [Challenging issuance of Revised Cleanup and Abatement Order No. R4-2011-0046 (Revised April 30, 2015)]. (DC)

13.7 *Wayne Fishback v. Michael D. Antonovich et al.*, United States District Court for the Central District of California, Case No. 2:15-cv-05719 [Seeking preliminary injunction, alleging violations of procedural and substantive due process and other claims for relief]. (DC)

13.8 *Wishtoyo Foundation v. State Water Resources Control Board and California Regional Water Quality Control Board, Los Angeles Region*, Los Angeles County Superior Court, Case No. BS159479 [Challenging issuance of waste discharge requirements water reclamation requirements, Order No. R4-2011-0079-A01]. (DC)

13.9 *Tesoro Refining & Marketing Company LLC and Tesoro SoCal Pipeline Company LLC v. Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS160502 [Challenging issuance of Cleanup and Abatement Order No. R4-2013-0064]. (JF)

13.10 *Los Angeles Waterkeeper v. California State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No. BS163391 [Challenging Resolution No. R15-004 establishing site specific water quality objectives for copper and lead in the Los Angeles River and tributaries]. (JF)

13.11 *Fishback et al. v. County of Los Angeles et al.,* Los Angeles County Superior Court, Case No. PC056481 [Alleging violations of procedural and substantive due process, violations of the state and federal takings clauses, and other claims for relief]. (DC)

Litigation filed by the Los Angeles Regional Water Quality Control Board against other parties (Gov. Code, § 11126, subd. (e)(2)(A).):

13.12 *State Department of Finance, State Water Resources Control Board and Los Angeles Regional Water Quality Control Board v. Commission on State Mandates,* Los Angeles County Superior Court, Case No. BS13070 [Challenging the Commission's decision that portions of the 2001 Los Angeles County MS4 permit created unfunded state mandates]. (JF)

13.13 *California Regional Water Quality Control Board, Los Angeles Region v. United States Army Corps of Engineers; Lieutenant General Thomas P. Bostick, In his Official Capacity*, United States District Court for the Central District of California, Case No. 2:16-cv-01091 [Alleging unauthorized discharges of dredge and fill materials and other pollutants into waters of the United States in violation of Clean Water Act sections 301, 401, and 404]. (JF)

13.14 *People of the State of California ex rel. Regional Water Quality Control Board Los Angeles Region v. The Boeing Company,* Ventura County Superior Court Case No. 56-2010-00371686-CU-MC-SIM [Consideration of extension of Consent Judgment for stipulated penalties for future violations of Boeing's NPDES permit for the Santa Susana Field Laboratory]. (JF)

Petitions for Review of Los Angeles Regional Water Quality Control Board actions filed with the State Water Resources Control Board (Gov. Code, § 11126, subd. (e)(2)(A).):

13.15 *In re: Petition of Natural Resources Defense Council, Los Angeles Waterkeeper, and Heal the Bay for Review of Executive Officer's Action to Conditionally*

Approve nine WMPs Pursuant to the 2012 MS4 Permit, SWRCB/OCC File A-2386 [Challenging the Executive Officer's approval, with conditions, of nine Watershed Management Programs (WMPs) pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.16 *In re: Petition of Los Angeles Waterkeeper and NRDC for Review of Executive Officer's Action to Approve the North Santa Monica Bay EWMP,* SWRCB/OCC File A-2477 [Challenging the Executive Officer's approval of the North Santa Monica Bay EWMP pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.17 *In re: Petition of Natural Resources Defense Council and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's September 7 Vote to Take No Further Action to Review Executive Officer's Approval of the North Santa Monica Bay Enhanced Watershed Management Program Pursuant to the L.A. County MS4 Permit,* SWRCB/OCC File A-2508 [Challenging the Regional Board's decision to not review the Executive Officer's approval of the North Santa Monica Bay EWMP pursuant to the Los Angeles County MS4 Permit Order No. R4-2012-0175]. (JF)

13.18 *In re: Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Hyperion Treatment Plant Discharge to the Pacific Ocean;* Order No. R4-2017-0045. (FM)

13.19 *In re: Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Donald C. Tillman Water Reclamation Plant Discharge to the Los Angeles River;* Order No. R4-2017-0062. (FM)

13.20 *In re: Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Burbank, Burbank Water Reclamation Plan and its associated wastewater collection system and outfalls, discharging to the Burbank Western Channel;* Order No. R4-2017-0064. (FM)

13.21 *In re: Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Los Angeles-Glendale Water Reclamation Plan and its associated wastewater collection system and outfall discharge to the Los Angeles River;* Order No. R4-2017-0063. (FM)

<u>Test Claims filed with the Commission on State Mandates (Gov. Code, § 11126, subd. (e)(2)(A).)</u>:

13.22 *In re: Los Angeles Region Water Permit – Ventura County,* Commission on State Mandate Test Claim No. 110-TC-01 [Regarding a test claim filed by Ventura County Watershed Protection District and the County of Ventura alleging that portions of Order No. R4-2010-0108 created unfunded state mandates]. (JF)

13.23 *In re: Los Angeles Region Water Permit – Cities of Los Angeles County,* Commission on State Mandate Test Claim No. 13-TC-01 [Regarding a test claim filed by several cities within Los Angeles County alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

13.24 *In re: Los Angeles Region Water Permit – County of Los Angeles,* Commission on State Mandate Test Claim No. 13-TC-02 [Regarding a test claim by the County of Los Angeles and Los Angeles County Flood Control District alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

<u>Other matters</u>:

13.25 Consultation with counsel about:

(a) A matter which, based on existing facts and circumstances, presents significant exposure to litigation against the Regional Board (Government Code section (Gov. Code, § 11126, subd. (e)(2)(B).); or

(b) A matter which, based on existing facts and circumstances, the Regional Board is deciding whether to initiate litigation (Gov. Code, § 11126, subd. (e)(2)(C).) (JF/FM/DC)

13.26 Consideration of the appointment, employment, or evaluation of performance about a public employee. (Gov. Code, § 11126, subd. (a).) (JF/FM/DC)

14. **Adjournment of current meeting.** (The next regular meeting of the Board will be held on June 1, 2017 at the Metropolitan Water District City of Southern California, Board Room, located at 700 North Alameda Street, Los Angeles, CA, 90012, and beginning at 9:00 a.m.)

Ex Parte Communications: An ex parte communication is a communication to a board member from any person, about a pending matter, that occurs in the absence of other parties and without notice and opportunity for them to respond. The California Government Code prohibits the board members from engaging in ex parte communications during permitting, enforcement, and other "quasi-adjudicatory" matters. Ex parte communications are allowed on pending general orders (such as general waste discharge requirements, general waivers, and general Clean Water Act section 401 water quality certifications) subject to the disclosure requirements of Water Code section 13287 (for further information and disclosure forms, please visit http://www.waterboards.ca.gov/losangeles/laws_regulations/). The Regional Board discourages ex parte communications during rulemaking and other "quasi-legislative" proceedings. The ex parte rules are intended to provide fairness, and to ensure that the board's decisions are transparent, based on the evidence in the administrative record, and that evidence is used only if stakeholders have had the opportunity to hear and respond to it. Ex parte rules do not prevent anyone from providing information to the water boards or requesting that the water boards take a particular action. They simply require that the information come into the record through proper channels during a duly noticed, public meeting. A board member who has engaged or been engaged in a prohibited ex parte communication will be required to publicly disclose the communication on the record and may be disqualified from participating in the proceeding. For more information, please look at the ex parte questions and answers document found at www.waterboards.ca.gov/laws_regulations/docs/exparte.pdf.

Procedures: The Regional Board follows procedures established by the State Water Resources Control Board. These procedures are established in regulations commencing with section 647 of title 23 of the California Code of Regulations. The Chair may establish specific procedures for each item, and consistent with section 648, subdivision (d) of title 23 of the California Code of Regulations may waive nonstatutory provisions of the regulations. Generally, all witnesses testifying before the Regional Board must affirm the truth of their testimony and are subject to questioning by the Board Members. The Board does not, generally, require the designation of parties, the prior identification of witnesses, or the cross examination of witnesses. Generally, speakers are allowed three minutes for comments. Any requests for an alternate hearing process, such as requesting additional time to make a presentation, should be made to the Executive Officer in advance of the meeting, and under no circumstances later than 5:00 p.m. on the Thursday preceding the Board meeting. The provisions of this paragraph shall be deemed superseded to the extent that they are contradicted by a hearing notice specific to a particular agenda item.

Written Submissions: Written materials (whether hand-delivered, mailed, e-mailed, or facsimiled) ***must be received prior to the relevant deadline*** established in the agenda and public notice for an item. If the submitted material is more than 10 pages or contains foldouts, color graphics, maps, or similar items, 12 copies must be submitted prior to the relevant deadline.

Failure to comply with requirements for written submissions is grounds for the Chair to refuse to admit the proposed written comment or exhibit into evidence. (Cal. Code Regs., tit. 23, §648.4, sub. (e).) The Chair may refuse to admit written testimony into evidence unless the proponent can demonstrate why he or she was unable to submit the material on time or that compliance with the deadline would otherwise create a hardship. In an adjudicatory matter, where there is a showing of prejudice to any party or the Board from admission of the written testimony, the Chair may refuse to admit it.

Administrative Record: Material presented to the Board as part of testimony that is to be made part of the record must be left with the Board. This includes photographs, slides, charts, diagrams, etc. All Board files pertaining to the items on this Agenda are hereby made a part of the record submitted to the Regional Board by staff for its consideration prior to action on the related items.

Accessibility: Individuals requiring special accommodations or language needs should contact Rosie Villar at (213) 576-6630 or rvillar@waterboards.ca.gov at least ten working days prior to the meeting. TTY/TDD Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

Availability of Complete Agenda Package: A copy of the complete agenda package is available for examination at the Regional Board Office during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday) beginning 10 days before the Board meeting. Questions about specific items on the agenda should be directed to the staff person whose name is listed with the item.

Continuance of Items: The Board will endeavor to consider all matters listed on this agenda. However, time may not allow the Board to hear all matters listed. Matters not heard at this meeting may be carried over to the next Board meeting or to a future Board meeting. Parties will be notified in writing of the rescheduling of their item. Please contact the Regional Board staff to find out about rescheduled items.

Challenging Regional Board Actions: Pursuant to Water Code section 13320, any aggrieved person may file a petition to seek review by the State Water Resources Control Board of most actions taken by the Regional Board. A petition must be received within 30 days of the action.

Petitions must be sent to State Water Resources Control Board, Office of Chief Counsel; Attn: Phil Wyels, Assistant Chief Counsel; 1001 I Street, 22nd Floor; Sacramento, CA 95814.

Lyris Name: Short Form Agenda
4/27/17

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8/29/2000 0:00	rferber@ix.netcom.com	Robin Ferber
9/7/2000 0:00	Jack.Price@waterboards.ca.gov	Jack Price
9/7/2000 0:00	Rosie.Villar@waterboards.ca.gov	Rosie Villar
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11/15/2007 16:31	gary@jagconsultinggroup.com	Gary Cronk
12/19/2007 11:15	Hassan.Rad@lacity.org	Hassan rad
1/23/2008 13:32	lindaestrin@gmail.com	LG estrin
2/26/2008 13:41	jsickenger@ka-pow.com	Jeff Sickenger
2/28/2008 17:33	dparkinson@geosyntec.com	David Parkinson
4/15/2008 16:20	jrodrig@dpw.lacounty.gov	Janet Rodriguez
4/29/2008 8:08	jcruz@dpw.lacounty.gov	Jemellee Cruz
5/9/2008 8:51	chrism@lwa.com	Chris Minton
6/9/2008 15:47	gamah@waterboards.ca.gov	Ginachi Amah
6/12/2008 4:40	GlennBaileySFV@yahoo.com	Glenn Bailey
6/13/2008 16:56	mray@wmspartners.com	Maya Ray
6/18/2008 12:23	hagop.bedikian@yahoo.com	Hagop Bedikian
7/3/2008 12:09	travis.peterson.solutions@gmail.com	Travis Peterson
7/5/2008 7:45	bflores007@msn.com	Bill Flores
7/10/2008 9:55	ysim@dpw.lacounty.gov	Youn Sim
7/14/2008 7:36	paul.cobian@lacity.org	Paul S. Cobian
7/14/2008 9:03	royallmichael@yahoo.com	Michael Royall
7/18/2008 10:38	brent.a.smith@amec.com	Brent Smith
8/13/2008 6:30	tmoon@dpw.lacounty.gov	TJ Moon
9/16/2008 17:08	jdougall@lvmwd.com	Jan Dougall
10/2/2008 3:14	ECOMOM2008@gmail.com	Christine L. Rowe
10/8/2008 11:31	fhutton@fionahuttonassoc.com	fiona hutton
10/9/2008 10:35	dleachman@lacsd.org	Debra Leachman
10/9/2008 19:42	ccash@paramountcity.com	Christopher S.Cash
10/24/2008 12:13	william.taylor@emcbc.doe.gov	William L. Taylor
10/29/2008 3:05	Johnrdarnell@yahoo.com	John R. Darnell II
11/5/2008 9:29	shawn.hagerty@bbklaw.com	Shawn Hagerty
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12/17/2008 15:24	jdreher@rinconconsultants.com	John Dreher
1/7/2009 14:08	jrp@astound.net	John Peterson
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1/15/2009 13:07	chrlee@ucla.edu	Christine Lee
1/21/2009 9:33	fgonzal@dpw.lacounty.gov	Fred A. Gonzalez
1/26/2009 14:07	ajirik@portla.org	Andrew Jirik
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11/2/2011 10:36	mcarpenter@newhall.com	Matt Carpenter
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11/7/2011 16:06	brenda.krout@ojaisan.org	Brenda Krout
11/7/2011 21:01	donholly@aol.com	Don Hollingsworth
11/8/2011 8:23	marty.melvin@vcrcd.org	Marty Melvin
11/9/2011 10:17	bburgess6410@yahoo.com	Brandon Burgess
11/9/2011 11:54	nrccgcm@gmail.com	J. Ryan Bentley
11/10/2011 9:40	tajenkins@sgvwater.com	Thomas A. Jenkins
11/10/2011 10:16	epi@riousa.com	David Light
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11/22/2011 12:00	jhunter@jlha.net	john Hunter
11/25/2011 12:08	richard@coloramanursery.com	Richard Wilson
12/1/2011 10:29	athomas@dpw.lacounty.gov	Anthein Thomas
12/1/2011 15:36	danielle.sakai@bbklaw.com	Danielle Sakai
12/6/2011 21:20	michael.mooradian@ecobilitycorp.com	Michael Mooradian
12/8/2011 10:56	gwang@waterboards.ca.gov	Guangyu Wang
12/12/2011 10:54	adanortega@me.com	Adan Ortega
12/15/2011 14:30	kathy.knight@verizon.net	Kathy Knight
12/16/2011 11:27	guiliano.dave@epa.gov	David Guiliano
12/18/2011 9:59	dodger93277@yahoo.com	Daniel Galbraith
12/27/2011 9:08	johnnym@agrx.com	John Morse
12/29/2011 11:05	Ppeuron@forestlawn.com	Peter Peuron
12/29/2011 15:29	smulligan@calleguas.com	Susan Mulligan
1/12/2012 14:50	kgraves@schmitzandassociates.net	Kris Graves
1/17/2012 14:58	srapoport@waterboards.ca.gov	Shana Rapoport
1/26/2012 9:38	econard@petrodiamond.com	Eric Conard
2/16/2012 14:41	mgrey@biasc.org	Mark Grey
2/20/2012 13:01	tracy@egoscuelaw.com	Tracy Egoscue
2/22/2012 16:20	kaying_lee@ci.pomona.ca.us	Kaying Lee
2/27/2012 12:37	saucerman.suesan@epa.gov	Suesan Saucerman
2/28/2012 8:46	bdouglas@naturalsystemsutilities.com	Bruce Douglas
3/13/2012 16:12	billlamarr@msn.com	Bill La Marr
3/15/2012 17:00	jpereira@cwecorp.com	Jason Pereira
3/16/2012 0:41	miguel@urbansemillas.com	Miguel Luna
3/20/2012 10:39	taylor@tidalinfluence.com	Taylor Parker
3/20/2012 16:23	jewel.johnson@mrca.ca.gov	Jewel Johnson
3/22/2012 11:56	jbellomo@willdan.com	Joe Bellomo
3/22/2012 15:22	BryantA@lwa.com	Bryant Alvarado
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5/27/2014 16:54	rcaldwell@goldcoasttransit.org	Reed Caldwell
5/30/2014 12:48	anne.callotdavis@mbakerintl.com	Anne Callot Davis
6/11/2014 9:26	cmeeker@ci.arcadia.ca.us	Claudine Meeker
6/20/2014 0:06	shouston45@hotmail.com	Scott Houston
6/24/2014 17:40	cfierro@burbankca.gov	Claudia Fierro
6/25/2014 11:28	Melanie.Tory@ladwp.com	Melanie Tory

7/3/2014 15:22	TonyE@unitedwater.org	Anthony A. Emmert
7/9/2014 7:12	ana.deanda@longbeach.gov	Ana DeAnda
7/15/2014 7:15	rchavez@ci.monrovia.ca.us	Ruth Chavez
7/24/2014 14:22	Akrieger@simivalley.org	Alan Lee Krieger
7/24/2014 18:10	ryandavyes@gmail.com	Ryan Davyes Troughton
8/11/2014 12:57	rbeltran@glendaleca.gov	Rick Bletran
8/24/2014 17:39	sarah.randle@yale.edu	Sarah Randle
8/27/2014 15:54	mbao@lacsd.org	Matt Bao
9/22/2014 14:47	nghirelli@rwglaw.com	Nicholas Ghirelli
10/8/2014 16:37	eugeneungermann@gmail.com	Eugene Ungermann
10/13/2014 7:50	calrmanews@gmail.com	Cal RMA
10/16/2014 13:39	apaxton@resourceslegacyfund.org	Alexandra Paxton
11/18/2014 7:06	bob.sun@ladwp.com	Bob Sun
11/21/2014 13:52	palva@dpw.lacounty.gov	paul alva
11/21/2014 17:18	dustin.bambic@paradigmh2o.com	Dustin Bambic
11/24/2014 11:43	kmika@ioes.ucla.edu	Katie Mika
11/24/2014 13:32	Man.Voong@waterboards.ca.gov	Man Voong
12/17/2014 14:09	Jerngeorge@yahoo.com	Jeremiah George
12/18/2014 16:13	justin@mcadvise.com	Justin Mahramas
1/5/2015 15:51	gilesp@lwa.com	Giles Pettifor
1/6/2015 20:11	susan.damron@ca.rr.com	Susan Damron
1/19/2015 9:44	croncw@cdmsmith.com	charles cron
1/26/2015 15:26	Spencer.Joplin@WaterBoards.CA.Gov	Spencer Joplin
1/28/2015 11:28	katherine.rubin@ladwp.com	Katherine Rubin
1/29/2015 11:32	lsalinger@counsel.lacounty.gov	Lillian Salinger
2/2/2015 12:48	samick@rma.org	Sarah Amick
2/4/2015 12:58	jlaudencia@rsrcorp.com	Jun Laudencia
2/5/2015 9:02	michelle.mattson@westonsolutions.com	Michelle Mattson
2/12/2015 8:15	Erum.Razzak@waterboards.ca.gov	Erum Razzak
2/13/2015 12:23	rbye@scwater.org	Ryan Bye
3/3/2015 17:04	adangelo@dpw.lacounty.gov	Armando D'Angelo
3/9/2015 13:27	lara@lawaterkeeper.org	Lara Meeker
3/16/2015 16:00	mbelen.bernal@gmail.com	Belen Bernal
3/24/2015 12:12	pglenn@bh.lacounty.gov	Paul Glenn
3/25/2015 11:35	wqcb.la@gmail.com	Justin Morgan
3/27/2015 12:51	suzanneb@lwa.com	Suzanne Brown
4/3/2015 19:44	ADLN.MTEKLLCcf@gmail.com	Project Coordinator
4/6/2015 14:47	jntrotter@burnsmcd.com	Jennifer Trotter
4/10/2015 9:50	mitschele.becky@epa.gov	Becky Mitschele
4/16/2015 18:09	simon.wick@matchpointinc.us	Simon Wick
4/17/2015 11:24	m.chris.hsu@gmail.com	Chris Hsu
4/18/2015 16:37	cindyzhang@singtaola.com	Cindy Zhang
4/21/2015 21:28	rkampalath@healthebay.org	Rita Kampalath
4/28/2015 10:29	vivian.marquez@lacity.org	Vivian Marquez
4/29/2015 12:23	kmarkarian@lcf.ca.gov	Kris Markarian
5/21/2015 12:15	alexanderlopezt5@gmail.com	Alexander Lopez
5/21/2015 19:40	j333bass@gmail.com	Justin Bass

5/25/2015 13:13	sue@wspa.org	Sue Gornick
6/6/2015 20:22	wharris@biocleanenvironmental.com	Will Harris
6/10/2015 9:46	Ching-Yin.To@waterboards.ca.gov	Ching To
6/17/2015 6:43	qiong.lei@lacity.org	Qiong Lei
6/17/2015 21:33	plauzoles@me.com	Lucien (Lu) Plauzoles
6/29/2015 8:09	epa.wrcb.losang@ec.grassrootsoncall.com	justin morgan
6/30/2015 10:59	linty@cdmsmith.com	Tiffany Lin
6/30/2015 13:55	deborah.brandes@waterboards.ca.gov	Deborah Brandes
7/2/2015 10:07	chris.speelman@gerdau.com	Chris Speelman
7/6/2015 16:41	thunguyen@dpw.lacounty.gov	Thuan Nguyen
7/7/2015 12:19	mtremblay@lacsd.org	Martha Tremblay
7/7/2015 14:38	rubin.laura@gmail.com	Laura Rubin
7/10/2015 12:50	kerisman@willdan.com	Kelsey Erisman
7/21/2015 8:31	lara.meeker@ventura.org	Lara Meeker
7/24/2015 10:26	raconte@aol.com	Geneviève M. Clavreul
7/31/2015 3:46	michaelgarabedian@earthlink.net	Michael Garabediann
8/13/2015 11:56	alex@stormwaterca.com	Alexander Sotelo
8/18/2015 17:11	jacqueline.mcmillen@altaenviron.com	Jacqueline McMillen
8/31/2015 16:29	ali.poosti@lacity.org	Ali Poosti
9/1/2015 8:48	kryan@capcoenv.com	Karen Ryan
9/3/2015 7:18	essi.esmaili@noreasinc.com	E Essi Esmaili
9/9/2015 14:15	ldow@falconwaterfree.com	Liam Dow
9/18/2015 14:39	patrick@jonesenv.com	Patrick Jones
9/24/2015 11:17	airyk@lwa.com	Airy Krich-Brinton
10/7/2015 10:45	brandon.eisen@aquilogic.com	Brandon Eisen
10/9/2015 15:41	sseivright@calcima.org	Suzanne Seivright
10/19/2015 10:49	bmardian@pienvironmental.com	Brent Mardian
11/2/2015 10:16	rexfrankel@yahoo.com	Rex Frankel
11/4/2015 14:07	mazhar.ali@waterboards.ca.gov	Mazhar Ali
11/4/2015 15:42	cjeffers@ci.glendora.ca.us	Chris Jeffers
11/10/2015 18:05	ply@wrd.org	Phuong Ly
11/10/2015 20:31	evan.arnold@gmail.com	Evan Arnold
11/11/2015 13:10	arthur@lawaterkeeper.org	Arthur Pugsley
11/16/2015 10:45	manofheart58@gmail.com	Thaddeus Smith
11/18/2015 8:37	edith.hannigan@bof.ca.gov	Edith Hannigan
11/18/2015 17:40	melissa@lawaterkeeper.org	Melissa Lynn Kelly
11/19/2015 11:16	rbutler@dpw.lacounty.gov	Ryan Butler
11/19/2015 15:49	jbryson@soundearthinc.com	James Bryson
11/28/2015 16:14	pete-smbrc.waterboards.ca.gov@peterbe	Peter Benjamin
12/8/2015 16:27	sjohnson@healthebay.org	Steven Johnson
12/9/2015 9:46	erica.wolski@waterboards.ca.gov	Erica Wolski
12/29/2015 7:14	cunguyen@dpw.lacounty.gov	Cung Nguyen
12/30/2015 7:59	mlombos@dpw.lacounty.gov	Mark Lombos
1/4/2016 11:41	brussak@libertyhill.org	Ben Russak
1/6/2016 15:02	rmoreno3@semprautilities.com	Ricardo Moreno
1/6/2016 21:29	Marianneratcliff@yahoo.com	Marianne Ratcliff
1/9/2016 16:40	jenna.latt@arb.ca.gov	

1/21/2016 16:31	chuckwhiteconsulting@gmail.com	Chuck White
1/22/2016 14:56	e_suher@cascinc.com	Ed Suher
2/5/2016 15:31	elizabeth.payne@waterboards.ca.gov	Elizabeth Payne
2/6/2016 5:31	sabina_sullivan@verizon.net	Sabina Sullivan
2/19/2016 9:50	anthony.brown@aquilogic.com	anthony brown
2/23/2016 11:34	cziegler303@gmail.com	Chris Ziegler
2/25/2016 7:51	kevin@kjservices.net	kevin sales
2/25/2016 8:08	sgeschwind@ci.san-dimas.ca.us	Sasha Geschwind
2/25/2016 8:36	stevec@paradigmh2o.com	Stephen Carter
2/25/2016 9:58	Pflores@ci.azusa.ca.us	Phillip A. Flores
2/25/2016 11:00	charles.herbertson@culvercity.org	Charles D. Herbertson
2/26/2016 12:19	rduboux@malibucity.org	Rob DuBoux
2/27/2016 11:36	ochi@ci.monrovia.ca.us	Oliver Chi
2/27/2016 15:24	tcherry@ci.monrovia.ca.us	Tina Cherry
2/29/2016 8:57	lgorecki@bellflower.org	Len Gorecki
3/4/2016 14:45	domingo.orosco@lacity.org	Domingo Orosco
3/18/2016 14:13	frivera@elsegundo.org	Floriza Rivera
3/21/2016 7:09	croldan@elmonteca.gov	Cesar Roldan
3/24/2016 16:54	mtalent@malibucity.org	Melinda Talent
3/30/2016 9:23	mhogan@ci.ventura.ca.us	Miles Hogan
3/30/2016 11:04	Steven.Sander@calrecycle.ca.gov	Steven P Sander
4/7/2016 15:54	susan.fears@dtsc.ca.gov	susan fears
4/29/2016 11:35	laura@houstonmagnani.com	Laura Cottrell
5/3/2016 11:00	fsmithjourno@gmail.com	Fiona Smith
5/5/2016 16:44	Gerhardt@sslocsd.us	Gerhardt Hubner
5/9/2016 12:55	sandilp@centralbasin.org	Sandi Linares-Plimpton
5/9/2016 13:51	amy.kauba@waterboards.ca.gov	Amy Kauba
5/10/2016 16:16	rebecca.christmann@waterboards.ca.gov	Rebecca Christmann
5/10/2016 17:10	114rockwell@gmail.com	A. J. Ursic Jr.
5/12/2016 16:16	ibravo@cityofwhittier.org	Isaac Bravo
5/18/2016 6:28	aguzmanperez@dpw.lacounty.gov	Amanda Guzman-Perez
5/19/2016 6:23	hmeshar@aol.com	Helyne Meshar
5/24/2016 15:16	spam@pistonsandrods.com	JetFuel
5/30/2016 16:52	Paulcyanez@icloud.com	Paul Yanez
5/31/2016 7:07	jskinner@bh.lacounty.gov	John Skinner
6/1/2016 11:34	nmunakata@lacsd.org	Naoko Munakata
6/6/2016 13:28	eguerin@scpr.org	Emily Guerin
6/22/2016 15:12	DianaE@lwa.com	Diana Engle
6/24/2016 13:45	peggy.nguyen@lacity.org	Peggy Nguyen
6/29/2016 9:59	acarlos@waterboards.ca.gov	Alex P Carlos
7/5/2016 16:04	woonhoek@usc.edu	Woonhoe Kim
7/13/2016 6:54	atachiki@ci.monrovia.ca.us	Alex Tachiki
7/14/2016 15:44	WCSolutionsLLC@yahoo.com	Cathy Chang
7/18/2016 10:53	paul.j.costa@boeing.com	Paul Costa
7/19/2016 17:32	asheldon@malibucity.org	Andrew Sheldon
7/20/2016 10:40	edlegarreta@gmail.com	Ed Legarreta
7/28/2016 15:42	robsusakiwi@msn.com	Robin Kennard

8/4/2016 13:27	simoneevett@lacsd.org	Simone Evett
8/4/2016 14:05	kelly.henderson@sce.com	Kelly Henderson
8/17/2016 21:57	LouisaStephen@yahoo.com	Louisa Stephen
8/25/2016 12:03	lwarren@brwncald.com	Laura Warren
8/25/2016 15:06	wwinter@dpw.lacounty.gov	Bill Winter
8/29/2016 9:54	asweet@cityofglendora.org	Alison Sweet
8/30/2016 10:54	scott.kasper@clarkconstruction.com	Scott kasper
9/6/2016 16:51	algrajeda@dpw.lacounty.gov	Alberto Grajeda
9/8/2016 14:42	fettke.kimi@gmail.com	Kim Fettke
9/9/2016 10:55	liz.dubrin@ojaisan.org	Liz Dubrin
9/13/2016 9:56	jmacias@ci.azusa.ca.us	Jared Macias
9/26/2016 8:53	brenda.panuco@siderah2o.com	Brenda Pancuo
9/28/2016 9:27	swong@avibank.com	Sam Wong
9/28/2016 15:09	MSzekely@rsrcorp.com	M Szekely
9/30/2016 8:43	faraz.asad@waterboards.ca.gov	faraz asad
9/30/2016 14:36	glen.osterhage@waterboards.ca.gov	Glen Osterhage
10/6/2016 9:46	francis.sysu@ladwp.com	Francis Sy Su
10/6/2016 10:50	jsoohoo@dpw.lacounty.gov	Justin Soo Hoo
10/10/2016 9:23	ochun@orionenv.com	Onamia Chun
10/13/2016 8:29	Joann@Sunstarlabs.com	Joann Marroquin
10/14/2016 8:52	Jennifer.Marion@waterboards.ca.gov	Jennifer Marion
10/19/2016 13:26	monishabrown@lacsd.org	Monisha Brown
10/25/2016 15:05	Xuan.Lieu@waterboards.ca.gov	Xuan Lieu
10/27/2016 11:25	jhallman@astropak.com	Josh Hallman
11/2/2016 10:44	tstorrer@lssh-law.com	Thomas Storrer
11/4/2016 12:05	ryan.baron@bbklaw.com	Ryan Baron
11/23/2016 14:44	celliott@ci.la-verne.ca.us	Clark Elliott
12/19/2016 17:10	cdalessandro@geosyntec.com	Chris D'Alessandro
12/20/2016 10:03	vmarchetti@lbschools.net	Vince Marchetti
12/30/2016 13:49	angineh.shahnazarian@waterboards.ca.gc	Angineh Shahnazarian
12/31/2016 17:06	woonhoe.kim@waterboards.ca.gov	Woonhoe Kim
1/3/2017 16:23	ewolf@sgvcog.org	Eric Wolf
1/4/2017 10:34	sadrpour@usc.edu	nick sadrpour
1/11/2017 15:16	zoutan@ucla.edu	Tan Zou
1/11/2017 17:00	nils.nehrenheim@gmail.com	nils nehrenheim
1/16/2017 9:27	sbeck@mbcnet.net	Shane Beck
1/23/2017 16:12	adriell@lwa.com	Adriel Leon
1/27/2017 8:30	edward.othmer@mwhglobal.com	Ed Othmer
1/27/2017 11:08	jlarson@geosyntec.com	Julie Larson
1/27/2017 16:50	barbara.bradley@advancedonsitewater.cc	Barbara Bradley
2/9/2017 17:00	kathleen@mcgowan.consulting	Kathleen McGowan
2/13/2017 13:25	jhakel@socalworks.org	John Hakel
2/14/2017 14:34	daniellep@lwa.com	Danielle Potocek
2/15/2017 12:28	jbreitling@lewisandco.net	James Breitling
2/15/2017 16:04	Saeedreza.Hafeznezami@Waterboards.ca.	Saeedreza Hafeznezami
2/16/2017 20:33	edm@malibuonline.com	EUGENE DONALD MICHAEL
2/17/2017 8:27	mathewwatson@lacsd.org	Mathew Watson

3/7/2017 7:37	jwestfall@lacsd.org	Josh Westfall
3/7/2017 15:27	Tachiki.Nicole@epa.gov	Nicole Tachiki
3/20/2017 8:39	lasswell@lasswellassociates.com	Thomas Lasswell
4/1/2017 15:48	ben.stanphill@arcadis.com	Ben STanphill
4/4/2017 15:32	ago@renewablegroup.com	Alyssa Go
4/4/2017 18:31	neotecuv@neotecuv.net	Sunny Kim
4/6/2017 8:32	info@cleanwatertechnologies.net	Michael Omary
4/6/2017 11:01	Jelena.Hartman@waterboards.ca.gov	Jelena Hartman
4/17/2017 13:04	Marji.Popour@waterboards.ca.gov	Marji Popour
4/24/2017 6:43	jjsalomon@armstrongflooring.com	Jonathon Salomon

Water Boards

Environmental Protection Agency
State Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SIGN-IN SHEET

Regional Board Meeting
May 4, 2017

Name	Mail Address Company Name/Organization	E-Mail Address or Telephone Number	Add Name to Mail List
Ray Tahir	TCAS	xJohn tecsenu	✓
Naoko Munakata	LACSD nmunakata@lacsd.org		
Josh Westfall	LACSD	jwestfall@lacsd.org	
Danielle Potocek	Larry Walker Associates	daniellep@lwa.com	
Judy Nelson	City of Glendora	nelsonjudy95@gmail.com	
Alison Sweet	CITY OF GLENDORA	asweet@cityofglendora.org	
Gloria Crudgington	City of Monrovia	gloria@crudg.com	
Steve Slaten	NASA JPL 4800 Oak Grove Dr	sslaten@nasa.gov	

Water Boards

Environmental Protection Agency
State Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SIGN-IN SHEET

Regional Board Meeting
May 4, 2017

Name	Mail Address Company Name/Organization	E-Mail Address or Telephone Number	Add Name to Mail List
Thien Ng	City of Oxnard		
Dan Rydberg	City of Oxnard		
Tim DAFETA	City of Los Angeles - Sanitation	(310) 648 5555	
Jenna Driscoll	Santa Barbara Channelkeeper 714 Bond Ave Santa Barbara, CA 93103	805-563-3377 x5 jenna@sbck.org	
Abraham Razon	City of Los Angeles / Sanitation		
STEVEN NIKAIDO	"		
HASSAN RAD	"		
Ann Heil	LACSD	aheil@lacsd.org	

12-2

Water Boards

Environmental Protection Agency
State Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SIGN-IN SHEET

Regional Board Meeting
May 4, 2017

Name	Mail Address Company Name/Organization	E-Mail Address or Telephone Number	Add Name to Mail List
Edward Kim	LADWP 111 North Hope St. Los Angeles, CA 90012	edward.kim@ladwp.com 213-367-4651	X
Yaissa Martinez	EPA 600 Wilshire Blvd Ste 1460 Los Angeles CA 90017	Martinez.Yaissa@epa.gov 213-244-1804	
Erika Bensch	LACSD 1955 Workman Mill Whittier CA 91205	~~[illegible]~~ erikabensch@lacsd.org	X
Adriana Stovall	Larry Walker Assoc. 2151 Alessandro Dr, #100	AdrianaS@lwa.com	X
Amy Storm	Larry Walker Assoc. 2151 Alessandro Dr, #100	AmyS@lwa.com	X
Jennifer Valdez	LADWP 433 E. Temple St. Bldg O, Room 101, LA, 90012	Jennifer.Valdez@ladwp.com	
Bob Sun	"	Bob.sun@ladwp.com	
Mario Acevedo	"	Mario.Acevedo@ladwp.com	

Water Boards

Environmental Protection Agency
State Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SIGN-IN SHEET

Regional Board Meeting
May 4, 2017

Name	Mail Address Company Name/Organization	E-Mail Address or Telephone Number	Add Name to Mail List
KATHLEEN McGOWAN	MC GOWAN CONSULTING BEACH CITIES WMG	kathleen@mcgowan.consulting	
AUSTIN STRAUS	433 E TEMPLE ST, LA, 90012	austin.straus@ladwp.com	
Bruce Hamamoto	LACDPW	bhamamo@dpw.lacounty.gov	
FERNANDO VILLALUNA	LACDPW	FVILLALUNA@DPW.LACOUNTY.GOV -	
Geremew Amenu	LACDPW	gamenu@dpw.lacounty.gov	
Kathy Garcia	City of Rosemead 8838 E Valley Blvd, Rosemead 91770	kgarcia@cityofrosemead.org	
Eric Wolf	San Gabriel Valley Council of Govt	ewolf@sgvcog.org	
Amber Ballrot	WGR Southwest, Inc.	aballrot@wgr-sw.com	✓
Ana Horn	WGR Southwest, Inc	ahorn@wgr-sw.com	✓

12-4

Steven Johnson	HEAL THE BAY	sjohnson@healthebay.org
Shawn Igoe	Manhattan Beach	sigoe@citymb.info
Anita Kuhlman	City of Camarillo	akuhlman@cityofcamarillo.org
Ewelina Mutkowska	County of Ventura	ewelina.mutkowska@ventura.org
Chloe Grison	Los Angeles Department of Water & Power	chloe.grison@ladwp.com
Joe Yahner	City of Ventura	jyahner@cityofventura.net
Hyginus Mmeje	City of LA / public works	hyginus.mmeje@lacity.org
ANDRÉ GOODRIDGE	LA SAN	
Jennifer Nowaczewski	JOHN L HUNTER	JNOWACZEWSKI@JLHA.NET
Kangshi Wang	RWQCB	kangshi.wang@waterboards.ca.gov

Please Print Legibly

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5·4·17

I wish to speak during the Board Meeting:

___ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ______
___ I oppose Agenda Item No. ______

Name: Judy Nelson
___ Representing Self
X Representing: City of Glendora

Unless exempted by the Board, comments are limited to three (3) minutes.

---

8 min

* Please Print Legibly

State of California

CALIFORNIA
Water Boards

Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5-4-17

I wish to speak during the Board Meeting:

~~X~~ I wish to speak during Public Forum (non-agenda item).

✓ I wish to speak on Agenda Item No. 9

I do not wish to speak, but express the following position:

___ I SUPPORT Agenda Item No. ___ ___ I OPPOSE Agenda Item No. ___

Name: Ann Heil Representing LA County Sanitation Districts

5 min

*Please Print Legibly

State of California

CALIFORNIA Water Boards

Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5/4/2017

I wish to speak during the Board Meeting:

___ I wish to speak during Public Forum (non-agenda item).

X I wish to speak on Agenda Item No. 9

I do not wish to speak, but express the following position:

X I SUPPORT Agenda Item No. ___ ___ I OPPOSE Agenda Item No. ___

Name: EWELINA MUTKOWSKA Representing COUNTY OF VENTURA

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Please Print Legibly

Date: MAY 4

I wish to speak during the Board Meeting:

___ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ___
___ I oppose Agenda Item No. ___

10 minutes

Name: RAY TAHIR

___ Representing Self (Corporation) GARDENA, SAN
___ Representing: FERNANDO, AZUSA, ROSEMEAD, WHITTIER, SOUTH EL MONTE

Unless exempted by the Board, comments are limited to three (3) minutes.

12-7

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Please Print legibly

Date: 5/4

I wish to speak during the Board Meeting:

✓ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ______
___ I oppose Agenda Item No. ______

Name: Bruce Hamamoto

___ Representing Self
✓ ~~Representing~~: LA County Dept of Public Works

Unless exempted by the Board, comments are limited to three (3) minutes.

8 min

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Please Print Legibl

Date: 5-4-17

I wish to speak during the Board Meeting:

8 minutes requested

✓ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ______
___ I oppose Agenda Item No. ______

Name: Ann Heil

___ Representing Self
✓ ~~Representing~~: LA County Sanitation Districts

Unless exempted by the Board, comments are limited to three (3) minutes.

12-8

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

5 min

SPEAKER REQUEST CARD

Date: 5/4/17

I wish to speak during the Board Meeting:

X I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ________
___ I oppose Agenda Item No. ________

Name: KATHLEEN McGOWAN
___ Representing Self
X Representing: BEACH CITIES WMG
(requested 5 min in advance)

Unless exempted by the Board, comments are limited to three (3) minutes.

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: ~~5/4/~~ 5/4/17

Please Print Legibly

I wish to speak during the Board Meeting:

X I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ________
___ I oppose Agenda Item No. ________

Name: STEVEN JOHNSON
___ Representing Self
X Representing: HEAL THE BAY

Unless exempted by the Board, comments are limited to three (3) minutes.

12-9

Please Print Legibly

State of California

California Water Boards

Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5/4/17

I wish to speak during the Board Meeting:

___ I wish to speak during Public Forum (non-agenda item).

✓ I wish to speak on Agenda Item No. 9

I do not wish to speak, but express the following position:

___ I SUPPORT Agenda Item No. ___ ___ I OPPOSE Agenda Item No. ___

Name: ALISON SWEET Representing CITY OF GLENDORA

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Please Print Legibly

Date: 5/4/17

I wish to speak during the Board Meeting:

X I wish to speak on Agenda Item No. 9 ? 303(d) Workshop
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ________
___ I oppose Agenda Item No. ________

Name: Jenna Driscoll
___ Representing Self
X Representing: Santa Barbara Channelkeeper

Unless exempted by the Board, comments are limited to three (3) minutes.

12-10

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5/4/17

I wish to speak during the Board Meeting:

✓ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ________
___ I oppose Agenda Item No. ________

Name: Nancy Broschart
Representing Self
✓ Representing: Farm Bureau of Ventura County

Unless exempted by the Board, comments are limited to three (3) minutes.

Please Print Legibly

State of California

California Water Boards

Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Date: 5/4/2017

I wish to speak during the Board Meeting:

___ I wish to speak during Public Forum (non-agenda item).

X I wish to speak on Agenda Item No. 9

I do not wish to speak, but express the following position:

___ I SUPPORT Agenda Item No. ___ ___ I OPPOSE Agenda Item No. ____

Name: Joe Deakin or Danielle Patrick Representing Calleguas Creek Watershed Stakeholders

12-11

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

5 min

SPEAKER REQUEST CARD

Please Print Legibly

Date: 5-4-17

I wish to speak during the Board Meeting:

✓ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ____
___ I oppose Agenda Item No. ____

Name: Joe Yahner
___ Representing Self
✓ Representing: City of Ventura

Unless exempted by the Board, comments are limited to three (3) minutes.

State of California
Environmental Protection Agency
Water Resources Control Board
Los Angeles Regional Water Quality Control Board

SPEAKER REQUEST CARD

Please Print Legibly

Date: 5/5/17

I wish to speak during the Board Meeting:

✓ I wish to speak on Agenda Item No. 9
___ I wish to speak during Public Forum on a non-agenda item.

I do not wish to speak but I do want to express the following position:

___ I support Agenda Item No. ____
___ I oppose Agenda Item No. ____

Name: Anita Kuhlman
___ Representing Self
✓ Representing: City of Camarillo

Unless exempted by the Board, comments are limited to three (3) minutes.

Item 9 Workshop

Consideration of the Proposed Revisions to the Clean Water Act Section 303(d) List of Impaired Waterbodies in the Los Angeles Region

California Regional Water Quality Control Board
Los Angeles Region
May 4, 2017

1

The 303(d) List and the Integrated Report

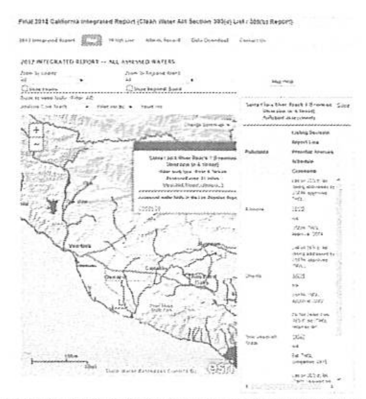
- Clean Water Act Section 303(d) } The Integrated Report
- Clean Water Act Section 305(b) }

- Listing Policy, Sept 2004
  - *"Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List"*

- CalWQA
  - California Water Quality Assessment database

2

303(d) List of Impaired Waters



3

12-13

303(d) List of Impaired Waters

- Report to Congress
- Permitting/RAA
- TMDLs
- Useful information for regulator and stakeholders

Water Boards are not limited by the 303(d) list

4

The Listing Policy

Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List 2004, amended 2015

- Weight of evidence approach
- Data organized into Lines of Evidence - LOEs
- Statistical methods
- Numbers of samples required
  - Fewer data and fewer exceedances to list a waterbody than to delist a waterbody

5

Waterbody Categories in the Integrated Report Categories 4 and 5 = 303(d) list

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data to make a beneficial use support determination but data indicate beneficial uses may be threatened.
4	At least one beneficial use is not supported, but a TMDL is not needed.
4a	One or more TMDLs have been developed and approved by USEPA for all pollutants causing impairment.
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard.
4c	The impairment is the result of pollution, not a pollutant.
5	At least one beneficial use is not supported and a TMDL is still needed.

6

12-14

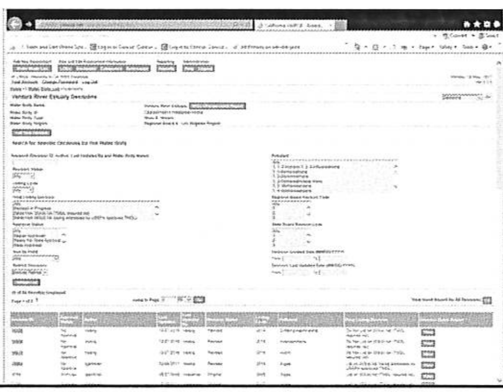
CalWQA database

California Water Quality Assessment Database

- Lines of evidence (LOE) - Data are organized into LOEs:
  - water quality data for the specific pollutant
  - where and when monitoring took place
  - beneficial use affected,
  - water quality objective or guideline protective of the beneficial use,
  - the number of samples, and
  - how many samples exceeded the objective or guideline
- Decision - "list," "do not list," "delist," or "do not delist"
- Factsheet – Transparency, All the LOEs and justification for a "weight of evidence" decision is written into a factsheet
  - Links to data and other references
- Data is analyzed in other programs (eg Excel)

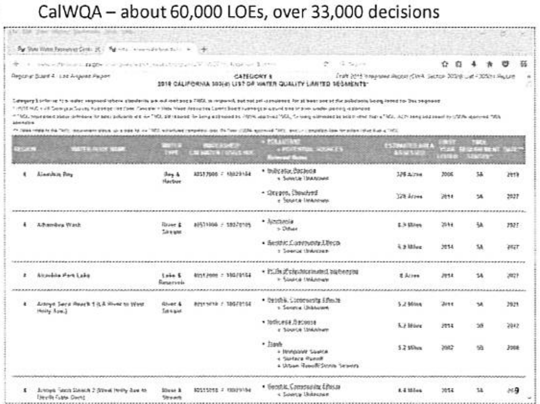
7

CalWQA – about 60,000 LOEs, over 33,000 decisions



8

CalWQA – about 60,000 LOEs, over 33,000 decisions



9

History of 303(d) listing in California

- Comprehensive 303(d) lists since at least the early 90s

Data cutoff	List Year	Final EPA approval
June 2002	2002	July 25, 2003
	2004 Listing Policy	
June 2004 (some 2005)	2006	May 29, 2008
Feb 2007	2010	October 11, 2011
Aug 2010	2012	July 30, 2015
Aug 2010	2014/2016	

- Every iteration of the list has much more data than the previous list

State-wide decisions:
2002: **1,852**
2016: **33,000**

Region 4 Decisions:
2002: **300**
2006: **995**
2010: **1115**
2016: **5860**

10

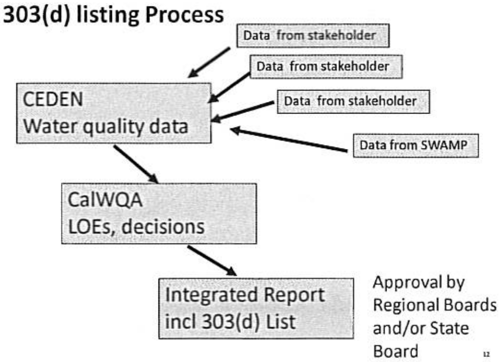
Changes to the Listing Policy in 2015

- An Integrated Report every 2 years
  - 3 Regional Boards each Report
- A requirement to enter data into CEDEN
  - CEDEN California Environmental Data Exchange Network
- Either the Regional Boards can approve followed by the State Board OR the State Board can approve

	Region
1	North Coast
6	Lahontan
7	Colorado River
3	Central Coast
5	Central Valley
9	San Diego
2	San Francisco
4	Los Angeles
8	Santa Ana

11

303(d) listing Process



12

Status of Los Angeles Region Draft Integrated Report

Category	Description	Waterbody Segments
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.	38
2	There is insufficient information to determine beneficial use support.	55
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.	13
4	At least one beneficial use is not supported but TMDL is not needed.	
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.	77
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.	0
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.	3
5	At least one beneficial use is not supported and a TMDL is needed.	134
Total Waterbodies Assessed		320

13

Los Angeles Region Draft Change from 2010 303(d) list

	category	2010		Draft 2016	
	1	0		38	
	2	26		55	
	3	23		13	
303(d){	4	28	}189	77 (4a) 3 (4c)	} 214
	5	161		134	
	total	238		320	

2010:
189 waterbodies on the 303(d) list - 79% waterbodies in Category 5

2016:
214 waterbodies on the 303(d) list - 66% waterbodies in Category 5

14

Comments Received

- 32 comment letters - municipalities, POTW agencies, other dischargers, and environmental non-profit organizations.
- General Comment Categories:
  - Specific and Technical comments
    - P*MUN
  - Missing LOEs submitted by data cutoff
  - 2010 data cutoff

15

Farm Bureau of Ventura County Stakeholders Implementing TMDLs in the Calleguas Creek Watershed

Inclusion of Data from VCAILG Monitoring

Comment:
Data was evaluated which was designed to be used to understand discharges

Response:
Assessed as "insufficient information" until re-examined

16

County Sanitation Districts of Los Angeles County

Mapping/Data misattributed to waterbody

Comment:
Data attributed to incorrect reach
- San Gabriel tributaries
- Santa Clara reaches

Response:
- Basin Plan map/ CalWQA map
- Revise the CalWQA underlying map – working with State Board staff

17

Wishtoyo Foundation and Ventura Coastkeeper
Earth Law Center

Flow

Comment: Waterbodies are Impaired due to reduced flows:
- Santa Clara River Estuary and Reaches 1 and 2
- Ventura River (Reaches 3 and 4)

Response
- No defined methodology for assessing

18

Next steps

- Los Angeles Water Board staff (in conjunction with State Board staff) work through remaining issues
- Los Angeles Water Board staff post update to response to comments and revised recomendations, when available
- State Board staff release the 2014/2016 303(d) list for comment (could be as early as June 9, 2017)
- Stakeholders comment on 2014/2016 list
- State Board approves the 2014/2016 303(d) list (October 2017)

These next steps provide:

- Additional scrutiny of recommended listing decisions
- Additional time to coordinate with State Board staff
- Greater opportunity for public engagement

19

THE LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

In the Matter of:)

)

Regular Board Meeting)

______________________________)

CITY OF PASADENA

COUNCIL CHAMBERS

100 NORTH GARFIELD AVENUE

PASADENA, CALIFORNIA

THURSDAY, MAY 4, 2017

9:30 A.M.

Reported by:

Martha Nelson

APPEARANCES

BOARD MEMBERS

Irma Munoz, Chair

Madelyn Glickfeld, Vice Chair

Fran Diamond

James Famiglietti

Cynthia Guzman

Charles Stringer

Lawrence Yee (telephonically)

STAFF

Sam Unger, Executive Officer

Debbie Smith, Chief Deputy Executive Officer

Paula Rasmussen, Assistant Executive Officer

Ronji Moffett, Executive Assistant

Jennifer Fordyce

Renee Purdy

David Coupe

Frances McChesney

David Boyers

Mayumi Okamoto

Cris Morris

Dr. L.B. Nye

Dr. Jun Zhu

Dr. Kangshi Wang

PUBLIC SPEAKERS

Judy Nelson, Glendora City Council Member

Gloria Crudgington, Mayor Pro Tem, Monrovia

Steven Slaten, NASA Remedial Project Manager

Karen Larson, State Water Board

Ann Heil, Los Angeles County Sanitation Districts

Ewelina Mutkowska, City of Ventura

Kathleen McGowan, Beach Cities Watershed Management Group

Sean Ego, City of Manhattan Beach

Steven Johnson, Heal the Bay

Jenna Driscoll, Santa Barbara Channelkeeper

Ray Tahir, TECS Environmental

Bruce Hamamoto, L.A. County Department of Public Works

Nancy Broschart, Farm Bureau of Ventura County

Joey Yahner, City of Ventura Environmental Services

Danielle Potocek, Calleguas Creek Watershed

Anita Kuhlman, City of Camarillo

Hassan Rad, Los Angeles Sanitation District

Mario Acevedo, Los Angeles Department of Water and Power

Daniel Ryder, City of Oxnard

INDEX

WORKSHOP

Basin Planning/TMDL

INFORMATION ITEMS

CLOSED SESSION

Fordyce (JF); Frances McChesney (FM); David Coupe (DC)]

Litigation filed against the Los Angeles Regional Water Quality Control Board (Gov. Code, § 11126, subd. (e)(2)(A).):

13.1 *City of Redondo Beach v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board*, California Court of Appeal, Second Appellate District, Case No. B271631 [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2008-0058M]. (FM)

13.2 *Balcom Ranch v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board*, Ventura County Superior Court, Case No. 56-2012-00419048-CU-MC-VTA [Challenging assessment of administrative civil liability in Order on Complaint No. R4-2010-0023]. (DC)

13.3 *City of Duarte v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board*, Orange County Superior Court, Case No.30-2016-00833614-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.4 *Natural Resources Defense Council and Los Angeles Waterkeeper v. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board,* Los Angeles County Superior Court, Case No.

BS156962 [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.5 *City of Gardena v. Los Angeles Regional Water Quality Control Board and State Water Resources Control Board*, Orange County Superior Court, Case No. 30- 2016-00833722-CU-WM-CJC [Challenging the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.6 *Barclay Hollander Corporation v. California Regional Water Quality Control Board, Los Angeles Region, et.al.,* Los Angeles County Superior Court, Case No. BS158024 [Challenging issuance of Revised Cleanup and Abatement Order No. R4-2011-0046 (Revised April 30, 2015)]. (DC)

13.7 *Wayne Fishback v. Michael D. Antonovich et al.,* United States District Court for the Central District of California, Case No. 2:15-cv-05719 [Seeking preliminary injunction, alleging violations of procedural and substantive due process and other claims for relief]. (DC)

13.8 *Wishtoyo Foundation v. State Water Resources Control Board and California Regional Water Quality Control Board, Los Angeles Region,* Los Angeles County Superior Court, Case No. BS159479 [Challenging issuance of waste discharge requirements/water reclamation requirements, Order No. R4-2011-0079-A01]. (DC)

13.9 *Tesoro Refining & Marketing Company LLC and Tesoro*

SoCal Pipeline Company LLC v. Los Angeles Regional Water Quality Control Board, Los Angeles County Superior Court, Case No. BS160502 [Challenging issuance of Cleanup and Abatement Order No. R4-2013-0064]. (JF)

13.10 *Los Angeles Waterkeeper v. California State Water Resources Control Board and Los Angeles Regional Water Quality Control Board*, Los Angeles County Superior Court, Case No. BS163391 [Challenging Resolution No. R15-004 establishing site specific water quality objectives for copper and lead in the Los Angeles River and tributaries]. (JF)

13.11 *Fishback et al. v. County of Los Angeles et al.,* Los Angeles County Superior Court, Case No. PC056481 [Alleging violations of procedural and substantive due process, violations of the state and federal takings clauses, and other claims for relief]. (DC)

<u>Litigation filed by the Los Angeles Regional Water Quality Control Board against other parties (Gov. Code, § 11126, subd. (e)(2)(A).):</u>

13.12 *State Department of Finance, State Water Resources Control Board and Los Angeles Regional Water Quality Control Board v. Commission on State Mandates*, Supreme Court of California, Case No. S214855 [Challenging the Commission's decision that portions of the 2001 Los Angeles County MS4 permit created unfunded state mandates]. (JF)

13.13 *California Regional Water Quality Control Board, Los Angeles Region v. United States Army Corps of Engineers; Lieutenant General Thomas P. Bostick, In his Official Capacity*, United States District Court for the Central District of California, Case No. 2:16-cv-01091 [Alleging unauthorized discharges of dredge and fill materials and other pollutants into waters of the United States in violation of Clean Water Act sections 301, 401, and 404]. (JF)

13.14 *People of the State of California ex rel. Regional Water Quality Control Board Los Angeles Region v. The Boeing Company,* Ventura County Superior Court Case No. 56-2010-00371686-CU-MC-SIM [Consideration of extension of Consent Judgment for stipulated penalties for future violations of Boeing's NPDES permit for the Santa Susana Field Laboratory]. (JF)

<u>Petitions for Review of Los Angeles Regional Water Quality Control Board actions filed with the State Water Resources Control Board (Gov. Code, § 11126, subd. (e)(2)(A).):</u>

13.15 *In re: Petition of Natural Resources Defense Council, Los Angeles Waterkeeper, and Heal the Bay for Review of Executive Officer's Action to Conditionally Approve nine WMPs Pursuant to the*

2012 MS4 Permit, SWRCB/OCC File A- 2386 [Challenging the Executive Officer's approval, with conditions, of nine Watershed Management Programs (WMPs) pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.16 *In re: Petition of Los Angeles Waterkeeper and NRDC for Review of Executive Officer's Action to Approve the North Santa Monica Bay EWMP,* SWRCB/OCC File A-2477 [Challenging the Executive Officer's approval of the North Santa Monica Cay EWMP pursuant to the Los Angeles County MS4 Permit, Order No. R4-2012-0175]. (JF)

13.17 In re: Petition of Natural Resources Defense Council and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's September 7 Vote to Take No Further Action to Review Executive Officer's Approval of the North Santa Monica Bay Enhanced Watershed Management Program Pursuant to the L.A. County MS4 Permit, SWRCB/OCC File [TBD] [Challenging the Regional Board's decision to not review the Executive Officer's approval of the North Santa Monica Bay EWMP pursuant to the Los Angeles County MS4 Permit Order No. R4-2012-0175]. (JF)

13.18 In re: *Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los*

Angeles, Hyperion Treatment Plant Discharge to the Pacific Ocean; Order No. R4-2017-0045. (FM)

13.19 In re: *Petition of Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Donald C. Tillman Water Reclamation Plant Discharge to the Los Angeles River*; Order No. R4-2017-0062. (FM)

13.20 In re: *Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Burbank, Burbank Water Reclamation Plan and its associated wastewater collection system and outfalls, discharging to the Burbank Western Channel*; Order No. R42017-0064. (FM)

13.21 In re: *Petition of Lawyers for Clean Water, Inc., and Los Angeles Waterkeeper for Review of Los Angeles Regional Water Quality Control Board's Adoption of Waste Discharge Requirements and NPDES Permit for the City of Los Angeles, Los Angeles-Glendale Water Reclamation Plan and its associated wastewater collection system and outfall discharge to the Los Angeles River*; Order No. R42017-0063. (FM)

Test Claims filed with the Commission on State Mandates (Gov. Code, § 11126, subd. (e)(2)(A).):

13.22 *In re: Los Angeles Region Water Permit – Ventura County*, Commission on State Mandate Test Claim No. 110-TC-01 [Regarding a test claim filed by Ventura County Watershed Protection District and the County of Ventura alleging that portions of Order No. R4-2010-0108 created unfunded state mandates]. (JF)

13.23 *In re: Los Angeles Region Water Permit – Cities of Los Angeles County*, Commission on State Mandate Test Claim No. 13-TC-01 [Regarding a test claim filed by several cities within Los Angeles County alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

13.24 *In re: Los Angeles Region Water Permit – County of Los Angeles*, Commission on State Mandate Test Claim No. 13-TC-02 [Regarding a test claim by the County of Los Angeles and Los Angeles County Flood Control District alleging that portions of Order No. R4-2012-0175 created unfunded state mandates]. (JF)

Other matters:

13.25 Consultation with counsel about:

(a) A matter which, based on existing facts and circumstances, presents significant exposure to litigation against the Regional Board (Government Code section (Gov. Code, § 11126, subd. (e)(2)(B).); or

(b) A matter which, based on existing facts and circumstances, the Regional Board is deciding whether to initiate litigation. (Gov. Code, § 11126, subd. (e)(2)(C).) (JF/FM/DC)

13.26 Consideration of the appointment, employment, or evaluation of performance about a public employee. (Gov. Code, § 11126, subd. (a).) (JF/FM/DC)

14. Adjournment of current meeting. The next regular meeting of the Board will be held on June 1, 2017 at the Metropolitan Water District of Southern California, Board Room, 700 North Alameda Street, Los Angeles, CA, 90012, and beginning at 9:00 a.m. 280

***

Ex Parte Communications: An ex parte communication is a communication to a board member from any person, about a pending matter, that occurs in the absence of other parties and without notice and opportunity for them to respond. The California Government Code prohibits the board members from engaging in ex parte communications during permitting, enforcement, and other “quasi-adjudicatory” matters. Ex parte communications are allowed on pending General Orders (such as general waste discharge requirements, general waivers, and general Clean Water Act section 401 water quality certifications) subject to the disclosure requirements of Water Code section 13287 (for further information and disclosure forms, please visit http://www.waterboards.ca.gov /losangeles/laws_regulations/). The Regional Board discourages ex parte communications during rulemaking and other “quasi-legislative” proceedings. The ex parte rules are intended to provide fairness, and to ensure that the board's decisions are transparent, based on the evidence in the administrative record, and that Board Meeting Agenda February 12, 2015, evidence is used only if stakeholders have had the opportunity to hear and respond to it. Ex parte rules do not prevent anyone from providing information to the water boards or requesting that the water boards take a particular action. They simply require that the information come into the record through proper channels during a duly noticed, public meeting. A board member who has engaged or been engaged in a prohibited ex parte communication will be required to publicly disclose the communication on the record and may be disqualified from participating in the proceeding. For more information, please look at the ex parte questions and answers document found at www.waterboards.ca.gov/laws_regulations/docs/exparte.pdf.

Procedures: The Regional Board follows procedures established by the State Water Resources Control Board.

These procedures are established in regulations commencing with section 647 of title 23 of the California Code of Regulations. The Chair may establish specific procedures for each item, and consistent with section 648, subdivision (d) of title 23 of the California Code of Regulations may waive nonstatutory provisions of the regulations. Generally, all witnesses testifying before the Regional Board must affirm the truth of their testimony and are subject to questioning by the Board Members. The Board does not, generally, require the designation of parties, the prior identification of witnesses, or the cross examination of witnesses. Generally, speakers are allowed three minutes for comments. Any requests for an alternate hearing process, such as requesting additional time to make a presentation, should be made to the Executive Officer in advance of the meeting, and under no circumstances later than 5:00 p.m. on the Thursday preceding the Board meeting. The provisions of this paragraph shall be deemed superseded to the extent that they are contradicted by a hearing notice specific to a particular agenda item.

***

Written Submissions: Written materials (whether hand-delivered, mailed, e-mailed, or facsimiled) *must be received prior to the relevant deadline* established in the agenda and public notice for an item. If the submitted material is more than 10 pages or contains foldouts, color graphics, maps, or similar items, 12 copies must be submitted prior to the relevant deadline.

Failure to comply with requirements for written submissions is grounds for the Chair to refuse to admit the proposed written comment or exhibit into evidence. (Cal. Code Regs. tit. 23, § 648.4(e).) The Chair may refuse to admit written testimony into evidence unless the proponent can demonstrate why he or she was unable to submit the material on time or that compliance with the deadline would otherwise create a hardship. In an adjudicatory matter, where there is a showing of prejudice to any party or the Board from admission of the written testimony, the Chair may refuse to admit it.

***

Administrative Record: Material presented to the Board as part of testimony that is to be made part of the record must be left with the Board. This includes photographs, slides, charts, diagrams, etc. All Board files pertaining to the items on this Agenda are hereby made a part of the record submitted to the Regional Board by staff for its consideration prior to action on the related items.

***

Accessibility: Individuals requiring special accommodations or language needs should contact Dolores Renick at (213) 576-6629 or drenick@waterboards.ca.gov at least ten working days prior to the meeting. TTY/TDD Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

***

Availability of Complete Agenda Package: A copy of the complete agenda package is available for examination at the Regional Board Office during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday) beginning 10 days before the Board meeting. Questions about specific items on the agenda should be directed to the staff person whose name is listed with the item.

***

Continuance of Items: The Board will endeavor to consider all matters listed on this agenda. However, time may not allow the Board to hear all matters listed. Matters not heard at this meeting may be carried over to the next Board meeting or to a future Board meeting. Parties will be notified in writing of the rescheduling of their item. Please contact the Regional Board staff to find out about rescheduled items.

***

Challenging Regional Board Actions: Pursuant to Water Code section 13320, any aggrieved person may file a petition to seek review by the State Water Resources Control Board of most actions taken by the Regional Board. A petition must be filed within 30 days of the action. Petitions must be sent to State Water Resources Control Board, Office of Chief Counsel; ATTN: Phil Wyels, Assistant Chief Counsel; 1001 “I” Street, 22nd Floor; Sacramento, CA 95814.

P R O C E D I N G S

9:30 a.m.

PASADENA, CALIFORNIA, THURSDAY, MAY 4, 2017

VICE CHAIR GLICKFELD: ...that we can get our -- we will be -- you will be lucky to have a ready-made plan in front of you from Deb to talk about when -- if we do that topic. So we're lucky to have Deb and her staff working so hard on that. And she came also to something at UCLA which I think helped a lot, so thank you for coming.

CHAIR MUNOZ: The meeting that our vice chair referred to, the WPCC, is an annual meeting of all the Board members throughout the state, all the regions participate, including executive officers.

VICE CHAIR GLICKFELD: Thank you for explaining my acronym.

And the last thing is that I had a lot of people talk to me about many different bills that affect us, and usually we get a list we get from the State Board, a compendium of bills pretty early in the session.

And this is for Sam and the staff. We have not gotten a compendium of bills that affect us in terms of water quality and things like that, so I would request that you ask the legislative director at -- to send it out to you and to all of the Board members as well.

So that's my request and my report.

CHAIR MUNOZ: Mr. Charlie.

BOARD MEMBER STRINGER: I don't have it in the report but I'm wondering do you want input on WQCC --

VICE CHAIR GLICKFELD: Yes.

BOARD MEMBER STRINGER: -- topics now or do you want to...

VICE CHAIR GLICKFELD: I think the sooner the better. You know, I don't think they're going to be rushing into anything but they will settle probably on these two topics and one more in the next couple months, so getting suggestions out soon that's of interest to all the boards and will educate all of us it important.

BOARD MEMBER STRINGER: I'm just wondering if we might want to add to the list of topics that I know you're working on, Madelyn, and that is the number of communities in California that don't have potable water.

CHAIR MUNOZ: Yeah.

VICE CHAIR GLICKFELD: So we did that a few years ago, but that was before we had the merger of the Department of Health drinking water permit with ours.

BOARD MEMBER STRINGER: It's now -- right.

VICE CHAIR GLICKFELD: And so it would be nice to get a progress report, so I think that would be good. Because there has been a lot of legislation, a lot of things done, but things are still very hard and slow moving.

BOARD MEMBER STRINGER: It's just extraordinary to me that so many people don't know that there are actually a number of communities in this state that, you know, we're living in the 21st Century now, that don't have drinkable water.

Anyway, that's my only issue.

CHAIR MUNOZ: Okay, great, we'll make sure we include it.

VICE CHAIR GLICKFELD: Or water period.

BOARD MEMBER STRINGER: Yeah, or water period.

BOARD MEMBER DIAMOND: Also, there was an article in today's, I think it was the front page maybe of today's *LA Times*, which I just glanced at precisely about that issue, the numbers of communities in California that don't have safe clean drinking water and the concern about that, so very timely, and I would say that's a very important topic for the WQCC.

I also think climate change is very important, especially at this particular time when we see that there are reductions in funding for climate change activities from the federal government and even a discussion of whether it exists or not, so I would like to see that happen in California since we are one of the leaders in that issue.

VICE CHAIR GLICKFELD: Right. And I think we can help a lot of the other regions because we're further ahead on that.

BOARD MEMBER DIAMOND: Yeah.

VICE CHAIR GLICKFELD: So just another thing for the audience is these meetings are public meetings. They're noticed. It's a long trip to Sacramento but people do come. And if there's a topic of interest to you I'm sure that what we could do, Mr. Unger, is send out the agenda to stakeholders. If they want to come, they can attend. It's a really good educational program.

BOARD MEMBER DIAMOND: So I would just add I also was at the meeting yesterday -- was it Our Water or One Water? I think it was Our Water. And I was very encouraged by how many people were there and the energy that I felt in the room from people who really wanted to move forward and work together to solve this problem that all of us share.

The only other thing I have to report is, as a member of the Santa Monica Bay Restoration Commission representing the Regional Board, at the last meeting, which was about two weeks ago, one of the staff members of the EPA from the San Francisco office was there. And as you may know, the Santa Monica Bay is part of a national estuary program, and these NEPs, I don't know how many there are around the country.

Deb, do you know, like 12 or 14?

MS. SMITH: I don't know the number.

MR. COUPE: It's 20 something.

BOARD MEMBER DIAMOND: Twenty something.

VICE CHAIR GLICKFELD: Three in California.

BOARD MEMBER DIAMOND: David was at this meeting, of course, too.

VICE CHAIR GLICKFELD: Three in California.

BOARD MEMBER DIAMOND: So about 20 in the nation and Santa Monica Bay Restoration Foundation receives a lot of funding -- probably in the complete realm of things not that much, but about $12 million, I believe, a year from this program to work on projects to enhance the bay, whether it's planting kelp in the ocean to clean up areas of the Santa Monica Bay that were previously dead zones and now thriving, various projects. Because of the EPA cutbacks we won't be able to do as much, so significant cutbacks.

So I'm just reporting to you that this very important program, National Estuary Program that funds scientific projects, many of them pilot projects to understand how we can protect our estuary.

Our national estuary right here in our region is being significantly cut back, which is of great concern. And this is only through September. We don't know after the end of this fiscal year how much more will be cut back, if any funding will be available for these programs. So I'm telling you this with a heavy heart about it, but I think it's important that we recognize that this is going to have a big impact on our region, and I'll let you know going forward what happens.

CHAIR MUNOZ: Dr. J.

BOARD MEMBER FAMIGLIETTI: Good morning, everyone, thank you for coming. I marched for science on Earth Day. I hope that you did too.

Like Board Members Guzman and Glickfeld, I went to a similar workshop but it was in Cleveland, and so it was a great model and I would love for us to talk about in more detail what I learned. There is a group called the Cleveland Water Lines and that group has been working hard at putting together government and elected officials and water managers in the private sector, including hack type events where competitions are held. The focus in Cleveland was on Lake Eerie and the (indiscernible) problems, but the concept is something that's transferrable to our region. And so I'll be talking to that group a little bit more and perhaps some of my fellow board members would like to be involved in those conversations.

So there are these sort of grass roots groups that are coming together. I heard of another one in LA, not the one that you mentioned, not the event that you went to, not the SCAG group. So there are a few groups that are springing up and we should keep our eye on them and try to work with them and listen to what they have to say.

Thank you.

CHAIR MUNOZ: Great, thank you. Yes?

BOARD MEMBER YEE: Just one more topic for the WQCC. I'd like to hear an update on the Sigma and where we sit with that and like the interaction between DWR and State Board. So thank you.

VICE CHAIR GLICKFELD: Do we have -- in Ventura County we have several SGMA groups or one or two?

CHAIR MUNOZ: One.

BOARD MEMBER STRINGER: I think one.

VICE CHAIR GLICKFELD: And then we have one for the Santa Monica Basin in LA County as well. Okay, SGMA.

BOARD MEMBER DIAMOND: Maybe we should tell the audience what that is.

VICE CHAIR GLICKFELD: The Sustainable Groundwater Management Act, the first statewide legislation that requires planning for sustainable use of water resources in areas that are unsustainably using them now. So I think that's a huge issue for Ventura County and for certain areas and for just one area in LA County because we already have adjudicated basins.

CHAIR MUNOZ: Thank you. I have a couple things to report. I've been very busy since our last meeting.

I decided to call a meeting with SA Recycling, the

Metals Coalition and LA Waterkeeper, and Sam Unger joined me in the meeting.

As part of the listening sessions one of the things that became clear to me was that for industrial sites, many industrial sites when they go get their business license or permits are not required or asked for a permit from us, and I think that that's like a no brainer and I think that cities need to start doing that because it's going to help them with MS4 compliance.

I started with them because when I talked to both of these business entities, they had told me that they're just as concerned that their members are in compliance and they want all of the members in the industry to be in compliance and, unfortunately, that is not what's happening.

So we had a very good meeting, and they all loved the idea, because they said they've tried several ideas over the years, including going door to door to make sure that other industrial sites in the cities in which they're located. And some of them don't, a big percentage don't, and I'm sure staff can tell us what percentage don't because they have the numbers.

So LA Waterkeeper also has been working on this and they have not tried this. So our next meeting is going to be, I believe, in June, and the next step is we're going to invite some cities to join us so that we can...

The whole purpose of this besides addressing the whole issue of industrial sites is also to start getting cities, the environmental groups, the Water Board and businesses working together, and I think the more we focus on one issue that we all have in common that we can create a very powerful partnership collaboration, so I'm really looking forward to that.

I know there's a couple of cities here, so if you want to be a part of that, let us know, but you've got to make sure you have industrial businesses, otherwise it's kind of for naught for you to be attending the meeting.

I know that I'm going to include El Monte. I'm not sure what other cities, I'm going to sit down and talk to the staff, but if any of the board have any, please let me know.

The other thing is that some of the cities, when the whole conversation of the water resilience from the county came up -- as a matter of fact, the Councilwoman's here present -- she said, you know what, we need to meet with NRDC, Heal the Bay, and Waterkeeper, because this isn't their problem, this isn't our problem, this is our issue and we need to sit down and figure out how we work together to make sure that's successful.

So we're organizing the meeting. I've already talked to all three groups and they said absolutely, let's do it, so I anticipate that happening in the next two weeks or so. The whole focus of that is working on the water resilience measure that County Supervisor Keuhl is leading.

And once again, it's all of the players, including business, all the players that all want this that can work together, because I don't see a lot of that happening since I've been on the Water Board. I see a lot of this happening and I think it's time for us to forget that and start working together and really start addressing the issues on a different tone.

I attended the Los Angeles Business Council annual summit they had over at the Getty Museum last week. Mayor Garcetti spoke. Attorney General Javier (indiscernible) and Senate Pro Tem (indiscernible) spoke. They invited me as the nonprofit but I kind of think they invited me because I'm on the Water Board.

It was an excellent meeting. They have it yearly. Businesses are talking more about water and I think that's really good, so now we've got everybody who's going to be involved, and so it was a full day meeting.

I also met with Mark Estrella [phonetic] from the County.

VICE CHAIR GLICKFELD: You were busy.

CHAIR MUNOZ: Yeah. With Sam Unger and Renee Purdy. And I was quite concerned about this water resilience. I had been hearing a lot of rumors that -- I was hearing rumors from the cities, from one of our colleagues here on the dais, and so I wanted to understand what this really was about because I'd been involved with other bond measures throughout the state and usually a lot of things get figured out behind the doors and many people aren't at the table, so I wanted to understand it, so I thought let me go with Mr. Estrella and he could tell me.

It was a very good meeting. It's a measure that I'm supporting a hundred percent. He basically said that water is going to be major focus now for the county, it's not going to be a PS. He's putting together a water plan that connects all the dots. Every aspect of water that you can imagine is going to be included in this plan and they're working on it and it'll be out.

Sam, did he give us a date when it would be out, do you know?

EXECUTIVE OFFICER UNGER: No, he didn't.

CHAIR MUNOZ: No. And it's very inclusive.

And really when I heard him speak, he's talking about a culture change in the county, and I think that he's going to be successful because he has a very strong team and everybody who understands the significance and the importance of water through different perspectives and through a lens that this way as opposed to narrowing the focus, will be supporting him.

And so I'm hoping to bring him here before the Water Board in a couple of months so he can talk to us about the paper and his vision. And I'm very confident and I believe he's going to be the trailblazer there for bringing all the folks together, because he talked about what's there for the cities, for the businesses, for the environs and the Water Board, so I was very hopeful for the meeting that we had with Mr. Estrella.

I went to the Chairs' Board Meeting in Sacramento and found out that we're not going to get any additional staff. There's been a one percent budget cut.

And it was really interesting because it's all of the board chairs and the executive officers from each region were there. We had a nice report from the Governor's Office. But it was a really crazy meeting because we had three fire alarms and we had to walk down, I think, two or three flights of stairs and go to a park, and every time we were settled to start over we had another fire alarm.

So it was interesting that US EPA, they were very organized, they made sure everybody was out and stayed, so it's very good to feel that nothing's going to happen to you there.

The next listening session is being organized by the director of public works and I in (indiscernible) Hills and we're going to be working with those cities near and around there, and that should be taking place next month.

VICE CHAIR GLICKFELD: Do we have a date for that yet?

CHAIR MUNOZ: No, that's what we're working on right now, and I'll let everybody know about that.

VICE CHAIR GLICKFELD: Excuse me. On that issue, I think last meeting there were several Board members that decided to attend that meeting. You might have to notice it so people can go.

CHAIR MUNOZ: Well, I think that I would like to have one Board member attend with me, unless you are going to come and you're going to listen. It's not about talking, it's about listening. That's the power of these, is that you're going to listen to the cities. Obviously you're going to comment, but this is their time, so I just want to make it clear to my colleagues that it's about listening. You're welcome to come because it's really amazing what you learn from the cities what their issues are.

And then actually what happens is it's a listening session but it becomes a working session, trying to resolve some of their issues.

And I have found them pretty intriguing that we are able to develop senses of trust and transparency between us and the cities. And we have a couple who have been to them, so I know they're going to speak, if they can talk about that so that I'm not thinking this all in my head. Because this is what my goal was and sometimes what I want to happen doesn't and someone has to clearly make it so we can change things.

And we're still working with Speaker Renden's staff from Sacramento to put together the meeting for his cities where we're going to have a listening session as well. I know some of you expressed interest and we'll get dates on that. That'll be in Los Angeles and we're going to be going up to the L.A. Caucus in Sacramento where we're going to be doing a listening session there.

So they're taking on, I have a lot of folks talking to me about them, and I'm hoping that when our vice chair becomes chair that she continues the listening session because I think they're very worthwhile.

VICE CHAIR GLICKFELD: Absolutely.

CHAIR MUNOZ: Okay. Let's see. I guess the last thing is my nonprofit did these telenovella's, these soap operas. We wrote a script and we've gone to a couple of cities, couple of neighborhoods, and we've had up to 300 people attend them. And they talk about water conservation, sustainable tips and the drought, whether it's over or still going on and whatnot. And the theme is water as a way of life, as Governor Brown has stated.

And what I wanted to share with you is that our audience is between the ages of 5 and 85, and it's very clear to me that after the drought especially that everybody wants to know more about water. This is the everyday person that wants to know where it comes from, wants to know about the quality of the water, what cities are ensuring so that they don't have to worry about drinking poor water, how can we conserve more, how does it function. They want the whole picture on water.

So I'm saying this because we deal with the aspect of water quality but somehow we have to figure out how we have this whole conversation and educate members of the public, because the more they're educated and informed, you'll see more positive action there.

So for those folks who are leaders in the water world and have constituents, I would encourage you to get engaged and involved in that, because that's one of the lessons that we learned.

And that concludes several of the meetings I've had.

VICE CHAIR GLICKFELD: Wow.

CHAIR MUNOZ: I've got others but I pulled the other ones, so I've been very busy.

VICE CHAIR GLICKFELD: And how do you do anything else in your life? This is a volunteer job, so thank you.

Seriously, I think all of us and the staff owes a vote of thanks to the dedication that you give to this job, so I really appreciate it but I'm terrified of trying to follow you.

CHAIR MUNOZ: Well, planting the seeds, Madelyn. When I became chair, based on what I had observed and learned and what I had listened to folks is that you can't do things the same way because you'll get the same result. You have to be more inclusive, you've got to listen.

I know we're a regulatory agency, but I always was an activist and I was always the person in the audience, or better yet, banging on the door to get in, and so I understand that feeling. And so what I wanted to do was to put a human face on the word Water Board, that we would listen, we can listen, and we know how to listen. And one of my goals, I'm going to start planting the seeds and I already have, is for the cities, the environmentals, business community start working together.

I don't like the idea of all the tension, what happens. I know sometimes it needs to happen, but we're at a point where we really need to pass this resilience measure and we need to start working as a team. And not that we're not going to have any disagreements, but we need to have a discord with respect and focus on a common goal, so that's the reason I feel like I've got to do all this and rushing it. And believe me, people are responding and I do believe that I have faith in the human spirit and I do think that we're moving in the right direction. And I really appreciate when you come to these meetings and provide us with guidance, because this is what we're here for, is to listen to what your needs are, what your comments are so that we can make good policy.

Okay, so moving on, we are now at uncontested items. We have one item, Item Number 5. Is there any Board member that would like to pull it to ask questions? If not, may I have a motion for approval?

BOARD MEMBER GUZMAN: Motion to approve.

BOARD MEMBER YEE: Second.

CHAIR MUNOZ: Roll call vote, please.

MS. MOFFETT: Ms. Diamond?

BOARD MEMBER DIAMOND: Yes .

MS. MOFFETT: Mr. Famiglietti?

BOARD MEMBER FAMIGLIETTI: Yes.

MS. MOFFETT: Ms. Glickfeld?

VICE CHAIR GLICKFELD: Yes.

MS. MOFFETT: Ms. Guzman?

BOARD MEMBER GUZMAN: Yes.

MS. MOFFETT: Ms. Munoz?

CHAIR MUNOZ: Yes.

MS. MOFFETT: Mr. Stringer?

BOARD MEMBER STRINGER: Yes.

MS. MOFFETT: And Mr. Yee?

BOARD MEMBER YEE: Yes.

MS. MOFFETT: Motion carries.

CHAIR MUNOZ: Thank you. Item Number 6, Executive Officer's Report. Mr. Unger.

EXECUTIVE OFFICER UNGER: Okay. Good morning, Chair Munoz, Vice Chair Glickfeld and members of the Regional Board. This morning's report addresses the Carousel track cleanup (indiscernible) field laboratory that may affect our regulatory activities at that site. Our response to the first harmful outflow balloon notice in our region this year.

I'm going to, I think in the interest of time, truncate my report on the stormwater especially from industrial discharges as Chair Munoz has discussed that, but I will mention a few things there.

The meetings attended by our outreach program. And finally, a review of our enforcements procedures. This last item will be immediately followed by Information Item Number 14 which will provide more detailed information in response to the Board discussion on enforcement during the February 4 meeting.

MS. MCCHESNEY: Item 11.

EXECUTIVE OFFICER UNGER: Item 11, thank you. So first Carousel.

The cleanup in the Carousel neighborhood continues with a third cluster of homes in the completion stages.

As reported to you previously, the cleanup is taking longer than anticipated. Shell, the responsible party, has studied the logistics of the cleanup operations and determined if changes to the number of homes in each cluster and changes to the sequence that new clusters are scheduled could expedite the cleanup.

That study was submitted to the Regional Board last month and it showed by doubling the number of homes in each cluster from roughly 10 to 20 and reordering the schedule of the clusters could result in a schedule in which the cleanup can be completed four years earlier than the ten-plus years presently estimated and that I've been reporting to you.

Staff reviewed the proposed plan, consulted with our attorney, and then approved the plan to reconfigure the clusters and expedite the cleanup. The community is being informed by both Shell's outreach team and our outreach team, and we plan to implement the new remediation plan on the next set of clusters later this year. And the new planned cleanup is now scheduled for completion around 2024.

And although not directly related to the cleanup, a final ruling in the Los Angeles County Superior Court has been issued in the Barclay Hollander case in which Barclay Hollander, a subsidiary (indiscernible) foods sued the Regional Board for improperly naming Barclay as a responsible party on the cleanup and abatement order for the Carousel site. The court rules in favor of the Regional Board and upheld the Regional Board amended cleanup and abatement order.

This is a huge win for the Regional Board and the site cleanup program, and preparation for this litigation, I think as David said, truly involved a village.

Carol Boyd and John Sosaki from the Attorney General's office wrote a number of briefs and provided oral argument at the hearing. David Coupe also provided legal research and input on the briefs. Special thanks go to Deb Smith and Dr. (indiscernible) for the technical work and assistance, which included preparation of administrative record of more than 27,000 pages.

So any questions on Carousel?

VICE CHAIR GLICKFELD: Congratulations.

EXECUTIVE OFFICER UNGER: Yeah. The AGs were awesome.

Santa Susana Field Laboratory. The Santa Susana Field laboratory located eastern Ventura and western Los Angeles Counties sits within a habitat linkage that connects the Los Padres National Forest to the Santa Monica Mountains and to the Pacific Ocean. Historically the site has served as a Department of Energy and NASA field laboratory for rocket propulsion and nuclear energy research.

The site, including groundwater beneath the site, is contaminated by radioactive materials and industrial solvents. Significant portions of the 2850 acre site remain undisturbed and are inhabited by wildlife, including mountain lions, red tail hawks, bobcat and mule deer. The Regional Board regulates stormwater runoff on the site under individual MPES permit and there have been a number of different innovative stormwater BMPs, best management practices, that have been implemented at the site.

Also, in 2009 the Board served as lead agency on contaminated soil removal action from subwatersheds at the site in order to improve the quality of stormwater runoff.

Boeing and NASA are the responsible parties for the cleanup at much of the site, and the DTSC is the lead agency for the cleanup.

Last week Boeing announced that it recorded a conservation easement to be held by North American Land Trust to designate nearly 2400 of the 2850 acres as open space habitat. The conservation easement preserves the land as open space to protect wildlife habitat and artifacts of the land's Native American history and restricts residential or agricultural uses of the property.

The North American Land Trust is a land trust that holds more than 480 conservation easements across the country in 18 states, will monitor and enforce the easement. And in addition, the California Attorney General has the authority to oversee the easement.

It is difficult now to speculate how this land use designation may affect our regulatory activities, but I think at the very least there will still be need to continue our regulation of stormwater discharges from the site.

Are there any questions?

CHAIR MUNOZ: Ms. Madelyn?

EXECUTIVE OFFICER UNGER: Yeah.

VICE CHAIR GLICKFELD: Yeah, could you find out more about the responsibilities that the North American Land Trust is taking over with regard to this easement. Are they going to be doing the management of this easement?

EXECUTIVE OFFICER UNGER: I don't know that.

VICE CHAIR GLICKFELD: Are they going to be doing the mitigation or are they going to turn over the mitigation responsibilities in the areas where the easement exists?

I do know that the National Park Service and Santa Monica Mountains Conservancy and the State Parks wouldn't touch it because of the difficulties with cleanup, so I just hope that, since they are very far away, they know what they are getting into, and I would hate for us to be involved with an uninformed, inexperienced land owner to try and get this done.

EXECUTIVE OFFICER UNGER: I will reach out to our colleagues at DTSC as well as to Boeing to try to answer your questions.

VICE CHAIR GLICKFELD: I'd also talk, if you can, if it's acceptable to Boeing, it would be great to talk directly to the North American Land Trust.

EXECUTIVE OFFICER UNGER: Thank you. I will do so.

Frances, did you have anything to add?

MS. MCCHESNEY: No, I was just going to tell Charlie (indiscernible).

CHAIR MUNOZ: Please make sure that the record notes that Mr. Stringer stepped out of the meeting (indiscernible).

EXECUTIVE OFFICER UNGER: Okay. Sorry about that.

Harmful Algal Blooms. This month was the first confirmed HAB, harmful algal bloom, recorded in quite some time. The HAB was detected at El Dorado Parkway in Long Beach, a lake that is located in a public park which supports a number of recreational uses. Staff and local environmental and public health agencies worked to warn Long Beach residents and recreational uses of El Dorado Lake to exercise caution after testing confirmed the presence of the harmful algal blooms, also known as blue-green algae blooms.

As a bit of background, scion bacteria are a common part of freshwater marine ecosystems. An increase in water stability, elevated water temperatures, high concentrations of nutrients, and low light intensity have been associated with an increase or dominance of scion bacteria in surface waters essentially across the country. Across the world, actually.

Regional Board staff worked with State Board staff and staff from the city of Long Beach Environmental Health Department to sample water along the shoreline. The sampling confirmed the presence of toxins that are associated with harmful algal blooms and high risk groups for HABs harmful algal blooms in El Dorado Lake.

The most high risk groups are really animals such as dogs and wildlife as they eat the algal material and drink the water.

Responding to HABs is the responsibility of the local agency and the regional and state boards have lent support to these agencies in the recent past.

As far as regional board activities in other regions, Region 1, the North Coast Region, has had the most recent experience in responding to HABs. Region 1, North Coast Region, has supported local agencies by providing technical expertise and support and broad notification to local populations, and we are essentially trying to follow their protocols.

Additionally, the state board has a portal on their website dealing with the science underlying response to HABs, and in this case at El Dorado Park staff provided sampling expertise, as I said, and assistance to the City of Long Beach's Environmental and Public Health Department and to the city of Long Beach's Department of Parks, Recreation and Marine Environment in implementing signage at the park.

State Board also participated in developing local environmental and public health department notices and recommended postings at the El Dorado Lake. And what you see is a media release regarding this incident in our region that we had posted on our website, and a little fuzzy picture of what an HAB looks like.

BOARD MEMBER DIAMOND: Sam.

EXECUTIVE OFFICER UNGER: Yes.

BOARD MEMBER DIAMOND: Is there an explanation for why this is happening now?

EXECUTIVE OFFICER UNGER: Well, I don't know that we know an explanation. Basically the one thing I think that we have most control over are levels of nutrients in the lake and I don't think at this point we know whether the nutrients are elevated at this site or whether it's other natural phenomenon that have created it. So we've really been focusing our activities on supporting the city of Long beach.

BOARD MEMBER FAMIGLIETTI: So now I would just note after spending some time in Cleveland and up around the Great Lakes, I know just enough about the harmful algal blooms to be dangerous. So the main drivers are nitrogen and phosphorous and they come from sewage and agricultural activity. And so the Great Lakes region has been able to really control the problem by, first by sewage treatment and now they're really focused on agricultural runoff and in particular phosphorous applications. In this case it might be sewage.

EXECUTIVE OFFICER UNGER: Thank you, that's very helpful. I think if we do get involved in further sampling activities we can include those constituents.

BOARD MEMBER FAMIGLIETTI: At the risk of overcommitting my agency, we have planes that can fly and I think we're well suited to tracking this kind of stuff. And there's across NASA there's again up on Cleveland the Glen Research Center has done a lot of aircraft flying up and down rivers and around the lakes to try to track the various forcings and the size of the blooms and so on, and so we could -- if things get worse in the future, we could bring some of that technology to bear.

EXECUTIVE OFFICER UNGER: I think that would be a great opportunity for our staff to work with NASA staff at the jet propulsion laboratory to try to get a better handle on this.

CHAIR MUNOZ: That's wonderful, thank you.

VICE CHAIR GLICKFELD: So also at the chairs' (indiscernible) we talked about these toxic (indiscernible) pools as a potential topic for WQCC because every region is having it. The Salton Sea, the wetlands in San Francisco Bay, and I wonder whether or not it's also a climate warming issue that's accelerating the impacts of nutrients in phosphorous. I don't know enough about chemistry to be --

BOARD MEMBER FAMIGLIETTI: Yeah, it's hard to know.

VICE CHAIR GLICKFELD: It's hard to know, but I think that when you meet with the other executive directors and the state board staff you might want to see whether there might be some resources that are being spent in the universities to look at this issue.

I know that we have a couple of professors at UCLA that are looking the Salton Sea.

EXECUTIVE OFFICER UNGER: Thank you.

BOARD MEMBER FAMIGLIETTI: So my take on this is that other regions are much further ahead than us and we can really benefit from their experiences, especially the Great Lakes region.

EXECUTIVE OFFICER UNGER: Thank you.

Deb, did you have something?

MS. SMITH: Yes, I just wanted to add that I participate recently in a series of calls with some other states, sort of a little subworking group under ACWA, the Association of Clean Water Administrators, and Karen Larson here is also a participant of that group. And they recently released some advisory levels for these toxins for waters. They're actually not as stringent as one we had in the working group in California that is made up of a whole variety of agencies interested in this have come up with on our own, so we've been commenting on that and working with EPA closely on that.

It is a national issue, it's bigger in other parts of the country. It's a drinking water issue, it's an aquatic life issue, it kills dogs if they drink the water. It's serious.

And I know EPA starting with the advisories and they've got that out for comment. They are working on implementation strategies for states. And then they're going to try to link it up with the criteria that we all, the states and EPA have been working on for about 20 years for nutrients to try to figure out the puzzle, you know, the relationship between those two.

So we'll keep you posted. And there's a whole group of folks working on it with the state board and regional board, so quite a big issue.

BOARD MEMBER STRINGER: Is this a saltwater issue?

MS. SMITH: I think it's both but I think --

EXECUTIVE OFFICER UNGER: The ones of concern lately are freshwater issues.

MS. SMITH: Freshwater dominates the discussion. And one of the issues is how do you treat it if it only affects part of a water body? Sometimes the treatment might be something that causes a worse water quality problem. How do you do assessments (indiscernible) later today as a future issue down the road to deal with, but how do you figure out how to handle it through all the clean water programs?

EXECUTIVE OFFICER UNGER: So moving on, I think I'm going to shorten my discussion about the industrial general permit and industrial discharges because I think Irma covered it very well.

I just wanted to mention two other initiatives that we are undertaking at a staff level.

We have sent letters to each and every permittee in the MS4 permit reminding them that the cities must implement an industrial discharge program within their cities. We have sent letters to remind them that the responsibilities under the permit are to identify nonfilers as required by the MS4; inspect DMPs that are in place, identify illegal connections in discharges, take progressive enforcement, and refer overcalcitrant nonfilers to the Regional Board, and so those letters have now been sent to all the permittees.

As a third activity moving forward with industrial general permit issues is last year at the WQCC Vice Chair Glickfeld and I participated in a workshop with Water Board members from the other eight regional boards, many of whom are using third party assistance for implementing their agricultural and their forestry discharge programs, as we also do for our agricultural program.

We discussed our challenges with the IGS, industrial general permit, and really sought some opinions from the other board members as to whether they think that working through some sort of third party compliance matrix might be effective.

The consensus of your peers in the other regions was that third party assistance could be feasible for regulating industrial discharges in our region.

Since that meeting we've been sort of putting the word out informally that we're interested in that, and at this point I would inform you that just recently we did receive a proposal for a third party group that could handle compliance and (indiscernible) inspection and BMP (indiscernible) for all the IGSs. We are now looking at that proposal to see whether we are interested in bringing it to you for your comment as to whether it's something you might want to include in the future.

CHAIR MUNOZ: Any questions or comments?

Please proceed.

EXECUTIVE OFFICER UNGER: Okay. And finally, other participation community outreach activities during the past month included the Regional Board participated in environmental health and enforcement symposium, which was held on April 10th and 11th at the California Endowment Center. The theme of the symposium this year was success stories, focusing on building robust enforcement partnerships in environmental justice communities.

Hughes Marley was a panelist on the community partnership panel and I participated along with (indiscernible) on the panel wrap-up, and the panel wrap-up is where we go from here.

We prepared research for upcoming quarterly meetings of the Florence Firestone Interagency Workshop group organized by the Los Angeles County Department of Public Health.

We organized and facilitated monthly Carousel community cleanup outreach communication meetings with the new cluster configuration will be discussed with members in the forthcoming months.

And finally, we have shared information with (indiscernible) Pomona, a community group partnering on the industrial general stormwater permit pilot project in the San Jose Creek subwatershed and it's being headed up by the Regional Board's enforcement program at this time.

So for my last item you will recall that earlier this year staff provided an update on enforcement activities, including settlement of an enforcement action against the City of Industry regarding construction activities that affected waters of the state and the United States that we conducted without required 401 certifications. I approved settlement under the Board's delegation.

After that update the Board had some questions regarding the matter focusing on two topics. The first topic was whether the Fallows Camp area could benefit from further restoration. And the second topic was what is the process for determining whether a settlement of an enforcement matter is approved directly by the Board or approved by the Executive Officer. I will first give you a brief update on Fallows Camp and then discuss the settlement approval process. And following this discussion David Boyers (indiscernible) will be providing further information on settlement processes.

So with respect to Fallows Camp, as we discussed in April, Deb Smith invited senior restoration staff from the Department of Fish and Wildlife representatives to visit Fallows Camp to evaluate the current condition of the river and whether restoration activities in the east fork of the San Gabriel River in an area that would be appropriate and viable.

City of Industry staff graciously led the tour of the areas of the camp adjacent to the river to help inform staff. Staff is working on a report to me of their visit but it is not yet complete.

In addition, I've reached out to the City of Industry representatives to discuss options for their participation in a potential restoration of the Fallows Camp area, and the city is interested in further discussions. I do not have specifics to talk about at this time but I will keep you informed.

And with respect to the City of Industry settlement, I want to first clarify that restoration projects that might occur in the future are independent of the settlement and will be dealing with the site as it now exists, not as it was five years ago at the time of the activities if we are so fortunate to be able to conduct further restoration at the site. The settlement is final and cannot be reopened.

Next, I want to provide some additional context on the enforcement of this matter before I turn it over to our office of enforcement staff.

Of the many governmental agencies that were involved in this matter, the Regional Board really was the only agency that enforced against the City of Industry. The settlement is a significant accomplishment for this Board and I did not want for us to lose sight of this.

The city's action was damaging to the environment. The prosecution team responded with a complaint assessing a penalty amount that was extremely high to take into account the nature of the actions and the difficulty in repairing the damage caused. This is the highest penalty ever assessed by a Regional Board in a settlement and in fact the highest assessed in the entire state by all boards.

In addition to paying $2.5 million into the cleanup and abatement account, the settlement includes $2.5 million for a project for the construction of stormwater retention facilities in the San Gabriel River basin to be made available in the area for reuse, and as you all know, this is a very important priority for this region.

I wanted to acknowledge the Regional Board's enforcement staff and the office of enforcement for achieving such an outstanding settlement in a very difficult situation and obtaining this agreement for such a large and record penalty amount, it is really a great accomplishment.

CHAIR MUNOZ: I'd like to add to that.

EXECUTIVE OFFICER UNGER: Sure.

CHAIR MUNOZ: When the item came up, we focused on one particular aspect of the conversation and we really didn't take a moment to recognize this is a historic, historic action that took place, and it took place because we have an incredible leader in the enforcement, Mr. Hugh Marley. I want to especially thank you for your constant dedication and your hard work.

Because what doesn't happen is when we have these kinds of things happening we aren't told this took three years, which meant 5,000 staff hours. If we were told that, I think we would appreciate and value a lot more of the accomplishments that you make. And I wanted to let you know that when I thought about our conversation and the report that you gave, I really felt pretty bad that we did not focus on all the hard work that your department and you did to get this historic monies for us.

They're very hard to get in this day and age and because of urban (indiscernible) and some other things, so thank you so much and please convey that to members of your staff, because I didn't want them to feel -- walk away thinking that you're underappreciated because if anything we hold you in very high regard.

EXECUTIVE OFFICER UNGER: Thank you. So now we're going to move right to Item 11 and I turn it over to Paula to lead the discussion of Item 11.

And that concludes my report.

CHAIR MUNOZ: I'm going to take a five-minute break before she starts, if you don't mind. Thank you.

EXECUTIVE OFFICER UNGER: Thank you.

(Off the record at 10:48 a.m.)

(On the record at 10:59 a.m.)

CHAIR MUNOZ: We're going to start with Item 11, and that's the discussion of the Regional Board's process for settlement enforcement actions. And Ms. Rasmussen.

MS. RASMUSSEN: Good morning, everybody. I'm Paula Rasmussen, Assistant Executive Officer. I'd just like to take a minute or two to give you some context for Item 11.

Many of you may have participated in the past on hearings involving enforcement matters, but these are few and far between, which we think is fortunate. Most of the cases are managed by the enforcement team settle, and as such, you do not see these cases or you hear about them after the fact either through the enforcement updates that Hugh provides or through the Executive Officer Report.

For example, so far this year we have had 55 cases settle for mandatory minimum penalties, MMPs, for almost

$1 million without hearings. Cases that don't settle are provided a hearing, and we had brought three cases for MMP penalties to an Executive Officer hearing last October and we are set to hear another five next week.

Now, discretionary cases can be negotiated before we issue a formal complaint. These typically are larger complex and time-consuming cases that require coordination with investigators and other agencies and extensive support from the Office of Enforcement.

Now, today's presentation will inform you about what happens and will provide insight on the level of effort it takes to move a case through the enforcement process to resolution.

Presentation will have two parts. From the Office of Enforcement we have Mayumi Okamoto and David Boyers, and they will discuss how enforcement cases are settled. And then Francis McChesney from OCC will talk about what happens after the prosecution team presents a proposed settlement.

(indiscernible) will present a key concept today, which is separation of functions, which is in place to ensure that the prosecution and advisory teams remain separate and do not communicate inappropriately on matters regarding the case to be considered.

One tool that we have developed to facilitate this is a confidential list of all of our enforcement cases we've put together at the direction of our attorneys which spells out both the prosecution team and the advisory team for the purpose of maintaining separation of functions. This is a living list, currently has more than 100 cases in different stages of development covering all of the Regional Board programs. We plan to maintain it and update it continuously as cases move through the process.

Frances is also going to discuss another management tool which is a framework that describes how settlements are considered for approval.

I will now turn this over to Mayumi and David.

CHAIR MUNOZ: Thank you.

MS. OKAMOTO: Thanks, Paula. Good morning, Chair Munoz and Board Members. My name is Mayumi Okamoto, I'm a senior attorney with the Office of Enforcement, and as Paula mentioned, I and the Chief Counsel David Boyers are here today to talk to you about the settlement process that your enforcement staff and our Office of Enforcement attorneys engage in and to answer any questions you may have about that process.

We will review the nuts and bolts of the procedural issues like the separation of functions and confidentiality. We'll talk about some of the considerations that we may take into account going into and during the settlement process. And we will review the ways a paid liability may be offset by the completion of supplemental environmental project or an enhanced compliance action.

So I thought this little Wizard of Oz cartoon was appropriate to describe the purpose of this informational item. For you as Board members there's a lot of mystery surrounding what goes on behind the curtain during the settlement process.

The investigation of the case, the discussions by the parties during the negotiation and the compromises that are made to reach an agreement, they all happen outside of your view and scope of direct knowledge, and that's intentionally done given the need to preserve your impartiality as decision makers.

But it also has this unintentional side-effect of leaving you with a lot of questions like what exactly is happening behind that curtain? So for the purposes of this informational item please consider David and I as Toto as we ever so slightly pull this curtain back to demystify the settlement process. I'm probably making it sound more exciting than it actually is but...

Okay. Probably the foundational procedural issue in any enforcement matter settlement is the separation of functions, as Paula mentioned. The Board separates the advocacy and the advisory functions on a case-by-case basis to guarantee that procedural due process requirements of a fair and impartial tribunal are met.

This process ensures that an impartial non-involved reviewer presides over a hearing or settlement approval by separating staff members into prosecution and advisory teams.

So most oftentimes the prosecution team is comprised of the following people.

So Assistant Executive Officer Paula Rasmussen, Compliance and Enforcement Supervisor Hugh Marley. Usually there's a Regional Board technical staff that assists us from the program in which we're doing enforcement. So for example, in the 401 Cert Program Dr. L.B. Nye is often on the prosecution team. And then your assigned Office of Enforcement counsel, which would be myself or any of the other attorneys in the Office of Enforcement.

And the advisory team typically consists of Executive Officer Sam Unger, Chief Deputy Executive Officer Doug Smith, usually also another Regional Board technical staff person if it's appropriate, and then your OCC Regional Board counsels.

So naturally what follows with the separation of functions is the prohibition of any ex parte communications between the prosecution team and the advisory team and the decision maker that are either substantive in nature. Or even procedural issues in a case which may be controversial, we don't have ex parte communications regarding those.

As Paula mentioned in her opening remarks, the enforcement section has pulled together a list of their ongoing cases with staff designated as either prosecution staff or advisory staff. This really serves as a quick reference to guide staff communication throughout the ongoing enforcement process.

In the life cycle of a settle of an enforcement matter the roles and functions of each team are separated as follows.

David and I are going to discuss the prosecution team's involvement in the settle process up until this point, and that's the final proposed settlement agreement after it's gone through the public comment and review process.

And Frances is going to discuss the advisory team's involvement and role in the settlement process after that.

So why settle? What are some of the benefits of settling a case?

Certainty in outcome is one of the benefits. Settling a case eliminates the inherent risk of going to hearing or engaging in protracted litigation.

Typically settlements will use fewer staff resources over the settlement's life cycle versus the hearing process life cycle.

Most settlements are front loaded with Regional Board staff resources and back loaded with attorney resources to memorialize the agreement, and I'll kind of explain what I mean by that in an upcoming slide.

The parties can incorporate terms into the agreement that are not otherwise authorized by the Water Code. So how can we do this?

Government Code Section 11415.60 is the tool that we use to incorporate aspects of a settle which may not be specifically authorized by the Water Code.

A good example of this is supplemental environmental projects or enhanced compliance actions which the agency would otherwise lack the power to include in a settlement agreement under the Water Code. And David's going to talk about these concepts in his portion of the presentation.

So there's two ways to initiate the settlement process. One is the pre-ACL complaint route, and this is typically the Office of Enforcement's preferred way to initiate settlement discussions and it's also one that your staff implements as well.

After the completion of the investigation, the staff and their assigned Office of Enforcement attorney develop the proposed penalty methodology analysis based on the State Water Board's water quality enforcement policy, looking at the evidence in consultation with the prosecution team lead, most oftentimes Paula Rasmussen.

Once we arrive at our final proposed penalty, the Office of Enforcement attorney will send the discharger's representative a pre-complaint letter or email letting them know that the Regional Board staff has requested our assistance in bringing formal enforcement for the alleged violations.

And we also offer them the opportunity to meet with us and discuss the facts surrounding the alleged violations, including the option of settlement prior to formally issuing a complaint.

VICE CHAIR GLICKFELD: Excuse me, one question.

CHAIR MUNOZ: Please.

VICE CHAIR GLICKFELD: It's pre the ACL but it's got to be post the notice of a violation being posted.

MS. OKAMOTO: That's correct. So this would typically happen in the process of escalating enforcement, so we've already notified the discharger of violations through a notice of violation. Maybe we've even sent an investigative order under Water Code section 13267 to get additional information about the violations.

So now we're kind of post information gathering stage, we're walking through the enforcement policy methodology to assign factors to the various violations, and now we're getting ready to sit down with them in our first settlement meeting.

And most oftentimes in the pre-ACL complaint stage dischargers do take us up on our offer to meet, so they'll come to the table and talk to us.

After they agree to meet with us we send them a confidential copy of the draft enforcement policy methodology, and this is really where the majority of the staff workload goes in this initial settlement process. They've looked at all of the facts, they've looked at all of the inspection reports, they've combed through the files and they've put together this draft enforcement policy methodology that comes up with the initial liability amount, and we use that as the basis for our first discussion.

The second route in engaging in settlement discussions is after the ACL complaint has been issued.

After the complaint is issued the discharger has a statutory right to have a hearing on that complaint within 90 days of issuance, but they may also choose to waive that right in order to engage in a settlement discussion with us to see if they can resolve the violations prior to hearing.

So what are the pros and cons of engaging in either one of these routes?

For the pre-complaint settlement route, it's typically a more efficient use of staff time. Like I said, a lot of time on the front end to create the proposed penalty methodology and then more attorney time on the back end to negotiate and memorialize. You have an opportunity to learn about case deficiencies prior to issuing ACL complaints.

The downside, you know, sometimes it results in a delay. Settlements can last well beyond that period of 90 days, so it's incumbent upon the parties to be motivated in order to conclude the settlement.

Post complaint, you can show the discharger that you're serious, you want to issue that complaint, get it out into the public realm to demonstrate you're serious about taking this matter to hearing, you feel strongly about your case.

It provides leverage to settle by a date certain. If you know you have to go to hearing in 90 days it kind of gives the parties that motivation they need to potentially settle the case prior to that.

The downside is it really does involve more staff resources. It's very, very draining on staff resources to have to both sit down and negotiate a case as well as prepare the evidentiary record for submittal and meet all the hearing procedure deadlines, so that is probably the major downside of going the second route.

And so now I'll turn it over to Assistant Chief Counsel Boyers.

MR. BOYERS: Thank you, Mayumi, and thank you, Madam Chair and Board Members for this opportunity, and thank you for allowing me to put this presentation together. I'll do my best to work the bouncing parts.

So again, I'm David Boyers, Assistant Chief Counsel in the State Water Board's Office of Enforcement. I supervise the legal unit and the team of attorneys that assists all the regional boards in bringing enforcement actions and settling enforcement actions for the regional boards.

So one of the first things Mayumi talked about how we engage with the dischargers when we find a violation. When we finally get down to having a settlement meeting with the dischargers, one of the first formalities that the attorneys say is it's understood that these negotiations or this discussion is going to be confidential and protected under Evidence Code Section 1152 and 1154, and everybody nods and makes that agreement.

Why do we do that, why do we have that formality?

It's very important. There is a strong public interest to encourage consensual resolution of disputes, and to do that there needs to be freedom to communicate openly and freely and make offers of compromises and other concessions in order to come to a resolution. You can imagine if everything that was discussed by the parties in a settlement context could then come back and be used if the matter didn't settle and we ended up at a hearing.

So we issue a complaint. We're proposing 500,000. The discharger says, 'Well, I'd be willing to pay 400,000,' and we don't end up settling. If we go to a hearing the discharger doesn't want us to say they offered to pay 400,000, there must be some liability. So that's the purpose of keeping settlement negotiations confidential.

1152 essentially exists to protect the discharger, and the basic elements are that evidence and an offer of compromise, and that's just what I talked about, statements made during attempts to compromise and conduct during negotiation is inadmissible to prove liability, so we don't want to be able to come back and use that evidence and the conduct against the discharger if we end up at a hearing.

Section 1154, conversely, protects us and says evidence of an offer to accept a sum of money, statements made during our attempts to negotiate a resolution, and conduct during our negotiation sessions is also inadmissible to prove the invalidity of our claim.

So just how do we come to a compromise and what are the rules that surround how we justify that compromise?

Well, very frequently during a negotiation we learn of new information that we didn't gain from our investigation alone, and that could just a myriad of things.

That can be a new calculation of a discharge volume that the discharger has done after they've received a complaint. So they have an employee who reports a discharge volume, and then they get a complaint and they say, oh wow, we really need to do a refined analysis of this discharge volume.

We'll engage with them, we'll look at their analysis, and oftentimes that will change the way that we look at the violation; it's a change in facts.

We can also make a number of other modifications to the penalty methodology and the enforcement policy. And if any of you are familiar with that, there's a number of statutory factors that we look at when considering how to calculate a liability.

For instance, one of them is a discharger's ability to pay, and we often hear during settlement negotiations that we don't understand their financial circumstances. They have basically access to all their financial data, which we ask for. We have economists that can look at that and often we will adjust the liability based on their inability to pay.

There's obviously some inherent risk associated with not settling and bringing a matter to a hearing. Oftentimes we can look at that risk and we can adjust the amount that we propose in a complaint versus the amount that we settle for and adjust for that risk inherent in going to a hearing.

One of the important things that I will say is when we do compromise and we do come to a resolution, the enforcement policy requires that we be transparent and that we explain the basis for our compromise. So we don't have any secret settlements, we don't have any secret methodology, we're not hiding the ball. Any of our analysis, whether we issue a complaint first and then a stipulated order after, or just a stipulated order is all there for you to see.

So the methodology requires that we show our work, and we do that. We say what the facts are and we say how we analyzed the evidence, we say what we think the discharger's conduct is worth, and we have that in any document that we put before you.

So Mayumi mentioned SEPs, ECAs, and there's another type of project called compliance projects, and these are a really important bargaining chip that the prosecution team has when trying to resolve a violation through settlement.

So a SEP is essentially, and there's a State Board policy entirely on SEPs, but it essentially is a project that enhances the beneficial use of water, provides a benefit to the public at large, and is not otherwise required by law. So think of this as you habitat restoration or your monitoring program, your studies, your on-the-ground work that is doing something to improve water quality and enhance beneficial uses.

And these projects are available both to offset liability for MMPs and for discretionary liability. We can use these pretty much in any settlement.

The next type of action is what we call an enhanced compliance action --

BOARD MEMBER STRINGER: I have just a quick question on SEPs. It was sort of a passion of mine years ago.

Do you have a preference between cash and SEPs, just all things being equal?

MR. BOYERS: So I'll get into the amount that is allowed to be suspended on the next slide.

BOARD MEMBER STRINGER: Oh, okay.

MR. BOYERS: In terms of a personal preference --

BOARD MEMBER STRINGER: No, is there a policy preference?

MR. BOYERS: There is a policy preference.

BOARD MEMBER STRINGER: The agency that I worked for had a preference for cash over SEPs.

MR. BOYERS: Yeah, so on the next slide I'll touch on that.

BOARD MEMBER STRINGER: Okay. Sorry to jump the gun.

MR. BOYERS: No worries.

So back to enhanced compliance actions. These essentially are capital or operational improvement projects that are beyond those required by law. They go above merely bringing the discharger back into compliance.

For these types of projects you're basically looking at the specific requirements of the discharger, and normally these come from them directly, they say, 'Well, rather than pay the money over, can we enhance our facility? Can we spend the money and make our treatment processes state of the art?'

And in some cases that makes sense to allow them to do that. As I said before, these are not strictly compliance projects, these are things that go above and beyond what is ordinarily required. These projects are available only for discretionary liabilities, to offset discretionary liabilities.

And then finally, the last type of project, which is called a compliance project, is very narrow in its applicant, it only applies to offset liability for mandatory minimum penalties with respect to POTWs that serve a small community with a financial hardship.

A couple things about these types of projects before I move on.

It's important to remember that these are offsets to what would otherwise be paid liability, and the discharger remains on the hook for these penalties until the projects are complete.

These are projects also that are performed by the discharger or a third party hired by the discharger, these are not performed by the regional water board.

They're also overseen, and our role in many cases is to oversee the implementation of these projects. As an alternative, the discharger can hire a third party to do that function.

There are a number of reporting obligations, there is auditing provisions, we require budgets, schedules and deliverables. These are highly tracked types of projects.

So here's where I'm going to get into your question, Board Member Stringer.

I talked about the first bullet kind of already, when are SEPs and ECAs available in lieu of paid liability. Basically in settlement. So SEPs for MMPs in discretionary liability and ECAs for discretionary liability only.

VICE CHAIR GLICKFELD: What does that mean, discretionary liability?

MR. BOYERS: So any liability that's not required to be imposed under the Water Code. So the Water Code for POTWs under Section 13385, and these are routinely resolved.

VICE CHAIR GLICKFELD: That defines what they can propose as a SEP or ECA.

MR. BOYERS: We'll get into what they propose, but the mandatory versus discretionary is generally your $3,000 per effluent limitation violation under 13385, and then there's some stormwater enforcement act mandatory liability too. We can use SEPs to offset that pay liability.

When do SEPs and ECAs get discussed in the process? Normally, if we've come to a resolution on a dollar figure, we'll discuss SEPs and ECAs at that time as a means of offsetting some of that liability.

Although, many times in certain circumstances we can bring up the idea of, you know, we would be open to a SEP or we would be open to an ECA; think about that as we're going through the process.

So the concept can be throughout the settlement process but really the details of the specific project and the dollar figures are resolved at the end.

BOARD MEMBER DIAMOND: One question, just trying to understand it. If it doesn't get settled and you go to a hearing, is a SEP not allowed except during settlement process?

MR. BOYERS: Generally that's correct. There are, as I said, for mandatory minimum penalties the statute itself does provide for SEPs, and I would defer to your OCC counsel on whether they thought including a SEP upon the agreement of the parties was an appropriate action for the Board to do in that context.

When we're looking at it and we're looking at it in a settlement context, yes, it generally is limited to settlement only of discretionary liability.

BOARD MEMBER DIAMOND: Is that to be an incentive to settle, is that the reason for that?

MR. BOYERS: It certainly does incentivize settlement. The legal reason is that the statute's limiting in terms of after you've gone through an adjudicatory hearing, the statute provides where those penalties go. And as I said, for certain types of projects, certain types of SEPs or MMPs and compliance projects, the statute provides that those can be offset.

When we're in settlement context and we're not going through an adjudicative proceeding, we're relying on that Government Code provision in order to justify the use of SEPs and enhanced compliance actions.

BOARD MEMBER DIAMOND: I guess my last question about that would be, is it possible if it doesn't settle and it goes to trial, ostensively, that a SEP can be used, is that still a possibility or just not if it's not done during settlement?

MR. BOYERS: So when you say trial you're talking about an adjudicative hearing --

BOARD MEMBER DIAMOND: Yes.

MR. BOYERS: -- in front of a board is it possible. I would say it is possible in the context when it's provided for in the statute. So if you've got an MMP that you're bringing to a hearing and the statute says for MMPs in excess of $15,000 you can offset 50 percent of the total amount, then yes, I think. And again, that would be counsel that your OCC attorney would provide to you in terms of those authorities.

When we bring a case before you, we're generally out of the settlement context. We're not talking about SEPs with the dischargers, right, we've exhausted our settlement remedies. We're basically at the capacity of asking you to impose the statutory penalty which would then be deposited in the (indiscernible) bank account.

BOARD MEMBER DIAMOND: Okay. Thank you.

MR. BOYERS: Mm-hmm.

So now that question about how much can be offset. The SEP policy and the enforcement policy basically say that up to 50 percent of the total liability can be offset in order to go to a SEP or an ECA. A hundred percent of an MMP for a small community can be used towards a compliance project. When we're talking SEPs and ECAs it's 50 percent unless the director of the Office of Enforcement decides that there's compelling justification and exceptional circumstances and has the authority to approve more than 50 percent.

I think in the eleven or so years that our office has been in existence, I think the director has done that maybe only two or three times. The vast majority are limited to 50 percent.

So we talked a little bit about who proposes the project. These are proposed by the discharger.

BOARD MEMBER STRINGER: Sorry to interrupt you again, but just for clarification, is whether to do a SEP at all discretionary?

MR. BOYERS: It is, it's absolutely, it's 100 percent discretionary.

BOARD MEMBER STRINGER: On the agency's part?

MR. BOYERS: Absolutely. And so Frances is going to talk about when you see a settlement and it's got a SEP in it, if you don't like it what do you do with it? You can say, 'This is a terrible project, we don't like this, go back and renegotiate.'

So to that extent it is within your discretion to look at the SEP, decide whether it's a worthwhile offset of those paid liabilities, and either approve or reject it.

Does that answer your question?

BOARD MEMBER STRINGER: It does. So is there any kind of policy preference between a SEP and cash, or is it really just left up to the people --

MR. BOYERS: No, I will say the Office of Enforcement brought the enforcement policy to the State Board for updates last month and there was a discussion of SEPs and the percentage of offsets for SEPs, and at least Board Member Doduc was very adamant that the 50 percent cap be retained for SEPs.

So the State Board has this account, which is the cleanup and abatement account, which they use for doling out for their own environmental cleanup projects or whenever they get applications from regional boards or local agencies where there's a need for this money, they control and they distribute that money. So they see it as a very valuable account and asset for them to continue to have.

VICE CHAIR GLICKFELD: If I could also?

CHAIR MUNOZ: Yes, please.

VICE CHAIR GLICKFELD: One of the reasons we're having this discussion today is that what you mentioned earlier is not necessarily the case for our board. You said generally it's true that when there's litigation and there's settlement of litigation it does come to our board, but there are lots of examples of cases that were in this pre-litigation settlement process and that also came to our board, and so one of the reasons that we asked for this is we didn't understand why some came and some others didn't, so that's the question I was most interested in, I don't know whether everybody else is, so I don't know if you have an answer to that but perhaps our own staff is going to address that issue sometime.

MR. BOYERS: I think that's correct, I think Frances is going to address that issue.

VICE CHAIR GLICKFELD: Good.

MR. BOYERS: You know, keep in mind that as the prosecution staff we are separated from the advisory team and we go about and we do our job of negotiating cases and settling the vast majority of cases with the designated parties, the dischargers, and then we bring those either through the Executive Officer or to the Board, and that's really not up to us how that's presented to you.

VICE CHAIR GLICKFELD: Okay. I've got it.

MR. BOYERS: So, yeah. So who evaluates the project? That's your prosecution team and then ultimately that's up to you and your advisory team to either sign off on it or not.

And that last bullet is really just these are settlements and the parties have to agree.

All right. So the last slide that I have is once we come to an agreement, once we've drafted the terms of the stipulated order or the settlement, so to speak, we provide public notice, and for Clean Water Act violations that public notice is required by 40 CFR 123.27.

We don't limit our public notice to just Clean Water Act violations, we publicly notice all of our settlements for a 30-day period. And then if comments come in, we generally will prepare a response to comments. It's not your formal rulemaking response to comments but it is something that we can provide to whoever's going to look at the settlement for approval to know what the dialog and back-and-forth has been, or at least our perspective.

If we get a comment that is something that we really didn't know about and we want to rescind the matter and start over, we have that option too. It rarely happens but we do have that option.

And so once we've done that, once we've engaged in the public comment process, we will present the entire package to the advisory team, and Frances is going to talk about that process, but what happens next is the settlement can be either approved by the EO through the delegation or it can be presented in a public meeting like this to the entire Board, and both parties generally get up and give our perspective and ask for your support on a settlement.

So with that, I will turn it over to Frances.

MS. MCCHESNEY: Hello, Board Chair Munoz and Board members my name is, as you know, Frances McChesney, and I am Senior Counsel for the State Water Resources Control Board's Office of Chief Counsel. And thank you David, Mayumi, and Paula.

So before we get started I wanted to bring to your attention you should have two handouts. One is just the PowerPoint presentation and the other one is what is labeled the Framework. And I'll be talking about the Framework, so it might be helpful for you.

So as David said I'm going to be talking about what happens once the settlement agreement reached by the parties gets handed off to the Board for approval. And then I'll talk a little bit about the scope of what the Board's and/or the Executive Officer's approval process entails.

So first, I'll just give you a little bit of background about the law. The Porter-Cologne Water Quality Control Act is the statute, as you know, that creates your authority and it's within the Water Code. And that law allows you to delegate some of your authorities. So you have delegated to the Executive Officer the authority to settle administrative civil liability complaint actions. And that delegation, is you put some constraints and parameters on that delegation.

So first -- oh, let me do this. Oops.

EXECUTIVE OFFICER UNGER: Gerry's trying to work the temperature. Let me try to get (indiscernible) --

MS. MCCHESNEY: Okay. So the first is that the settlement amount or if the ACL complaint amount is either $50,000, and the total amount of liability that could be assessed is under $100,000, then the delegation that delegates to the Executive Officer is to just settle those on his or her own. And then the second category is if the settlement amount is more than those limits, then the Executive Officer may settle after consultation with the Chair if the settlement is not controversial and not likely to generate significant debate.

And I just wanted to say too that just back to the delegation, once when the Board delegates a duty to the Executive Officer, the Executive Officer is actually acting as the Board, not in lieu of it. It becomes the Board's action and so when the Executive Officer settles a complaint, you know, approves a settlement, it becomes a final action as if the Board acted.

So if after the consultation with the Chair, the Executive Officer determines the settlement is not controversial, not likely to generate significant debate, Executive Officer approves the settlement and informs the parts. If it would be controversial or likely to generate significant debate amongst the Board then the settlement proposal would be brought to the Board.

So I also want to mention another section of the Water Code that allows the Executive Officer to sub-delegate this authority. So Mr. Unger has sub-delegated to the Chief Deputy Executive Officer and to the Assistant Executive Officer the authority to settle ACL or to approve settlements if the EO -- when the EO has a conflict. And yet when the sub-delegatee acts it's also acting as the Board and of course, would follow the parameters of the delegation.

So the kernel process is just outlined in this framework that I gave you. And this isn't some new process that's being done. This is actually what's been going on, but this actually puts it down on paper, so it's clear for all the staff to understand that might become involved in a settlement matter. So the first thing that happens is that the Prosecution Team attorney, the Lead Attorney, will provide to the Executive Officer and the Advisory Team attorney information regarding the settlement. And so this in step one it lists the kinds of information that's provided and that includes what were the alleged violations? What's the recommended liability and potential maximum amount? And then the active settlement itself, the summary of the settlement terms, and as Dave had mentioned there's a public participation process. And so the Executive Officer also gets the comments and the response to comments and how the violations were developed or determined and lots of information.

So then when the settlements comes to the Advisory Team attorney that attorney's job is to first determine if the Executive Officer is authorized to approve without consultation with the Chair, so it has to check those amounts. And if no Chair consultation is required, the Executive Officer, the attorney and the Technical Advisor meet and review the settlement and then determine whether to approve it and then inform the parties.

If Chair consultation is required then the Advisory Team attorney and the Executive Officer provide that information to the Chair, the information that was provided the Prosecution Team. And we all as a team review that information and determine well do we need any additional information or are there questions that we might have about the settlement, which then the attorney would transmit those questions and might have a meeting with the Prosecution Team, Prosecution Team attorney and the attorneys for the parties to collect additional information as needed.

And then the Chair, the Executive Officer, and the

Advisory Team meet and discuss whether the settlement is controversial and why it would generate significant debate. If so, it would come to the Board, if not the Executive Officer determines -- it's up to the Executive Officer to determine after that consultation whether it's controversial or likely to generate significant debate and if not, the Executive Officer approves the settlement. And yes, if it is then the Advisory Team attorney would inform the Prosecution Team attorney and they would then schedule it for a public meeting.

Okay. Now, if it comes to a public meeting or even with the EO determining whether to approve the settlement there's no adjudicatory hearing, there's no presentation of evidence, there is no cross-examination. There's none of the adjudicatory procedures. Rather as Dave had mentioned, the parties will make a statement to the Board as part of the settlement, ask for the Board's questions, but there wouldn't be any hearing. And then whether the EO is approving the settlement or the Board, the option is either approve it or not approve it. But you could request -- you might want some changes and even request those changes. You might not like if there's a set. You might not like it and want to discuss that, so you could make those requests. But if the parties say no we're not going to make the changes, then your option is still are you going to approve the settlement or not approve the settlement?

And if you approve it, it becomes a final action and it can't be changed after the fact.

Now, if the Board does not approve the settlement then the parties can go renegotiate something and come back to the Board again with a new settlement. And if the Board does hold a public -- so if the settlement isn't renegotiated to the satisfaction of the Board then it would eventually come to you for an administrative civil liability hearing. And then in this Board, the technical process is you have a panel hearing of three panel members of the Board and then there's a full evidentiary hearing with all the procedures that go along with that including presentation of evidence and cross-examination and then closing arguments. And then ultimately the Board adopts an administrative civil liability order.

So the next steps really are to if you have any questions or comments about the framework that we put together we have you hear those and then the next steps well, Mr. Unger is going to provide this to all the staff with a cover manual and it'll be helpful for staff to understand what the process is going forward.

And I think that's all I have to say, any questions?

CHAIR MUNOZ: Yes. No, but I would like to recommend that you review that process with the new Board members when they're appointed, because I think this is very important for them to know. I even think it would be important to present this to the colleagues (phonetic), so that they know what -- they know the process. And I believe we have a council member (indiscernible) and ask, because I think that everybody should know what the process is. That way they understand the very serious nature of this and all the steps that it takes.

Are there any questions or comments from our Board?

BOARD MEMBER DIAMOND: I have one.

CHAIR MUNOZ: Okay. Why don't we start with Ms. Frances?

BOARD MEMBER DIAMOND: At one point you talked about when there are certain -- is my mic on?

UNIDENTIFIED SPEAKER: Yes, it is.

BOARD MEMBER DIAMOND: At one point when we had a report several months about a settlement, I think it was with the City of Industry, and we asked -- and maybe that's the reason why we're having our information item today, if that isn't -- we talked about perhaps settlements that were that large should come before the Board just because they would rise to the level of perhaps the Board would want to hear those. And I'm wondering if we're going to talk about that today or at a future time or I don't know.

MS. MCCHESNEY: Well, the delegation that you adopted has the process that I laid out of if it's over a certain amount to consult with the Chair. And I think given it's very rare, obviously that was the largest settlement in the region and the state as I understand it, that it's very rare. And you certainly could designate for (indiscernible) element any large settlements like that go -- or prefer they come to the Board. And that's totally reasonable to do that.

BOARD MEMBER DIAMOND: Okay. Thank you.

CHAIR MUNOZ: Any other -- yes, Madelyn?

VICE CHAIR GLICKFELD: So here are the concerns I have. You know, listening to Mr. Boyers and to Mayumi I am not convinced that within the negotiation process, thinking about this City of Industry settlement and others, that I'm worried about the fact that there may not be adequate consultation with all of the parties that would be interested in this, because it's not a regular hearing process. It's a solicitation for letters. People don't have full information about the issues.

When a settlement provision is dropped by the state from consideration within the settlement that's not what goes to the public. That's not what goes to the

Executive Director. That's not what goes to the Chair. So it's only after the fact, if at all, that we discover that process. And I think that's really the concern.

I think the other concern is in general we don't have hearings anymore, period. We don't have PAL (phonetic) hearings, which is adjudicatory. Not the settlement process that we were talking about, but I still think that there's an inconsistency with the pre-adjudicatory ACL consultations with the Board and what we get in terms of the ones that are conducted in the middle of litigation. We constantly get stuff that's done in litigation, but we had some SSOs that were not yet in litigation I believe. And that those came to us as well.

So I just think that that part of it needs to be clearer about what our role as advisors are and when you recommend to the Advisory Team that that you, me or others recommend to the Advisory Team that they bring it to the Board. So I think you need to think about that, so there's some consistency thinking about the fact that when you drop provisions from the settlement that it's very difficult for you to find all the people that might have real information about what the locations are.

MS. MCCHESNEY: Well, I wanted to just --

CHAIR MUNOZ: May I ask a clarification here based on didn't we as a Board ask that we not be participating in hearings? I'm confused about that, so --

MS. MCCHESNEY: Well, I'll answer it, the question.

CHAIR MUNOZ: Okay. Good, thank you.

MS. MCCHESNEY: So the question about knowing what goes on behind the curtain, you know, that's (indiscernible) recent rule requirements of the evidence probe, that those discussions be confidential, so that as David and Mayumi describe the process, they can have full frank discussions.

But so that part and then there is the public process where there is an opportunity for the public. So I'm not sure if that was your question, but I mean obviously we can't go (indiscernible) --

(Traffic noise interferes with audio.)

VICE CHAIR GLICKFELD: You know, we can't fix what happened, but what I'm talking about is really important and that you understand it, is that because of confidentiality the only time that the enforcement team can really find out whether giving up on something is a good idea is to do a lot of outreach to people. But if they can't do it, because they're in the middle of confidential agreements, but it's a circle and it causes a lot of problems.

So bringing it to the Board, I think with the diversity of our Board and our participation we solved the problem right away. And so it would be helpful in bringing it to the Board in a public hearing, I believe. I mean, we wouldn't hold public hearings if we only set things out for comment in some of that, but the public hearing itself on a big matter matters. It's an issue that more people will get involved. More people will give more information. We might not change our decision, but we might. So I think that's something to keep in mind.

CHAIR MUNOZ: I hate to interrupt the conversation, but I think we need to open up the rest of these windows, because (indiscernible) so if we can just take two minutes and open up the windows. And pull out the curtains.

UNIDENTIFIED SPEAKER: The air came back on. The air came back on and cool air is forming.

CHAIR MUNOZ: It is?

UNIDENTIFIED SPEAKER: Yeah.

CHAIR MUNOZ: Is it on?

UNIDENTIFIED SPEAKER: Yeah.

MS. SMITH: And the court reporter can't hear with the trucks going by, so she said (indiscernible).

(Colloquy regarding air conditioning.)

BOARD MEMBER DIAMOND: So trying to answer the question that you asked I don't believe, and the staff can correct me if I'm wrong, that we ever said we don't want to do hearings. I think we were having so many of the small hearings, because of the MMPs right that we said we're not (indiscernible) that we shouldn't be sitting and hearing all of these, because it's just too much. And staff can handle these much more efficiently, but I don't think we ever said that the big ones shouldn't come before us. So I think that's the answer.

MS. OKAMOTO: And I wanted to address Board Member's Glickfeld's comments also. You had mentioned instances where the Board seems to be more engaged in the process of saying express mentioned instances where the Board seems to be more engaged in the process of saying (indiscernible) with the steps, really being involved in that review process.

And I do want to make the distinction between enforcement matters that are brought on by the Prosecution Team to be heard by you as a mutual decision maker versus cases that are brought by the Board through the Attorney General's Office where the Board and your advisors and often times your attorneys from the Office of Enforcement kind of sit more in that client position. So a lot of that is there are cases that this Board has done in the last couple of years have been that latter type of case where the Board is sitting in the client position. And so there's a lot more say in that review process of saying yes or no to certain types of projects. Of saying yes or no to a certain amount of liability.

VICE CHAIR GLICKFELD: So is there litigation in place for every single one of the things that come before our Board, because I can think of some examples that we didn't litigate. We talked about it, but we didn't litigate.

MS. OKAMOTO: Correct. Yeah, so when we say litigation I mean, we think of litigation in the context of a civil action in Superior Court. And there has been those instances with certain centers who are overflow cases that we have tended to initiate in a civil court with the Board in the client position versus cases that are brought by your staff administratively before you where you have to remain neutral and really don't get a lot of say in terms of what happens prior to a case coming before you either in a settlement approval context or an adjudicative hearing.

And then just one other point that I want to clarify too about this lack of seeing enforcement hearings coming before this Board. You know, as Board Member Diamond was saying for a long time when we were doing the big mandatory minimum penalty push it felt like every Board meeting there was an MMP enforcement matter on the agenda. I think since we've gone past that initial MMP enforcement initiative and we're getting into the realm of larger discretionary cases those types of cases do tend to settle.

There's a will on the part of the Discharger to want to resolve these cases prior to going to a hearing, prior to expending lots of their resources and attorney time to adjudicate it before the Board.

So I think a lot of it has to do with the nature or the types of enforcement the unit is working on too, where we've kind of moved past that mandatory minimum penalty enforcement. So the cases that do come before you they're just going to be more difficult cases where a will to settle may not necessarily be there. And those kind of seem to be a little fewer and far between now.

VICE CHAIR GLICKFELD: If I could make a last comment? I think one of the things we're focusing on is how much information the EO and the Chairperson gets in order to decide whether it has to go to the Board or not. And it may be that they need to have information about what was not in the settlement in order to do that. But I think you're saying you can't give it to our advisors?

MS. OKAMOTO: Yeah, I mean without a waiver. You know, both parties have to essentially agree to waive that cloak of confidentiality.

VICE CHAIR GLICKFELD: Totally or for one specific item?

MS. OKAMOTO: Well, it depends on the nature, I guess of the clarifying questions that the Advisory Team may have or the parties. But there does have to be that agreement, okay we do recognize there's a need to provide fuller information so that the advisors and the Board can make a decision. So we'll waive this very limited confidentiality over X, Y, and Z issues. But that does have to be done by both parties in order of us to give you kind of a broader peek behind the curtain.

VICE CHAIR GLICKFELD: Well, I would just recommend to you that the next time you waive mitigation, because they say it's going to be fine without it that's a red flag. That I think that the Board needs to know.

MS. OKAMOTO: Yeah, and I will say the process that the staff has developed, the framework that Frances has introduced or not really introduced but memorialized in this document, I think will really help also, so.

CHAIR MUNOZ: Okay. Well, in any case my observation is that we're overly concerned, because of what happened. But I don't think we want it to go quite where we want to be a fifth lawyer in the room. That's not the point of the Board here, is for us to look at all the work that was done. That's what they get paid for and they're very competent. What we're supposed to do is if we have more questions when it's presented to us or to the Board Chair if it goes to that point, that we ask those questions. And if there's any flags that are raised it's because the Chair and the Executive Officer raised them though. Then we don't have a process.

I'm not undermining the intelligence of the Board, but this is a process that has a lot of complications in its negotiations and all of the factors and so on and so forth. You can't capture all that in a report; all those hours of going back and forth and so on and so forth. I'm not a lawyer, but I've gotten myself in complications in negotiations and I'm not sure I want everybody to be privy to all of that. So I'm trying to -- if someone on the Board can help me clarify what I'm trying to say here.

MS. MCCHESNEY: Well, I would just add that the framework that actually lists a bunch of things that might be things to consider in determining whether it should come to the Board and we didn't have that before. And I think that's pretty helpful to just kind of focus the kinds of questions that might be good to look at and take into account. And yeah, if you think of any others we can, because this is not a set-in-stone document we can add and make sure whatever seems appropriate to be considering our consultation process.

CHAIR MUNOZ: I also wanted to share with everybody that when Sam called me to inform me and to talk to me about the settlement I was so excited and happy about the large settlement, that I knew that would never happen, that I focused on that case in thinking oh my god, we're here. As opposed to asking the questions how did we get here, how difficult it was and all of the various things and so the due diligence maybe I should have been more considerate of. But at that point I didn't even know my approval authority.

So I think that when you have a new Chair it has to be very clear as to what this means. And I'm assuming the responsibility, because as Chair I should be asking questions. What is my responsibility here? What is my role here? So once again I think that we need to let the lawyers do their work and they will bring things to our attention when it needs to be brought to our attention. And I'd like to hear from the other Board Members what they think, because I think we should be involved but not get into the minutiae stuff. I don't mean to be --

BOARD MEMBER STRINGER: I just had a couple of reactions. One is just on the issue of confidentiality, I understand it. But I think there should be a better appreciation for the need to provide for waivers around that to the extent that is necessary to make sure the Board is making an informed decision. And I think that that can be done in ways that respects the process, but I do think that it should almost be especially on complex sort of cases that have policy implications, I think there should almost be a presumption that that should occur. And we can work it through on a case-by-case basis and again with respecting all of the need for that confidentiality, which I totally get having been in just about every role in this process that you're talking about.

The other reaction I had is this paper framework that we got today, I think we need a little time to digest it.

MS. MCCHESNEY: Oh, yes. So you can just give me a call or send me an email or whatever through.

BOARD MEMBER STRINGER: So and I think the presumption should always be that we as a Board need to be able to make informed decisions about what we're signing off on. That seems kind of self-evident, I think. Go ahead.

CHAIR MUNOZ: In the (indiscernible) but not necessarily today is the question was asked about were they going to restore the areas. And because I don't know and Frances, you did mention to me that it had been three years and that nature is restoring itself, and so I guess I need more of that kind of information and generally for other situations.

MS. MCCHESNEY: Right. Well, I think that the plan is as Sam mentioned in this report that Deb would continue to go look at the site and they're gathering information or working with the Department of Fish and

Wildlife to look at what if any work would be appropriate and will be reporting back to you. So on that specific one I would rather not get into more detail, because they need to do their --

CHAIR MUNOZ: Right. I was talking about generally.

MS. MCCHESNEY: Yeah, and generally I think you had mentioned interest in learning more about restoration projects in general. And I'd be happy to have an informational item about that.

CHAIR MUNOZ: That would be great, yes. Because I don't know --

EXECUTIVE OFFICER UNGER: And I think I guess I would like to make -- yeah, and we will report back to you when we get the report from Deb and Fish and Wildlife on what can be done and steps that we may be able to take to implement that at the Fallows Campsite. And Frances, just tell me to stop if I go -- but I think it might be appropriate at least as a first step to amend or revise the delegation authority to include specifically for 401 type of violations that some sort of component for restoration is considered in the decision to bring this before you or not. I think right now we have a dollar amount and

MS. MCCHESNEY: Right, well we can talk about it later, but I think it could just be in part of the -- you know, add to the consultation that list of things to consider (indiscernible) --

EXECUTIVE OFFICER UNGER: (Overlapping) That's all I'm talking -- I mean that's exactly --

MS. MCCHESNEY: -- what the main (indiscernible) step is and all that.

EXECUTIVE OFFICER UNGER: Right, and that's exactly --

MS. MCCHESNEY: So instead of because what could be, I really want to just think that there is one type of matter that the Board might be particularly interested, but rather just pay more attention to that subject.

EXECUTIVE OFFICER UNGER: Yes, and thank you for clarifying. And I think maybe we could discuss that and bring it to the Board and possibly if it's appropriate revise the delegation memo.

CHAIR MUNOZ: Okay. Any additional comments or questions?

VICE CHAIR GLICKFELD: I just think that as Executive Officer and whoever the Chair is that it would be appropriate for at least when they're getting informed by the Enforcement Team and the attorney is getting informed by the Enforcement Team, the question should be asked was there any major points that the Enforcement Team tried to implement that weren't implemented and why weren't they implemented? And that would mean that they would have to go back to the parties and seek a waiver.

So I think that if we were talking about something big where there is damage not only for interference with water ways, but other things that are big. Where there's a contention about whether or not we want to accept, whether we want money and how much money is right, I think it would be good to at least ask and if they don't want to disclose they don't disclose.

CHAIR MUNOZ: Yeah, okay.

MS. MCCHESNEY: Anything else?

CHAIR MUNOZ: Thank you, very much.

We're going to move on to public forum and we only have one card. The rest of the cards are for Item 9 and that's Councilwoman Judy Nelson from the City of Glendora. Please step forward.

COUNCILWOMAN NELSON: Thank you, Chair Munoz and Board members, I am Judy Nelson. A Council Member of the City of Glendora and the Vice Chair of the San Gabriel Valley Council of Government's Water Committee.

I wanted to respond to Chair Munoz's comments in her early report about her listening sessions, which when she came to the San Gabriel Valley COG was really transformational. It started a relationship that was more collaborative; that we feel that we are being listened to by the Board and while we do have concerns that there are ears listening to those concerns. And Sam Unger and Renee Purdy also came and we've been able to speak with them further about those concerns.

I also wanted to say that your proposal, Chair Munoz, to facilitate meetings with businesses, NGOs, the Regional Board and cities would be highly enthusiastically received by the cities. We very much want to collaborate. I've learned from other experiences that when we collaborate with people that maybe we think are fighting with we actually, if we have a common goal, can get to that common goal once we start talking. So I think that's really important.

Lastly, regarding the industrial permit you asked, Chair Munoz, how our city handles it. We, when someone comes to the city for a permit to open a business they go to Public Works. If they're deemed to be one that needs an industrial permit we send them to the Regional Board to get that permit and then we monitor them. We monitor their compliance.

And my Public Works Director just informed me that an item is coming to our Council shortly to authorize $25,000 for a consultant to follow up on a regular basis since we're required to make sure that those permits are being handled the way that they should. That they're in compliance and it's more than we can handle within our city, so we're being asked to authorize additional funds to do that.

So thank you very much for what all of you are doing. I really appreciate it and we look forward to working together with you.

CHAIR MUNOZ: Thank you.

MR. COUPE: Chair Munoz, it just came to my attention, I think there's another public comment card. If you haven't received it we've got another request for public comment at this time.

CHAIR MUNOZ: Oh, okay. Please come forward, Councilwoman.

MAYOR PRO TEM CRUDGINTON: My name is Gloria Crudginton. Actually I got a promotion to sworn Mayor Pro Tem with the City of Monrovia.

CHAIR MUNOZ: Congratulations.

MAYOR PRO TEM CRUDGINTON: Thank you. I wanted to thank Vice Chair Glickfeld for her kind comments earlier. I did also attend the Atwater-L.A. Coalition kickoff. I woke up this morning sort of levitating on my bed from the energy of it. I had several -- actually I had five conversations with five separate environmental NGOs. And those conversations were about future possible collaboration, so it was definitely worth my while to be there and I was really happy to do that.

In addition to that a couple of weeks ago I flew up to Sacramento to testify on behalf of Holden's AB 1180. This is a piece of legislation that would create a tire fee, specifically dedicate an ongoing fund, money that we're pouring into a fund specifically for stormwater cleanup. This is something that I have been talking to, particularly Heal the Bay about, and how we might look at ways to raise fees from anybody who uses a product that winds up polluting our stormwater. It's only fair. If they're going to put it in they ought to help us take it out. And after I testified I was just delighted to see that Heal the Bay had mustered a whole bunch of environmental health and support for it, so it was like the cavalry arrived at the end of the testifying. And it's worked its way through Committee and Assembly Appropriations, so hopefully this might be part of our first dedicated source ongoing for stormwater. And hopefully there will be a lot more.

I wanted to thank you specifically for the emphasis that you're making on environmental NGOs and municipalities working together. And it is becoming increasingly clear to me that we're not going to be able to do this unless it's like a three-legged race. And if we're just smack at each other we're not going to get across the goal line. We need each other to get across this goal line.

And as Judy mentioned it is a lot easier to work this out as we learn from your example when on the talking, listening tour that you were doing. It is a lot easier to work things out with someone you have a relationship with than a stranger that you know nothing about.

So that's part of -- because I was in a prior career incarnation a marriage and family therapist for 30 years, I really do believe in the power of relationship. That any kind of relationships can heal, that working together we're stronger. And I intend to continue to devote myself in that direction, so thank you so much for your example. We'll take it and do more. Thank you.

CHAIR MUNOZ: Thank you. Ms. Gloria, I need you to fill out a card, because I don't seem to find yours.

MAYOR PRO TEM CRUDGINTON: Okay. I'm happy to.

CHAIR MUNOZ: Okay. Thank you.

Moving on to Item 12, Mr. Unger, do you have opening remarks?

EXECUTIVE OFFICER UNGER: I think that Item 12 is NASA, NASA GPL.

(Off mic colloquy.)

EXECUTIVE OFFICER UNGER: Item 12 is an information item to provide you information regarding groundwater treatment at the Jet Propulsion Laboratory. And this is Steve Slaten who is the Program Manager for that project for groundwater cleanup at both JPL and some of the downgraded offsite wells that are serving drinking water to the cities of Pasadena and Altadena. And I think that's it.

MR. SLATEN: Thank you.

EXECUTIVE OFFICER UNGER: Thank you.

MR. SLATEN: So I was thinking that I would have a pointer and be able to point to things. You can see what's on the screen that we can see, right?

CHAIR MUNOZ: Right.

MR. SLATEN: Okay. All right, so I can make this go pretty quickly. I mostly have some pretty photographs to tell kind of the story of the success that we've had. So let's just go ahead and go to the next slide.

So this is just to remind us all of where we are and where JPL is. You can see that this is most of L.A. and JPL is tucked right up against the mountains. We have Forest Service land right behind us and then all down below us between there and the ocean are millions and millions of people. The next slide?

This is taken at JPL from up above on the mesa above JPL looking towards Pasadena. And really pretty much right in the middle of those buildings is about where we are in Downtown Pasadena. So we're looking at JPL and the Arroyo Seco is there along the left, Altadena and then Pasadena to the south. Next slide?

So what we're talking about here is a groundwater basin. It's the Raymond Basin is a large groundwater basin up here. It's about 20 miles across. And what we call the Monk Hill sub-basin is where JPL is. It's partly in the basin, but kind of up above the most of the rest of it. JPL is sort of top left, the mountains behind it. And what we have underneath us, under Altadena and Pasadena is this wonderful aquifer that's up to about a thousand feet thick filled with this wonderful groundwater, which has been a very important resource for the area for well over a century. And it's in the Raymond Basin and it's an adjudicated basin where people's water rights are watched closely by the Raymond Basin Management Board.

The next slide tells you basically the big picture of what's going on. But going back to the 1940s when the U.S. Army ran JPL they dumped their liquid waste into pits into the ground. It went out of sight and out of mind and went down to the groundwater a couple of hundred feet below the surface. And then over the decades it migrated to the east and southeast towards our neighbors' drinking water wells, the City of Pasadena and Lincoln Avenue Water Company.

So what we have is a plume of dissolved chemicals about a mile long. Now, the good news about this is that we had relatively small amounts of chemicals. JPL was never a big industry. It was small scientific endeavors where a few pounds of chemicals would be used at a time and then disposed. So in total we have a few thousand pounds total of chemicals and what that really means is this is a job that is doable. That it is not intractable. We know exactly what we need to do and how to clean it up. And what we have now that we're cleaning up are part per billion levels of a couple of chemicals in the groundwater. Of signature is perchlorate and carbon tet (phonetic) and we know what to do and how to clean them up.

And I'll talk more about our three plants now. There is a plant onsite on JPL that pumps up groundwater, cleans it up and reinjects that clean groundwater back into the ground at JPL, then two other treatment plants, which actually are for treating water for drinking water purposes. The City of Pasadena, what we call a multiple-treatment (phonetic) system. They've got four wells that go into there and that's a big system, it can handle 7,000 gallons a minute of water. And then out on what we call the leaving edge of the plume, the Lincoln Avenue Water Company has three wells out there. And we have a treatment plant out there as well.

So what we -- the way we approached this was when I got there we -- there had been a lot of studies. And we knew where things were, but we weren't sure how we were going to finish the cleanup. So what I did is I went and talked to my neighbors that were impacted and some of their wells had been shut down and they were not able to access this resource. And I said to them, "What NASA can do is pay for a new treatment plant that will take all the chemicals out of the water, so you can go back to serving this water to your customers." So that's what we've done. We've built two offsite treatment plants for our neighbors.

So what we have is a partnership with them. It works very well. We get the treatment that we need to get the permanent solution of getting these chemicals out of the ground. And these water companies are able to go back to serving their customers. Next?

This is just a map of where the three treatment plants are. One is onsite, we call the source area, that's the top left photo. And what we call the mid-plume is the bottom left photo, that's the City of Pasadena treatment plant. And the picture on the top right and then the furthest right of the wells, that's for the Lincoln Avenue Water Company system. Next?

Now, I'm going to talk a little bit about the outreach that we've done, because a very, very important part of what we've done is not just the science and the engineering, but it's how we interacted with our neighbors and our stakeholders to make this happen. Because I always said the best technical plan in the world won't work if people don't trust you to implement it, so Merrilee Fellows sitting back here is in the pink dress. We came on at about the same time, 13 1/2 years ago, and what we were told by NASA is we want to do the right thing and treat our neighbors right, so this has been a wonderful project to work on from that.

What I wanted to show is Fred Gregory who was a Senior Manager in Washington and an astronaut is talking to Bob Hayward, the General Manager of Lincoln Avenue Water Company there. And then that's me with my tie that I wear every once in a while. Next. (Laughter.)

On another picture, yes I have a tie on in that picture too. This shows the other part of other Lincoln Avenue Water Company, also Bob Hayward from Lincoln Avenue Water Company and some of my NASA Headquarters colleagues who helped to make this happen. The next photo?

This is the big tanks that are at the Monk Hill treatment system site for the City of Pasadena. In this picture is myself, also Yarissa Martinez is my EPA Remedial Project Manager we've worked closely with. And in that picture I can see half of Dave Connor's head. Dave Connor is my Field Geologist Engineer who actually built these plants. Next?

So we've had a very successful regulatory team and

I've been so very lucky. All of the people we've had to work with have just been wonderful for over the last decade and a half almost. EPA has had wonderful people to work with. Yarissa's been with us for a few years. DTSC, most recently Chand is our RPM there and at the Water Quality Control Board now it's back to Kwang Lee. It was Jeff Brooks for a while.

So we also have to work closely with Lincoln Avenue Water Company and Pasadena Water and Power. We have agreements in place. We've paid out millions of dollars a year to them to cover all the costs, all of our impact of having our chemicals in their water. We've had to work with the water permitting people as well and also all around us are other water agencies, which are very concerned about what may happen to them. So we have to work closely with them to make sure that we don't impact them as well.

Some more nice photos with people, some of my high-level headquarters people. The point of that is that NASA really paid attention to this all the way to the very top. And at the very top they said, "We need to do what it takes to make this right." Next?

Now this, we don't need to go into detail in this, but I'll just point out that this is not a new thing. That this issue was identified going back into the '80s and that there's been decades of investigations and cleanups going on. So it's a really mature project and we know a lot more than most people know about their sites, because of the decades of information and work we've had on it. So really what I'll point out mostly is that starting in the 2000s we got the treatment plants on and all the treatment plants running. And we got an Interim Record of Decisions, which said yes putting the treatment plants on is the right thing to do.

So now we're through the process now. We've worked through this long circle process and we're down to where we've submitted a final ROD for signature and what that ROD says is what we're doing to do this cleanup is working. It's going to continue to work and we need to continue to use these three treatment plants until the job is finished. The job will be finished somewhere in the 10 to maybe 13-year range, so there's still work to be done. But we've got the treatment plants in place to get the job done. Next slide?

This is just an example. This is only one of our wells, but all of our wells tell a similar story that before we put on the treatment we had perchlorate levels in this case, that were up in the 100 part per billion range or more. And after we put on the treatment, and this is what you always hope to see in a groundwater cleanup, is a curve that goes down like this. Usually, it goes down quickly at first and then it flattens out and we're definitely seeing that. It projects right along where our theoretical curve said it would be when we started this. And that bottom line at the bottom is six parts per billion, which is drinking water standards so you can see we're still above drinking water standard. And when you get down near the tail end it's going to take several more years to finish and reach drinking water standards. Next.

A little bit more about the community outreach and this is just some photographs of some of our meetings and outreach and publications. I won't read all of this you can see, but we have literally spent millions of dollars and thousands of hours on community outreach and it's worth every penny. Because like I say we've gone from when Merrilee and I first got here where there was a lot of mistrust and a lot of misunderstanding and people were concerned. And we have put in a lot of effort in turning that around. We have great relationships with all kinds of neighbors, so we're really proud of that. And we continue doing that. We know that that's an important thing that you have to do. Next slide?

Now, this is another thing. Up Arroyo Boulevard is the Monk Hill treatment plants; the City of Pasadena lot where we put in that big 7,000 gallon a minute treatment plant. And the area frankly, it sort of borders Altadena and Pasadena. It was kind of blighted for a long time and we came in and said, "We need to install a treatment plant in that location." It was the right place, the only place that we could put in a treatment plant. So we worked with neighbors, told them that we were going to do a good job of making that treatment plant fit in the neighborhood and not harming their enjoyment and their values in their neighborhood.

So you can see what was up on top. It was actually a lot worse than that at times. And down on the bottom it's actually better than that now, because we've had a few more years of that landscaping to grow in. We've put in landscaping all along that entire block. It's a block long there and it's grown in really, really nice and it's really pretty. And what's actually happened in the neighborhood, the neighborhood was kind of downtrodden. And after we cleaned up that one block down that side of the street, across the street and up and down the street, people started cleaning up and planting. And the whole neighborhood has really come back and I think it's -- I mean, the timing's right, things are (indiscernible) of course. And I think it's partly because of us being good neighbors and putting in a good-looking, nice coverage area for that new treatment plant. Next?

Now another thing that we did in the last year is we drilled the new well for Lincoln Avenue Water Company. They had a well that's 100 years old and it's about to die and we said we need to make sure that there's a good well here that can finish this job for the NASA cleanup and then after that it belongs to the Lincoln Avenue. So they've got a new resource and we have a new well that we just put in and we actually did a lot of work with our neighbors. You can see we worked in the backyard of the Lincoln Avenue Water Company.

This is the middle of the neighborhood. There's no extra room and there's no empty lots, so we had to shoehorn it in to Lincoln Avenue's back parking lot. And we actually put up a 20-foot high sound wall fence, because on the lower picture, the right part of the lower picture is a home (indiscernible) that's just right across at the fence. And at the very top, that's a playground for a middle school. So we had to go and work with our neighbors, explain to them what we were going to be doing, and when you drill a well that goes almost 1,000 feet deep you have to run 24 hours a day for months. And it's an impact, so we did everything we could to lower the impact on the neighbors. Being careful about noise we made, we had to make some special equipment changes to make things quiet. So we really took into account the neighbors' quality of life there and what we needed to do. And we spent a lot of money like on that high sound wall. That it was absolutely necessary for us to treat the neighbors right.

So the other thing we did about that and we worked with the Board, usually when you drill a new water well you have to develop it at first and pump out all of the sand and dirt and stuff that's in the well. And in every other case, everybody has to waste that water. They dump it into a pit or dump it down a stream or something. In our case since we were in the middle of the drought here we said, "We're going to treat that water," so we put it through double treatment. And it was added and used as a part of the water supply for Lincoln Avenue Water Company. So that 17 million gallons that it took to develop the well was saved. It did cost a lot of money to do that, but it was a good thing to do, because we didn't have a good place first of all to put the water. And so it was better then to use it and not waste it. Next slide.

Now, it's down to what I said is the Record of Decision. We've been through this long process for a couple of decades, went in a circle where you go through all your studies and you go through your plans. And then at the final you submit a final Record of Decision, which says, "We're committed to finishing this project. And this is the way we're going to finish it and our technology and everything is working to do that." So the good thing about the ROD is it's sort of the final stamp on your project that says you know what you're doing, you're committed to do it and this commits the federal government to continue to fund this for another 10 to 13 years to finish the cleanup, so that the water's back where people can drink it without it needing treatment any more. Next.

That was it.

CHAIR MUNOZ: Thank you for a great presentation and very thoughtful and great. And I really enjoyed your commitment to key engagement and I think you're right. You've got to make sure everybody who lives near and around you is informed, so they can buy in and make the process a lot smoother. Because sometimes when folks don't do that it extends the time of what you're doing with them, so this is great representation.

Any other comments from the Board or questions?

BOARD MEMBER FAMIGLIETTI: Hi.

MR. SLATEN: Hi.

BOARD MEMBER FAMIGLIETTI: I'm (indiscernible) nice to meet you, (indiscernible) like that.

So where is the onsite treatment plant, where is that. I mean, like near what building numbers?

MR. SLATEN: Well, we call it Building 332 and then we have a map of that. And it's right up above the firehouse.

BOARD MEMBER FAMIGLIETTI: Okay. So it's up there?
MR. SLATEN: It is.
BOARD MEMBER FAMIGLIETTI: And so that's the source location?
MR. SLATEN: It's in the area where the old pits were that caused the original problems.
BOARD MEMBER FAMIGLIETTI: Okay. And then the Monk Hill site, is that down near the end of the old east lot?
MR. SLATEN: Yes, except up on top of the hill it's near -- you know the parking lot where all the bicyclers park at the top where Arroyo and Windsor (phonetic) (indiscernible) --
BOARD MEMBER FAMIGLIETTI: Yeah, yeah.
MR. SLATEN: -- it's right along the block south of there. And it must be well hidden if you don't know where it is.
BOARD MEMBER FAMIGLIETTI: Yeah, no I don't. I don't, but I don't go over there anymore now that there's no parking.
So for those of you in the audience we actually work together, but we've never met. I think I get, is it Merrilee who sends out the emails once a year?
MR. SLATEN: Yes.

BOARD MEMBER FAMIGLIETTI: Thank you so much for those. Do you have any modelers that work in your group?

MR. SLATEN: Groundwater modelers?

BOARD MEMBER FAMIGLIETTI: Yes.

MR. SLATEN: Yes. So just to kind of tell you about what my group is, my group is me and Merrilee are the federal civil servants that work on this. And we're the only federal --

BOARD MEMBER FAMIGLIETTI: So you actually work for NASA as opposed to me, right, because I work for Caltech.

MR. SLATEN: Yes. We're NASA Headquarters.

BOARD MEMBER FAMIGLIETTI: I masquerade as a government employee.

MR. SLATEN: What is?

BOARD MEMBER FAMIGLIETTI: I masquerade as a government employee.

MR. SLATEN: Oh, okay. The distinction doesn't really matter for this, but Merrilee and I, we get the work done through COP contractors. And so my main contractor is Tidewater and Dave works for Tidewater. And Tidewater is all over the country and when we need a groundwater modeler, they go out and get me the right, the best ones. And they've got great people and --

BOARD MEMBER FAMIGLIETTI: Okay. I think the best ones are in my group, but that's okay. (Laughter.) No, we don't have any, just kidding. So did you say --

VICE CHAIR GLICKFELD: Are you volunteering your group?

BOARD MEMBER FAMIGLIETTI: No, no I'm not, Madelyn.

Do you inject that water back in then?

MR. SLATEN: At the onsite treatment plant that's the one treatment plant where the water is pulled up sort of downhill and down gradient, treated where it's clean enough to drink, but we don't drink it. Then we reinject it uphill and up gradient and it helps to wash out that underground sands that -- and so it's kind of a flushing. And so the levels have come way, way down there.

BOARD MEMBER FAMIGLIETTI: Sure, sure. So I have two more questions and I'll let you go. One, will you come and talk to our group sometime and tell us about all of this work? Because we're all hydrologists, but most of us are thinking about space and not thinking about the water that's actually underneath.

MR. SLATEN: Yes. That's definitely a part of my job is --

BOARD MEMBER FAMIGLIETTI: We'd love to have you over for a presentation. Okay, excellent and I had another question, but I just completely forgot it.

MR. SLATEN: Okay. Well, what I will offer to anybody on the Board however it works out for you is if you want to come and see the treatment plants I'll take you up if you want a tour.

BOARD MEMBER FAMIGLIETTI: That was the question.

MR. SLATEN: I took Sam a couple of weeks ago for a quick tour and we were out --

BOARD MEMBER FAMIGLIETTI: Sam, I can't believe you didn't invite me.

MR. SLATEN: We were out an hour and I --

EXECUTIVE OFFICER UNGER: I think you were traveling.

BOARD MEMBER FAMIGLIETTI: I probably was.

MR. SLATEN: We made it go pretty quickly there with Sam an hour and a half or something, and as much technical detail as you want. I mean, I could keep you busy for days with all the minutia of technical and how it works. But a couple of hours we can probably do a pretty nice tour if people want to do that, so just let me know.

BOARD MEMBER FAMIGLIETTI: Thank you.

MR. SLATEN: Otherwise our website has lots of information. It's jplwater.nasa.gov.

BOARD MEMBER FAMIGLIETTI: Yeah, I know. I had a problem with that too, but we're going to talk about that later.

MR. SLATEN: Now, it's not perfect. But --

BOARD MEMBER FAMIGLIETTI: No, no, not the website, just the JPL water, so we wanted that and we went (indiscernible) water.jpl.

MR. SLATEN: Well, maybe it's for sale.

CHAIR MUNOZ: Well, once again thank you so much for your presentation. Oh, there is one more comment.

BOARD MEMBER YEE: Yeah, do you have a cost for reclaimed water per acre foot? I'm just curious.

MR. SLATEN: I could put a pen and pencil to it, but let me give you a couple of big picture numbers. We've spent almost $150 million to date and we've got about $65 million more to spend. So it's not cheap to do this type of stuff.

BOARD MEMBER FAMIGLIETTI: And this is NASA that's spending that money?

MR. SLATEN: It's you if you're a taxpayer.

BOARD MEMBER FAMIGLIETTI: No, I don't pay taxes. (Laughter.)

MR. SLATEN: Okay. No, it's definitely taxpayer money that comes through NASA yes. And the good thing about this job is I've been able to get the resources I need to do things right, so that gives you an idea about just how much it costs.

Now, if you were to look at the tens of thousands of acres of water that have been returned, treated and used, and do a cost I don't know how you'd do that. It's not cheap, but a few thousand acre feet per year costs us a few million dollars to treat. So I don't have a calculator with me.

BOARD MEMBER FAMIGLIETTI: It's a lot. It's a lot.

CHAIR MUNOZ: Any other comments or questions?

Once again, thank you so much.

MR. SLATEN: You're very welcome.

CHAIR MUNOZ: This is very informative and actually wonderful.

MR. SLATEN: All right.

CHAIR MUNOZ: Okay. We are going to break for lunch. We're going to be back at 1:30 where we're going to go into Item 9 and do we need a report from (indiscernible) on what we're going to be doing in (indiscernible)?

MS. FORDYCE: Yes, during closed session the Board has set Items 13.3, 13.4, 13.5 through 13.13.

CHAIR MUNOZ: We'll see you all in one hour.

(Off the record at 12:34 p.m.)

(On the record at 1:37 p.m.)

(Colloquy between Board before meeting resumes.)

CHAIR MUNOZ: Good afternoon, we're going to get started with Item 9. We're going to have introductory remarks from Deb Smith and Renee Purdy, but meanwhile if you could all stand and take the oath I'd appreciate.

MR. COUPE: Those that are providing testimony today.

CHAIR MUNOZ: Yeah, those who are providing testimony today.

(The Oath was given.)

CHAIR MUNOZ: Thank you. You may be seated.

MS. PURDY: Okay. Thank you very much. My name is Renee Purdy and I'm going to be introducing this item and then I'll turn it over, the presentation, to Dr. L.B. Nye. And before I turn the podium over to L.B. for the staff presentation I did want to provide some context for today's Board workshop on the Los Angeles Region's 303(d) List.

The Federal Clean Water Act requires states to periodically assess surface water quality and identify the surface waters that are not meeting water quality standards.

California's 303(d) Listing process is governed by state policy, which the State Water Board adopted in 2004 and also then amended in 2015. The listing policy, as we refer to it, sets forth all data acquirements for making listing and delisting decisions, as well as the statistical approach that the Water Board needs to evaluate the date. It also establishes the administrative procedures that the Water Board used to develop and approve the state's list.

The Section 303(d) List of impaired water body is a valuable information resource for the Board and stakeholders and can have important consequences for future Board actions. It is our goal to produce the best list possible. Staff have been working diligently for over a year and a half to evaluate over 11,000 lines of evidence for water bodies in the Los Angeles region and to make recommendations regarding decisions to either list or delist water bodies from 303(d) List. The number of lines of evidence is well over double the number evaluated by most other regional boards.

In response to our public notice of proposed changes to the 303(d), which I think we issued in about the February or early March timeframe -- and because of the historical importance of the 303(d) List -- we of course received many written comments. Stakeholders identified several general areas of concern that L.B. will be touching on in her presentation. And we did agree with a number of these comments that were raised.

Making revisions in response to comments is of course as you know, a valuable part of our normal procedure in bringing an item to you for consideration. In this type of case however, because of the number of recommended decisions and associated lines of evidence that we are reevaluating in light of comments it has not been possible to complete our revisions prior to this Board meeting. And due to deadlines to finalize our 2015 list for submittal to USEPA, who will make a final approving decision on the list, we're not able to put (indiscernible) item to a future Regional Board meeting.

As a result we determined that a change in the process to hold a Regional Board workshop instead of asking you to approve staff recommendations prematurely, was the best course of action. The benefit of a workshop today is that staff will be able to more completely respond to comments. Prior to a decision on the list, we need to have a better final product and stakeholders will have more time to review Regional Board staff's response to their comments, prior to a decision on the list.

This change in process remains consistent with the listing policy, which allows for the State Water Board to consider and approve our Regional Water Board's list. While the Regional Water Board will not be asked to approve the list during this present cycle stakeholders will get an additional comment period prior to State Board's action to approve the Los Angeles Region's list in order to review and comment on the recommended L.A. Region 303(d) List.

And we'll be able to do that once we've made revisions to the list in response to the comments that we received.

We've already been working diligently in collaboration with State Board staff to address a number of issues identified by commenters and will continue to do so over the next several weeks. And also you will have an opportunity to later this afternoon to hear from Karen Larson, the Deputy Director of the State Water Board, about this collaboration.

So just to recap, before I hand it over again today's item is a workshop, not a hearing where the Board is taking action. Therefore, you will not be adopting a resolution to approve staff's recommendations today. However, we look forward to discussion with you and also to your direction as we continue to work together with the State Board to produce the best 2016 list possible for the Los Angeles Region.

And with that, I'd like to hand it over to L.B.

CHAIR MUNOZ: Okay. Thank you.

DR. NYE: Good afternoon members of the Board. I'm L.B. Nye. I'm one of the Unit chiefs one of the TMDL units at the Los Angeles Water Board. And with me today is Dr. Jun Zhu and Dr. Kangshi Wang, who are the principal staff who worked on this report. And of course Renee, the Chief of the Regional Programs section is here today also.

So I'm presenting the Los Angeles Region Integrated Report, which includes the Clean Water Act

Section 305(d) Report and the 2016 upgrade to the Section 303(d) Report for the 303(d) List of impaired waters.

So for the first part of my presentation, I'm going to give you some of the regulatory background and history of the 303(d) List and the process that we used to develop the list. And then I'll talk about the list itself and how it's changed since the last time we developed the 303(d) List. And then we'll discuss comments and our response to comments.

So for background on the 303(d) List I want to discuss the matters that are on this slide. What comprises the 303(d) List and integrated report, the listing policy and the CalWQA database.

So the term "303(d) List" is short for the state's list of impaired water's per Section 303(d) of the Clean Water Act as Renee was (indiscernible). Under the Clean Water Act Section 303(d) states are required to review, make changes as necessary, and submit to USEPA a list identifying the water bodies that are not meeting water quality standards and identifying the water quality parameter that is the pollutant that's not meeting the standards. And this is required every two years.

Under the Clean Water Act Section 305(b) states are required to report every two years to USEPA on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their national water quality inventory report, which they make as their report to Congress.

State of California does both of these assessments at the same time and we produce one report for the EPA, which is called the integrated report. How the State of California produces its 303 list is outlined in the listing policy. And I'll tell you more about the listing policy in a few minutes. And the other background thing I'll tell you about in a few minutes is the CalWQA database or the California Water Quality Assessment Database, which is the tool we use for the 303(d) List.

So this is just a screen shot of a part of the 303(d) List as you would see it on the Water Board's website. It's pretty easy to navigate around, you know, clicking on different water bodies, moving up and down the state. And you can pretty easily see which water bodies are impaired by which pollutants. And in most cases, if you click on the links to the right you can get very detailed information about the pollutant in that water body data that supports the 303(d) List.

The 303(d) List triggers a certain regulatory process. Placement on the list for each water body pollutant impaired on the list generally triggers development of a pollution control plan of the total maximum daily load, or TMDL. It may be possible in some cases to address the water body pollutant combination with another regulatory program, but usually a TMDL. The 303(d) List is also important, because of the USEPA's report to Congress (phonetic) and also because Congress may refer to the 303(d) List.

For example, generally MS4 permittees are required to do an analysis called a Reasonable Assurance Analysis or an RAA for any pollutant on the list in water bodies that they discharge to, to ensure that their discharge can meet the standard.

And it's useful for California and for the regions to keep the handle on the full scope of our waterways and how polluted or not polluted they are. It is important to note that the water boards are never limited by the 303(d) Lists. And by that I mean when we take a regulatory action we're not limited. For instance with TMDLs, like developing a TMDL we're not limited to the water bodies on the list. We can develop a TMDL anywhere it will be useful. And we're not limited to the data that's been assessed for the 303(d) List. We always use the most recent information and data.

So the principal of guidance for development of a 303 list is the listing policy; the water quality control policy for developing California's Clean Water Act, Section 303(d) List. The listing policy prescribes the use of a weight of evidence approach in determining whether a water body goes on the list or not. Data are organized into lines of evidence or LOEs, and the LOEs are evaluated by a prescribed statistical methods. And the listing policy provides requirements for how many samples are needed to list. And how many samples are needed to delist or take the pollutant off the 303(d) List. And there are fewer data and fewer exceedances of standards requiring lists for water bodies pollutants than there are to delist a water body and its pollutant.

So, after all the data are evaluated and the water bodies are set per the listing policy, the water bodies are categorized for the integrated report. And the water body goes into one category. The integrated report includes both the impaired water bodies per Section 303(d) and the assessment of (indiscernible) water bodies per 305(b).

So these are the water bodies' categories that the State of California and the EPA agreed to. They're fairly standard among the states, so the EPA can easily combine assessments from all the states. Category 1 is that's really the category that we want the water bodies to be in, where all assessed beneficial uses are supported and no benefitted use is known to be impaired, so no pollutants beyond the standards.

Categories 2 and 3 are for water bodies with insufficient information to be able to place them in one of the other categories. And Category 3 is for those water bodies where there's insufficient information list it, but perhaps we think there -- there is reason to think there may be a contaminant, just perhaps not sufficient data to make that conclusion for the listing policy. And Category 2 then is for water bodies where there's not sufficient data either way.

And that leaves Categories 4 and 5 and 4 and 5, are in fact the 303(d) List. Category 4a is for those water bodies where there's one or more impairments, but all of the identified impairments are already being addressed by a TMDL or on the regulatory programs. So an example of 4a would be Ballona Creek Estuary. Ballona Creek Estuary is impaired by several pollutants, but they're all addressed by TMDLs. So there's Ballona Creek Trash TMDL, Ballona Creek Metals TMDL, the Ballona Creek Estuary Toxics TMDL and so forth.

Not that many water bodies ever get categorized as 4c or 4b. 4b is for water bodies where the impairments are being addressed by a regulatory program other than a TMDL. And 4c is for impairments that actually don't involve water quality. And we have just a few of those in our region for impairments due to pumping or a fish passage blockage.

And then Category 5 is for those water bodies where there's one or more impairment, but not all of the identified impairments have yet been addressed by a TMDL or other regulatory programs. So an example of a water body in Category 5 could be Colorado Lagoon. There are a number of impairments for which there are TMDLs for Colorado Lagoon including chlordane, DTD, PCB, but -- and those are all addressed by a TMDL, but there is also an impairment due to fecal indicating bacteria. That's an impairment, which has not yet been addressed by a TMDL, so Colorado Lagoon gets categorized in Category 5.

So CalWQA database is the California Water Quality Assessment Database. And that's our principal tool in organizing and presenting the 303(d) List and the integrated report and all the supporting information.

The CalWQA data is -- in CalWQA data is organized into lines of evidence. The water quality data for the specific pollutant is part of the line evidence, where and when the monitoring took place, the beneficial use effected. The water quality objectives are a guideline that's protective of that beneficial use, the number of samples, and how many samples exceeded the objective or guideline.

And the CalWQA database also includes the recommended decision. And the decisions are list, do not list, de-list -- that's take something off the list -- or do not de-list. And all of the LOEs and the justification for the live evidence, weight of evidence decision is written into a fact sheet. And the fact sheet has links to all the data and all the references.

The CalWQA database makes the list transparent. Anyone who can get to the final list as I showed in that third slide or to a proposed list like we made available to our stakeholders for comment, and drill down through the hyperlinks, to all the information if that's part of the listing decision including the data and all the references.

However data are not analyzed as a function of the database. Usually that's done by staff in Excel worksheets or other kinds of documents, which are then -- those documents are then linked to from the CalWQA database.

So just to give you a quick look at the CalWQA database this is a screen shot of what a Water Board staff sees when assessing data. It's web-based. Multiple people can work on the database at one time, people in Sacramento and all over the state at the same time. It's necessarily web-based just because of the sheer volume of data.

The CalWQA database for the full state and not just for our region, but for all of California, there's over 60,000 lines of evidence and over 33,000 decisions for specific water body pollutant combinations, and over reported 4,300 references. And it also includes GIS mapping of all the state's water bodies.

This is just a (indiscernible) one of the appendices to the integrated staff report that is publicly available. This is one of the appendices that was available to the public to comment on our list. This example is just a piece of Category 5 in the Los Angeles Region.

The Los Angeles Region and the State of California have been producing comprehensive 303(d) Lists at least since the early 1990s. And you can see though in these recent years, how the final list approval can lag not only the purported list year, but also be well after the cutoff date for data that's considered in that list year. And every iteration of the list has more data than the previous list.

So it's just a couple of numbers for you. In 2002 statewide there were about 1,800 decisions or water body accommodations assessed. In 2016, right now in the state as I said there's about 33,000. And it would seem similar to the Los Angeles Region also. For this list we've made over 5,800 decisions for specific water body pollutants.

So due to the need to improve the timeliness of the 303(d) List, and to manage the increasing amounts of data, the State Water Board made certain amendments to the listing policy in 2015. The changes were actually negotiated with the EPA and announced to stakeholders in 2013, but they were incorporated into the listing policy formally in 2015.

For the 2012 listing cycle, the water boards realized that the magnitude of the data set and required analysis wasn't manageable on an every two-year schedule. So the strategy agreed on divides California into thirds, by regional water board. And an integrated report will be submitted for each third -- that is three regional water boards per the every other listing cycle. And this should allow for submittal of the integrated report in a timely manner.

Furthermore, pages to the listing policy included requiring data to be submitted to the California Environmental Data Exchange Network or CEDEN, which is the database that -- it's been around for a number of years. Many stakeholders already use it and upload data to it. The owner of the data, the producer of the data organizes it and uploads it into CEDEN themselves instead of giving it to somebody at the State Board or the Regional Board to organize and to analyze the data.

So CEDEN, having people do that themselves should really help automate and make more efficient the first part of data assessment. So consequently the 2002 integrated report and 303(d) List in the State of California included new data only from three regional boards: regional boards 1, 6 and 7. The 2014 list will consist of data submitted for regional water boards 3, 5 and 9. And 2016 will consist of new data from regional water boards 2, 4 and 8. So that's where we are now with the 2016 list.

In addition, the State Water Board determined that the August 2010 cutoff that was originally announced for the 2012 list will be the cutoff for all three of these 303(d) Lists. And we won't solicit more data until all of the data that was submitted with the August 2010 data has been analyzed and evaluated in terms of 303(d) List. But the CEDEN is available to anybody right now, so anybody preparing for the next step of listing cycles can upload the data to CEDEN.

Also, the 2015 listing policy amendments clarified that either the Regional Board can approve a 303(d) List followed by the State Board approval, or the State Board can approve it, just the State Board alone.

So this is just a quick schematic of the process for future listing cycles, the water quality data from our stakeholders or from sources like the State of California SWAMP Program, Surface Water Ambient Monitoring Program, will be uploaded into CEDEN. And then CEDEN will then feed the CalWQA where the lines of evidence and decisions live. And then that will be used to do the integrated report, including the 303(d) List.

So this is a summary of the Los Angeles Integrated Report at this time. And because we're still reviewing some of the comments received and finalizing staff recommendations, some of these numbers may change a little, but this is basically what it's going to look like. If you look at the bottom of that table you can see 320. We've assessed 320 water bodies in our region. And for the assessment we've reviewed about 11,000 LOEs and assessed about 5,800 water body pollutant combinations.

So Category 1, as you remember that's the water bodies that's are fully supported and that have no impairments; 2 and 3 are those categories for which we don't have enough information to confidently put the water body in another category. And 4 and 5 together are the 303(d) List, so that's -- I should have put it on the slide, but if you add those numbers together, 4, 5, it's 214. So right now, we have 214 water bodies on our draft list.

I wanted to compare our current draft to the 2010 list. And so if you look at the totals again we -- 320 of the 2016 list, and it was 238 water bodies first added to the 2010 list.

And the increase in water bodies is generally tributaries for which we did not previously have data. So I'm not saying they're not new water bodies, they're new water bodies that have been newly assessed within the 303(d) List.

Category 1, you'll recall that's the water bodies which are fully supported and there's an increase in that category in part because we've changed the approach we used to include water bodies in a Category 1 to be more like the other regions. In the 2010 list we only included a water body in Category 1 if we had data to assess for every type of beneficial use like recreation and aquatic life, fishing or drinking water, those apply. So a water body would have to be assessed as unimpaired in each of the beneficial use categories. So this listing cycle, we assigned a water body to Category 1 if all the assessments we've had shown unimpaired even if there were some beneficial use categories which were not assessed.

So several of these are beaches where people, there's monitoring for fecal indicating bacteria and we can say the beneficial use of recreation is protected, but we don't have data showing aquatic life. Or, you know, there's no toxics being monitored, so we can't say the beneficial use for protecting aquatic life has been that.

But there a couple of these that are -- have been where these water bodies were assessed in multiple beneficial uses. And these are mostly tributaries, small tributes that are in the mountains above sources of pollutants like Little Sycamore Canyon in Santa Monica Mountains or Elizabeth Lake Canyon, which is in the Angeles National Forest above Castaic Lake.

So that means our 4 and 5 are the 303(d) List. So what you'll note is that even though our 303(d) List is larger total, and we have 214 water bodies now to the 189, and we've assessed more water bodies, the number of water bodies in Category 4 has gone up. And the number of water bodies in Category 5 has gone down, which means there are more water bodies, which have been fully addressed by TMDLs. And fewer that still have some impairments left to address. And that's because this region, this Board, has been very effective in developing TMDLs.

So if we released a draft integrated report, including the 303(d) List on February 8th, 2017. And the public has had a 50-day comment period.

We received 32 comment letters from municipalities and POTW agencies, other dischargers, and environmental non-profit organizations. Most of the comments were very specific and technical, concerning the appropriateness of a specific pollutant or water body being included or not included on the 303(d) List and as Renee said were re-categorized or are addressing a lot of those right now.

And this included the assessment of some water bodies supporting a beneficial use for municipal drinking water and land, but a potential conditional drinking water beneficial use. And we have a number of water bodies in our basin plan that have been assigned this conditional asterisk beneficial use. We called them P star MUN for short. And we should not have, because those are conditional beneficial use assignments. We shouldn't have assessed those water bodies as having municipal beneficial use and again the number (indecipherable) so we're correcting those at this time.

And we also found that there was some data that was submitted by the August 2010 cutoff that was never added into the CalWQA database. There aren't LOEs for it right now, so we're entering that data right now with a good deal of help from the State Water Board staff, so that that data can be fully assessed.

And then we did have a number of comments on the 2010 data cutoff, with a (indiscernible) concern that the more recent data wasn't assessed. And both concerned from the point of view that you're going to be holding things on the list, which could be de-listed actually on the list. And we had a concern that you're missing things that should be on the list and you won't have them on a list, because you haven't gotten the most recent data.

The Farm Bureau of Ventura County and the stakeholders implementing TMDLs in the Calleguas Creek Watershed, both noted that data was evaluated and included on that 303(d) List that's from the monitoring program or VCAILG the Ventura County Agricultural Irrigated Lands group, which is the requirement of the conditional waiver. The monitoring is a requirement of the conditional waiver-ability located in agriculture lands in Ventura County. And some of this data was from agricultural drains and ditches. And they contend that use of data from agricultural drains and ditches for a 303(d) assessment is inappropriate.

And the (indiscernible) of the monitoring program was based on land use and characterized in the water quality contributions from different agricultural lands. However, if the data characterizes a receipt in water quality it is appropriate to use it in 303(D) listing. So in response to the comments, we had modified the CalWQA database at this time to show that the data from the monitoring sites that were in question are assessed as insufficient information. And we will reexamine the VCAILG monitoring sites to determine if they really just show discharge water quality. We don't want to assess that under 303(d). But if they do show the water quality of the receiving water we do want to include that in the 303(c) list, as part of the 303(d) List assessment.

VICE CHAIR GLICKFELD: Can I --

DR. NYE: Yes?

VICE CHAIR GLICKFELD: -- ask one question. I think it's a really pivotal point. I just want to make sure I understand what you're saying. We have people who have tons of outfall, either outfall from their property, outfall from between jurisdictions. But unless we have data about the receiving water itself we're not able to make the assessment.

DR. NYE: Discharge taken from a drain or from an MS4 we wouldn't consider. It has (indiscernible) drain.

MS. GLICKFELD: In the drain?

DR. NYE: In the drain.

VICE CHAIR GLICKFELD: We have to figure and see if it's in the water?

DR. NYE: It's through moving like through the surface waters, receiving waters, yeah not the drains.

MS. GLICKFELD: I was really confused when I was reading this, because I've had -- first of all it's 2010 where so much has changed. And secondly, it's we have so much MS4 data, but all of our MS4, all of our ag waiver data is outlets and drains, not receiving waters. We have some receiving waters --

DR. NYE: Some of it, yet.

VICE CHAIR GLICKFELD: -- and most of it is not.

DR. NYE: Much of it is (indiscernible), yeah.

MS. GLICKFELD: (Overlapping) I just want to make sure I got that right.

DR. NYE: Yes.

MS. GLICKFELD: Okay. Thank you.

DR. NYE: Yeah, and VCAILG pointed out to us, we want to be sure that we don't include discharge and we only do include everything that characterizes a receiving water.

So looking at our County Sanitation Districts of Los Angeles County there are a few areas where it seemed the data was being applied to the incorrect reach. And we found that there are several areas where our basin plan map, which is what we go by, is not exactly the same as the maps that underlies the CalWQA database. So that as a monitoring site, if it's close to the line between two reaches it may have been attributed to one reach when it should have been included with the data of another reach.

So these are a little more complicated for us. We do need to address, because we do need State Board staff who manage the underlying map in the CalWQA database to make the changes for us or help us make the changes, so that we can reassess the reaches with the realigned data. And we're working with State Board staff at this time to resolve these comments.

Wishtoyo Foundation and Ventura Coastkeeper commented that the Santa Clara River Estuary, Santa Clara Reach 1 and Santa Clara Reach 2 are impaired due to reduced flows due to the Freeman Diversion.

Earth Law Center commented that the Santa Clara River and the Ventura River Reaches 3 and 4 are also impaired due to reduced flows. And both of these commenters would like to see these impairments reflected on the 303(d) List.

And flow is certainly important to maintain aquatic life. However we do not have a time methodology at the time, a consistent transparent approach to analyze the extent which flow-related alterations cause or impact water quality standards. So we're not making any list recommendation to list any water bodies per flow. But the interest in flow as an impairment is not going away. And if methods are established to determine impairments that can be pursued in subsequent 303(d) assessments.

So that's all time?

UNIDENTIFIED SPEAKER: Yes.

DR. NYE: Let me go to my last slide. Oh, there it is, great. Okay. So it's only the last slide, so the Next Steps.

So Los Angeles Water Board staff, and in conjunction with State Board staff, will work through their main (indecipherable) reply to response to comments. The State Water Board staff has been really helpful and we're really working on these issues as a team, so we'll continue to do that.

The Los Angeles Water Board staff will post an update to our response to comments and revise the recommendations when those are available.

The State Board will release their 2014-2016 pre 303(d) List for comments. And that could be as early as June 9th, 2017.

And I think -- I meant to tell you before, I forgot to point it out, the three regional boards 2014 list, they completed their list last fall or winter. So State Board is going to consider those three regional boards with the 2014 list and our three regional boards at the same. And they'll release that list for State Board comments. And they intend to consider the list and approve it, hopefully in October of 2017 and then will be forwarded on to EPA with final approval.

These next steps provide additional scrutiny of the recommended listing decisions, additional time to coordinate with State Board staff and a greater opportunity for public (indiscernible).

(Off mic colloquy overlapping speaker.)

That's all I have for you and I'll be glad to take any questions.

CHAIR MUNOZ: Does the Board have any questions or comments?

If not, we'll go on to our next speaker. Now we will invite stakeholders to provide your comments. First I want to --

(Off mic colloquy re: speakers.)

CHAIR MUNOZ: Okay. Now, we will invite stakeholders to provide your comments. First I want to clarify to my fellow Board members, stakeholders and members of the public that we are not adopting or taking an action requiring a vote from the Board.

Our next speaker is from the State Water Board and we want to welcome you to Los Angeles Water Board. Thank you for being here as of this morning, Ms. Karen Larson.

MS. LARSON: Thank you, Chair Munoz and the rest of the Board. I appreciate my opportunity to make some remarks before the Board this afternoon.

I'm Karen Larson. I'm Deputy Director of the Division of Water Quality at the State Water Board and the Statewide Assessment Unit is in my Division headed up by Nick Martorano and newly appointed Rebecca Fitzgerald who comes from Region 1 is heading up our Fresh Water and Ocean Standards section and hopefully she'll get down at some point to come and meet you all.

The first thing I wanted to do is just acknowledge the heavy lift that your staff has made to get this list in the shape that it is in. And yes, there are some mistakes, but they just moved mountains to get where they are. And work with my staff at the State Board and the GIS Unit on the mapping to get the list in really good shape. And you saw the numbers of lines of evidence and the decisions that they needed to make in order to get to today. And so I can't say enough about how diligent your staff worked and worked collaboratively and closely with the State Board. And I won't mention names, but you guys are at the top of the list of the regional boards in terms of collaborating with us.

I also wanted to mention that your stakeholder process is sound. I really think that it is very helpful to us at the State Board not to have to ask without you having already gone through your public comment period and responded to comments. So when it comes to us even though you will not have acted assuming that that means your decision moving forward, it will help us tremendously in getting the full list over the finish line.

And that really kind of rounds out my last final remarks, because we really do need to get this list over the finish line. It is ridiculous that we're looking at 2010 data. We've never had the list done the same way twice nor have we ever been on time on getting the list up to the USEPA. And our hope is moving forward we can use all of the automation and the tools that we're putting in place to improve our ability to look at the massive amounts of data that are now coming in as a result of being able to collect it and submit it electronically.

So the challenge is only getting bigger and bigger every year. And so we need to develop tools in order to do it more streamlined. And we're working with all of the regional boards to get that done. And we're committed to that and we're committed to working with your staff in order to make the fixes that are needed and give you a level of comfort that you have the back lists to bring before the State Board.

I'll just reiterate quickly we do intend to get the lists out for public comment, the six-region list, 2014 and 2016 by June 9th. We think it's possible based on the work that we're doing with your staff, but we are also willing to let that date slip. Because we still think we can make an October Board hearing in front of the State Board for the six regions remaining.

So and then of course we are planning an October 3rd and 4th hearing to make a recommendation of the final list to USEPA.

The other thing just really quickly, and I'll end my remarks and let you guys listen to the stakeholders, is I wanted to point out and highlight the fact that you now have 38 water bodies in Category 1. We spend a lot of -- in other words they're meeting beneficial uses. We spend a lot of time in our agency looking for problems and not enough time acknowledging the places that are still in good shape.

And you now have 38 water bodies to demonstrate we have places that are still in good shape, or at least you don't have evidence to suggest that they're not. And aren't those places that we want to make sure remain in good shape?

So I'll leave you with that thought unless you have any questions for me.

CHAIR MUNOZ: We will take questions right now, but then from the following speakers we'll wait until all the stakeholders speak, since you're the State Board.

Let's start with Mr. Yee.

BOARD MEMBER YEE: So this awful problem of the lag between 2010 data and now, that we're producing a list, is that going -- you hope it's not going to continue. I mean, next time hopefully that gap will be much less?

MS. LARSON: Yes. So the plan is we've already solicited data for the next three regions, which are 1, 6 and 7. The due date for getting the data in was yesterday, so we're already getting ready for the next listing cycle. But we will remain on the three-region schedule. So we won't be back before you for another six years. So there's going to still be some data lag as we're getting into back into or actually ever having an on-time list. So I won't say that there won't be a data lag, but we're improving each time.

BOARD MEMBER YEE: Thank you.

CHAIR MUNOZ: Ms. Madelyn?

MS. GLICKFELD: Thank you. Thank you so much for your comments and your appreciation of our staff. We appreciate them. And I think you're right that because we extended our public comment period is the reason why we found the mistakes and we're fixing them, so I appreciate our stakeholders too.

One thing you said was that there's a possibility that your schedule will lag and that you will not close everything for October hearing, in June. Would that give us a chance to actually have a hearing here, or not?

MS. LARSON: Okay. So what I said was what will lag is the public release, so for the public comment period for our six-region report, but we intend to stay on track for a hearing in October. So in other words, that gives our staff less time to respond to comments for the whole six region list, but we think we can do it. And so if we need to have a little bit more time to make sure your fixes are made then we'll do that and give ourselves less time to get it to our Board.

MS. GLICKFELD: So is the State Board going to hear all six regions at the very same time, so there's going to be hundreds of stakeholders going to testify?

MS. LARSON: Yes. Except for when it comes before our Board, we only open that for a public comment for anything that wasn't already addressed at the Regional Board. So with all of the other regions besides Region 4 will have already acted and responded to comments. You all have already responded to comments as well, so that simplifies our response to comments on your portion of the list.

But the rest can only be opened up to anything new that the region already did not address during their action, if that makes sense?

MS. GLICKFELD: Yes. So when our staff finalizes it's report to you that will not be opened up to comment until it gets to you.

MS. LARSON: It will be opened up for public comments when we release it somewhere around June 9th.

MS. GLICKFELD: So it won't be at our (indiscernible)?

MS. LARSON: There will be another bite at the apple of your part of the list.

VICE CHAIR GLICKFELD: Okay. Thank you.

MS. LARSON: So we will rely substantially on the responses to comments that your staff has already prepared.

MS. GLICKFELD: You can imagine like I'm a Vice Chair and I thought vice chairs like vice presidents weren't supposed to do anything. So I got the phone call last week and I'm saying, "We're going to do what? You want me to decide what?" And never give up our right to vote. And we know our stakeholders well. We respect their concerns, so we understand why we have to do this, but we're not doing it very joyfully.

So I understand that we have to do this. I hope that whatever happened here, because we did start it in a timely way we could figure out a way that we'll have enough given the complications in our region, that we'll have a way of dealing with this better the next time around. It's really frustrating that our public process works. We need to do more work and there's not time for us to bring it here.

CHAIR MUNOZ: Okay. Are there any other questions or comments?

Thank you so much and I hope you come back before us again.

MS. LARSON: My pleasure, I look forward to it.

CHAIR MUNOZ: Okay. Thank you.

We have three more groups before we go into speaker cards. The first one with eight minutes is the County Sanitation Districts. And then we have the County of Ventura for five minutes and the Beach Cities Watershed Group with five minutes, so if you can come on up I'd appreciate it.

MS. HEIL: Okay, thank you. And I have a presentation. All right, let me see. I don't know how to make your (indiscernible) oh, there we go.

Well, good afternoon. First of all I want to start out thanking the Regional Board for changing today's agenda from a hearing where we'll be taken to a workshop.

You know, the preparation of the report was just a monument, so undertaking with those 11,000 lines of evidence. And when there's so much it's just inevitable that there are going to be errors. And you really don't want to approve a list that's wrong. You want to get those errors fixed, because we're going to have this list for another six years. We just want to get everything right when we move forward with it, so we don't have things listed that shouldn't be listed. So we don't delist something that shouldn't be delisted. So we understand you wanted to vote and we certainly appreciate that. But again, we really just do want those errors fixed as we go.

So I'm going to talk to you about three things today. I'll just mention the data errors briefly and then I want to talk to you about temperature listings and bioassessment listings. So my real point on data errors is just that we want everything fixed before the list gets finalized. As staff mentioned, sometimes some of the data came from the wrong reach. Sometimes there was data that was in the data set that wasn't evaluated and we just want our list of problems fixed. We got very, very nervous when we saw in response to comments that some of the issues that some of the issues might not be resolved until the next listing cycle. And we really think that's just not appropriate. Before someone finalizes the list we have to get all those errors cleaned up.

So I'll move on to temperature now. Several of the water bodies to which we discharge got new listings for temperature. And when they did those listings they didn't consider the natural conditions in the water body. So for the Basin Plan it's very clear. It says that temperatures for warm designated water bodies shall not be raised about 80 F as a result of waste discharges.

And the Basin Plan objective is written the same way for pH and DO. It brings in as a result of waste discharges and that recognizes just the natural variability in these parameters. So if your stream naturally has a high temperature you don't want to list it as impaired. It may just be the natural conditions of how it's supposed to be.

And this is not the way to you do it for like a metal, for copper. Copper, you either meet the objective or you don't meet the objective. We're in and out and there's nothing about waste discharges.

So with the Basin Plan calling for the temperature not to be raised above 80 as a result of waste discharges, you have to go in and look at whether the conditions were caused by something natural going on. You have to look at whether the temperatures were caused by waste discharges. And there was no acknowledgement or consideration of the high ambient temperatures in our area during that process.

So I thought I'd give you an example. And this picture shows a sampling location on San Jose Creek Reach 1. This is in a spot where it's a fully lined concrete channel. This is a spot that's downstream of our Pomona water reclamation plant. And this graph shows temperature on days when there was no discharge from our Pomona plant, zero discharge.

This is the natural conditions in the river. And there is water in the river then, because there's groundwater upwelling there. The groundwater comes up through the bottom of the concrete lined channel in these little manhole structures and flows down the river. And it's baking in the hot sun in these concrete lined channels. The sun's going on, and the concrete is hot. And what we see is that in the summer the temperatures get up to 90 degrees, just naturally in the channel.

And of course there's natural variability. In the winter the temperatures are much lower. So we think it needs to be recognized that sometimes these high temperatures are not a result of waste discharge. It's just due to natural conditions in our warm Mediterranean climate. And you know in particular for this reach we have very clear evidence that the temperature is not a response to waste discharges.

And now I want to talk about bioassessments. Several of our streams have proposed new listings for bioassessments. And the bioassessments are based on the old way of doing bioassessments and that's using a method called the Southern California IBI. And some are based on a newer method, what's it's called the California Stream Condition Index, or CSCI. So we really believe that the assessment should be based on the new, vastly improved method that you've got, this California Stream Condition Index, not the old Southern California IBI.

But if you do choose to continue to use the Southern California IBI to do your listings, you really can't use it to assess impairment for low elevation, low gradient streams. And that's because there just are not good reference sites to determine if it's an appropriate metric for the streams.

And what happens was when they developed this index for Southern California they just did not have enough low gradient, low elevation streams to do it. So a low elevation stream is one that's like in a flat plane where there's not much flow to it, as opposed to a mountain stream where it's really steep. You get very different conditions in the streams. The flat ones are really sandy with meandering streams, where in the mountains it's very rocky and you get waterfalls. So you get very different critters living in these two different areas, so you don't want to compare your flat stream to a mountainy stream.

So when this came up in 2010 the Regional Board approved these bioassessment listings for the Santa Clara River. And we went to the State Board. And we had a little more time and went to the State Board, because these listings got added at the last minutes, in 2010.

So by the time we got up to the State Board we had spent talking to the scientists who developed the indices and to other scientists. And they all agreed, the scientists that (indiscernible) that you shouldn't be using the SoCal IBI on these low gradient streams. So one quote is on the slide, "Adequate reference sites are not available to assess benthic macroinvertebrate," which is a kind of critters, "populations for low gradient and low elevation streams in the L.A. Region."

And the State Board was convinced. They rejected these listings, because the science is just not there to support it.

So we look back and the State Board spent a lot of time developing this California Stream Condition Index, which is really a great index. It covers a lot more conditions. It looks at references around the state as appropriate, so it covers a much wider range of water bodies. But unfortunately there's still this gap. And for the CSCI it cannot handle the low elevation, low gradient streams in large watersheds. So there's just a few water bodies that it can't cover.

And this map, little science-y map here, like it kind of shows the red is where you fit in really good with this California Stream Condition Index. You've got lots of sites to compare it to. The model's going to be really robust. If you're in the red you can be really convinced that you've got a good assessment if you've used this index.

Along the blue, the purple, it's just getting really iffy. You know, you can kind of use it, but it's just not quite as robust in that our Santa Clara River sites are shown in the green circle on this slide and they just fall off the map. They are just not covered. This model just does not cover those particular sites.

So the bottom line is that when we use this California Stream Condition Index to score these sites we don't know what the numbers should be. You can't compare it to the references out there. These sites may be at or near reference conditions, because we have healthy populations supported of the endangered three-spined stickleback in the river and other threatened and endangered species. So if the listings are made we'll be put in a position of having to solve a problem that may not even exist in the first place. So we'll be expected to raise the CSCI scores in these reaches when there's no evidence to show the current scores are inappropriate or that the scores can in fact be raised.

So I want you to use good science on this. I was at the Science March too, started at Caltech. So this is one area where really you need to really consider the science behind it.

And I'll just wrap up pretty quickly and just mention that with the bioassessment listings there also was not an evaluation done of physical habitat. In the listing policy that staff mentioned, it requires consideration of physical habitat in addition to reference comparison. You can't substitute comparing the reference for comparing to physical habitat.

The pictures on this slide show two areas in the Santa Clara River. The one on the left is Santa Clara River Reach 5. And you can see it's mostly ag and open space. And this slide actually passed the CSCI. The one on the right is Santa Clara River Reach 6, which is just a few miles away. It's surrounded by development. It's right next to the interstate. And it failed the CSCI. So the immediately surrounding physical habitat can really have an impact on a stream, because streams are very sensitive to development. So we really feel that consideration of physical habitat needs to be brought into play in listing the streams.

So that's it. I'll just summarize by saying please, please, please, fix the data errors before somebody finalizes the list. For temperature listing you really have to consider whether it's a result of waste discharge. And please don't apply that Southern California IDI or the California Stream Condition Index where it's outside of the model where the reference isn't applicable. It's just bad (indiscernible) science. So thank you again for letting me take up a little extra time today.

CHAIR MUNOZ: Thank you.

The County of Ventura with five minutes.

MS. MUTKOWSKA: Chair Munoz, the Regional Water Board members and Mr. Unger, my name is Ewelina Mutkowska. I'm the Stormwater Program Manager at the County of Ventura. The County of Ventura appreciates the opportunity to comment on the proposed revisions to the 303(d) List of impaired water bodies in the Los Angeles Region, particularly we thank your staff for the decision to change the originally scheduled hearing to a workshop in order to allow discussions of our additional concerns after a review of the responses to our written comments.

The County understands that the data analysis for the proposed changes were performed by the State Board. We appreciate the time that has been invested to address the numerous region-specific issues.

We want to thank the Regional Water Board for averting many of our comments and requested revisions related to the errors and inconsistencies regarding listings using potential use and beneficial use in correctly applied units for mercury listings, incorrect use of estimated data (indiscernible), and inappropriate use of agricultural drain monitoring data as a basis for listing.

Besides comments that were submitted by the County of Ventura, the County and the cities of Fillmore and Santa Paula submitted separate comment letters with the reminder of your staff determination from November 2016 to recommend delisting of ammonia in Santa Clara River. We thank you for your consideration and response that this revision will be incorporated.

Remaining concerns includes comments regarding the lack of proper temporal representation and each was related to a proposed new listing for pH and temperature.

On March 30 of this year the County provided comments related to a total of 37 proposed new water body polluted combination listings; 21 or about 45 percent of those new listings are lacking proper temporal representation. Section 6.11.5.3 of the State Water Board Listing Policy states that samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent if the majority of samples were collected on a single day or during a single short-term natural event such as a strong flood, a wild fire, the data should not be used as the primary data set for supporting the listing decision.

For example listings for Ventura Harbor are based on the data collected on a single day, February 28th, 2007. The County respectfully requests that all pollutants listed, based on the single sampling date, will not be listed, due to insufficient temporal representation of the available data.

As stated in the fact sheets and according to Los Angeles Regional Basin Plan the pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of the waste discharges. For the proposed new listings for pH in Santa Clara River Estuary and Reach 1 it was not demonstrated that elevated pH levels were a result of waste discharges, as opposed to natural causes. The County respectfully requests that either such evidence is provided for, or if no such evidence exists these listings should be removed from the proposed outtake.

The new temperature listing in Ventura River Reaches 1, 2 and 4 are based on evaluation guidelines of temperature limits between 13 and 21 degrees Celsius as the optimum (indecipherable) for rainbow trout. However, the applicable Basin Plan objective for water bodies designated as cold, a water temperature shall not altered by more than 5 degrees Fahrenheit above the natural temperature. The fact sheets provide no discussion of natural temperatures or a demonstration that the temperature wasn't raised above the natural temperature. It was not demonstrated that the temperature objectives were exceeded.

In addition, the evaluation guideline is applied inappropriately. While temperature above 21 degrees Celsius may be optimal according to Moyle 1976, in 2002 Moyle clearly states that the lethal temperatures are those greater than 23 degrees Celsius. And so which indicates that the evaluation guideline of 21 degrees Celsius is more appropriately applied as a chronic guidelines, which are therefore necessitating the establishment of an averaging period.

CHAIR MUNOZ: You have 30 seconds.

MS. MUTKOWSKA: 23 degrees Celsius is the more appropriate not to exceed guideline if uses for listing. Using 23 degrees Celsius instead of 21 temperature data for

Ventura River would not meet the listing thresholds.

Please stop and fix errors before finalizing the lists and thank you very much for this opportunity to comment.

CHAIR MUNOZ: Thank you so much.

Beach Cities Watershed, five minutes.

MS. MCGOWAN: Good afternoon. My name is Kathleen McGowan. I serve as the Watershed Coordinator for the Beach Cities Watershed Management Group. And with me I have Sean Ego (phonetic) from the City of Manhattan Beach.

Thank you for the opportunity to speak. Individual at Beach Cities have provided comments in writing that speak to the Santa Monica Bay and Dominguez Channel proposed listing decisions. And I'd like to highlight briefly our most significant concerns and we have reviewed the staff's response to comments and preparedness.

First, with respect to Santa Monica Bay we are gratified that Manhattan Beach and Hermosa Beach now meet the criteria for delisting indicator bacteria impairments for recreational water quality. This demonstrates the significant efforts and resources that have been expended by the Beach Cities in partnership with L.A. County Flood Control Districts since adoption of the Santa Monica Bay Bacteria TMDL in 2003. These efforts have eliminated non-essential dry weather discharges to the shoreline through low flow diversions and reduction in the irrigation runoff and other sources of non-stormwater.

Although the delisting criteria is demonstrated based on data aggregated year round across all weather conditions, the Bacteria TMDL distinguishes between wet weather and dry weather conditions through separate implementation schedules and compliance targets. The wet weather final compliance deadline is not until 2021. And the group continues to work toward that deadline through construction of stormwater infiltration systems, a much greater challenge than addressing dry weather discharges, because of the volume of stormwater that must be mitigated and the cost of these systems.

Hermosa Beach, in partnerships with the other beach cities, has recently been awarded a 3.1 million Prop 1 stormwater grant that will provide approximately 48 percent of the estimated 6.4 million for the construction of one of these projects. The remaining capital costs will be covered by the beach cities and the operation and maintenance as well. However, there's still several other large regional projects proposed within the beach cities: two high-priority Santa Monica Bay watersheds including one in Manhattan Beach, that need to meet the final Wet Weather TMDL. And the group needs to be able to compete for state grant funding to bring those projects to fruition. So the Beaches group would like assurance that delisting of the beaches will not impair the group's ability to compete for funding through the SWRCB Division of Financial Assistance in order to meet that final TMDL.

Additionally, based on staff's response to comments we understand that Santa Monica Bay will now be delisted for sediment toxicity consistent with the DDT and PCP TMDL. And we really appreciate that.

The Beach Cities Group is also concerned about the new listings being proposed for Santa Monica Bay offshore and near-shore for arsenic and mercury. Listing of the Santa Monica Bay as a whole is being proposed based on a limited set of fish tissue data collected under the City of L.A.'s Hyperion Waste Water Treatment Plan permit in two runs (phonetic) of the Bay north of Redondo Pier. This data collected only during 2006 and 2007, some ten years ago. And we're concerned that the significant new listing has been proposed when so much more data should now be available.

We agree with the suggestion made by City of Los Angeles in its written comments that if the Board feels it is necessary to categorize that information now that the water body pollutant combination be placed in Category 3 indicating that data is insufficient, but that beneficial uses may be potentially threatened. That will allow a more complete evaluation in the next listing cycle.

Regarding Dominguez Channel the Beach Cities Group agree with the written comments made by the County of Los Angeles, and in particular regarding that the community impairment listings in concrete lined channels, such as Dominguez Channel.

We also understand that Board staff are considering our comments regarding the inadequacy of the data which was the basis for the original listing of the lion's portion of Dominguez Channel above Vermont for lead and we hope that you'll carefully review that decision. We anxiously await those results.

Lastly, we're gratified that Dominguez Channel Estuary will be delisted for ammonia based on lack of evidence for impairment, but the lion's portion above Vermont should also be delisted for ammonia based on lack of evidence for impairment. The Los Angeles County Flood Control District large mass emission station data set for S-28 data, as well as the data from Vermont Avenue Station support this delisting. Some of that data does cross into beyond the 2010 deadline, but again we really believe there is sufficient evidence for that delisting.

Thank you for the opportunity to speak. We really appreciate it.

CHAIR MUNOZ: Thank you.

Mr. Steve Johnson from Heal the Bay. Welcome.

MR. JOHNSON: Good afternoon Chair Munoz, Vice Chair Glickfeld and fellow members of the Board. I believe this is the first time I've seen all seven of you all at the same time, (Laughter) so I think that's good to see, including all the new members.

Anyway, my name is Steven Johnson. I'm here representing Heal the Bay as their Water Resources Policy Analyst. First and foremost, we appreciate the care the Regional Board staff as well as the State staff I think has taken an exhaustive task to sort of multiple forms of data, over the past few years and then to address all of the numerous comments made by 32 different organizations and municipalities. We know the entire process has been daunting and it looks like Regional Board staff has come close to reaching the other side.

We agree with the Regional Board staff when in their response to Heal the Bay's comments they maintain that the integrated report and the 303(d) List should remain the state's best assessment based on water quality data evaluated. Still, we find this is a difficult proposition when the age of the data justifying delisting on the newly proposed 303(d) List is seven years old.

The Regional Board staff goes on to say that not delisting any water body in order for those areas where water quality may have improved abide only on (indiscernible) with pre-2010 data. Our point is that these water bodies should be exactly that, ignored until more is known about their current condition. Considering this discrepancy in a time from data submittal to listing and delisting proposals, we formally ask that the Regional Board and State Board and the Environmental Protection Agency not delist any bodies of water that are currently on the 2010 integrated report until more current data is received.

This will eliminate the possibility of delisting a water body that is currently impaired, as there is no way to know that the condition of the water in question using data that's solely from a 2010 report. To err on the side of caution when dealing with our state waters it will be in the best interest of our water quality standards on beneficial uses. The severity of these delisting decisions are even further accentuated by the fact that these bodies of water will not be evaluated again until 2022.

This seems like a reasonable precautionary request and is supported by the State Board themselves in policy language that has been adopted as well as in discussion during past State Board hearings concerning adoption of the delisting policy.

Okay. From a policy language perspective this point is represented in the State Board's water quality control policy for developing California's clean water (indiscernible) Section 303(d) List itself, which was adopted on September 30th of 2004 and amended February 3rd, 2015. And Section 411 which states, "When making a delisting decision based on the situation-specific weight evidence the Regional Water Board must justify its recommendation by Bullet Point 1 providing any data or information, including current conditions, supporting the decision."

We argue that there is no way to demonstrate the current conditions with information and data that is aged seven years or more. Because of this it seems in line with state listing policy that no water body is to be delisted for the current 303(d) List. During the next listing and delisting cycle, which will be in 2022, staff will then be able to make more accurate judgment on impairment simply because the information is more up to date.

I also have a quote from a previous State Water Board member during the hearing. If it's only -- I have two more paragraphs, if that's okay?

CHAIR MUNOZ: That's fine.

MR. JOHNSON: Okay. The intent of the policy in regard maintaining ecological standards is reiterated in language that is obtained from a prior State Water Board hearing transcript from September 30th, 2004 in which past

State Board Member Nancy H. Sutley who had (indiscernible) tapped by Obama for the California Environmental Quality states -- and this is her quote -- "If it's on the list then you have to have some information that says that they, meaning the fish, are not dying now and that the water body is not currently impaired."

The Board Member Sutley is referring to listings that were made by mistake. The principal behind her words should still hold true. The intent was to say that information and data on water should currently show that water quality standards are met and that the body of water is not currently impaired before being moved from the list.

Board member Sutley goes further to suggest that boards should affirm a lack of current impairment before delisting bodies of water by saying she was -- her quote again -- "Okay with not adding additional language to the listing policy as long as we're all in agreement, and that's at the direction of the regional boards, that you have to look at current conditions as well before delisting."

We realize that actions or lack of actions on this scale are likely to be decided on the state level, so be aware that Heal the Bay will mention this again on the state level whenever given the opportunity to.

And to end on an optimistic note, Heal the Bay is quite supportive of the state's move to evaluate data that is submitted to the California Environmental Data Exchange Database, CEDEN. Not to compare the 303(d) Listing and delisting process to hell, but perhaps CEDEN will become a truer Eden (Laughter) for the Regional, State and EPA staff in their future efforts to list and delist California's bodies of water due to the innovations expected of a convenient, thorough and streamlined submission process.

Thank you for the opportunity to comment.

CHAIR MUNOZ: Thank you so much.

Mr. Tahir, ten minutes. You may begin.

MR. TAHIR: Your Honor, I'm waiting for my presentation to pop up.

CHAIR MUNOZ: Oh, okay.

(Off mic colloquy while setting up presentation.)

MR. TAHIR: While we're waiting thank you very much for granting me the time, Madam Chair, it is very kind of you.

CHAIR MUNOZ: Well, are you going to be able to --

UNIDENTIFIED SPEAKER: I can't (indiscernible)

CHAIR MUNOZ: Okay. While you're waiting why don't we call on someone else until we get it fixed?

MR. TAHIR: That's a good idea.

CHAIR MUNOZ: Ms. Alison Sweet from the City of Glendora? I think she may have left.

Jenna Driscoll from the Santa Barbara

Channelkeeper?

MS. DRISCOLL: Hello. My name is Jenna Driscoll and I'm with Santa Barbara Channelkeeper and I'm going to read a one-page statement for the record.

Channelkeeper noted with alarm that the Region's February draft modifications to the 303(d) included a proposal to delist Reach 3 of the Ventura River for pumping. However, the staff report and appendix offered no explanation or the rationale behind the decision.

In 2015, and again as part of our response to comments, we submitted many years of extensive monitoring data and examples of multiple monitored evidence that clearly demonstrate that beneficial uses of the river are impaired by (indiscernible) diversions. It is unclear whether or not it has ever been analyzed or is considered by the region, but in any case we have our disapproval of the region's decision to only consider data prior to the 2010 data solicitation; a decision that we find to be inconsistent with the Clean Water Act and sound science.

In any case, Regional Board staff modified their draft proposal to delist Reach 3 for the Ventura River for pumping. And now propose, without prior public notice, to re-categorize all pumping and diversion impairments for the Ventura River under Category 4a. This is an inappropriate modification.

Regional Board staff justify this re-categorization by citing EPA language in the approval letter for the Ventura River Algae TMDL. Unfortunately, the EPA language was mischaracterized and misquoted in response to comments. The response to comments quoted EPA as saying, "EPA has determined that it is unnecessary at this time to establish separate actions for the pumping and water diversions in Reaches 3 and 4 of the Ventura River."

For the record, what the EPA actually wrote was, "EPA has determined that it is unnecessary at this time to establish separate nitrogen and phosphorus TMDLs with pumping and water diversion impairments listings for Reach 3 and 4 of the Ventura River."

Further, for the record the EPA also wrote, "EPA's proposed TMDLs were developed to address water quality impairments caused by nitrogen and phosphorus under current hydrological conditions. EPA did not attempt to delineate Ventura River's natural hydrological conditions or address other issues related to the pumping and diversion of water in Reaches 3 and 4 of the Ventura River."

Other (indiscernible) include impairments caused by increased impairments and loss of oxygen due to loss of flows as well as loss of endangered species and wildlife habitat and loss of recreation, which are both caused both by loss of flows rather than by any other pollutant. It is inappropriate to place the pumping and diversion impairment in Category 4a. Rather, the listing should be left as is or at a minimum placed in Category 4c, because all impairments have not been addressed by the TMDL as confirmed by the correct reading of the EPA approval letter and are not caused by any other pollutant.

In parallel, our written comments echo statements submitted by the Earth Law Center regarding the necessity of placing an additional impaired waterway on the 303(d) List or Category 4c in recognition of the flow impairments. It remains unclear how the L.A. Region intends to address its 305(b) obligations under the Clean Water Act. Nevertheless, at this time our organization concurs with Earth Law Center's legal interpretation of the Clean Water Act and EPA guidance. And we encourage the Regional Board to consider incorporating additional flow related listings in the integrated report. Thank you.

CHAIR MUNOZ: Thank you.

We are going to be taking a 15-minute break and Mr. Unger is going to explain what we're attempting to do.

EXECUTIVE OFFICER UNGER: So let's see, yes as you note the Los Angeles Regional Board, we do not have our own conference room. We're dependent upon the kindness of others. In this case the City of Pasadena has been very gracious to afford us this room. They need this room in the next few minutes, and so we're going to be adjourning to a different room in this facility. We're getting it ready to essentially find out exactly where it is. Paula Rasmussen is checking out the other room, we're setting up the IT. So we'll meet in 15 minutes and we need everyone to migrate to a room that without Gerry here at the moment I don't exactly what --

CHAIR MUNOZ: He's right here.

EXECUTIVE OFFICER UNGER: Oh, there he is. Gerry is the building (indiscernible.) (Laughter.)

Okay. So what I would ask is that you take about a five-minute break. We will come right back here, show you the way down to the new room, and we will continue the meeting at that point. So take the --

VICE CHAIR GLICKFELD: Can we -- thank you, do you need our help?

EXECUTIVE OFFICER UNGER: Not until we figure out exactly where the room is.

CHAIR MUNOZ: I would suggest that we, the Board members, take all of your materials and --

EXECUTIVE OFFICER UNGER: Yes, yes. Yeah, you can pack up your materials, because that's where we'll be moving to in a few minutes.

(Off the record at 2:50 p.m.)

(On the record at 3:26 p.m.)

CHAIR MUNOZ: Okay, I want to thank each and every one of you. You must have all been in a number of fire drills because you all listen to directions very well, and you're here. And I know this issue is very important to you, so we're going to listen to you very carefully. But we do ask that you speak a little louder so we can hear you because everything that you have to share with us is something that we want to hear.

And we're going to start with Mr. Tahir. We're going to ask you to stand right over here.

MR. TAHIR: Please, call me Ray.

CHAIR MUNOZ: Okay. And we're -- are we putting the timer up here?

MR. RABELO: Yeah. Yeah. It's going to be right there on the --

CHAIR MUNOZ: Okay. You could see the timer here on the left-hand corner. Mr. Tahir has ten minutes. Some of you have -- no.

MR. TAHIR: So I just have to --

CHAIR MUNOZ: You have to speak loud.

MR. TAHIR: Okay.

CHAIR MUNOZ: Okay. So let's get started.

MR. TAHIR: All right. Thanks again. Okay.

The first three slides really aren't intended to be critical of Staff. You know, I don't think it's going to do any good to do that. We understand that Staff really had a hard time with the 303(d) List (phonetic) update. I would have preferred to have seen the response to comments sooner, you know, rather than have been given, basically, 24 hours.

You know, there were so -- there were so many listings, almost 900 of them. There are 300 pages of (indiscernible). And it's really been tough, not just for me, for anybody else, to sift through them to respond to them.

To point out that the Santa Ana Board, they, too, had to update their 303(d) List in accordance with the schedule that they had provided during their research. They were able to get a workshop and a -- a workshop and a public hearing. But, of course, they had fewer listings that they had to deal with.

I'm somewhat critical about not having a public hearing. But after hearing Staff's explanation, I understand why you couldn't hold a public hearing. But I need to point out to Staff that you have to have one, okay? If you're going to rely on the listing policy, the water quality control policy to developing the 303(d) List, it clearly says that at a public hearing the Regional Board shall consider and approve each proposed list change as documented in the water body (indiscernible). Okay. We know that couldn't be done. The (indiscernible). We cannot have a public hearing.

Okay, let's move on to general comments.

Staff deserves substantial credit for not listening for San Diego River Reach 3 metals which impacts those cities, about 12 or 13 of them. Also, the listed metals and selenium for San Jose Reaches 1 and 2, and that affects Claremont, San Dimas, Pomona, Laverne. Also, for Rio Hondo Reach 2, which is has been (d) (phonetic) listed or was not placed on the do-not list for metals, and that effects Alhambra partially, Arcadia, Duarte, El Monte, Monrovia, Monterey Park, Montebello, Pasadena partially, Rosemead, South El Monte, blah, blah, blah. This is going to have a tremendous cost-reductive impact for those cities in terms of complying with the Metals TMDL.

I should point out that the staff did not place Arroyo Seco Reach 1, 2 or 3 on the do-not list for metals. None of the metals -- none of the metals were previously listed on the 2010-2012 303(d) List. The MS4 permit, by the way, mistakenly applies the Metals TMDLs to permittees in these reaches, which included South Pasadena, Pasadena and La Canada/Flintridge. These reaches should not be added to the do-not list category. To point out -- Dr. J is not here, but J --

BOARD MEMBER FAMIGLIETTI: I'm right here.

MR. TAHIR: Oh, I'm sorry. JPL, I think, is located in Reach 3 --

BOARD MEMBER FAMIGLIETTI: The Arroyo --

MR. TAHIR: -- the Arroyo Seco, because you're close to the Devil's Gate Dam.

BOARD MEMBER FAMIGLIETTI: I don't think I've ever seen any water flow in the Arroyo.

MR. TAHIR: There's no flow. There ain't no flow.

So Staff's response is that the integrated report and 303(d) List do not include any decisions for metals in the Arroyo Seco, because no metals data were available or assessed for that reach. The decision to do-not list is only made when there are data in the CalEPA database that support the do-not list decision. Well, look, you (d) List it or you're not -- you've placed the metals on a do-not list for Reach 2 of the Rio Hondo and Reach 3 and 4 of the San Gabriel River. You could have done the same thing for the Arroyo because they're all in the same basket.

So we ask Staff that you make the recommendation to place all the reaches of the Arroyo Seco on the do-not list for all the metals, copper, lead, zinc and selenium.

We note that the 303(d) List adds South San Jose Creek and Compton Creek unnamed tributary at Santa Fe Road. I could be wrong, but none of these reaches appear on the Los Angeles Basin Plan and therefore may not be placed on the 303(d) List until they are. But can Staff verify this? Okay.

California Toxin Rule; any 303(d) toxin pollutant includes -- including metals, subject to CTR that did not comply with these requirements should be placed on the (d) List or do-not list category. CTR establishes water quality standards to protect the quality of life for water bodies. It doesn't include bacteria or mercury (indiscernible). But one thing to remember about CTR is it requires ambient water quality monitoring based on actual hardness. Many of the 303(d) List toxics and metals for various water bodies should have not been listed because they were based on wet-weather water quality testing instead of ambient testing.

CTR also requires an actual hardness value using calcium carbonate for establishing a pollutant water quality standard as determined at the time the sample is taken from the water body. The lower hardness value -- the lower the hardness value the lower the compliance part, which is more difficult to me. For example, 50 milligrams per liter hardness, a value for dissolved copper, sets a 4.5 micrograms a liter water quality standard. For 100 milligrams of hardness a value is set at 9 micrograms per liter, which is easier to meet. The Metals TMDL for L.A. River uses a default hardness value of 100, while Dominguez Channel uses a default value of 50. You should not use those default values.

The Regional Board approves of the default values. However, the Regional Board's own Surface Water Monitoring Program, SWMP, used an actual hardness value, not default values as CTR requires, because CTR did not meet the ambient or actual value. Any CTR-related pollutant on the 303(d)

List should be eliminated.

The Regional Board staff responsible (indiscernible) evaluating CTR. Well, I would say CTR lies outside of the scope of the 303(d) List, actually. Actually, CTR is referenced in the listing policy in section 3.1. In several 303(d), those fact sheets refer to (indiscernible) to CTR criteria. If the CTR metric is defective, then so are the (indiscernible).

Many of the water quality standards and TMDLs based on 303(d) pollutants did not follow the water quality control plan for development, Clean Water Act section 303(d). It did not meet the statistical frequency test by normal distribution based on a known hypothesis. Much of the water quality data is more than a decade old, as most of you people here know. It best the question, why was not more contemporary sampling performed by SWAMP, which could have done this easily? In fact, cities pay a surcharge to fund the SWAMP program. It uses water quality data that does not pass the quality assurance/quality control requirements.

They do not meet the statistical frequency based on known hypothesis. Much of the water quality data was -- I'm sorry, I did that.

So let's go to specific examples.

Compton Creek should be listed for copper because recent water quality data reveals that 1 of out 15 samples exceeded copper. According to Staff, however, this would not be sufficient to list copper today because -- the (d) List, rather, because the sample size needed to (d) List is 26. But there were no valid samples taken over the past six years which would have met the 26 sample requirement. SWAMP data taken in 2005, by the way, also revealed that no copper exceedances -- there were no copper exceedances for the creek. Had the Regional Board, which conducts ambient monitoring had continued to take samples from Compton Creek, it would have met the (d) List criteria.

Okay, L.A. River Reach 5, copper and lead are recommended for placement on the list. It should not. The justification reported on the fact sheet for both copper and lead is that zero of the 12 samples exceeded the criteria. This must be an error? How can zero or none of the 12 samples exceed the criteria?

Okay, example three, Dominguez Channel Reach 1, poly aromatic hydrocarbons are to be de-listed. Okay. But what hasn't been de-listed is percolene (phonetic) (indiscernible) and cyrene (phonetic). These are specific types of poly aromatic hydrocarbons, but they're not de-listed. They're in the same category. So we're asking that they also be de-listed.

Recommendations. Okay. I was going to --

CHAIR MUNOZ: You have a minute left, Mr. Tahir.

MR. TAHIR: Okay. Let's do it right the next time is all I'm saying, and that's it. And thank you very much --

CHAIR MUNOZ: Thank you.

MR. TAHIR: -- once again for being generous about granting me ten minutes' time.

CHAIR MUNOZ: Okay. Great. Thank you.

MR. TAHIR: You bet.

CHAIR MUNOZ: Okay. Is Ms. Ann Heil here from L.A. County Sanitation?

MS. HEIL: No. I'm here, but I already testified.

CHAIR MUNOZ: Oh, but you testified? Okay.

From the L.A. County Department of Public Works, Mr. Bruce Hamamoto? I hope I pronounced that correctly. If not, please correct me.

MR. HAMAMOTO: Good morning -- good afternoon, Chair Munoz and Members of the Board. My name is Bruce Hamamoto. I'm a Senior Civil Engineer with the L.A. County Department of Public Works. I am here to speak on behalf of the Flood Control District and the L.A. County. Thank you for the opportunity to comment. The County and Flood Control District provided extensive written comments for your consideration. In reviewing Staff's draft response, we are pleased that some of our concerns are being addressed. We would like to take our time today to discuss a few remaining concerns.

The first issue we would like you to reconsider is temperature. With this draft 303(d) List, many water bodies are listed for temperature for the first time. As you know, temperature is highly variable from season to season and from year to year. Many stream channels in the L.A. Region are also concrete lined for flood control purposes, which plays a role in effecting water temperature. A one-size-fits-all temperature objective may not be appropriate in our urban environment.

This Board has identified the development of temperature objectives as one of its priority objectives during the 2014 to 2016 Basin Plan triennial review, and we support waiting for this process to play out before any listings for temperature are finalized for water bodies in this region.

Turning to our proposed toxicity listings, as our comments noted, a recent lab calibration study by the Southern California Stormwater Monitoring Coalition found that laboratories that conduct toxicity tests do not produce reliable data. The findings show that toxicity data associated with C dubia (phonetic), the water flea,is unreliable and could potentially result in false exceedances which may result in water bodies being incorrectly listed for toxicity. The toxicity related inter-laboratory variability is unprecedented and raises serious concerns. In fact, following SMC's findings, some agencies have stated they no longer stand behind their toxicity data due to the inconsistencies in the lab results.

Finally, the listing of water bodies for bioaccumulative pollutants is based on limited data. Many water bodies are listed for these pollutants based on data that is collected over a single day. A single day does not capture the temporal variability of the condition in the water body, and thus is not representative. We ask that you reconsider the bioaccumulative pollutant listing.

Thank you very much for your time. I'm available to answer any questions later.

CHAIR MUNOZ: Thank you. Ms. Nancy from the Farm Bureau of Ventura County.

MS. BROSCHART: Broschart, it's one of those names.

CHAIR MUNOZ: Broschart. Thank you.

MS. BROSCHART: I'll try to use my outdoor voice.

BOARD MEMBER DIAMOND: Good.

MS. BROSCHART: We'll see how that goes.

BOARD MEMBER DIAMOND: We can hear you.

MS. BROSCHART: I'm Nancy Broschart. I'm the Water Policy Specialist for the Farm Bureau of Ventura County. We manage the Ventura County Agriculture Irrigated Lands Group. It's a discharger group. VCAILG's purpose is to assist commercial farmers to meet water quality regulations in our county.

First, we appreciate Staff's

acknowledgment of the numerous flaws in the document and the Board's willingness to engage in the public process, such as this workshop, that allows them to be corrected.

We urge your Board to address these issues as part of the 2016 listing package, rather than putting them off until the next cycle. In the past, it has been -- proven difficult to dislodge even obvious mistakes once they become entrenched I an adopted 303(d) List.

We appreciate the agreement to adopt a do-not-list status for water bodies where ag drain monitoring data has been used inappropriately to justify a listing. We will continue to argue that it's inappropriate for ag drains to be regarded as proxies for downstream conditions or to be regarded as water bodies themselves.

Also, VCAILG is a member of the Calleguas Creek Watershed TMDLs Stakeholder Group. We support the comment letter submitted on its behalf, as well as the public comments that hopefully will provided today.

Thank you very much.

CHAIR MUNOZ: Thank you.

Mr. Joey Yahner from the City of Ventura.

MR. YAHNER: Good afternoon. My name is Joey Yahner. I'm with the City of Ventura. I'm the Environmental Services Manager for the City. And I'm actually going to be making comments from two letters, one that was sent from the city in general, and then one that was specifically sent from Ventura Water, which is a department in the city that they run our water reclamation facility.

I'm trying to cut stuff down here to be quick, so just a few specifics.

Regarding the listing in Ventura Harbor, I wanted to just support what the County of Ventura stated, as well. We were encouraged by the Board's response to question 6.6 and appreciate the Board's decision to review the evaluation guidelines, listing the Ventura Keys for arsenic. In addition, the City of Ventura would like to encourage the Board to conduct a full review of the Ventura Harbor listings. Unfortunately, I don't have time to get into all the details, but we can provide some additional details to Staff, if necessary.

Also wanted to reiterate, the County, we're concerned about the use of the Moyle Study from 1976, rather than the 2002 Moyle Study which clearly states the lethal temperature as 23 degrees

Celsius, which we feel is a more appropriate not-to-exceed guideline for this listing.

Now I'm going to put on the Ventura Water hat, even though I'm not in Ventura Water. So they've asked me to comment on their behalf regarding the Santa Clara River Estuary. And Ventura Water has invested more than $21 million in treatment process upgrades at the Ventura Water Reclamation Facility to improve the quality of the tertiary treated flows discharged to the estuary. Of particular concern to us, which I've even mentioned it before, is that much of the data used to determine water quality impairment for the estuaries order is not representative of current conditions. Significant plan improvements have been implemented since 2010's City monitoring data, since the plan upgrades are readily available and should be included within the 303(d) List of determinational analysis.

Also, the Santa Clara River Estuary has been heavily regulated for the NPDES permit for the Water Reclamation Facility. And many of the permit requirements have become more stringent since 2010 with the application of technology-based limitations. And by Ventura Water's estimation, many of the constituents on the proposed 303(d) List are not appropriate given recent water quality data based on current data and the state's listing policy requirements to aggregate the data by appropriate reach or area and to the appropriate averaging periods. Ventura Water disagrees with some of the constituent listings and requests calculations of exceedances.

And that's it.

CHAIR MUNOZ: Thank you so much.

MR. YAHNER: Thank you very much.

CHAIR MUNOZ: Joe (indiscernible) or Danielle Potocek from Calleguas Creek Watershed, stakeholders.

MS. POTOCEK: Hi. Yes, it's Danielle, not Joe.

CHAIR MUNOZ: Oh, okay.

MS. POTOCEK: He stepped out.

CHAIR MUNOZ: Yes, you look like a Danielle.

MS. POTOCEK: Yeah. So my name is Danielle Potocek and I'm speaking on behalf of the stakeholders implementing the TMDLs in the Calleguas Creek Watershed. And a lot of the topics that we wanted to address today have already been brought up, so we'll just -- I want to endorse the previous comments made by the County of Ventura. We have a model that's been used in agriculture drains and whether or not they are representative of the receiving water quality.

The stakeholders influencing the TMDLs are really thankful to the Board to have this at a workshop versus a hearing. And they're grateful for the amount of time that went into updating this list and correcting the errors.

Furthermore, the stakeholders appreciate the staff's comments -- or addressing the comments specifically related to the potential new beneficial use, the mercury listing unit corrections and the corrections of use of estimated data. However, the stakeholders remain concerns with a few specific issues.

One of those regards reassessing the Calleguas Reaches using the TMDL monitoring data for receiving waters. From 2001 to 2007 the stakeholders have developed six TMDL documents that were adopted by this Board, the State and EPA, and have been implementing them since adoption. However, the stakeholders are disappointed that the data accumulated in the report submitted more than ten years do not appear to be reflected in the current draft 2016 303(d) List. The stakeholders request that this monitoring data from receiving waters be used to reassess the water bodies in the Calleguas Creek Watershed.

The second issue regards temperature, which we've heard about a little bit today, but it's the specific issue for Calleguas. Reach 12 of Calleguas Creek Watershed is listed for temperature. However, it was assessed using an incorrect evaluation criteria. Calleguas Creek Watershed Reach 12 has a warm beneficial use, but it was assessed using cold beneficial use evaluation criteria. Furthermore, the data that was used to assess Reach 12 is actually from Reach 10, so there's two issues here. We want to just bring that up to the Board's attention and make sure that that is considered in their evaluation of that listing.

And the third issue that the stakeholders would like to bring is regards to the pyrethroid pesticides listing. We believe -- the Calleguas Creek stakeholders believe that these listings are based on inappropriate data. There are -- they are also unnecessary because there's already an existing Toxicity TMDL that addresses them. So the basis for the pyrethroid pesticide listings is from agricultural drains which, as mentioned previously, are not representative of the receiving waters. Even if this data is found to be applicable, it is not necessary to develop another TMDL since the Toxicity TMDL already exists which addresses them.

In the Regional Board's response to comments they state that the Toxicity TMDL does not apply to pyrethroids and that the TMDL would need to be revised to identify pyrethroid components. This is incorrect. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in identification of phyrethroids as a potential cause of toxicity, and the stakeholders have already been addressing these pesticides and monitoring them since 2008.

So in summary, we want to thank the Board again for holding this workshop. And if they have any questions in addressing any of the issues, the Calleguas Creek stakeholders are happy to make themselves available.

CHAIR MUNOZ: Thank you so much.

(Bell tones, colloquy.)

CHAIR MUNOZ: Ms. Anita Kuhlman from the City of Camarillo.

MS. KUHLMAN: Good afternoon, Chairman, Board Members and Staff. Thank you again for allowing this workshop to be held. My name is Anita Kuhlman. I'm with the City of Camarillo. Camarillo is also a stakeholder in the Calleguas Creek Watershed, and we echo the comments that have already been issued for the county by the County VCAILG and Danielle for the watershed.

The development of TMDLs in Calleguas Creek has been a collaborative process, and we have expended lots of resources and money on the monitoring that has been done. So we would appreciate that monitoring be looked at, and that we not use the ag drain outfalls or drains to (d) List or list or any of the pollutants.

So again, we do appreciate you holding the workshop, and we do echo the comments that were issued in the Calleguas Creek Watershed comment letter and look forward to a revised 303(d) List policy.

I'd be happy to answer any questions.

CHAIR MUNOZ: Thank you so much.

MS. KUHLMAN: Thank you.

CHAIR MUNOZ: Ms. Ewelina -- is it Mutkowska?

MS. MUTKOWSKA: I already spoke.

CHAIR MUNOZ: Oh, you already spoke? Okay.

MS. MUTKOWSKA: There was a misunderstanding.

CHAIR MUNOZ: Okay.

MS. MUTKOWSKA: Ewelina Mutkowska.

CHAIR MUNOZ: Thank you.

Is there anybody who turned in a card who I haven't called? Because I think I've called all the cards at this point. Okay.

Being none, before we open it up to the Board, after a review of the agenda package, including the response to comments, as well as Staff's presentation or comments at today's workshop, I would like us to provide general direction to Sam and the Staff to consider the questions, comments and concerns raised by the stakeholders and members of the public, as well as through individual Board Members, prior to submittal of the final 303(d) List recommendations to the State Water Board.

I understand that additional work was

required by our staff in collaboration with State Board staff to reevaluate the many lines of evidence as part of those recommendations. I would like to direct Sam and Board staff to continue to work with State Board staff in reevaluating the lines of evidence as necessary. I would also like to ask that Staff bring back and information item from the State Water Board as to how its public hearing is followed in order to update us on the final stages to the Los Angeles Regions 303(d) List and next steps.

EXECUTIVE OFFICER UNGER: I would just ask you --

COURT REPORTER: Actually, Sam, go to the microphone. Yeah.

EXECUTIVE OFFICER UNGER: Yeah. I'll just ask the Board Members if there's any other direction you would like to provide to me and to all of us who have worked on this 303(d) List, and we'll be recording it and we'll be taking it into account. Because, as you heard from Karen Larson earlier today from State Board, the plan is to work with the State Board to have the most correct list that we can have possible in front of State Board for their evaluation and determination. So please --

BOARD MEMBER STRINGER: I have a question, I guess --

EXECUTIVE OFFICER UNGER: Yes?

BOARD MEMBER STRINGER: -- more so than a comment. Would it be helpful for you and Staff to have a subcommittee to work with or not?

EXECUTIVE OFFICER UNGER: You know, I think in this case, my answer would be I don't think it would really be necessary. Most of the issues that we have before us today are really what I would call technical issues rather than policy-related issues. I mean, the policy is, I mean, from my perspective is to work diligently with State Board staff to try to get the most correct list that we can. I mean, I don't think -- I think that's basically what we are charged with doing, what we're skilled at doing and what we can do in working with State Board staff. So I think at this point we probably don't need a subcommittee because it's a fairly straightforward policy issue that's in front of us, in my mind.

BOARD MEMBER STRINGER: Great.

CHAIR MUNOZ: I think -- oh, please.

BOARD MEMBER DIAMOND: I guess I just had a couple of questions for Staff, and maybe you would like to address them, and that was in our Board package on page 923 there is the integrated report for 2014-16, and it lists all of the regions. And for Region 4, if I'm reading it correctly, and I'm asking you, actually, if I am, it looks like there are 211 new listings and 48 new de-listings; is that correct?

DR. NYE: Yes, that's our current draft.

BOARD MEMBER DIAMOND: So of these, I don't know, maybe I'll just start with the de-listings, are all of -- are any of those de-listings -- or maybe I should say, how many do you think of those de-listings are based on information that we -- you said that there were some issues, there were some problems in gathering some of the data or in having enough data, or are you confident that those de-listings are based on the most accurate data?

Because my big concern -- I think many of probably feel that it's been a long time since we've had new data. So I'm just wondering if any of these de-listings are things that we are still looking for new information or correcting any --

DR. NYE: You know, after we finish with

the response to comments and --

BOARD MEMBER DIAMOND: Right.

DR. NYE: -- getting things corrected --

BOARD MEMBER DIAMOND: Right.

DR. NYE: -- these numbers might change a little bit.

BOARD MEMBER DIAMOND: Okay.

DR. NYE: But even with that, we're confident that these are good listings and de-listings based on data prior to August 2010. They're accurate based on the --

BOARD MEMBER DIAMOND: Okay.

DR. NYE: They will be accurate, when we're done, based on the data prior to 2010. That doesn't solve the problem that we've heard people talk about a number of times today, including Karen Larson, is that we're not looking at data that is from August 2010 forward --

BOARD MEMBER DIAMOND: Right.

DR. NYE: -- even though it exists.

BOARD MEMBER DIAMOND: Right.

DR. NYE: It's -- we're going to get this done first before we go to that, so --

BOARD MEMBER DIAMOND: So by the time State Board gets it from -- gets this from us, from the staff, there will be as much -- all the information that we can possibly gather that -- from the data that we have up until 2010?

DR. NYE: Yes. Yes.

BOARD MEMBER DIAMOND: Okay. Well, I guess my only concern is there's such -- it's been such a long time that there has not been data gathered, and that is a concern to me. And I share the concern that Steve Johnson raised was, you know, erring on the side of caution in terms of de-listing, and for the, you know, for all of the communities for the listings, as well.

That's -- those are my comments.

EXECUTIVE OFFICER UNGER: And it's very helpful, I think, as we move forward towards the State Board --

BOARD MEMBER DIAMOND: Yeah.

EXECUTIVE OFFICER UNGER: -- (indiscernible).

CHAIR MUNOZ: Dr. J, did you have some comments?

BOARD MEMBER FAMIGLIETTI: Yeah. So I agree with everything you said, and I also agree with everything that was said by all the stakeholders.

So first of all, thank you all for coming. And we really appreciate hearing from you, and you took the time to come out here and show us your -- demonstrate your concern and your passion. And where's that woman from Santa Barbara? She was most pissed. You win the most pissed-off award, but in a good -- but in a very good way.

And so, you know, I really understand all of the sampling issues that you were talking about in space, in time, over the course of the day, the concrete channels and, you know, on and on. Everything that you've said in this whole six-year gap is just absolutely ridiculous. So I hope at the WQCC we can really push for some improvements next time around.

You know, I feel your pain. And as a scientist, I mean, the sampling issues, some of the -- you know, we have to do what we have to do, right, based on the information that we have, but I think we should take a look at whether it's justifiable based on, you know, one point of data taken, you know, at one specific point in time. You know, the stream temperature thing, somebody showed the annual cycle, but, I mean, there's great diurnal daily variations, as well.

So, you know, sampling is one of the things that I work on. And if you're not sampling at the frequency to which the change occurs, you're going to miss the true behavior. And, of course, we don't have the money to do that, but -- so something has to go.

CHAIR MUNOZ: Any other comments? I will make sure not to give the most -- what did you call it, angry -- angry --

BOARD MEMBER DIAMOND: Most pissed.

BOARD MEMBER FAMIGLIETTI: I called her most pissed.

CHAIR MUNOZ: -- most pissed award.

BOARD MEMBER FAMIGLIETTI: But in a good way.

CHAIR MUNOZ: Okay. I understand it's a good way. Most -- absolutely an activist.

Any others? Ms. Madelyn?

VICE CHAIR GLICKFELD: So I also want to thank everybody. The testimony that you provided, we got a whole CD of all of your comments. I, personally, am very grateful to our Chair and our Executive Officer for extending the time for comments so you were able to do what you were able to do and help our staff discover the problems.

So I wanted to ask our staff in general, you got extensive comments in writing. Were there issues that were raised today that you don't have the answers to that you will get the answers to, or did you really hear -- have most of these issues been raised to you before?

MS. PURDY: Yeah. I mean, I would say, to start out with, that most of what we've heard today is what we read in the written comments that we received. I did not hear anything that I don't think, in some form, was raised by these stakeholders and others in the written comments that they provided to us.

In answer to do we -- I think really, you know, the reason we had this workshop is in answer to your other question about do we need more information to address these things? I think in some cases we just needed -- we needed more time to fully evaluate them, which is what we're giving ourselves by having a workshop today instead of an action item. So we, in many cases, I think, have much of the information we need. There may be some situations where, you know, perhaps we'll be reaching out to stakeholders to get some additional information or perspective on some of these comments. But in large part, we, as both L.B. and I said at the beginning, we need the time to just go through and reevaluate the many, what we call, decisions, our recommendations, basically, and the lines of evidence that support those decisions on the basis of going through the comments that we received.

So it's really just the magnitude of the task that we need more time to work through each of these things and relook at some of the recommendations that we had made in light of the written comments. But I didn't hear anything really new from what was in the written comments.

VICE CHAIR GLICKFELD: Thank you. And my next question is, you know, a lot of people were very excited because there were de-listings and they weren't going to have to implement TMDLs. And then other people were really lucky -- really worried because there we de-listings and they wouldn't have to implement TMDLs. And there were other people that were very upset because there were new listings, and they thought it would lead automatically to new TMDLs.

Can you explain to all of us, including

the Board and the public, what -- if you were going to -- what happens next? You have a whole work program of existing TMDLs. What would you do once the State Board and EPA certify this list? Would you immediately apply these standards to the TMDLs, as has been suggested by one commented?

MS. PURDY: So I'll start and then I'll let others chime in, including Deb if she wants to.

So first of all, with regard to new listings, we do have a work plan that's laid out, and we have a number of -- you know, obviously, we have many TMDLs already in place that we're working hard to implement with stakeholders. We have -- we do have listings that, you know, we need to develop TMDLs, or even, you know, not related to this list but related to previous lists that don't have TMDLs yet. So we already have a work plan in terms of TMDL development that, at this point, does not include any of these new listings in the near future because we have a lot of additional work to just continue to address the listings that have already been on the list. We, of course, addressed a lot of them, as L.B. showed.

The good news is, is that we're seeing that many more of our water body pollutants combinations on the 303(d) List have been addressed by TMDLs, but there are still some that haven't been, even, you know, putting aside what we're discussing today in terms of new listings. So that won't happen for a while, probably not until, frankly, after the next listing cycle that you all consider, because we have sufficient work to address the current listings that we have on the list.

VICE CHAIR GLICKFELD: So would you suggest, based on that, that plans that are in place for our agricultural waiver for the MS4, for our POTWs for them to implement water quality standards are going to be pretty stable over the next few years? We have a work program. We can only move so many of these things through that the same time. So it's not like this is going to have either, from your point of view, bad effects or good effects for a while, it's just that it's a basis for planning in the future? And that probably what you'll be doing is once you use this information, because it's old, you'll be looking at new data before you decide to go ahead with the TMDL; right?

MS. PURDY: Right. Right. That's

correct.

VICE CHAIR GLICKFELD: We'll finally get to the new data --

MS. PURDY: Yeah. That's correct.

VICE CHAIR GLICKFELD: -- which is what everybody wants.

EXECUTIVE OFFICER UNGER: Yeah. And I think L.B. said that during her presentation, but that's what I wanted to assure the Board Members, that, you know, if in some manner, you know, say a new water body was listed as on the 303(d) Listing, needed an implementation plan or a TMDL or something like that to address that listing, any work that we would do to develop that implementation plan would involve a very thorough look at all data, not just the data that was used to list at this point, so --

VICE CHAIR GLICKFELD: So we're not derailing anybody off the path that they're on right now; that's right?

MS. PURDY: No.

EXECUTIVE OFFICER UNGER: No.

VICE CHAIR GLICKFELD: No?

MS. PURDY: No.

EXECUTIVE OFFICER UNGER: But we are -- I think we did make a decision, essentially, to essentially give ourselves the opportunity to try to make the list as we -- or the information that we have now the most correct and accurate list as possible --

VICE CHAIR GLICKFELD: Right.

EXECUTIVE OFFICER UNGER: -- moving forward, just so, essentially, we do manage our workload in a manner that we are addressing the problems and they're not, you know, not artificial problems that may be created by using only the dated data --

VICE CHAIR GLICKFELD: Right.

EXECUTIVE OFFICER UNGER: -- if you will.

VICE CHAIR GLICKFELD: And so I would also request, Madam Chair, that at the next Chair's call and at the next Executive Team call, Sam, that you talk about how crazy it is for us to be using 2010 data, and that we should not -- if we're going to go through these cycles where there's going to be a certain number every two years, we should each be able to use data that's the most current to our efforts and our analysis, because it just defeats the purpose.

MS. PURDY: Yeah. And I'd like to respond quickly to that, and to one other point that you raised earlier which is with regard to the 2010 data. We are, you know, we're all very distressed about that. And it was the rule that we were told to use in this instance, but we fully expect in the next listing cycle, which, I mean, ours will be some years down the road, but we expect at that point, we will have data up until probably a year before we would do the list. It will be much more current data. This was a very, you know, awkward and unfortunate transitional period, and we are not going to find ourselves in this position again.

VICE CHAIR GLICKFELD: Good.

MS. PURDY: So that will be much better.

VICE CHAIR GLICKFELD: Good.

MS. PURDY: The other thing that I did want to say in response to your first set of questions was that for things that -- with regard to the impact of listing or de-listing, you know, of course I'm speaking to the choir on this, but TMDLs are separate regulatory actions. So just because you're de-listing something or we're de-listing something, it doesn't take the TMDL away. The TMDL is a regulation that you've adopted that is in our Basin Plan.

And if we were to change it, which we've brought many of those changes to you over time, we brought Calleguas Creek metals to you recently, that that would be a separate action. And we would, again, as L.B. pointed out, we'd be looking at all the data, the most current data, to determine, is it the right decision to make revisions to that TMDL, remove pollutants from that TMDL, so that would be a separate action that you would take. So the TMDLs are not being changed in any way by the action to update the 303(d) List.

VICE CHAIR GLICKFELD: Thank you.

CHAIR MUNOZ: Okay. So in conclusion, I'd like to make a couple of observations.

First of all, I find it astonishing that the very folks who are here, probably the very folks who submitted comments but yet they're here, and they're here from far-away places with very busy schedules, but the commitment that you have to your jurisdictions is very well proven. And these are the kinds of meetings I like, where we sit down and we listen and we respond to your concerns and your recommendations.

Under crazy circumstances where we had to, you know, go a flight down the stairs and kicked out of a room and so on and so forth, and no microphones. So I want to thank each and every one of you because this is the new Water Board of Los Angeles. It's about listening. It's about working together to resolve problems and alleviate any fears or concerns that you have. And I want to thank, especially, the staff who does the listening and who does the responding. And so we're on a new frontier, I guess, here at the Water Board. So thank you so much.

We have one last informational item, which is based on recycling. So if you'd like to stay, you may. If not, thank you.

So we're going to take a two minute break.

(Off the record at 4:08 p.m.)

(On the record at 4:11 p.m.)

CHAIR MUNOZ: Okay, folks, we're going to get started on Agenda Item 10. First of all, I want to thank everyone who stayed and was patient to share your information, so we're going to be extra listening to what you have to say because I know it's been a long day for all of you, which means it's been a long day for us, as well, but this is very important.

So let's talk about the recycling water

projects. And we'll start from a report from our staffer, Ms. Cris Morris.

MS. MORRIS: Yes. My name is Chris Morris and I'm the Unit Chief for -- do I have to speak loud? Anybody in the back row over there? I'm the Unit Chief from Municipal Permitting. I will be giving the info item today to provide an update on the recycled water projects associated with the publicly owned treatment works, or POTWs, in our region. The topics I will be covering include an overview of the POTWs in our region, the recycle flow rates, the percent recycled from the major dischargers, a summary of the uses, and our permitting activities and a brief description of the future projects in our region.

Here are the POTWs in our region. And I know you can't read that very well, but if you're familiar with our region, you kind of have a good lay of the land. The Tillman, Burbank and L.A./Glendale plants discharge into the L.A. River.

Gerry, I want to see if you can keep up with me.

The plants discharging into the San Gabriel River include Pomona, San Jose, Whittier Narrows, Los Coyotes and Long Beach. The joint plant is located in Carson and discharges to the ocean. Terminal Island discharges to the Los Angeles and Long Beach Harbor. Tapio (phonetic) discharges to the Malibu Creek, but also has the capability of discharging to the L.A. River. Malibu Mesa discharges to the Marie Canyon Creek (phonetic). The plants located -- Gerry, are you not keeping up?

MR. RABELO: (Off mic) (Indiscernible.)

MS. MORRIS: Okay. The plants located in the Calleguas Creek Watershed include Simi Valley, Moorpark, Hill Canyon, Camarillo and Camosa. The plants located along the Santa Clara River that have NPDES permits to discharge to the river are Saugus and Valencia. Ventura discharges to the Santa Clara Estuary, and the Oxnard plant discharges to the ocean. We also permit treatment plants on San Clemente Island and the Catalina Island.

What's wrong, Gerry? Okay.

MR. RABELO: I wasn't any help.

MS. MORRIS: Okay. No more help is needed.

The Title 22 allowed uses for recycled water depends on the level of treatment. This is a simple schematic that shows the different levels of treatment of a POTW. A plant that only includes primary and secondary treatment can only produce recycled water with limited uses and includes constraints concerning public exposure.

As an example, both Hyperion and the joint plant produce only secondary effluent and discharge to the ocean. The POTWs that discharge to fresh water are required to undergo the extra treatment steps to filter out fine particles and chlorinate for disinfection. This tertiary effluent, in many cases, is recycled for irrigation or industrial use. If the tertiary treatment is further treated with microfiltration, reverse osmosis and an advance oxidation process for disinfection, this advance treated water can be used for seawater barriers and indirect potable reuse through groundwater replenishment in lieu of potable water.

So now, going back to my map, I've shown here which plants include secondary treatment and those that include tertiary treatment. The rest of the plants include the filtration -- the rest of the plants include the filtration step, so the effluent is tertiary treated. The advance treatment plants treat the effluent from an adjoining POTW and are shown with an A. These plants are primarily along the coast, so the advance treated recycled water can be used for seawater intrusion projects.

Before I show the recycled flows from our major POTWs, I thought it would be useful to show you the amount of recycled water available in our region based on the adopted permits for the last 30 years. The advance treatment plants for the seawater intrusion barriers were primarily responsible for the increases between 2001 and 2007, but the sharp increase starting in 2008 was due to the adoption of the Oxnard Grade Permit and all of the nitrification/denitrification upgrades to tertiary plants.

Although this is the amount of recycled water available based on the permits, the amount that can be recycled may be impacted by a water rights decision to provide a minimum flow requirement in the receiving water. It is important that the Regional Water Board initiate the dialogue with the Division of Water Rights before approving additional recycled flows that reduce the amount of treated effluent discharged into inland waterways.

Based on information submitted to the Regional Water Board, I've summarized the recycled water flows, the amount used for groundwater replenishment using surface spreading, and the percent recycled for the POTWs in our region. I separated out the results between POTWs with subsequent advance treatment and those without.

This is the first table of POTWs without subsequent advance treatment. It includes the discharges into the L.A. River, Malibu Creek, the San Gabriel River and the Pacific Ocean. Currently, the Division of Water Rights is evaluating petitions from the City of Glendale and from the City of Burbank before they are allowed to expand their recycled program.

As you can see from this table, the Pomona, San Jose and Whittier Narrows WRPs have the highest percent recycled. The recycled water that is not needed by their users is discharged to the San Gabriel River. Per the reports from the County Sanitation District, the remainder of the flow that is discharged to the surface water body is diverted into the Montebello Forebay for groundwater recharge. During rainfall events when there is inadequate capacity in the spreading basins, the flow in the river is not diverted and the recycled water is discharged to the ocean.

So here are the rest of the treatment plants without an adjoining advance treatment facility that are located in the Calleguas Creek Watershed or adjacent to the Santa Clara River.

VICE CHAIR GLICKFELD: Could you just stop for a minute before --

MS. MORRIS: Yes, ma'am.

VICE CHAIR GLICKFELD: -- we go ahead. Go back to the other page.

MS. MORRIS: Sure.

VICE CHAIR GLICKFELD: So we have the Hyperion Plant, so --

MS. MORRIS: No. Hyperion Plant is not on there.

VICE CHAIR GLICKFELD: But the Hyperion Plant actually doesn't just discharge to the ocean, they discharge to a treatment plant that the West Basin has.

MS. MORRIS: That's right.

VICE CHAIR GLICKFELD: So do we count that too?

MS. MORRIS: So that's the third table.

VICE CHAIR GLICKFELD: Okay. Great.

Thank you.

MS. MORRIS: So I counted Hyperion as one with advance treatment after.

VICE CHAIR GLICKFELD: Okay.

MS. MORRIS: Okay. So Camosa -- so as you can see from this, Camosa is able to recycle as much as 96 percent of their treated effluent. One of the reasons for this high recycle rate is that they use five retention ponds to accommodate the fluctuations and demand.

The recycle rate for the POTWs that have subsequent advance treatment in this table include the recycle flows from the advance treatment facility. The advance treatment facilities are needed to produce the higher water quality necessary for the seawater intrusion barriers, or to satisfy water quality requirements necessary for recycling uses, including the 36 MGD of internal recycling at the Hyperion Treatment Plant and the recycling that is done by West Basin at the EC Little (phonetic) plant, the percent recycled for Hyperion is 30 percent. The Oxnard WRP only has a ten percent recycle, since they're still building their user network for their advance treated water. And they do not have their indirect potable permit yet in place.

So here's a summary of the recycled rates for the past year. These are based on the 2016 annual reports that we've received. Based on the total amount of treated effluent produced, the overall recycled rate for the region is 24 percent.

Yeah. There we go.

If we include recreational impoundments, such as the Japanese Garden at the DC Tillman Plant (phonetic), and the minimum flow requirements for National System Restoration of Wetlands and Wildlife Habitat (phonetic), and that would be like the minimum flow requirement coming from Ventura, the beneficial use distribution for the recycled water in our region is given by this pie chart. However, the reports that we used to generate this information did not necessarily have the breakdown that we need. In the next few weeks we are planning to send a letter to the dischargers requesting a breakdown, such as this, for all their future recycling annual reports. And an example of that is in some cases, they don't tell us that they're using the irrigation for golf courses. So the golf course irrigation is probably low, and the landscape irrigation is probably a little high.

As you probably know, a lot of the recycled water in the state is distributed using purple pipe. An example of a purple pipe distribution system is shown on this map for the City of Los Angeles. The purple lines were already in place, and the green ones are in progress.

The recycled water that is discharged to the San Gabriel River upstream of the Montebello Forebay is diverted into the Rio Hondo and San Gabriel spreading grounds to replenish the groundwater. Given the difficulties of accurately measuring the amount of water that is diverted to the spreading basins, it is unclear how much of the effluent from the Pomona, San Jose and Whittier Narrow plants actually end up in the groundwater. The only reasonable accounting we have is what the water -- how much water was discharged from the plants. This lack of accurate flow information for the diverted water makes establishing a baseline flow, which is needed for the San Gabriel River water rights analysis, very difficult.

Another beneficial use of the recycled water is injection for seawater intrusion barriers. In Region 4 we have three barriers managed by the Water Replenishment District. They are the West

Coast Barrier which gets its water from the ECC Little Plant by Hyperion. The Dominguez Gap Area uses advance treated water from the Harbor Water Recycling Project associated with the Terminal Island Plant. The advance treated recycled water from the Vanderlans Treatment Facility near the Long Beach plant supplies water to the Alamitos Barrier.

While I'm on this map let me -- Gerry, would you also show the GRP site, which is located up near the Montebello Forebay? Thank you.

I included this slide to illustrate why we need the seawater intrusion barriers to protect our groundwater from contamination. The seawater intrusion barrier uses high-pressure water to form a buffer between our drinking water basins and the ocean. The top section on the top -- the cross-section on the top panel of this slide shows a typical coastline before 1950. The fresh water and seawater meet together underground in the aquifer. As the city grew and water was extracted for drinking and agricultural uses, the freshwater table liquid level decreased and pumping pulled the seawater in.

The second panel shows the situation

facing water managers in the 1950s after over pumping the groundwater from the basin. The 1960s the City of Los Angeles had responded by injecting fresh water at seawater intrusion barriers. A pressure barrier of water between the ocean and the drinking water allowed fresh water to be pumped out, but prevented the seawater from moving in to contaminate the groundwater. Advance treated recycled water is now replacing much of the potable water that was previously injected into the seawater intrusion barriers. In addition to preventing seawater intrusion, the injected water also supplements the inland aquifers and results in incidental indirect potable reuse.

Now I would like to describe a few of the current permitting activities for recycled water, the Groundwater Reliability Project, or the GRP project, is currently under construction, and we are working on the draft permits now. The objective of this advance treatment facility is to recharge the groundwater in the Montebello Forebay by either using the spreading grounds and/or direct injection into the aquifer. The supplemental recharge wells will allow continued operation while the spreading grounds are not available.

In addition to the artist's rendering of the plant, this slide shows the location of the GRP site in relation to the San Jose Plant, the turnout structures, and the Montebello Forebay. The permitting should be complete this year, and startup will follow in 2018.

We are also working on a draft permit for the Indirect Reuse Replenishment Project for the Upper San Gabriel Valley Municipal Water District. If recycled water is available in the future, the tertiary treated effluent from the San Jose Creek West WRP would be used to recharge the groundwater at the Santa Fe spreading grounds. As of November 2016, the Sanitation Districts of L.A. County informed the Upper San Gabriel Valley MWD that recycled water is not available for this project.

In addition to the amendment to the Oxnard WRR to extend the amount of time that the city can use the Calleguas Brine Line (phonetic) to transport the advance treated recycled water to the Pleasant Valley farmers, we are also reviewing the Phase 2 Engineering Report to allow the recycled water to be used to recharge the groundwater via injection wells. This is the first project in this region to store advance treated recycled water in an aquifer for retrieval at a later time to supplement drinking water.

We are also working on the permitting for Whittier Narrows and Simi Valley to transition them to the General State Board WRR for recycled water use. In addition, Pasadena is moving forward with their plans to use the recycled water from the L.A./Glendale Plant. And the recommended permitting for this project is also the General State Board WRR Permit. The 1211 Water Rights Petition for this project is still being reviewed by the Division of Water Rights. The City of Los Angeles is intending to use the general permit, as well, to expand the Hyperion Recycled Water Program, including supplying water to the expansion of LAX.

So now I'd like to move into future projects.

The City of L.A.'s Groundwater Replenishment Project is part of the City's Integrated Resources Program to expand the use of recycled water. Specifically, this project would use the recycled water from the DC Tillman Plant to include indirect potable uses, such as groundwater spreading. To accommodate this project, source water currently discharging to Hyperion will be diverted to DCC Tillman. Phase 1 of a pilot program has already been completed and Phase 2 is already in progress. The Environmental Impact Report for this project was approved in December 2016. The treatment process includes microfiltration, reverse osmosis and advance oxidation process. The scheduled completion date is 2022.

The Las Virgenes Municipal Water District already recycles approximately 60 to 70 percent of Tapia (phonetic) Water Reclamation Facility's final effluent for landscape irrigation and operation of their composting facility using a network of purple pipes. Depending upon the recycled water demand, the remainder of Tapia's WRF's effluent that is not recycled or discharged to maintain a minimum flow in Malibu Creek will be treated through their Pure Water Project. This project will treat Tapia's WRF's final effluent by microfiltration, reverse osmosis and advance oxidation.

The advance treated final effluent will be conveyed to the Las Virgenes Reservoir for indirect potable reuse by surface water augmentation. After the required detention time, mixing and dilution within the potable water reservoir, the blended water will be treated by filtration to meet drinking water requirements before being distributed to potable water customers. This customer is scheduled for completion in 14 years.

The Regional Recycled Water Supply Program is a joint effort with MWD and the Sanitation Districts of Los Angeles County. The purpose of this project is to treat the secondary effluent from the Joint Water Pollution Control Plant in Carson and to use it for groundwater replenishment in the region. This is an indirect potable reuse project similar to Water Factory 21 in Orange County. Design and procurement for this project are currently underway, actually for the small unit, the test unit. And the anticipated start date is in the beginning of 2018.

VICE CHAIR GLICKFELD: Excuse me. Is this the GRP project again?

MS. MORRIS: No. No. This is --

VICE CHAIR GLICKFELD: This is something else?

MS. MORRIS: This MDW's project, where they're going to take water from the joint plant, treat it, and then use it for groundwater --

VICE CHAIR GLICKFELD: Okay.
MS. MORRIS: -- recharge.
VICE CHAIR GLICKFELD: And what's the source of water for the GRP program?
MS. MORRIS: The joint plan? Oh, the GRP is San Jose.
VICE CHAIR GLICKFELD: Okay.
MS. MORRIS: And I'm sure Ann is going to talk a little bit more about this one.
COURT REPORTER: I think the battery needs to be replaced on this. Can you help me, Gerry? This is not working.
MR. RABELO: Yeah.
COURT REPORTER: Go ahead.
MS. MORRIS: Another future project is the City of Santa Monica's Indirect Potable Reuse Project. This project is a component of the larger SWIP project, or Sustainable Water Infrastructure Project. Instead of discharging wastewater to Hyperion for treatment, the city plans to build an advance treatment facility and to use the recycled water for non-potable reuse via the existing purple pipe and for indirect potable reuse for recharging the aquifer. The timing for this project is to complete the IPR permit process by 2022.

Another future project is the potable reuse project (indiscernible) and it is the potable reuse project that the City of Ventura is planning as soon as the minimum flow requirements to the Santa Clara River Estuary are resolved. To prepare for this project, the city operated a demonstration project to produce water from their tertiary treated effluent to the highest quality that is suitable for drinking. That project, that demonstration project was completed last year.

So that's the end of my presentation. I think the plan is to have County San come up next, so then when you have questions -- or does anybody want to ask questions of me before I sit down? Yes, ma'am?

CHAIR MUNOZ: I don't have a question, but wow. What a report and how hopeful and wonderful it is and amazing.

MS. MORRIS: There's a lot going on.

CHAIR MUNOZ: Yeah, a lot going on and it's wonderful. We need to get (indiscernible) for a lot of people, so they can see all the great work that's happening.

MS. MORRIS: Okay.

BOARD MEMBER STRINGER: I have a question

just on the technology that's being used is there
just a wide variety of technology, or are they
gravitating all towards the same kind of stuff?
MS. MORRIS: Well, most of the plants --
BOARD MEMBER STRINGER: (Overlapping)
(indiscernible)
MS. MORRIS: -- have been using
microfiltration RO. The advanced oxidation kits
kind of vary depending upon the water quality. The
MWD plant, they're going to MBR, which is Membrane
Bio Reactor, which is a little different. And I'm
not as familiar with it, so that's why they're
going to do this demo unit to see how it works out.
BOARD MEMBER STRINGER: Yeah, okay. Is
that something that we're tracking? The
technologies and what's -- because I know there's a
lot of new technologies people are talking about,
but none of it's getting deployed at scale, so I
don't know --
MS. MORRIS: Yeah, in terms of the
technology and keeping on top of it all, that's
more DDW. (phonetic) I mean, we try to stay up
with them, but they're really on top of the
technology and percent removals and whether they're
adequate in everything else.

MS. SMITH: You can ask for a presentation.

BOARD MEMBER STRINGER: That's all right.

MS. SMITH: But the basic (indiscernible) is found in Orange County's big plan and that's what other people are using. This MBR is a little bit new. Sam and Cris and Dave and I go to meetings every few months with (indiscernible) County San and others and we're learning more about that, but yeah DDW is the (indiscernible).

EXECUTIVE OFFICER UNGER: Yeah, DDW, they're the lead agency from a technical review of these technologies, but the MBR is fairly new. There's a lot of attractiveness to it relative to some of the MFRO, the reverse osmosis type process, it's less energy from (indiscernible).

And apparently what DDW, we've learned at the last meeting DDW is relying heavily on some work that's happened over the last two to three years in Australia where different membrane bioreactors have been used and they're finding successful applications of it. So moving ahead cautiously they'll get it up in a smaller plant first, using this technology. And I think that'll be one of the -- certainly the first one in our region, with MBR.

MS. MORRIS: Yeah, Anheiser Busch is the other one that's looking at it.

EXECUTIVE OFFICER UNGER: Yeah, Anheiser Busch is looking at as well for their (indiscernible)

MS. MORRIS: Yeah, one of the reasons why they want to do this for the joint plant, is because it's only a secondary plant. They don't already have a tertiary, so they're going to kind of going by not having that filtration they want to go into MBR and kind of skip a step and make it more economical.

EXECUTIVE OFFICER UNGER: So two steps in one basically.

MS. MORRIS: Yeah.

MS. SMITH: So (indiscernible) again.

MS. MORRIS: Yes.

BOARD MEMBER YEE: So what's about the average cost per acre foot of this --

MS. MORRIS: Oh, you all!

BOARD MEMBER YEE: No, I know.

BOARD MEMBER STRINGER: I let him ask that.

BOARD MEMBER YEE: -- of the tertiary

treatment?

MS. MORRIS: I'm going to let Ann hit that one, because she's -- all of their plants are tertiary and they have a very, very large recycle program.

BOARD MEMBER YEE: I just want to compare it to de-sal and to imported water and that kind of thing.

MS. MORRIS: Okay. Well, if she can't help you with a number I will dig up a number for you.

BOARD MEMBER YEE: Okay.

EXECUTIVE OFFICER UNGER: Yeah, it might be a good idea to come back and (indiscernible) later this year.

VICE CHAIR GLICKFELD: The reason we have so many of these plants is because imported water went through the roof.

MS. MORRIS: Yeah, in some areas it's even worse than others, so that's why Sam (indiscernible) was looking at doing something original.

BOARD MEMBER FAMIGLIETTI: Yeah, I think it could be about $1,000 an acre foot, at least in the Orange County Water District, which is significantly less than the water desal.

BOARD MEMBER YEE: Yeah, for the tertiary. (indiscernible) that's really good.

MS. MORRIS: Oh, okay. Oxnard is going to talk about that too, so let's give them an opportunity before I put my (indiscernible).

CHAIR MUNOZ: Okay. So let's move on to the next speaker. Welcome back.

MS. HEIL: I was so worried about making my time limit for the last talk I did that I forgot to introduce myself. So, I'm Ann Heil. I'm with the Los Angeles County Sanitation District. And I want to start by thanking you for giving me the opportunity to talk to you today about our recycled water program. We're already on a push to go out and get the word to everybody so we do it as much as we can.

And I noticed Chair Munoz's nice purple jacket today. And purple is the color of recycled water. So, our recycled water team wears purple on Thursdays. We call it purple Thursday. So, David Hahn (phonetic) has purple on, too. So, we're really pleased.

MS. MORRIS: I didn't get the memo.

MS. HEIL: No, I know purple Thursday.

Yeah, there's a presentation.
EXECUTIVE OFFICER UNGER: Yeah, we'll get copies out of anything you need.
MS. HEIL: So, the mission of the sanitation districts is to take the 400 million-gallons-a-day of wastewater that we received and turn it into valuable products. We make recycled water. We make renewable biogas during our treatment of solids, and we make a nutrient-rich fertilizer compost from the product. So, and we want to do this while protecting the environment and public health along the way.
So, our entire system was actually designed to maximize production of recycled water. We started looking at water reuse in a big way. In 1949 we did our first big report on it. And as our system grew from one central treatment plant, you can see it on that slide. It says JWPCP down in the corner. That was our first treatment plant.
As our system grew, rather than just expanding that plant and building lots of sewers to get water to the plant, we instead located water reclamation facilities all around the basin so they would be close to the users. And to save money so you didn't have to pump the recycled water back

uphill.

So, our first real foray into a modern water reclamation plant, we have some very old, little ones that we had as the system grew, was our Woody Orneros Water Reclamation Plant. And that's actually a national civil engineering landmark. That was built in 1962, the same year that I was born. And it was the first plant specifically designed to recharge groundwater with recycled water. So, we're very proud of that one. And as the system grew we put them all around.

The main part of our system that you see down in the lower part, that big area, it's called our joint outfall system. So, that's a system of six interconnected treatment plants, or there's seven. There's six water reclamation plants, and then the one central location, the joint water pollution control plant.

So, the solids get sent down to joint plant, so we don't have to do solids treatment everywhere. It saves a lot of money and it allows us to take advantage of economies of scale.

And then, we have two smaller systems. One is in the Santa Clarita Valley. You'll see it over on the left where it says Saugus and Valencia.

Those two are interconnected.

And then up in the very top is our plants out in the Antelope Valley, our Lancaster and Palmdale plants. And those are regulated by the Lahontan Regional Board, up there.

All of our water reclamation plants, except for we have one teeny, tiny reclamation plant in La Canada that just serves a golf course and that just does secondary treatment. And you can water a golf course, a restricted use golf course with secondary treated water.

But other than that, all of our water reclamation plants now have full tertiary treatment with nitrification and denitrification to bring the levels down.

So, we are a major producer of recycled water. We're one of the largest producers of recycled water in the country. And I think you're all aware that recycled water is a really important part of our local water portfolio. So, we continue to work on our program.

BOARD MEMBER STRINGER: What's the percentage?

MS. HEIL: I'll get some numbers for you here.

BOARD MEMBER STRINGER: Oh, you are. Okay.

MS. HEIL: Yeah. Ask me at the end if I don't get them to you.

BOARD MEMBER STRINGER: Thanks.

MS. HEIL: Okay. So, we partner -- now, one thing that's very different about us from City of L.A. or a number of the cities is we can't sell the water ourselves. We're a producer of the water. We have to partner with cities and water agencies. And this is due to duplication of service provisions under the State Code. So, if we came in and started serving recycled water in someone's water agency, they would be stranding our infrastructure. So, we're not allowed to do that.

So, we have to partner with water agencies and cities. And we partner with some 25 different ones. We have contracts with them to do that. But we don't just sit back and provide the water to them. We provide a huge amount of support at our end, as an agency, to help do that.

So, we'll give them easements at our water reclamation plants so they can put in their pump stations. We'll do O&M. We'll take care of their pump station if they want us to. We monitor the recycled water quality. We do the engineering reports to the Regional Board. We report on usage. We actually do site supervisor training every month or two. We have handbooks. We do inspections, a lot of things.

So, we're not really in control of the expansion of the system. It really falls on our partners and a lot of it really is based on economics. So, how much does the water cost, really is a good question and I'll get to that at the end.

So, our recycled water is used at almost 900 sites. We used 109,000 acre feet in 2016 that was beneficially reused, enough to supply 273,000 homes.

Now, Chris said there was 100 used across the Basin. That includes some water up in the Lahontan area. That's not just in the L.A. Basin. The water's actually all beneficially reused in our two Lahontan plants.

So, we serve a wide range of non-potable uses, all the usual landscaping, golf courses, cemeteries, schools, parks, playgrounds, freeway median. We also served some industrial uses. Our recycled water is used in cooling towers. It's used for making cement. It's used in a carpet dying facility. It's used to reinject into the oil formations down in Long Beach.

So, the non-potable is through the purple pipe and there are limits on what you can do with purple pipe. It's actually very expensive to build the purple pipe infrastructure. And beyond just money, there's the issue of supply and demand. So, everyone wants all the recycled water on a hot night, in the middle of night in August. That's when they want to water the grass.

Well, we're a wastewater treatment plant. No one's flushing their toilet in the middle of the night. We do not have much water in the middle of the night to give people. So, storage becomes a really big consideration if you want to get anything beyond minimum use of your thing.

And then beyond there there's seasons. In the winter no one wants the water when it's pouring rain. In the summer, everyone wants it.

So, groundwater recharge is actually our highest volume use. For the joint outfall system, so down here in the main part of the Basin, 73 percent of our recycled water went to groundwater recharge because you don't have these barriers to reusing it.

So, we have two existing recharge programs in place. Chris mentioned both of them, actually. The Montebello Forebay receives water from three of our water reclamation facilities. This is where we started recharging with that Woody Orneros plant back in 1962.

And this gets tertiary water from our three plants. And then, you know, it's not just the water. The treatment doesn't end at tertiary. Actually, as the water percolates in the ground it gets more treatment, called soil aquifer treatment. And this is actually well-studied and well-characterize, the amount of breakdown that occurs during this soil aquifer treatment phase for it.

I'll talk to Chris later, but we actually produce a separate recycled water report for the Montebello Forebay that lays out how much water is coming and spread based on L.A. County Department of Public Works numbers.

And then, the Leo Vander Lans Water Treatment facility takes water from our Long Beach Water Reclamation plant and it treats it with the technology that everyone's talking about, microfiltration, reverse osmosis, UV, and advanced oxidation with hydrogen peroxide. And that's injected into a seawater barrier.

So, Chris already went over some of the projects coming online, so I'm not going to go into them in too much detail. The GRIP project, again, is served from our San Jose Creek West Water Reclamation plant. That one's farthest along. It's under construction. It's going to be a 10,000-acre-foot project.

The IRRP, you see there, will be up by Santa Fe Dam. Chris mentioned this one's really a difficult issue because they tried. They started to do this project in the 1990s, the early 1990s. And it moved in fits and starts. It was going and Miller Brewery got in the way because it's right there. There were public reception issues, so it took a step back.

They solved the Miller Brewery issue. Then, there was the issue of the water was going to go in the river and what are the numbers that are going to apply? So, that got held up. So, there were some court decisions about the numbers that went in the river.

So now, they're trying to move it again but we don't have any water anymore for it.

VICE CHAIR GLICKFELD: So, this is a dam way up to the top of the watershed, so you're going to pump all the waste?

MS. HEIL: The water will have to go up, yeah.

VICE CHAIR GLICKFELD: That's going to be a lot of electricity.

MS. HEIL: It is, yeah. This will be at the corner of the 210 and the 605. And that's one of the beauties of the Montebello Forebay project. That is all gravity. We just do the tertiary treatment. It flows out of the plant by gravity. It flows down by the river by gravity. It goes into the spreading basins by gravity and it percolates down. There's not a cent of --

VICE CHAIR GLICKFELD: So, why did they choose that site? Why wouldn't they choose a site near the joint plant?

MS. HEIL: Because this is the Upper San Gabriel Valley Municipal Water District that's doing it.

VICE CHAIR GLICKFELD: Oh, of course, why not?

MS. HEIL: And they're up in the main San Gabriel Basin. So, they need water in the main San

Gabriel Basin. There's no -- we don't have any treatment plants sited that far up in the Basin. So, the main San Gabriel Basin is way down in terms of levels.

VICE CHAIR GLICKFELD: So, you couldn't take the joint water and give it to the West Basin and the Central Basin, and then take some of the plants that you're now using for the West Basin and Central Basin and give it to the San Gabriel Basin so we don't have greenhouse gas issues?

MS. HEIL: Well, the water would still have to get pumped up to the San Gabriel Basin.

BOARD MEMBER STRINGER: There's still an elevation change.

MS. HEIL: You can't get around it. And people are looking at putting satellite treatment plants in up there, but that water's already all taken.

VICE CHAIR GLICKFELD: Yeah.

MS. HEIL: You can't site a new treatment plant there. It's already allocated. It's all gone from those three treatment plants, San Jose Creek, Pomona, and Woody Orneros. This is done.

So, you know, it's not that we have none. We've told them they can take as-available water in a winter year like this perhaps they can do something.

There's one out in Palmdale that you guys probably don't care too much about. And Santa Clarita is actually looking into groundwater recharge, as well.

And I think everyone's really interested in our big project that we're looking at with Metropolitan Water District. And this would take water from our Joint Water Pollution Control plant.

Now, we haven't built any recycled water infrastructure from this plant, yet, because it's too salty, basically. We route high salt waste around our water reclamation plants down to the joint plant. So, in order to reuse that water you have to de-salt it, and it's been too expensive in the past. But the numbers are starting to work out.

So, there will be this big regional project with Metropolitan Water District, with a design capacity of 150 million gallons-a-day, which is 168,000 acre feet.

This water, right now the net cost project for this one is 16 or 17 hundred dollars an acre foot from it, for the water.

So, there's a demo project plant going in. Construction is out to bid right now on a half MGD demonstration plant. And as was mentioned, it would use membrane biological reactors, reverse osmosis, and then advanced oxidation for the treatment.

And that water would go, Madelyn, up to the main San Gabriel Basin, as well. So, that's got to go all the way uphill. And they're also looking at sending it over to Orange County.

VICE CHAIR GLICKFELD: Really.

MS. HEIL: And then, this would also go to West Basin and Central Basin for a recharge. So, it's so big that it would have to go around the Basin.

VICE CHAIR GLICKFELD: A lot of power panels.

MS. HEIL: Yeah, exactly. Okay, so we're continuing the Love Our Recycled Water Program. It's integral to our mission statement. And we're trying to continue to use it as much as we can given the constraints that we have.

So, we've mentioned San Jose Creek, Pomona, and Woody Orneros, those three plants capped out, done. It's really hard when cities come to you, saying they want to put in more purple pipe and you're like, we just don't have the water for you. So, we're trying -- the ones that are already funded, we're letting go ahead. But you just have to say no. Rowland Heights wants to do a big project and water's just not there.

We've had a 25 percent decrease in our water. Our water is now at 1968. The volume of wastewater that we get every day is the amount we got in 1968. Anyway, 1968, fun fact.

VICE CHAIR GLICKFELD: I don't know if you want to address all the water in that how much water is still dumped?

MS. HEIL: Well, Hyperion we don't do. So, City of L.A. can talk about it.

VICE CHAIR GLICKFELD: I'd love to hear about that, yeah.

MS. HEIL: Right now, our flow is 250 million gallons a day.

VICE CHAIR GLICKFELD: So, next, you're on.

MS. HEIL: Next. And so, we think about our -- from the Joint Water Pollution Control plant is 250 million, MGD, and that's all going to the ocean. But again, we think of it as an integrated system. We've been recycling water from our system all along. It's just that we do it from different treatment plants.

So, for the recycled water that we produce in the main part of the Basin, we manage to reuse right now 80 percent of the recycled water that we produce. So, we're doing really well.

At our Long Beach, it's really interesting the City of Long Beach owns all the water rights, in perpetuity, from the water we produce free from our Long Beach Water Reclamation plant. They use about half the recycled water now. We're working with them. We really want to find ways for them to use more.

Our Las Coyotes plant only uses about 28 percent. Chris's slide said 20. It's somewhere around there. So, we have water there.

Central Basin is looking at -- Central Basin's Water District is looking at expanding their system a little more out of Las Coyotes. But that really needs storage. They don't have storage, now, so they can't even pick up that diurnal perk. Because in Long Beach, on that hot day in August Las Coyotes, the flow gets below the recycled water demand. They're just offset a little bit is the only way we're doing it.

In the San Gabriel River, we are limited now in expanding. We're working on an adaptive management plan because we're going to be taking out of the river, even to supply GRIP, to allow us to reduce the dischargers while maintaining this critical habitat. It's for the least turn. And that is quite a process in itself.

I think you're going to see that we need to do that so that we can put in our water rights application with Department of Water Resources, and under Water Code Section 1211. And that's really holding up, now, around the Basin, these recycled water projects. It's really a critical issue.

And in Santa Clarita we can't expand at all right now. We're only using 3 percent of the recycled water. And that is due to concerns about the Unarmored Three Spine Stickleback and having adequate water in the river for them. So, that has to get sorted out before we can expand our Santa Clarita system.

So, I promised some numbers. Oh, sorry, I see on my notes I just want to mention that El Dorado Lakes does not get any of our recycled water. It's located right near us. We're not the cause of harmful algal bloom. That was the first thing we dove in and looked at when we thought of using that because we water the grass in the park, but it does not go in the lakes.

So, cost. So, we have a long-standing cost structure for recycled water. So, when we produce our tertiary water it's already produced, you're paying for it through your sewage fees. But we do, when we serve the recycled water, get some cost recovery from it. So, we base it on a fraction of our operation and maintenance costs for the treatment plant.

So, we have sort of what's called the Shared Savings Program. So, we help -- we give people lower rates when they're developing their infrastructure. And then based on that there's a floor, they have to pay at least 30 percent of our O&M cost for that water, up to 100 percent if all of their infrastructure is fully paid for and done. And that runs $200 or $300 an acre foot right now, if you're at that 100 percent cap. So, that's the tertiary water.

VICE CHAIR GLICKFELD: It's $1,000 for imported water, then $200 or $300 is --

MS. HEIL: So, that's why people are

willing to pump it up, too, it's cheaper than imported water.

And I will let you know we're going to continue to focus on recycled water at the sanitation districts. We intend to continue to promote it at any opportunity we get. And we'll continue to work with our partners to expand, again within these constraints that we're starting to bump up against.

CHAIR MUNOZ: Okay, thank you.

BOARD MEMBER YEE: So, Ann?

MS. HEIL: Yes, sir?

BOARD MEMBER YEE: In the vernacular of the food system, which I understand, are you the producer and distributor?

MS. HEIL: We are the producer. And we don't -- we have intermediate folks. Some people it goes through five hands before it gets to the end user.

BOARD MEMBER YEE: You partner for the distribution.

VICE CHAIR GLICKFELD: They use the spreading grounds a lot.

MS. HEIL: Well, the spreading grounds is, again, a partnership with water district. They're the ones responsible for filling the Basin. And then, L.A. County Department of Public Works actually operates the Basin.

So, we don't really count ourselves as a distributor. A distributor would be someone like Central Basin.

BOARD MEMBER YEE: In some cases. In some cases.

VICE CHAIR GLICKFELD: And doesn't the Flood Control District or somebody meter what you put in with your pipe from your discharge?

MS. HEIL: Oh, absolutely.

VICE CHAIR GLICKFELD: So, they actually -- they do know -- you do know exactly what goes into the ground in terms of at least what goes into the spreading basin and doesn't evaporate.

MS. HEIL: Yeah, there's meters on a lot of different things. Flow meters are so awful. You try to get them to balance, you know, and it's just they're not as accurate as we would really like them to be. But, yeah, we do meter what -- well, I think WRD meters what goes into the spreading grounds. We meter what we put into the river. Some of it does percolate along the way and just replenishes that -- it replenishes the Main

Basin, the lower part of the Main Basin, not the Central Basin which runs --

VICE CHAIR GLICKFELD: So, you mentioned a couple of constraints. There's not much water left. We're using less water, so we can't recycle what we don't have.

MS. HEIL: Right.

VICE CHAIR GLICKFELD: And there's also the issue of proximity and the ability to place a high quality tripping plant next to or close to the sewer treatment plant.

What other kinds of constraints do you see in the future toward more recycling?

MS. HEIL: I think that the big things are sorting out what we have to put in the river. We have to get that done. And then beyond that it really comes down to money, basically. I mean, there's huge public acceptance, now, of recycled water. It's really money that makes these projects go. And when the economics pencil out, the projects go. If the economics don't pencil out, the projects don't go.

So, when the money came for Prop. 1 everybody ran for it, right. That money just evaporated right away and they got three times the applications that they had the money for.

So, that's what it's going to take, you know, expanding out the Joint Plan. You know, one of the constraints there was just having a partner big enough to handle a project that could really do it justice.

Because, you know, Orange County, the Orange County Water District, the Orange County San, they're right next to each other. You know, you had one player. But in the L.A. Basin it's just a very complicated system with so many different players there.

VICE CHAIR GLICKFELD: Yeah.

BOARD MEMBER STRINGER: Is there a role for the private sector in this, in your mind?

MS. HEIL: Some of the water agencies are held by private companies, like Liberty Water Company I think is a private one. So, some of them are --

BOARD MEMBER STRINGER: I'm talking about in the infrastructure side to help --

MS. HEIL: If you had a big investor that wanted to come in and do it, I don't know who would, but I mean it's certainly there. Right, that would build it and then charge people back for it. I think we'd be a little leery about their financial capacity and stuff, right.

We work with a lot of private, third-party places in the biosolids round, right. Everyone has a great idea for how we're just going to make all this energy out of the biosolids.

BOARD MEMBER STRINGER: Sure, of course.

MS. HEIL: And sometimes the ideas aren't as well thought out as they could be. Sometimes they don't have the financial wherewithal to get them through. Really, it's been we haven't really hit gold on any of those partnerships, yet, but we keep looking.

BOARD MEMBER STRINGER: Great.

BOARD MEMBER YEE: So, in your vision where are we in 2040 with all this?

MS. HEIL: 2040, I hope the NET project is all built out, right. I mean, we're going to need that water. You know, it's really awkward. From a recycled water stand point a five-year drought is good. Because when it rains people drop the recycled water projects. So, if you have a long stretch with no rain you move a long way forward. And then it rains and everyone sits back for a little while, right, and then you get a few rainy years. And then, you get another stretch of dry weather and everything moves forward again.

So, I think by 2040, and I think people recognize now, especially with the Governor's thing, like the drought is over but you still have to conserve. I think that mentality has sunk in, now. So, I think by 2040 I think NET will all be built out and I think all of our recycled water will be used by then, frankly. I mean I think that's realistic, too, by 2040 to get that.

BOARD MEMBER YEE: Very good.

MS. HEIL: Okay.

CHAIR MUNOZ: Okay, great, thank you so much, very informative.

MS. HEIL: Sure, thank you.

CHAIR MUNOZ: And the City of Los Angeles.

MR. RAD: Board Chair Munoz, Board Members, my name is Hassan Rad. I'm the Division Manager of the Rehabilitation Division of LA Sanitation.

Our mission in LA Sanitation is to protect the environment and the public. And this is an overview of the presentation. We're going to do a little bit of talk about what we do at LA Sanitation, the sustainability plan that we have, and how it applies to water recycling and water supply. And talk a little bit about the core level of water recycling that we do and things that are, you know, in the pipeline that are going to be done in the near future.

And also, share with you some of the challenges that we are facing, particularly at the Hyperion Treatment plant where I know there's a lot of interest.

We are, as you know, the producer of the recycled water. Our sister agency, LADWP is the distributor of that recycled water. So, I'm going to do a five-minute presentation and then I'm going to ask my colleague at LADWP, Mr. Mario Acevedo to update you on the network distribution and how we're going to get the water into our customers.

Just about LA Sanitation, we serve a population of 4 million. We have a service area over 600 square miles, anywhere from San Fernando Valley all the way to Harbor area, and Terminal Island.

Our service system's length is about 6,700 miles. We have two distinct service areas for our wastewater flow. The first one is, as you know Hyperion service area is the biggest. It's comprised of three interconnected plants.

The Terminal Water Reclamation plant is all the way up in San Fernando Valley. We have also the Los Angeles-Glendale Water Reclamation plant that is co-owned by City of Glendale. And we have our Damistan (phonetic) plant at Hyperion Treatment plant, which is just south of LAX. We also have the Terminal Island Treatment plant sitting in San Pedro, where it serves area Wilmington, San Pedro, and Terminal Island.

The Terminal Island and Hyperion Treatment plant have solid handling facilities, whereas the Tillman and LA-Glendale are just the water reclamation plant where they treat water.

The good news is that at our Terminal Island, the water reclamation facility, 100 percent of our flow is recycled. So, that's the great news. The second phase is almost complete and we are expecting that second phase to be online within three months.

As you know, our Mayor Garcetti, in 2015 came out with the planning of sustainability for City of Los Angeles that has a lot of priority initiative and goal directly related to the water supply, and water recycling. Some of that is the reduction of -- to reduce our dependency on imported water, increase stormwater capture, come up with a climate resiliency adaptation on climate impact on City of Los Angeles, including sea level rise, and temperature increases and flooding aspect. Enhancing the water quality in our estuaries and receiving waters.

At the same time, the Mayor came up with the Executive Directive No. 5. This was at the peak of drought in 2014, which has a lot of specific goals in terms of reduction of the per capita water, which I'm glad to say that we accomplished the goal, which was a reduction of 20 percent.

Also, a 50 percent reduction in the imported water by 2024 and, also, establishment of an integrated water source planning known as One Water LA. I know there is a lot of interest in that program and we would be glad to come back at a later time to give you a presentation of where we are in that and how we are progressing on that.

But the synergy between these two plants, the sustainability at the very executive office, and in order to meet some of those goals it's really imperative that we transform Hyperion Water Reclamation plant into a water production facility.

I want to tell you that at all level of the organization we are committed to doing that. And later on in my presentation I will give you a little bit of where we are, where we're going, and as I pointed out, some of the challenges that we have.

I think Chris already talked about this, but this is chlorine system-wide water recycling, that we are doing chlorine all of our wastewater plants. As you can see, Hyperion has the biggest potential for getting the recycled water. And Donald C. Tillman we are doing a number of projects right now. There's a number of projects that are going to be coming down. But we are also supplying the Sepulveda lakes and the watershed there.

Los Angeles-Glendale, too, we are doing currently some. There are some projects that are coming down and I'll be talking about them.

And as I pointed out, Terminal Island is going to be a 100 percent water recycling facility.

Okay. So, Hyperion service area, the first one is Donald C. Tillman. As I pointed out, currently we are doing 4 MGD. This is used for irrigation, golf irrigation, for cooling water, and industrial cooling water and other purposes. And the rest of it is going to Sepulveda Basin Lake, which feeds Los Angeles River.

And these are an issue of 1211 and, you know, how much needs to go to waterbodies and stuff. But we are planning on working with that by doing some sort of a flow regime study in the future.

The future water recycling project that we have at Donald C. Tillman, and Chris alluded to that, that's we are planning on taking 30 MGD of flow and using it for groundwater spreading, enhancing them and Pequoima (phonetic) by using MFRO. This project is way underway. The CEQA was certified in December of last year. We are working with Army Corps of Engineers to complete the NEPA that has been over one year of pilot studies. The MFRO pilot and we are publishing the data.

So, the first phase of it we anticipate is going to be online by 2019. And then, the entire 30 MGD somewhere around 2022, 2023 is going to be online.

Going to Los Angeles-Glendale Water Reclamation plant, the current level of recycle is about 1 and a half to 2 MGD. The rest of it is going to irrigation, industrial application, cooling water. And some of it is going to LA River. Again, we are discharging our flow into the LA River.

As far as the future water recycling facilities in Los Angeles-Glendale Water Reclamation plant, the City of Glendale has a project where they're going to take up to 3 MGD of water, bring it into City of Pasadena that is going to be used for stadium washing, irrigation, and other purposes. That project is already going through the permitting process. The engineering report has been submitted. And currently, they have filed a petition with the State Water Board for the 1211 analysis.

The City of Los Angeles is also having the downtown water recycling project, where we are going to be taking 1 and a half to 2 MGD of that water for recycling demand in downtown Los Angeles and USC area.

So, going back to Hyperion water reclamation, itself, the current level of recycling is that we are sending 35 million gallon-a-day of effluent to West Basin. This water is treated in a portfolio of water from anywhere from just chlorinated tertiary to advanced MFRO. Some of it comes back to City of Los Angeles, where we will use it in City of Los Angeles. Some of it is distributed into our South Bay Area.

We are also using up to 36 million gallons of filtered secondary effluent in terminal process. This is the cooling water that we are using at the cryogenic facility for the secondary reactors. Also, we are using 25 MGD at our -- the project just came online at Hyperion, the digester gas utilization project that we take the biogas and converting it into energy.

So, the total amount of recycle right now is 71 MGD.

Okay, so future water recycling activities at Hyperion Treatment plant. We are looking at a Phase 1, which is between one and a half, and it could be expandable up to 5 MGD of advanced treated water. This is we are going to be taking the primary effluent and putting it to MBR. I know there was some discussion about MBR, so this is one of those projects. But rather than secondary effluent, we're going to be using primary effluent.

This project is going to be providing advanced treated water for Los Angeles Port Air Race, for Scattergood, for some of the neighborhood facility users. And we are on the way. We are working on the permitting process, working on the engineering report and on the construction documents, and other things.

The second phase is realizing 30 to 35 MGD flow of Hyperion to increase recycled water at upstream water reclamation plant. And that is because the number of the flow that we have in the collection system of some of these treatment plants is limited. So, in order if you want to increase and enhance our water, we have to reduce the flow of inflow coming to Hyperion, and increase our flow at the DCP or LAG Treatment plant.

But as I pointed out, these are all connected and interconnected, and part of one service area.

Phase 3 is increase distribution to West Basin by an additional 35 MGD. We are in our way of developing memorandum of understanding and agreement with West Basin.

And Phase 4 is to do some sort of regional collaboration to find the recycled water for groundwater recharge replenishment and go to 100 percent recycle. This is something that is going to take a little bit of creativity and, you know, challenges.

And I am going to discuss that next, if I can get to the next slide that is. I need help. Okay. Oh, I did it. Okay, sorry. Yeah.

Okay. So, I know there's a lot of interest about Hyperion and the sheer level of the volume that is currently discharged into the Santa Monica Bay. But I think, like Ann was saying earlier, each one of the agencies and each one of the facilities have unique challenges. And I'd like to point out some of the challenges that we are facing at the Hyperion Treatment plant.

One is just finding user in that area and where the plant is located. As I pointed out, the plant is located downstream. It's sitting at the edge of a city where there is really no industry, no major reuse that we can think of in that area. Purple pipe is limited in how much you can use. There is already a (indiscernible) about this creek that is sort of in the place, have some of the customers.

And then, like I pointed out, the volume, you know, the volume that we are dealing with would require some sort of drinking water supply. We were really excited when there was a lot of talk in direct potable reuse. I think the passage of direct potable reuse is going to give a big boost to, you know, turning Hyperion into a water production facility. If, and we are hoping that that would happen, that would really be a great boost to us.

And then the other issue is the groundwater storage area. There is really no groundwater basin close to us that we can use this for groundwater recharge. As you know, we are going through major corridor. Any expansion that we have to do is going to go through some major corridors of city. Most of the water reuse demand are upstream, so there are going to be pumping and a piping apparatus involved.

So, those are some of the challenges. But we are open to any discussion, the feasibility analysis that we can do to take this forward.

I know I ran over my time, so I'll be available to take any questions that you have.

CHAIR MUNOZ: Well, you've been here since 8:00 a.m. so --

MR. RAD: Right, right. As long as Mario gets his time, I'm happy.

CHAIR MUNOZ: Yes, of course.

BOARD MEMBER FAMIGLIETTI: I have one question. Thank you, that was really interesting and informative. And I was just wondering on the issue of the amount of recycled water that you have just talked about, perhaps being 100 percent by 2027, do you anticipate that some of the de-sal that's been talked about -- I know West Basin has talked about a de-sal plant. And just before we were talking about it not penciling out in terms of costs compared to recycled water, what do you think the impact of that will be on a de-sal plant in the area that perhaps was --

MR. RAD: Well, obviously, something like that is going to create, you know, competition for the recycled water that it produce in the area. But the cost is a major factor in de-sal. Right now the cost of recycled water, even MFRO, is much less than the cost of de-sal.

There is the issue of climate change and greenhouse gas. It's very energy intensive so our industry and our project got much more greener in that sense. So, those are some of the good things that is going toward the water recycling.

However, there are, you know, technology that is changing, particularly in de-sal. I know there has been a lot of push with some of the companies, local companies to get that going. But I believe just in the fact that, you know, the greenhouse gas issue, the cost issue, ultimately it's going to be the cost issue. And I think we have the advantage over the cost issue and that's something that is going to help.

BOARD MEMBER FAMIGLIETTI: Well, thank you. And I appreciate that.

MR. RAD: Thank you.

VICE CHAIR GLICKFELD: Anymore questions? If not, I have one.

MR. RAD: Sure.

VICE CHAIR GLICKFELD: So, I have a suggestion. I think you should go over and talk to Ann Heil about the problems that she's raised about in-stream flows and how much you can take out of the Tillman plant that's now going into the LA River, how much Glendale can take out since those are effluent-dominated streams, but they're of interest to the Fish and Wildlife people.

MR. RAD: Okay, so I'm glad you raised that, Board Member Glickfeld because as you know there's a lot of projects from different agencies, different cities along the river that are now going through the 1211 analysis. And we believe that it needs to be looked at in a holistic, and the total impact needs to be considered, rather than each individual project.

So, we are all for a stakeholder-driven -- because some of these agencies have projects that are current and we are coming up with projects in the future. So, it's really important to have a discussion and bring them into a table, and have a stakeholder-drive process that we can address some of the entire impact to the LA River, rather than just one individual project.

VICE CHAIR GLICKFELD: Well, one thing that I would like you to note is that we have problems all over our Region, from Ventura where we can't recycle enough because they have to leave the water in the lagoon of the Santa Clara River. We have problems taking discharge out of the top of Santa Clara River. We can't take it out on the bottom and we can't put it in -- never mind.

And then, we've got problems all the way around in terms of what the impacts are. We've had a lot of problems getting to be able to pull out excess flows during the winter from the Tapia plant. But I think of all of the problems, I think the problems of the multiple plants along the LA River, who have been doing this kind of effluent discharge for so many years, it's going to be the toughest.

And I would hope that, Sam, as they move forward if we can do anything to get a cooperative relationship going between the resources agencies that sort of control these flows, and our dischargers, and ourselves trying to figure out what the best flows are for the river so that we can discharge that.

Do you want to say something about that?

MS. SMITH: Yeah, we're hosting a meeting with the City and the Resource Agency this month.

VICE CHAIR GLICKFELD: That's perfect.

MS. SMITH: We've already had some discussions. And the City's going to have a meeting in July to kick this off.

MR. RAD: Yes. Yeah, it's pretty much, you know, on the radar let's say, and we are looking into it under One Water LA, so thank you for bringing that up.

VICE CHAIR GLICKFELD: Okay, that's great. I'd be interested in seeing it. I think that's one of the critical problems.

Thank you very much for a great presentation.

MR. RAD: Thank you. Thank you.

VICE CHAIR GLICKFELD: Anybody else? Let's see, I think that's the end of our agenda today, Sam?

EXECUTIVE OFFICER UNGER: No, we have Mario.

VICE CHAIR GLICKFELD: Oh, one more? Sorry, I apologize for that. Who is -- I don't have my list here.

EXECUTIVE OFFICER UNGER: Whoever wants to speak, just get up and speak?

MR. ACEVEDO: Okay. All right, we'll be quick. So, my name is Mario Acevedo. I'm with DWP. I'm the Manager of Water Recycling. And thank you, Board Members for your patience today. And I will keep mine to five minutes.

As Hassan mentioned, LA Sanitation produces the recycled water and DWP distributes the recycled water within the City of Los Angeles. So, we have four areas in the City where we distribute water. The first one is the Valley system. And in the Valley, we already have recycled water to the majority of the parks and golf courses. Basically, we've hit all of the low-hanging fruit in the San Fernando Valley.

Our next big project in the Valley is going to be the groundwater replenishment project. And as Hassan mentioned, our goal is to spread up to 30,000 acre-feet-per-year of advanced treated recycled water in the San Fernando Basin.

I'm sorry do I need to say that? You guys can hear me okay? Okay.

VICE CHAIR GLICKFELD: No, I'm fine. I'm just trying to find my --

MR. ACEVEDO: Okay. So, not shown on this map, we do have a partnership with the City of Burbank because something I've heard earlier is about partnerships. And we do have a partnership with Burbank. We're getting recycled water from Burbank and we've connected to their infrastructure to serve customers in the North Hollywood area, which is too far from my existing purple pipe.

We're also looking at a partnership with the Las Virgenes Municipal Water District to possibly get water from the Tapia Water Reclamation plant to serve customers in Woodland Hills which is another area that is just too far from existing purple pipe.

In the Metro system, our biggest customers are going to be Griffith Park, Forest Lawn, Mount Sinai, Lakeside Country Club, and Universal Studios. So, these projects came online back -- some of our earliest projects back in the 1990s. And right now we're looking to expand.

Roosevelt Golf Course will be on recycled water toward the end of this calendar year. And the Downtown Water Recycling project is probably going to be the last of our big NPR purple pipe projects, where we're hoping to get all the way down to USC, Exposition Park, and other areas in downtown L.A. which would like to use recycled water.

On the Westside, we have limited recycle water use. So, currently, it was mentioned earlier Hyperion produces secondary water. Approximately 35 MGD of secondary water is delivered to West Basin, where they further treat the water.

We purchase tertiary treated water from West Basin at C. Little plant. And we distribute recycled water to the Westchester Golf Course, Loyola Marymount, and a variety of customers in the Playa Vista development.

In partnership with LASAN, our next

project that we've identified is the need for advanced treated recycled water to LAX and to Scattergood. So, this is going to be for cooling tower use, so it needs to be higher quality water. Secondary or I should say tertiary water is not sufficient for the need.

So, Tena (phonetic) is going to be building a 1.5 MGD plant and that plant will be serving LAX and Scattergood by 2019 or 2020.

Moving on to the Harbor system, Terminal Island already produces MFRO water. It's advanced treated water. I have one key customer, it's my biggest company in the City of Los Angeles, it's the Dominguez Gap Barrier. The Dominquez Gap Barrier can take up to 5,000 acre feet per year.

And the Harbor system has the most potential for MPR expansion. So, in the Harbor system my next goal is to get the industrial customers in the area on recycled water. I have Air Products, Valero, Tesoro, Phillips 66. This area in the City could easily utilize between 20 and 25 thousand acre feet of water per year.

So, Terminal Island has already expanded. They're going to be able to produce up to 12 MGD per day. And I recognize that if I can get all of my customers on board with recycled water, I'm going to need additional recycled water to the Harbor system.

So again, working with my partner LASAN, we already have plans in place to bring more advanced treated recycled water to the Harbor system from Hyperion. And certainly, if the NWD project unfolds that might yet be another source of advanced treated recycled water that can serve the Harbor system.

Redundancy is another thing that was not discussed earlier. One thing I can tell you, limitations on recycled water use, for industrial customers they have an expectation that recycled water will be as reliable as potable water and if we cannot prove that to them, they will not sign agreements with us to take recycled water.

So, having redundancy in our recycled water system for industrial customers is absolutely vital to moving forward with projects.

So, customers that we've connected since 2015, over the last, roughly 15, 18 months you can kind of see all the customers we've connected, a lot of parks, a lot of schools. The City has been very aggressive. Because of the drought we've had renewed interest from a lot of our partners to get on recycled water.

Next up, L.A. Unified has expressed a lot more interest. And I have a lot of L.A. Unifieds and additional Rec and Park parks that are going to be on recycled water.

So, in my group we are aggressively pursuing additional sites where they make financial sense and where I have customers who are willing to make the investment in the necessary infrastructure.

In terms of deliveries, over the last three years we've average about 10,000 acre feet of recycled water deliveries. These deliveries are only deliveries to customers. This does not include environmental purposes, such as the water that's currently being delivered to the Japanese Gardens, wildlife lakes, and so forth.

For '17-'18, I'm hoping that we can deliver 12,000. And I see us ramping up. And the ramping up is due to Terminal Island expansion.

VICE CHAIR GLICKFELD: Mario, you have to finish because we have to get outside and they're kicking us out.

MR. ACEVEDO: So, we've provided copies of our Recycled Water Annual Report. Hopefully, those all got distributed to you. My information is on the back. If you guys have follow-up questions, I'm easy to reach. Thank you for your time.

EXECUTIVE OFFICER UNGER: Okay, we have one more, the City of Oxnard.

VICE CHAIR GLICKFELD: We need to be out of here in six minutes.

MR. RYDER: Okay. So, I'm Daniel Ryder, a Director from the City of Oxnard. Oxnard's a full-service city. We do our own water, wastewater and solid waste, about 200,000 people, about 44,000 customers. Here's a photo of our recycled water plant.

The next slide. Our current capacity is about 6 and a quarter million gallons per day, or 7,000 acre feet. We're using wastewater for our feedstock. We have about enough wastewater to double that capacity to date. We're also hoping to use stormwater to increase the capacity.

The current uses are crop irrigation, recycled water, new potable, and aquifer storage recovery wall.

Go ahead to the next slide. So, one of the primary benefits to the region is helping farming, which is important to the economy and the culture of the area. The recycled water actually helps increase the yield of berry crops by 20 to 40 percent, so that's pretty significant. It also uses a lot less water before they do the planting because most of their water is used to dry the salts out of the root zones for growing berries, especially strawberries.

The next slide. So, two dairies we're working with right now, we're using the selenium management pipeline temporarily to provide water to farmers during the drought, while we're completing a permanent pipeline. The design is done. We're just working on permits and right-of-way.

The other thing we're doing is we're delivering water to a 36-hole golf course. Later this summer we're going to be connecting a water or recycler. And we just connected a recycle development and we're going to connect a larger development this summer.

The next slide. So, a project that we're just finishing up, we have a pilot aquifer storage recover well for indirect potable reuse that will be completed next month.

So, if you just want to go through the

next couple of slides you'll see a typical recharge project. You put water in the ground and then the water will flow downhill and you'll pull it out.

With this system we're going to inject in one well, hold that for the response time while we're injecting in the second well, and then we'll be pulling out of the first well while we're injecting in the third well. So, we'll be able to use indirect potable reuse year-round with three sets of wells.

All right, the next slide. So, again I mentioned the ASR Well pilot is just about complete. We'll do a 1,000 gallon-a-minute pilot for a month. And then, we have a nine-month test period. Following that we hope to be fully functional in January of 2018 at a 7,000 gallon-per-minute capacity. And then within two years then be at the 14,000 gallon-per-minute capacity.

Any questions?

EXECUTIVE OFFICER UNGER: I have a question. Do you have salt buildup as you recycle in the produced water?

MR. RYDER: No.

EXECUTIVE OFFICER UNGER: No, okay.

MR. RYDER: We have a de-salter in, so

that's part of the process. And we also use partial imported water so --

EXECUTIVE OFFICER UNGER: So, it's blended?

MR. RYDER: Yeah.

EXECUTIVE OFFICER UNGER: And what do you do with the brine?

MR. RYDER: The brine is discharged to the ocean.

VICE CHAIR GLICKFELD: They have a brine line.

EXECUTIVE OFFICER UNGER: Since we're getting kicked out can I get your card?

BOARD MEMBER FAMIGLIETTI: Could we possibly get a copy of your presentation?

VICE CHAIR GLICKFELD: All of us. We would like to get electronic, if we can.

MS. MORRIS: Yes, ma'am.

VICE CHAIR GLICKFELD: Thank you for being here all day for our discussions.

(Applause.)

CHAIR MUNOZ: Okay, motion to adjourn.

VICE CHAIR GLICKFELD: Move to adjourn.

(Whereupon, the Los Angeles Regional Water Quality Control Board meeting adjourned at 5:25 p.m.)

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CERTIFICATE OF REPORTER

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 17th day of January, 2018.

Martha L. Nelson

MARTHA L. NELSON, CERT**367

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I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified transcriber and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of January, 2018.

Myra Severtson
Certified Transcriber
AAERT No. CET**D-852

LOS ANGELES REGIONAL
WATER QUALITY CONTROL BOARD

2016 CLEAN WATER ACT SECTIONS 305(b) AND 303(d) INTEGRATED REPORT FOR THE LOS ANGELES REGION

STAFF REPORT

April 2017
Revised June 2017

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List of Acronyms and Abbreviations

Basin Plan	Water Quality Control Plan: Los Angeles Region
BPTCP	Bay Protection and Toxic Cleanup Program
BMI	Benthic Macro Invertebrates
CalWQA	California Water Quality Assessment (database)
CCC	Criteria Continuous Concentration
CCR	California Code of Regulations
CDPH	California Department of Public Health
CFR	Code of Federal Regulations
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act
ºC	degrees Celsius
ºF	degrees Fahrenheit
FED	Functional Equivalent Document
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DFW	Department of Fish and Wildlife, formerly Department of Fish and Game (DFG)
DO	Dissolved oxygen
dw	dry weight
ERM	Effects Range Median
HCH	Hexachlorocyclohexane
HSA	Hydrologic Sub Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILRP	Irrigated Lands Regulatory Program
IR	Integrated Report
kg	kilogram(s)
Listing Policy	Water Quality Control Policy for Developing California's Section 303(d) List
LOE	Line of Evidence
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	milligrams per kilogram (parts per million)
mg/L	milligrams per liter (parts per million)
µg/g	micrograms per gram (parts per million)
µg/L	micrograms per liter (parts per billion)
MTBE	Methyl tertiary-butyl ether
MTRL	Maximum Tissue Residue Level
NAS	National Academy of Sciences
ng/g	nanograms per gram (parts per billion)
ng/L	nanograms per liter (parts per trillion)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

NTU	Nephelometric Turbidity Unit
oc	organic carbon
OEHHA	Office of Environmental Health Hazard Assessment
PAH	Polynuclear aromatic hydrocarbon
PBDE	Polybrominated diphenyl ethers
PCB	Polychlorinated biphenyl
PEL	Probable Effects Level
pg/L	picograms per liter
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBI	Relative Benthic Index
RL	Reporting Level
SCCWRP	Southern California Water Research Project
SMWP	State Mussel Watch Program
SQG	Sediment quality guideline
SWAMP	Surface Water Ambient Monitoring Program
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSMP	Toxic Substance Monitoring Program
TSS	Total Suspended Solids
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirement
WQO	Water quality objective
WQS	Water quality standard
ww	wet weight

1. Introduction

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring water quality. Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress. Under CWA Section 303(d), states are required to review, makes changes as necessary, and submit to the USEPA a list identifying waterbodies not meeting water quality standards and identifying the water quality parameter (i.e., pollutant) not being met (303(d) list). Placement on this list generally triggers development of a pollution control plan called a total maximum daily load (TMDL) for each waterbody/pollutant pair on the list.

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is responsible for developing and adopting the 2016 Integrated Report for waters within the Los Angeles Region of California. Following adoption by the Los Angeles Water Board, the 2016 Integrated Report will be transmitted to the State Water Resources Control Board (State Water Board), where it will be considered by the State Water Board in combination with other Regional Water Board Integrated Reports.

The purpose of this staff report is to describe the assessment process (the procedures used by the State Water Board and Los Angeles Water Board staff to analyze data and information), provide a report of surface water quality in the Los Angeles Region as required by CWA Section 305(b), and provide Los Angeles Water Board staff recommendations for additions, deletions, and changes to the California CWA Section 303(d) List.

The results of the staff analysis are presented as staff recommendations in the form of fact sheets that contain a decision and supporting lines of evidence for each water body/pollutant pair assessed. A summary of staff recommendations can be found in Section 4. The fact sheets are available in Appendix ~~G~~ I of this Staff Report.

2. Legal Requirements and Policy

This section provides a summary of the federal and state legal requirements and applicable policies for the 2016 Integrated Report.

2.1 Federal Requirements

2.1.1 CWA Section 303(d) – Impaired Waters

Section 303(d) of the Clean Water Act requires states to identify waters that do not meet applicable water quality standards after the application of certain technology-based controls.[1] The Section 303(d) List must include a description of the pollutants causing the violation of water quality standards (40 CFR §130.7(b)(iii)(4)) and a priority ranking of the water quality limited segments, taking into account the severity of the pollution and the uses to be made of the waters.

Water quality standards include the designated beneficial uses of a waterbody, the adopted water quality objectives to protect those uses (numeric and narrative), and the State's Antidegradation Policy (State Water Board Resolution No. 68-16) (SWRCB 1968).

Federal regulation defines a "water quality limited segment" as "any segment [of a surface waterbody] where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after application of technology-based effluent limitations required by CWA Sections 301(b) or 306" (40 CFR 130.2(j)).

States are required to review the Section 303(d) List in even-numbered years, make changes as necessary, and submit the list to the USEPA for approval. A TMDL is generally developed for a water quality limited segment. A TMDL is the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources, and natural background (40 CFR 130.2(i)).

2.1.2 CWA Section 305(b) – Water Quality Assessment

Under CWA Section 305(b), states are required to report biennially to the USEPA on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress.

2.1.3 The Integrated Report and Waterbody Categories

In 2002, the USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) list of impaired waters be integrated into a single report. This report is called the Integrated Report, and it satisfies both the CWA Section 305(b) and Section 303(d) requirements.

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping

[1] Technology-based controls are defined in CWA Section 301. They include effluent limits (primary and secondary treatment requirements) for industrial discharges and discharges from publically owned treatment works.

categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments are evaluated for at least one of six "core" beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation.

Table 1. Integrated Report Categories

Category	Description
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.
2	There is insufficient information to determine beneficial use support.
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.
4	At least one beneficial use is not supported but TMDL is not needed.
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame..
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.
5	At least one beneficial use is not supported and a TMDL is needed.

A waterbody will often have multiple pollutants impairing multiple beneficial uses. In these cases, when the waterbody has TMDLs for all the impaired uses, the waterbody is placed in category 4a; when the waterbody is lacking a TMDL for at least one impairment, the waterbody is placed in category 5.

2.2 California Requirements

On September 30, 2004, the State Water Board adopted the "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," also known as the Listing Policy (SWRCB 2004a) in accordance with California Water Code Section 13191.3(a). The Listing Policy identifies the process by which the State Water Board and the Regional Water Quality Control Boards will comply with the listing requirements of CWA Section 303(d). The Listing Policy became effective in December 2004. Justification of each portion of the Listing Policy is presented in the Final Functional Equivalent Document (SWRCB, 2004b) that was developed to support the provisions of the Listing Policy.

The objective of the Listing Policy is to establish a standardized approach for developing California's Section 303(d) List with the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters. TMDLs will generally be developed as needed for the waters identified under the provisions of the Listing Policy.

The Listing Policy outlines a "weight of evidence" approach that provides the rules for making decisions based upon different kinds of data, an approach for analyzing data statistically, and requirements for data quality, data quantity, and the administration of the listing process. Decision rules for listing and delisting are provided for chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisance such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities. The Listing Policy also requires that situation specific weight of evidence listing or delisting factors be used if available information indicates water quality standards are attained or not attained and the other decision rules do not support listing or delisting.

The Listing Policy also provides direction related to:

- The definition of readily available data and information.
- Administration of the listing process including data solicitation and fact sheet preparation.
- Interpretation of narrative water quality objectives using numeric evaluation guidelines.
- Data quality assessments.
- Data quantity assessments including waterbody specific information, data spatial and temporal representation, aggregation of data by reach/area, quantitation of chemical concentrations, evaluation of data consistent with the expression of water quality objectives or criteria, binomial model statistical evaluation, evaluation of bioassessment data, and evaluation of temperature data.

The Listing Policy requires that *all* surface waters that do not meet water quality standards be placed on the Section 303(d) List. The Policy also states that the California 303(d) List includes (1) waters still requiring a TMDL under Category 5, and (2) waters where the water quality limited segment is being addressed under Category 4. Waterbodies in the "Water Quality Limited Segments Being Addressed" category must meet either of the following conditions:

1. A TMDL has been approved by USEPA and is expected to result in full attainment of the standard within a reasonable, specified time frame (Category 4a).

2. It has been determined that an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame (Category 4b).

Waterbodies that are impaired by a non-pollutant source (Category 4c) do not require a TMDL and the State Water Board, in accordance with the Listing Policy, does not consider waters in Category 4c as a part of the 303(d) List. This means that, for California, waters that fall into the

Integrated Report Categories 4a, 4b, and 5 are considered part of the California 303(d) List. The USEPA considers Category 5 waterbodies as the only category that constitutes the 303(d) List.

2.3 TMDL Scheduling

In conformance with Section 5 of the Listing Policy, a TMDL completion schedule date is required for all waterbody-pollutant combinations placed on the 303(d) List. Water Board staff relied on guidance from the USEPA (1997), which states that "schedules should be expeditious and normally extend from eight to thirteen years in length, but could be shorter or slightly longer depending on State-specific factors." Therefore, the timeline for completing TMDLs for waterbodies listed for the first time as part of the 2016 Integrated Report is estimated to be no longer than thirteen years, which equates to an estimated completion date of 2029. Expected TMDL completion dates are proposed by Los Angeles Water Board staff in the fact sheets of this report (Appendix ~~G~~I).

2.4 Consequences of 303(d) listing and delisting

When a waterbody/pollutant combination is placed on the 303(d) list, it requires the Los Angeles Water Board to further evaluate the need for a TMDL to bring the waterbody into attainment status for the water quality standard within a reasonable, specified time frame.

As discussed in section 2.3, the timeline for completing a TMDL, or identifying an existing regulatory program that will fully address the impairment, is no longer than 13 years. However, in that time period, because additional 303(d) assessment will be conducted and/or other regulatory actions will require assessments, the waterbody/pollutant combination will likely be reevaluated. Because this 2016 303(d) list only includes data through 2010, it is expected that the next update to the 303(d) list, scheduled for 2022, will include many revisions, which may include listing new waterbody/pollutant combinations, potentially re-listing previously delisted waterbody/pollutant combinations, and delisting existing waterbody/pollutant combinations. These revisions may result from an evaluation of more recent data or, in less frequent cases, because the evaluation guideline (i.e., water quality objective) has changed.

As a result of the "snapshot" nature of the 303(d) list and the often lengthy intervening time period between an initial listing decision and TMDL development, the Los Angeles Water Board does not depend exclusively on the 303(d) list or the data used in the listing decision when it begins TMDL development. During the initial "problem identification" stage of TMDL development, the Los Angeles Water Board evaluates all available data, including more recent data that was not assessed as part of the 303(d) listing process. In many cases, the Los Angeles Water Board will also collect additional data for a better understanding of the waterbody impairment.

Additionally, due to the large amount of data that needs to be assessed during each update of the 303(d) list, the 303(d) list data evaluations are more general. In particular, these evaluations do not include source assessments; they rely upon existing waterbody delineations without further subdivision (e.g., Santa Monica Bay); and they typically do not entail more refined analyses such as assessing data collected during wet weather and dry weather separately. As Board staff commences TMDL development, these more temporally and spatially refined data assessments are made along with a source analysis. Based on these analyses, staff may propose a finding of no impairment with a recommendation to delist during the next 303(d) cycle, or may refine the defined scope of the impairment to be addressed by the TMDL (e.g., wet weather only). For example, during development of the Dominguez Channel and Los Angeles and Long Beach Greater Harbor Waters Toxic Pollutants TMDL, the diazinon listing for Dominguez Channel was reassessed using additional data and found to no longer be causing an impairment; as a result, the Board did not develop a TMDL for diazinon.

Lastly, delisting a waterbody/pollutant combination from the 303(d) list does not result in any change to existing TMDLs adopted by the Los Angeles Water Board or established by the U.S. EPA. TMDLs developed to address the previously listed impairment remain as regulations in the Region's Basin Plan. Nor does a delisting negate requirements to implement TMDL wasteload allocations (WLAs) and load allocations in NPDES permits, Waste Discharge Requirements (WDRs), waivers of WDRs, or any other State or Regional Water Board orders (e.g., Time Schedule Orders, Clean-up and Abatement Orders). NPDES permits must include effluent limitations to implement available WLAs from TMDLs, and NPDES permits, WDRs and waivers of WDRs must be consistent with applicable state and regional water quality control plans, including the Region's Basin Plan. Thus, WLAs and load allocations assigned to dischargers/permittees still apply and permittees must comply with permit provisions, including water quality based effluent limitations, that have been incorporated into discharge permits to implement these TMDL allocations. A change to a permit provision required by a TMDL must be preceded by a change to the TMDL. An action to revise a TMDL is a separate, independent and administratively different action from the Water Boards' action to approve the 303(d) list.

The Los Angeles Water Board often reconsiders TMDLs and, if warranted, a TMDL may be revised to eliminate a waterbody/pollutant combination from the TMDL. For example, during the reconsideration of the Ballona Creek Estuary Toxics TMDL and Ballona Creek Metals TMDL, selenium data was reassessed and selenium was found to no longer be causing an impairment; as a result, the selenium TMDL and the associated targets and allocations were eliminated. However, the Board exercises caution when making such a decision, since the purpose of a TMDL is to ensure attainment of water quality standards and, thus, maintaining the detailed program of implementation established in the TMDL is often beneficial.

2.5 2010 303(d) List of Impaired Waters

The 2010 303(d) list was adopted by the Los Angeles Water Board on July 16, 2009, in Resolution No. R09-004; adopted by the State Water Board on August 4, 2010, in Resolution No. 2010-0040; and approved by the USEPA on October 11, 2011. The 2010 list included data submitted through February 28, 2007. The 2010 303(d) list is the most recent list which included updates from the Los Angeles Region.

2.6 Changes to California's Integrated Report 303(d) and 305(b) Process

In February 2013, the State Water Board announced a new strategy for the development of the State's Integrated Report including establishing three groups of Regional Water Boards and submitting an Integrated Report for one group per listing cycle (i.e. every two years). This strategy was formally described in an *Integrated Report Update Memo* in November 2013 (SWRCB, 2013). The Listing Policy was amended to reflect this and other changes on February 3, 2015.

Therefore, the 2012 Integrated Report consisted of data submitted for the North Coast Regional Water Quality Control Board (Region 1), the Lahontan Regional Water Quality Control Board (Region 6), and the Colorado River Basin Regional Water Quality Control Board (Region 7). On July 30, 2015, the USEPA issued its final decision this update to the 303(d) list and this 2012 303(d) list replaced the 2010 303(d) list as California's current 303(d) list.

The Central Coast Regional Water Quality Control Board (Region 3), the Central Valley Regional Water Quality Control Board (Region 5), and the San Diego Regional Water Quality Control Board (Region 9) recently approved Integrated Reports including a 303(d) list for their respective regions. Region 9 approved its 303(d) list in October 2016 and Regions 3 and 5 approved their 303(d) lists in December 2016. These updates to the 303(d) list were to be approved by the State Water Board as the 2014 303(d) list.

The 2016 Integrated Report will consist of data for the San Francisco Bay Regional Water Quality Control Board (Region 2), the Los Angeles Water Board (Region 4), and the Santa Ana Regional Water Quality Control Board (Region 8). Each of these Regions is expected to approve their lists by April 2017. Until the 2014 and 2016 303(d) list updates are approved by the USEPA, the current list is the 2012 303(d) list.

Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed. Each of the 2012, 2014 and 2016 303(d) lists have assessed only data from the 2010 data solicitation.

In addition, changes to the procedures included in the February 2015 amendment to the Listing Policy, included a requirement that all data be submitted to the California Environmental Data Exchange Database (CEDEN); this change will significantly improve the efficiency of the listing and delisting process so that even with regional updates only once every six years, California will have a more comprehensive assessment and 303(d) list than in the past. The CEDEN website has a new page dedicated to the 303(d) list: http://www.ceden.org/303d_list.shtml.

The data solicitation for the 2018 303(d) list was released on November 3, 2016. The 2018 303(d) list will address Regions 1, 6, and 7.

The Los Angeles Water Board will develop its next Integrated Report, including an updated 303(d) list, in 2022. Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021.

2.7 Public Review and Board Approval of the 2016 303(d) List

Pursuant to section 6.2 of the Listing Policy, waterbodies listed in Category 4a, 4b, or 5, which make up the 303(d) list, are subject to public review and approval by the Los Angeles Water Board. Waterbodies listed in Categories 1, 2, 3, or 4c are provided to the public and to the Los Angeles Water Board as additional waterbody information. All categories will be submitted to the State Water Board for inclusion into the California Integrated Report. Once compiled, the State Water Board will provide public notice of the California Integrated Report for additional public review prior to approval by the State Water Board, as outlined in section 6.3 of the Listing Policy. Waterbodies in Categories 4a, 4b, and 5 will be considered for inclusion in the California 303(d) list.

It is anticipated that the State Water Board will approve the 2014 list updates of Regional 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017.

The California 303(d) list will require final approval by USEPA. If USEPA determines that changes are needed to the submitted report they will initiate further public review before finalizing and publishing the report.

3. Development of the 2016 Los Angeles Region 303(d) List

This section provides a review of the data analysis for the Los Angeles Region's 2016 Integrated Report.

3.1 Data Solicitation for the 2016 303(d) List

In January of 2010, the State Water Board solicited data from the public with a formal "Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report" (Notice), which was sent to interested persons subscribed to the State Water Board's Integrated Report e-mail distribution list. In addition, the Los Angeles Water Board sent the notice to persons subscribed to the Los Angeles Water Board's Basin Plan Amendments and TMDL e-mail distribution lists. Data used as part of the 2016 Integrated Report were received through August 30, 2010. Data sources include government agencies, municipalities, environmental groups, citizen groups, receiving water data from the National Pollutant Discharge Elimination System (NPDES) dischargers and data collected by the Regional and State Water Boards under the Surface Water Ambient Monitoring Program (SWAMP).

All data and information submitted are available as part of the electronic administrative record (Appendix ~~H~~J). Data and information pertaining to specific waterbody-pollutant assessments are provided in the fact sheets (Appendix ~~G~~I) and link directly to the administrative record.

3.2 Data Processing and Analysis

All readily available data and information in the administrative record was considered in the development of the 2016 Integrated Report. However, only high-quality data supported by a Quality Assurance Project Plan was used to make determinations of water quality standards attainment. In the absence of quality assurance documentation, data is used only as supporting evidence and is not the basis of a listing decision.

Fact sheets and overall beneficial use support determinations were developed in the California Water Quality Assessment (CalWQA) database. Lines of evidence (LOE) summarize: water quality data, information pertaining to where and when the water quality monitoring took place, the pollutant sampled, the beneficial use affected, the water quality objective or guideline protective of the beneficial use, the number of samples collected, and how many samples exceeded the objective or guideline. Potential sources are identified in fact sheets in some cases, otherwise, the potential source was marked “Source Unknown”.

Data were aggregated by waterbody segment following the requirements of Section 6.1.5.4 of the Listing Policy, and assessments were performed on the individual segments. Waterbodies were segmented to account for hydrologic features.
Spatial and temporal representation of data was assessed using the requirements and guidance of the Listing Policy. The available data were used to represent concentrations during the averaging period associated with the particular pollutant and water quality objective, as required by Section 6.1.5.6 of the Listing Policy. For example, if only one data point was available during a 4-day period, it was used to represent the four-day average concentration for that period.

Following data assessment, Los Angeles Water Board staff determined whether or not the waterbody was attaining relevant water quality standards. Decision recommendations were completed to summarize all relevant LOEs for a waterbody-pollutant combination and, based on the statistical evaluation described in the Listing Policy, to state if the exceedances of water quality standards constituted an impairment of a beneficial use and, thus, necessitated a 303(d) listing.

3.3 Water Quality Standards Used in the Data Assessment

Beneficial uses for waters in the Los Angeles Region are identified in Table 2-1, 2.1a and 2.3 of the Los Angeles Regional Water Quality Control Plan (Basin Plan).

Water Board staff assessed data using regulatory limits when available. The most common regulatory limits used include water quality objectives in the Basin Plan or any statewide Water Quality Control Plans applicable to the waterbody, including objectives for toxic chemicals promulgated by the USEPA under the California Toxics Rule (40 CFR §131.38). When numeric regulatory limits were not available, evaluation guidelines were considered to interpret narrative water quality objectives. Evaluation guidelines are selected in conformance with section 6.1.3 of the Listing Policy.

3.4 Determination of Beneficial Use Support and Integrated Report Categories

To meet CWA Section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment and the need for a TMDL. Water segments were evaluated for at least one of six "core" beneficial uses including: municipal and domestic supply, aquatic life support, fish consumption, shellfish harvesting, contact recreation, and non-contact recreation. For each core beneficial use associated with each waterbody segment, a rating of fully supporting, not supporting, or insufficient information was assigned based on the assessment of readily available data and information.

Table 2. Los Angeles Integrated Report Waterbody Categories, 2016 303(d) List

Category	Description	Waterbody Segments
1	All assessed beneficial uses supported and no beneficial uses known to be impaired.	~~38~~57
2	There is insufficient information to determine beneficial use support.	~~55~~54
3	There is insufficient data and/or information to make a beneficial use support determination but information and/or data indicates beneficial uses may be potentially threatened.	~~13~~12
4	At least one beneficial use is not supported but TMDL is not needed.	
4a	A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.	~~77~~80
4b	Another regulatory program is reasonably expected to result in attainment of the water quality standard within a reasonable, specified time frame.	~~0~~4
4c	The non-attainment of any applicable water quality standard for the waterbody segment is the result of pollution and is not caused by a pollutant.	**3**
5	At least one beneficial use is not supported and a TMDL is needed.	~~134~~132
Total Waterbodies Assessed		~~320~~342

Detailed Category Reports can be found in Appendices B-~~F~~H.

Pursuant to Section 2 of the Listing Policy, waterbodies remain in Category 5 until all 303(d)-listed pollutants are addressed by USEPA-approved TMDLs or by another regulatory program that is expected to result in the reasonable attainment of the water quality standards, at which point the waterbody will be placed into Category 4a or 4b. Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant but rather caused by pollution, such as flow alteration or habitat alteration. Waterbodies placed in Category 4c are not included as part of the 303(d) list and do not require the development of a TMDL.

Waterbody-pollutant combinations listed in Category 5 (Appendix B) show the TMDL requirement status. If a "TMDL is still needed" for the waterbody-pollutant combination, the TMDL requirement status is labeled 5A. If the waterbody-pollutant combination is "being addressed by a USEPA approved TMDL", the TMDL requirement status is labeled 5B. If the waterbody-pollutant combination is "being addressed by an action other than a TMDL", the TMDL requirement status is labeled 5C. These labels were created for internal tracking and are not Integrated Report sub-categories required by the USEPA.

4. Proposed Changes to the Section 303(d) List

While, due to the changes to the 303(d) process described in Section 2.5, data review was restricted to data collected prior to September 2010, a significant number of changes to the Los Angeles Region's 303(d) list are proposed. The ~~211~~ 153 proposed new listings include:

- Additional PCB and pesticide listings arising from California's Surface Water Ambient Monitoring Program (SWAMP) water quality sampling conducted in 2009 focusing on lakes and reservoirs. For example, staff has proposed new listings for Castaic Lake (PCBs), Pyramid Lake (chlordane, dieldrin, DDT and PCBs) and Echo Park Lake (dieldrin).

- Additional pesticide and other pollutant listings in Ventura County waters draining agricultural lands including the Santa Clara Drain, Tapo Canyon, Wheeler Canyon and Boulder Cove, arising from the Ventura County Agricultural Irrigated Lands Group water quality monitoring.

- Additional toxicity listings in the Los Angeles River arising from water quality sampling conducted the City of Los Angeles' Bureau of Sanitation, required pursuant to the City's NPDES permits.

- Various other proposed listings arising from special studies or ongoing water quality monitoring programs.

Most of the proposed new listings are new waterbody segment-pollutant combinations where a TMDL will be needed. These waterbodies would then be in Category 5. However, several of the proposed new listings identify additional impairments in watersheds already being addressed by a TMDL for that pollutant. For example, the proposed new listings for mercury in Calleguas Creek Reach 3 and the proposed DDT listings in Hondo Barranca are being addressed by the Calleguas Creek Metals TMDL and the Organochlorine Pesticides, PCBs and Siltation TMDL. In addition, the proposed Los Angeles River Reach 3 indicator bacteria listing is already being addressed by the Los Angeles River Bacteria TMDL. These waterbodies would then be in Category 4a unless another waterbody pollutant combination requires a TMDL such that the waterbody would remain in Category 5.

The proposed ~~48~~ 54 delistings include:

- Several proposed delistings for indicator bacteria at Santa Monica Beaches, including Abalone Cove Beach, Bluff Cove Beach, Outer Cabrillo Beach, Manhattan Beach and Hermosa Beach. It is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved.

- Various other proposed delistings arising from special studies or ongoing water quality monitoring programs.

In a number of cases, in both fresh and marine waters, listings for “coliform bacteria” were renamed “indicator bacteria” based on USEPA’s recommendation and for statewide consistency.

In addition, because 21 TMDLs including 252 listings, have gone into effect since the development of the 2010 303(d) list, a number of Category changes are proposed to change waterbody-pollutant combinations from “requiring a TMDL” (Category 5A) to “being addressed by a USEPA approved TMDL” (Category 5B or, if all waterbody-pollutant combinations have been addressed for that waterbody, Category 4a).

For detailed information on proposed changes, refer to the waterbody-pollutant “fact sheets” in Appendix I~~G~~.

As discussed in Section 2.6, it is anticipated that the State Water Board will approve the 2014 list updates of Regions 3, 5 and 9 and the 2016 list updates of Regions 2, 4, and 8, during the same State Water Board hearing in 2017. Table 3, below, shows the 303(d) list changes approved by Regional Water Boards 3, 5 and 9 and the 303(d) list changes proposed, at this time, for approval by the staff of Regional Water Boards 2, 4, and 8.

Table 3. Summary of 2014 and 2016 Changes to the California 2012 303(d) List

2014-2016 INTEGRATED REPORT						
REGION	**2012 303(d) LIST**	**2014 and 2016 303(d) List proposed changes**				
	Total 303(d) Listings (Categories 4a, 4b and 5)	**Regional Water Board 303(d) Listing Recommendations**		**Miscellaneous Changes***		**Total proposed 303(d) Listings (Categories 4a, 4b and 5)**
		New Listings	**New Delisting**	**Resulting in Listings**	**Resulting in Delistings**	
1	159	0	0	0	0	159
2	333	~~41~~30	7	0	~~9~~10	~~358~~346
3	712	269	~~48~~47	0	23	~~910~~911
4	823	~~211~~153	~~48~~54	0	0	~~986~~922
5	730	269	45	0	0	954
6	155	0	0	0	0	155
7	68	0	0	0	0	68
8	132	~~31~~28	~~16~~18	0	0	~~147~~142
9	445	~~244~~243	~~14~~17	0	0	~~675~~671
Totals	3557	~~1065~~992	~~178~~188	0	~~32~~33	~~4412~~4328

*Miscellaneous changes include adjustments to the 303 (d) list when waterbody reaches are combined or split resulting in a decrease or increase in the number of listings.

5. References

For a complete list of references used in all the assessment fact sheets, see Appendix ~~H~~J.

SWRCB. (2004a). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (amended February 3, 2015). Sacramento, CA.

SWRCB. (2004b). *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, Final Functional Equivalent Document*. Sacramento, CA.

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REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Abalone Cove Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Alamitos Bay	Indicator Bacteria				
		Oxygen, Dissolved	Y			
4	Alhambra Wash	Ammonia	Y			
		Benthic Community Effects	Y			
4	Aliso Canyon Wash	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Alondria Park Lake	PCBs (Polychlorinated biphenyls)	Y			
4	Amarillo Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	Benthic Community Effects				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Artesia-Norwalk Drain	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Arundell Barranca (Ventura County)	Indicator Bacteria	Y			
4	Ashland Avenue Drain	Indicator Bacteria			Y	

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Organic Enrichment/Low Dissolved Oxygen				
		Toxicity				
4	Avalon Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Balboa Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
		Toxicity	Y			
4	Ballona Creek	~~Cadmium~~		Y		
		ChemA				
		Chlordane				
		Copper				
		Cyanide				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria			Y	
		Lead				
		PCBs (Polychlorinated biphenyls)			Y	
		~~Selenium~~		Y		
		Silver			Y	
		Toxicity				
		Trash				
		Viruses (enteric)				
		Zinc				
		pH				
4	Ballona Creek Estuary	Cadmium				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Indicator Bacteria			Y	
		Lead			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)			Y	
		Silver				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Toxicity			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Zinc			Y	
4	Ballona Creek Wetlands	Exotic Vegetation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Habitat alterations				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Hydromodification				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Reduced Tidal Flushing				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Bell Creek	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Big Rock Beach	Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bluff Cove Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Boulder Creek (Ventura County)	Bifenthrin	Y			
		Toxicity	Y			
4	Brown Barranca/Long Canyon	Nitrate and Nitrite				
4	Bull Creek	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Bull Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
4	Burbank Western Channel	Ammonia				
		Cadmium				
		Copper				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Cyanide				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Scum/Foam-unnatural				
		Selenium				
		Taste and odor				
		Trash				
4	Cabrillo Beach (Outer)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Chlordane (tissue)				
		Copper				
		DDT (tissue & sediment)				
		Dieldrin				
		Endosulfan (tissue)				
		Mercury				
		Nickel				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene				
		Toxicity			Y	
		Zinc				
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA				
		Chlordane			Y	
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Endosulfan			Y	
		Indicator Bacteria				
		Nitrogen				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Toxaphene			Y	
		Toxicity				
		Trash				
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		DDT (Dichlorodiphenyltrichloroethane)				
		Dieldrin				
		Indicator Bacteria	Y			
		Nitrate and Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Total Dissolved Solids				
		Toxaphene				
		Trash				
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	Boron				
		ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chlorpyrifos (tissue)			Y	
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)			Y	
		Excess Algal Growth				
		Fecal Coliform			Y	
		Nitrate as Nitrate (NO3)				
		Nitrogen				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Selenium				
		Sulfates				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue & sediment)				
		Chlorpyrifos (tissue)				
		DDT (tissue & sediment)				
		Dacthal (sediment)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue & sediment)				
		Excess Algal Growth				
		Nitrogen				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sedimentation/Siltation				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Chlordane				
		Chloride				
		Chlorpyrifos				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		DDT (sediment)				
		Diazinon				
		Dieldrin				
		Indicator Bacteria			Y	
		Nitrate and Nitrite				
		Nitrate as Nitrate (NO3)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	Ammonia				
		Boron				
		Chloride				
		Chlorpyrifos				
		Diazinon				
		Indicator Bacteria				
		Organophosphorus Pesticides				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	Boron				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (Dichlorodiphenyltrichloroethane)				
		Diazinon				
		Dieldrin				
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Toxaphene				
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	ChemA (tissue)				
		Chlordane (tissue)				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin (tissue)				
		Endosulfan (tissue)				
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue)				
		Nitrate as Nitrate (NO3)				
		Nitrogen, Nitrate				
		Nitrogen, Nitrite	Y			TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls) (tissue)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		~~Chlordane~~		Y		
		Chloride				
		Chlorpyrifos				
		DDT (tissue)				
		Diazinon				
		Dieldrin				
		~~Endosulfan (tissue)~~		Y		
		Excess Algal Growth				
		Indicator Bacteria			Y	
		Malathion	Y			
		Nitrogen, Nitrite				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
		Trash				
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Excess Algal Growth				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				
		Sedimentation/Siltation				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	~~Ammonia~~		Y	Y	
		Chlordane (tissue)				
		Chlorpyrifos	Y			
		DDT (tissue)			Y	
		Diazinon	Y			
		Dieldrin				
		Malathion	Y			
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene				
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	Ammonia				
		ChemA (tissue)				
		Chlordane				
		Chloride				
		DDT (tissue)				
		Dieldrin				
		Endosulfan (tissue)				
		Excess Algal Growth				
		PCBs (Polychlorinated biphenyls)				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene (tissue & sediment)				
		Toxicity				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Canada Larga (Ventura River Watershed)	Indicator Bacteria			Y	
		Oxygen, Dissolved			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	Carbon Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Casitas, Lake	Mercury				
4	Castaic Lagoon	PCBs (Polychlorinated biphenyls)	Y			
4	Castaic Lake	Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Castlerock Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Channel Islands Harbor	Lead			Y	
		Zinc			Y	
4	Channel Islands Harbor Beach	Indicator Bacteria			Y	
4	Colorado Lagoon	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		Lead			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Zinc			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Compton Creek	Benthic Community Effects			Y	
		Copper				
		Indicator Bacteria				
		Iron	Y			
		Lead				
		Trash				
		Zinc	Y			
		pH				
4	Coyote Creek	Abnormal Fish Histology (Lesions)				
		~~Ammonia~~		Y		
		Copper, Dissolved				
		~~Diazinon~~		Y		
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron	Y			
		~~Lead~~		Y		
		Malathion	Y			
		Toxicity				
		Zinc				
		pH				
4	Coyote Creek, North Fork	Indicator Bacteria				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
4	Crystal Lake	Organic Enrichment/Low Dissolved Oxygen				
4	Dan Blocker Memorial (Coral) Beach	Indicator Bacteria			Y	
4	Dockweiler Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Dominguez Channel (lined portion above Vermont Ave)	Aldrin				
		~~Ammonia~~		Y	Y	
		ChemA				
		Chlordane				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Chromium			Y	
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				
		~~Diazinon~~		Y		TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin			Y	
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Aldrin				
		~~Ammonia~~		Y	Y	
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		ChemA				
		Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium (total)				
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper	Y			
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Zinc (sediment)~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Copper	Y			
		Oxygen, Dissolved	Y			
4	Dry Canyon Creek	Indicator Bacteria			Y	
		Selenium, Total				
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	Bifenthrin	Y			
		ChemA			Y	
		Chlordane				
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)				
		Nitrogen				
		Toxaphene				
		Toxicity				
4	Echo Park Lake	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Ammonia~~		Y		
		Chlordane	Y			
		~~Copper~~		Y		
		Dieldrin	Y			

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	El Dorado Lakes	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Elderberry Forebay	Dieldrin	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Elizabeth Lake	Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
		Trash				
		pH				
4	Ellsworth Barranca	Chlorpyrifos	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
4	Escondido Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Flat Rock Point Beach Area	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	Boron				
		Chlordane	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Sulfates				
		Total Dissolved Solids				
4	Hermosa Beach	~~Indicator Bacteria~~		Y	Y	
4	Hobie Beach (Channel Islands Harbor)	Indicator Bacteria			Y	
4	Honda Barranca	Bifenthrin	Y			
		Chlordane	Y			
		Chlorpyrifos	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
4	Hopper Creek	Sulfates				
		Total Dissolved Solids				
4	Hueneme Drain	Escherichia coli (E. coli)	Y			
		Trash	Y			
4	Inspiration Point Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	J Street Drain (Ventura County)	Trash	Y			
4	Javon Canyon	Benthic Community Effects	Y			
		Selenium	Y			

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	La Costa Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Calabasas	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Hughes	Algae				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Eutrophication			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		~~Fish Kills~~		Y		
		Odor				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Trash				
4	Lake Lindero	Algae				
		Chloride				
		Eutrophic				
		Odor				
		Selenium				
		Specific Conductivity				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lake Sherwood	Algae				
		~~Ammonia~~		Y	Y	
		Eutrophic				
		Mercury (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Organic Enrichment/Low Dissolved Oxygen~~		Y	Y	
4	Las Flores Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Tunas Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Las Virgenes Creek	Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Organic Enrichment/Low Dissolved Oxygen			Y	
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Legg Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)	Y			

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				
		pH				
4	Leo Carillo Beach (South of County Line)	~~Indicator Bacteria~~		Y	Y	
4	Lincoln Park Lake	Ammonia				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Lead~~		Y		
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 1	Algae				
		Benthic Community Effects				
		Indicator Bacteria			Y	
		Invasive Species				
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Lindero Creek Reach 2 (Above Lake)	Algae				
		Indicator Bacteria			Y	
		Scum/Foam-unnatural				
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Long Beach City Beach	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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REGION	**WATER BODY SEGMENT**	**POLLUTANT**	**REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS**		**MISCELLANEOUS CHANGES**	
			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
4	Long Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Cabrillo Marina	Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Consolidated Slip	2-Methylnaphthalene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benthic Community Effects				
		Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Cadmium (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nickel				
		PAHs (Polycyclic Aromatic Hydrocarbons)				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		PCBs (Polychlorinated biphenyls) (tissue & sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Fish Harbor	Benzo(a)anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dibenz[a,h]anthracene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Phenanthrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Pyrene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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REGION	**WATER BODY SEGMENT**	**POLLUTANT**	**REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS**		**MISCELLANEOUS CHANGES**	
			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Beach Closures				
		Copper				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles River Estuary (Queensway Bay)	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (sediment)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead (sediment)				
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	
		Trash				
		Zinc				
4	Los Angeles River Reach 1 (Estuary to Carson Street)	Aluminum				
		Ammonia				
		Cadmium				
		Copper, Dissolved				
		Cyanide				
		~~Diazinon~~		Y		
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Trash				
		Zinc, Dissolved				
		pH				
4	Los Angeles River Reach 2 (Carson to Figueroa Street)	Ammonia				
		Copper				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	Ammonia			Y	
		Copper				
		Indicator Bacteria	Y			
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	~~Ammonia~~		Y	Y	
		Benthic Community Effects	Y			
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Taste and odor				
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 5 (within Sepulveda Basin)	Ammonia			Y	
		Copper				
		Lead				
		Nutrients (Algae)				
		Oil				
		Scum/Foam-unnatural				
		Taste and odor				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Toxicity	Y			
		Trash				
4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	1,1-Dichloroethylene (DCE)/ Vinylidene Chloride				
		Copper	Y			
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Tetrachloroethylene/PCE				
		Toxicity	Y			
		Trichloroethylene/TCE				
4	Los Angeles/Long Beach Inner Harbor	~~Beach Closures~~		Y		
		Benthic Community Effects				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Benzo(a)pyrene (3,4-Benzopyrene -7-d)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chrysene (C1-C4)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Los Cerritos Channel	Ammonia				
		Bis(2ethylhexyl)phthalate (DEHP)				
		Chlordane (sediment)				
		Copper				
		Indicator Bacteria			Y	
		Lead				
		Trash				
		Zinc				
		pH				
4	Los Sauces Creek	Selenium	Y			
4	Lunada Bay Beach	Beach Closures				
		Indicator Bacteria				
4	Machado Lake (Harbor Park Lake)	Algae				
		Ammonia				
		ChemA			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Dieldrin (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Eutrophic				
		Odor				
		PCBs (Polychlorinated biphenyls) (tissue)				
		Trash				
4	Madranio Canyon	Benthic Community Effects	Y			
		Copper	Y			
		Selenium	Y			
4	Malaga Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y		
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Malibou Lake	Algae				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dieldrin	Y			
		Eutrophic				
		Organic Enrichment/Low Dissolved Oxygen				
4	Malibu Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
4	Malibu Creek	Benthic Community Effects			Y	
		Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Indicator Bacteria			Y	
		Invasive Species				
		Nutrients (Algae)				
		Scum/Foam-unnatural				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Sulfates				
		Toxicity	Y			
		Trash				
4	Malibu Lagoon	Benthic Community Effects				
		Eutrophic				
		Indicator Bacteria			Y	
		Swimming Restrictions				
		Viruses (enteric)				
		pH				
4	Malibu Lagoon Beach (Surfrider)	Beach Closures				
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Manhattan Beach	~~Indicator Bacteria~~		Y	Y	

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REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Marina del Rey Harbor - Back Basins	Chlordane			Y	There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Copper			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin			Y	
		Indicator Bacteria				
		Lead			Y	
		Oxygen, Dissolved	Y			
		PCBs (Polychlorinated biphenyls)			Y	
		Toxicity			Y	
		Zinc			Y	
4	Marina del Rey Harbor Beach	Indicator Bacteria			Y	
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Creek Reach 2 (Above Reservoir)	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Matilija Reservoir	Fish Barriers (Fish Passage)				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	McCoy Canyon Creek	Indicator Bacteria			Y	
		Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium, Total				
4	McGrath Beach	Indicator Bacteria			Y	
4	McGrath Lake	Chlordane			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Dieldrin (sediment)				
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls) (sediment)				
		Toxicity			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	Algae				
		Benthic Community Effects	Y			
		Indicator Bacteria			Y	
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Medea Creek Reach 2 (Abv Confl. with Lindero)	Algae				
		Benthic Community Effects			Y	
		Indicator Bacteria			Y	
		Invasive Species				
		Sedimentation/Siltation				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	Nitrate and Nitrite				
4	Monrovia Canyon Creek	Lead				
4	Munz Lake	Eutrophic				
		Trash				
4	Nicholas Canyon Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Ormond Beach	Indicator Bacteria				
4	Ormond Beach Wetlands	Trash	Y			
		pH	Y			
4	Oxnard Drain	Escherichia coli (E. coli)	Y			

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Trash	Y			
		pH	Y			
4	Padre Juan Canyon	Benthic Community Effects	Y			
		Selenium	Y			
4	Palo Comado Creek	Indicator Bacteria			Y	
4	Palo Verde Shoreline Park Beach	Pathogens				
		Pesticides				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Paradise Cove Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peck Road Park Lake	Chlordane (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDT (tissue)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Odor				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Organic Enrichment/Low Dissolved Oxygen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Peninsula Beach	Indicator Bacteria				
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	Chloride				
		Toxicity	Y			
		pH				
4	Point Dume Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Fermin Park Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Point Mugu Beach	Indicator Bacteria	Y		Y	
4	Point Vicente Beach	Beach Closures				
		Indicator Bacteria				
4	Pole Creek (trib to Santa Clara River Reach 3)	Sulfates				
		Total Dissolved Solids				
4	Port Hueneme Beach Park	Indicator Bacteria	Y		Y	
4	Port Hueneme Harbor (Back Basins)	Arsenic	Y			
		Cadmium	Y			
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Dieldrin	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)	Y			
		PCBs (Polychlorinated biphenyls)			Y	
4	Port Hueneme Pier	PCBs (Polychlorinated biphenyls)				
4	Portuguese Bend Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Potrero Canyon Creek	Oxygen, Dissolved	Y			
4	Promenade Park Beach	~~Indicator Bacteria~~		Y	Y	
4	Puddingstone Reservoir	Chlordane			Y	
		DDT (Dichlorodiphenyltrichloroethane)			Y	
		Mercury			Y	
		Organic Enrichment/Low Dissolved Oxygen				
		PCBs (Polychlorinated biphenyls)			Y	
4	Puente Creek	Indicator Bacteria			Y	
		Selenium				
4	Puerco Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Pyramid Lake	Chlordane	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Mercury				
		PCBs (Polychlorinated biphenyls)	Y			
4	Redondo Beach	DDT (Dichlorodiphenyltrichloroethane)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Resort Point Beach	Beach Closures				
		Indicator Bacteria				
4	Rincon Beach	Indicator Bacteria				
4	Rincon Parkway Beach	Indicator Bacteria	Y			
4	Rio De Santa Clara/Oxnard Drain No. 3	ChemA (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chlordane (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		DDD (Dichlorodiphenyldichloroethane)	Y			
		DDE (Dichlorodiphenyldichloroethylene)	Y			
		DDT (tissue)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen				
		PCBs (Polychlorinated biphenyls)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene (tissue)				
		Toxicity			Y	
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Toxicity				
		Trash				
		Zinc				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		pH				
4	Rio Hondo Reach 2 (At Spreading Grounds)	Ammonia				
		Coliform Bacteria				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Cyanide				
4	Robert H. Meyer Memorial Beach	~~Beach Closures~~		Y		
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Rocky Point Beach	Beach Closures				
4	Royal Palms Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Indicator Bacteria~~		Y	Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	San Antonio Creek (Tributary to Ventura River Reach 4)	Indicator Bacteria				
		Nitrogen				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total Dissolved Solids				
4	San Buenaventura Beach	Indicator Bacteria				
4	San Gabriel River Estuary	Abnormal Fish Histology (Lesions)				
		Copper				
		Dioxin				
		Indicator Bacteria	Y			
		Nickel				
		Oxygen, Dissolved				
4	San Gabriel River Reach 1 (Estuary to Firestone)	Abnormal Fish Histology (Lesions)				
		Excess Algal Growth				
		~~Indicator Bacteria~~		Y	Y	
		Temperature, water	Y			
		Toxicity				
		pH				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	Copper				
		Cyanide				
		~~Indicator Bacteria~~		Y	Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				
		Temperature, water	Y			
		Zinc				
4	San Gabriel River Reach 3 (Whittier Narrows to Ramona)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
4	San Gabriel River, East Fork	Benthic Community Effects	Y			
		Trash				
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	Ammonia				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxicity			Y	
		pH				
		Ammonia				
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Selenium				
		Temperature, water	Y			
		Total Dissolved Solids				
		Toxicity			Y	
		pH				
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Excess Algal Growth				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	San Pedro Bay Near/Off Shore Zones	Chlordane				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Chromium			Y	
		Copper			Y	
		PAHs (Polycyclic Aromatic Hydrocarbons)			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Zinc			Y	
4	Sanjon Barranca Creek	Escherichia coli (E. coli)	Y			
		Trash	Y			
4	Santa Clara River Estuary	Ammonia	Y			
		ChemA				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Nitrogen, Nitrate				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxaphene				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Toxicity				
		pH	Y			
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	Oxygen, Dissolved	Y			
		Toxicity				
		Trash	Y			
		pH	Y			
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	~~Ammonia~~		Y	Y	
		Chloride				
		Escherichia coli (E. coli)	Y			
		Indicator Bacteria	Y			

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Mercury	Y			
		Selenium	Y			
		Total Dissolved Solids				
		Toxicity				
		Trash	Y			
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	Ammonia			Y	
		Benthic Community Effects	Y		Y	
		Chloride				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Iron				
		Nitrate and Nitrite				
		Trash	Y			
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	Ammonia				
		Benthic Community Effects	Y			
		Chloride			Y	
		Chlorpyrifos				
		~~Copper~~		Y		
		~~Diazinon~~		Y		
		~~Indicator Bacteria~~		Y	Y	
		~~Iron~~		Y		
		Temperature, water	Y			
		Toxicity				
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)	Trash	Y			
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	Boron				

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Specific Conductance				
		Sulfates				
		Total Dissolved Solids				
4	Santa Fe Dam Park Lake	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		PCBs (Polychlorinated biphenyls)	Y			
		pH				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Bay Offshore/Nearshore	Arsenic	Y			
		Chlordane				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Mercury	Y			
		PAHs (Polycyclic Aromatic Hydrocarbons)				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		~~Toxicity~~		Y	Y	
		Trash			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Santa Monica Beach	Indicator Bacteria			Y	
4	Santa Monica Canyon	Indicator Bacteria				
		Lead				
4	Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)	Trash	Y			
4	Sawpit Creek	Bis(2ethylhexyl)phthalate (DEHP)				
		~~Indicator Bacteria~~		Y	Y	
4	Sea Level Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Sepulveda Canyon	~~Ammonia~~		Y	Y	
		Copper				

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Indicator Bacteria				
		Lead				
		Selenium				
		Zinc				
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	Chloride				
		pH				
4	Solstice Canyon Creek	Invasive Species				
4	South San Jose Creek (Los Angeles County)	Ammonia	Y			
		Toxicity	Y			
		pH	Y			
4	Stokes Creek	Indicator Bacteria			Y	
4	Surfers Point at Seaside	Indicator Bacteria				
4	Tapo Canyon	Chlordane	Y			
		Chloride	Y			
		DDD (Dichlorodiphenyldichloroethane)	Y			
		Malathion	Y			
		Sulfates	Y			
		Total Dissolved Solids	Y			
		Toxicity	Y			
4	Timber Canyon	Chlorpyrifos	Y			
4	Topanga Beach	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Topanga Canyon Creek	Lead				
4	Torrance Beach	Beach Closures				
		Indicator Bacteria			Y	
4	Torrance Carson Channel	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Lead				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	New Delistings	Pollutant Name Change	Other Revisions
4	Torrey Canyon Creek	Nitrate and Nitrite				
4	Trancas Beach (Broad Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Triunfo Canyon Creek Reach 1	Benthic Community Effects	Y			
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Triunfo Canyon Creek Reach 2	Benthic Community Effects				
		Lead				
		Mercury				
		Sedimentation/Siltation				
4	Tujunga Wash (LA River to Hansen Dam)	Ammonia				
		Copper				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Scum/Foam-unnatural				
		Taste and odor				
		Trash				
4	Venice Beach	Indicator Bacteria			Y	
4	Ventura Harbor: Ventura Keys	Arsenic	Y			
		Cadmium	Y			
		Chlordane	Y			
		Coliform Bacteria				
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Dieldrin	Y			
		Indicator Bacteria	Y			
		PCBs (Polychlorinated biphenyls)	Y			
4	Ventura Marina Jetties	DDT (Dichlorodiphenyltrichloroethane)				
		PCBs (Polychlorinated biphenyls)				
4	Ventura River Estuary	Algae				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

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			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		Eutrophic				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria			Y	
		Trash				
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	Algae				
		Benthic Community Effects	Y			
		Temperature, water	Y			
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	Benthic Community Effects	Y			
		Indicator Bacteria				
		~~Pumping~~		Y		
		Toxicity	Y			
		~~Water Diversion~~		Y		
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	Benthic Community Effects	Y			
		Pumping				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Temperature, water	Y			
		Water Diversion				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	Copper				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Verdugo Wash Reach 2 (Above Verdugo Road)	Excess Algal Growth				
		Indicator Bacteria			Y	TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Trash				
4	Walnut Creek Wash (Drains from Puddingstone Res)	Benthic Community Effects			Y	

Date: 06/09/17						

2016 INTEGRATED REPORT
SUMMARY OF REGIONAL BOARD RECOMMENDED CHANGES TO THE 2012 303(d) LIST
(includes Categories 4a, 4b, and 5)

REGION	WATER BODY SEGMENT	POLLUTANT	REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS		MISCELLANEOUS CHANGES	
			New Listings	New Delistings	Pollutant Name Change	Other Revisions
		Indicator Bacteria				There have been changes to assessment information for this pollutant, but the pollutant listing decision has not changed from last 303(d) listing cycle.
		Toxicity				
		pH				
4	Westlake Lake	Algae				
		Ammonia				
		Eutrophic				
		Lead				
		Organic Enrichment/Low Dissolved Oxygen				
4	Wheeler Canyon/Todd Barranca	Chlordane	Y			
		Cypermethrin	Y			
		DDT (Dichlorodiphenyltrichloroethane)	Y			
		Nitrate and Nitrite				
		Sulfates				
		Total Dissolved Solids				
		Toxaphene	Y			
		Toxicity	Y			
4	Whites Point Beach	DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
4	Wildlife Lake	Ammonia	Y			
		Oxygen, Dissolved	Y			
4	Will Rogers Beach	Indicator Bacteria			Y	
4	Wilmington Drain	Ammonia				
		~~Copper~~		Y		
		Indicator Bacteria			Y	
		~~Lead~~		Y		
4	Zuma Beach (Westward Beach)	Beach Closures				
		DDT (Dichlorodiphenyltrichloroethane)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL
		Indicator Bacteria				

Date: 06/09/17						
2016 INTEGRATED REPORT SUMMARY OF REGIONAL BOARD RECOMMENDED CHANGES TO THE 2012 303(d) LIST (includes Categories 4a, 4b, and 5)						
REGION	**WATER BODY SEGMENT**	**POLLUTANT**	**REGIONAL BOARD 303(d) LISTING RECOMMENDATIONS**		**MISCELLANEOUS CHANGES**	
			New Listings	**New Delistings**	**Pollutant Name Change**	**Other Revisions**
		PCBs (Polychlorinated biphenyls)				TMDL status changed from TMDL still required to Being Addressed by Completed TMDL

** Additional listings and delistings can be an artifact created from mapping changes such as the splitting of a water body into additional segments or the merging of water bodies into one single water body. Original 303(d) listings are copied to new segments and then delisted from the old segment. This generates listings and delistings that should not be included in important counts of new listings and delistings.*

2016 CALIFORNIA 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS*

Category 5 criteria: 1) A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

** TMDL requirement status definitions for listed pollutants are: A= TMDL still required, B= being addressed by USEPA approved TMDL, C= being addressed by action other than a TMDL, ALT= being addressed by USEPA approved TMDL alternative

*** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date, B= Date USEPA approved TMDL, and C= Completion date for action other than a TMDL

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• POLLUTANT ◦ POTENTIAL SOURCES *Relevant Notes*	ESTIMATED AREA ASSESSED	FIRST YEAR LISTED	TMDL REQUIREMENT STATUS**	DATE***
4	Alamitos Bay	Bay & Harbor	40512000 / 18070104	• Indicator Bacteria ◦ Source Unknown	328 Acres	2006	5A	2019
				• Oxygen, Dissolved ◦ Source Unknown	328 Acres	2014	5A	2027
4	Alhambra Wash	River & Stream	40531000 / 18070105	• Ammonia ◦ Other	6.9 Miles	2014	5A	2027
				• Benthic Community Effects ◦ Source Unknown	6.9 Miles	2014	5A	2027
4	Alondria Park Lake	Lake & Reservoir	40512000 / 18070104	• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8 Acres	2014	5A	2027
4	Arroyo Seco Reach 1 (LA River to West Holly Ave.)	River & Stream	40515010 / 18070104	• Benthic Community Effects ◦ Source Unknown	5.2 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Source Unknown	5.2 Miles	2014	5B	2012
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	5.2 Miles	2002	5B	2008
4	Artesia-Norwalk Drain	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	2.5 Miles	2010	5B	2016
				• Selenium ◦ Source Unknown	2.5 Miles	2010	5A	2021
4	Arundell Barranca (Ventura County)	River & Stream	40311000 / 18070103	• Indicator Bacteria ◦ Source Unknown	4.9 Miles	2014	5A	2027
4	Balboa Lake	Lake & Reservoir	40521000 / 18070105	• Ammonia ◦ Source Unknown	27 Acres	2014	5B	2004
				• Oxygen, Dissolved ◦ Source Unknown	27 Acres	2014	5A	2027
				• Toxicity ◦ Source Unknown	27 Acres	2014	5A	2027
4	Ballona Creek	River & Stream	40513000 / 18070104	• Copper ◦ Source Unknown	6.5 Miles	1800	5B	2005

				• Cyanide ∘ Source Unknown	6.5 Miles	1996	5A	2019
				• Indicator Bacteria ∘ Nonpoint Source ∘ Point Source	6.5 Miles	2014	5B	2007
				• Lead ∘ Source Unknown	6.5 Miles	2002	5B	2005
				• Toxicity ∘ Source Unknown	6.5 Miles	1996	5B	2005
				• Trash ∘ Source Unknown	6.5 Miles	1996	5B	2001
				• Viruses (enteric) ∘ Nonpoint Source ∘ Point Source	6.5 Miles	1996	5B	2007
				• Zinc ∘ Source Unknown	6.5 Miles	1996	5B	2005
4	Boulder Creek (Ventura County)	River & Stream	40331000 / 18070102	• Bifenthrin ∘ Source Unknown	6.5 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	6.5 Miles	2014	5A	2027
4	Bull Creek (Los Angeles County)	River & Stream	40521000 / 18070105	• Ammonia ∘ Source Unknown	6.5 Miles	2014	5B	2004
				• Toxicity ∘ Source Unknown	6.5 Miles	2014	5A	2027
4	Burbank Western Channel	River & Stream	40521000 / 18070105	• Copper ∘ Source Unknown	13 Miles	2006	5B	2005
				• Cyanide ∘ Source Unknown	13 Miles	2006	5A	2019
				• Indicator Bacteria ∘ Source Unknown	13 Miles	2010	5B	2012
				• Lead ∘ Source Unknown	13 Miles	2006	5B	2005
				• Selenium ∘ Source Unknown	13 Miles	2010	5A	2021
				• Trash ∘ Nonpoint Source ∘ Surface Runoff ∘ Urban Runoff/Storm Sewers	13 Miles	1996	5B	2008
4	Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)	River & Stream	40312000 / 18070103	• Ammonia ∘ Nonpoint Source ∘ Point Source	4.3 Miles	1996	5B	2003
				• ChemA ∘ Agriculture-storm runoff *Historical use of pesticides and lubricants.*	4.3 Miles	2014	5B	2006

				• Chlordane ◦ Source Unknown	4.3 Miles	1800	5B	2007
				• Copper ◦ Nonpoint Source	4.3 Miles	2014	5B	2007
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Nonpoint Source	4.3 Miles	1996	5B	2005
				• Dieldrin ◦ Source Unknown	4.3 Miles	2006	5B	2006
				• Endosulfan ◦ Agriculture-storm runoff	4.3 Miles	1988	5B	2006
				• Indicator Bacteria ◦ Source Unknown *Area affected is at the mouth of the creek.*	4.3 Miles	2014	5A	2006
				• Nitrogen ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2002	5B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2014	5B	2005
				• Sedimentation/Siltation ◦ Source Unknown	4.3 Miles	2002	5A	2005
				• Toxaphene ◦ Nonpoint Source	4.3 Miles	1800	5B	2005
				• Toxicity ◦ Nonpoint Source ◦ Point Source	4.3 Miles	2014	5B	2005
				• Trash ◦ Source Unknown	4.3 Miles	2010	5A	2021
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	River & Stream	40312000 / 18070103	• Ammonia ◦ Source Unknown	3.5 Miles	1996	5B	2003
				• Chlordane ◦ Source Unknown	3.5 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3.5 Miles	2002	5B	2008
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	3.5 Miles	1996	5B	2006
				• Dieldrin ◦ Source Unknown	3.5 Miles	2006	5B	2006

				Indicator Bacteria ◦ Source Unknown	3.5 Miles	2014	5A	2027
				Nitrate and Nitrite ◦ Nonpoint Source ◦ Point Source	3.5 Miles	1996	5B	2003
				PCBs (Polychlorinated biphenyls) ◦ Source Unknown	3.5 Miles	1996	5B	2006
				Sedimentation/Siltation ◦ Source Unknown	3.5 Miles	2002	5A	2015
				Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	3.5 Miles	2002	5B	2008
				Toxaphene ◦ Source Unknown	3.5 Miles	1988	5B	2019
				Trash ◦ Source Unknown	3.5 Miles	2010	5A	2021
4	Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)	River & Stream	40311000 / 18070103	**ChemA (tissue)** ◦ Agriculture-storm runoff	7.2 Miles	1996	5B	2006
				Historical use of pesticides and lubricants.				
				Diazinon ◦ Source Unknown	7.2 Miles	2006	5B	2006
				Dieldrin (tissue) ◦ Nonpoint Source	7.2 Miles	2006	5B	2005
				Endosulfan (tissue & sediment) ◦ Agriculture-storm runoff	7.2 Miles	2006	5B	2006
				Nitrate as Nitrate (NO3) ◦ Nonpoint Source ◦ Point Source	7.2 Miles	1996	5B	2003
				Nitrogen ◦ Nonpoint Source	7.2 Miles	2002	5B	2003
				Sedimentation/Siltation ◦ Source Unknown	7.2 Miles	2002	5A	2015
				Selenium ◦ Nonpoint Source	7.2 Miles	2002	5B	2007
				Total DDT (sum of 4,4'- and 2,4'-isomers of DDT, DDE, and DDD) ◦ Source Unknown	7.2 Miles	2014	5B	2005
				Toxicity ◦ Source Unknown	7.2 Miles	1996	5B	2005

				• **Trash** ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	7.2 Miles	2002	5B	2008
4	Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)	River & Stream	40311000 / 18070103	• **ChemA (tissue)** ◦ Agriculture-storm runoff	4.3 Miles	1996	5B	2006
				• **Diazinon** ◦ Source Unknown	4.3 Miles	2006	5B	2006
				• **Nitrogen** ◦ Nonpoint Source	4.3 Miles	2002	5B	2003
				• **Sedimentation/Siltation** ◦ Source Unknown	4.3 Miles	2002	5A	2005
				• **Toxicity** ◦ Nonpoint Source	4.3 Miles	1996	5B	2006
				• **Trash** ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	4.3 Miles	2002	5B	2008
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	River & Stream	40362000 / 18070103	• **Ammonia** ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003
				• **Chlordane** ◦ Source Unknown	15 Miles	1996	5B	2006
				• **Chloride** ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	15 Miles	2002	5B	2008
				• **Chlorpyrifos** ◦ Source Unknown	15 Miles	2006	5B	2006
				• **Diazinon** ◦ Source Unknown	15 Miles	2006	5B	2006
				• **Dieldrin** ◦ Source Unknown	15 Miles	2006	5B	2006
				• **Indicator Bacteria** ◦ Source Unknown	15 Miles	2014	5A	2027
				• **Nitrate and Nitrite** ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003
				• **Nitrate as Nitrate (NO3)** ◦ Nonpoint Source ◦ Point Source	15 Miles	1996	5B	2003

				Sedimentation/Siltation ◦ Source Unknown	15 Miles	2002	5A	2005
				Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	15 Miles	2002	5B	2008
				Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	15 Miles	2002	5B	2008
				Toxicity ◦ Source Unknown	15 Miles	1996	5B	2006
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	River & Stream	40367000 / 18070103	**Ammonia** ◦ Nonpoint Source ◦ Point Source	14 Miles	1996	5B	2003
				Boron ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				Chlorpyrifos ◦ Source Unknown	14 Miles	2006	5B	2006
				Diazinon ◦ Source Unknown	14 Miles	2006	5B	2006
				Indicator Bacteria ◦ Source Unknown	14 Miles	2002	5A	2019
				Organophosphorus Pesticides ◦ Agriculture ◦ Municipal Point Sources	14 Miles	1996	5B	2006

				• Sedimentation/Siltation ◦ Source Unknown	14 Miles	2002	5A	2006
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	14 Miles	2002	5B	2008
				• Toxicity ◦ Source Unknown	14 Miles	1996	5B	2006
				• Trash ◦ Source Unknown	14 Miles	2010	5A	2021
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	River & Stream	40366000 / 18070103	• Boron ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Chlordane ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Chlorpyrifos ◦ Source Unknown	7.2 Miles	2006	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Diazinon ◦ Source Unknown	7.2 Miles	2002	5B	2006
				• Dieldrin ◦ Source Unknown	7.2 Miles	2006	5B	2006

				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	7.2 Miles	1996	5B	2006
				• Sedimentation/Siltation ◦ Source Unknown	7.2 Miles	2002	5A	2015
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	7.2 Miles	2002	5B	2008
				• Toxaphene ◦ Source Unknown	7.2 Miles	1988	5B	2006
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	River & Stream	40312000 / 18070103	• ChemA (tissue) ◦ Agriculture-storm runoff	1.7 Miles	1996	5B	2006
				• Chlorpyrifos ◦ Source Unknown	1.7 Miles	2006	5B	2006
				• Diazinon ◦ Source Unknown	1.7 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	1.7 Miles	2014	5A	2027
				• Nitrate as Nitrate (NO3) ◦ Nonpoint Source ◦ Point Source	1.7 Miles	1996	5B	2003
				• Nitrogen, Nitrate ◦ Nonpoint Source ◦ Point Source	1.7 Miles	1996	5B	2003
				• Nitrogen, Nitrite ◦ Source Unknown	1.7 Miles	2014	5B	2003
				• Sulfates ◦ Source Unknown	1.7 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Major Municipal Point Source-dry weather discharge	1.7 Miles	2002	5B	2008

				◦ Surface Runoff				
				• Toxicity ◦ Source Unknown	1.7 Miles	1996	5B	2006
				• Trash ◦ Source Unknown	1.7 Miles	2010	5A	2021
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	River & Stream	40363000 / 18070103	• Ammonia ◦ Nonpoint Source ◦ Point Source	6.2 Miles	1996	5B	2003
				• ChemA (tissue) ◦ Agriculture-storm runoff	6.2 Miles	1996	5B	2006
				• Chlordane ◦ Source Unknown	6.2 Miles	1996	5B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	6.2 Miles	2002	5B	2008
				• Chlorpyrifos ◦ Source Unknown	6.2 Miles	2006	5B	2006
				• Diazinon ◦ Source Unknown	6.2 Miles	2006	5B	2006
				• Dieldrin ◦ Source Unknown	6.2 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	6.2 Miles	2010	5A	2019
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	6.2 Miles	1996	5B	2006
				• Sulfates ◦ Source Unknown	6.2 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Source Unknown	6.2 Miles	2002	5B	2008
				• Toxicity ◦ Nonpoint Source ◦ Point Source	6.2 Miles	1996	5B	2006
				• Trash ◦ Source Unknown	6.2 Miles	2010	5A	2021
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d	River & Stream	40364000 / 18070103	• Ammonia ◦ Nonpoint Source ◦ Point Source	3 Miles	1996	5B	2003

list)

• <u>ChemA (tissue)</u> ◦ Agriculture-storm runoff	3 Miles	1996	5B	2006
• <u>Chlordane</u> ◦ Source Unknown	3 Miles	1996	5B	2006

• <u>Chloride</u>
  ◦ Atmospheric Deposition
  ◦ Domestic Use of Ground Water
  ◦ Groundwater Loadings
  ◦ Irrigated Crop Production
  ◦ Major Municipal Point Source-dry weather discharge
  ◦ Surface Runoff
	3 Miles	2002	5B	2008

• <u>Chlorpyrifos</u> ◦ Source Unknown	3 Miles	2006	5B	2006
• <u>Diazinon</u> ◦ Source Unknown	3 Miles	2006	5B	2006
• <u>Dieldrin</u> ◦ Source Unknown	3 Miles	2006	5B	2006
• <u>Indicator Bacteria</u> ◦ Source Unknown	3 Miles	2014	5A	2027
• <u>Malathion</u> ◦ Source Unknown	3 Miles	2014	5A	2029

• <u>Nitrogen, Nitrite</u>
  ◦ Nonpoint Source
  ◦ Point Source
	3 Miles	1996	5B	2003

• <u>PCBs (Polychlorinated biphenyls)</u> ◦ Source Unknown	3 Miles	1996	5B	2006

• <u>Sulfates</u>
  ◦ Atmospheric Deposition
  ◦ Domestic Use of Ground Water
  ◦ Groundwater Loadings
  ◦ Irrigated Crop Production
  ◦ Major Municipal Point Source-dry weather discharge
  ◦ Surface Runoff
	3 Miles	2002	5B	2008

• <u>Total Dissolved Solids</u>
  ◦ Atmospheric Deposition
  ◦ Domestic Use of Ground Water
  ◦ Groundwater Loadings
  ◦ Irrigated Crop Production
  ◦ Major Municipal Point Source-dry weather discharge
  ◦ Surface Runoff
	3 Miles	2002	5B	2008

• <u>Toxaphene (tissue & sediment)</u> ◦ Nonpoint Source	3 Miles	1988	5B	2006

• <u>Toxicity</u>
  ◦ Nonpoint Source
  ◦ Point Source
	3 Miles	1996	5B	2010

• <u>Trash</u>				

				◦ Source Unknown	3 Miles	2010	5A	2021
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	River & Stream	40365000 / 18070103	• Ammonia ◦ Nonpoint Source ◦ Point Source	8.7 Miles	1996	5B	2003
				• ChemA (tissue) ◦ Agriculture-storm runoff	8.7 Miles	1996	5B	2006
				• Chlordane ◦ Source Unknown	8.7 Miles	1996	5B	2006
				• Dieldrin ◦ Source Unknown	8.7 Miles	2006	5B	2006
				• Indicator Bacteria ◦ Source Unknown	8.7 Miles	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8.7 Miles	1996	5B	2006
				• Sedimentation/Siltation ◦ Agriculture ◦ Natural Sources	8.7 Miles	2002	5A	2005
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	8.7 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	8.7 Miles	2002	5B	2008
				• Toxicity ◦ Nonpoint Source ◦ Point Source	8.7 Miles	1996	5B	2005
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	River & Stream	40364000 / 18070103	• Chlordane (tissue) ◦ Nonpoint Source	5.5 Miles	1996	5B	2006
				• Chlorpyrifos ◦ Source Unknown	5.5 Miles	2014	5A	2029
				• Diazinon ◦ Source Unknown	5.5 Miles	2014	5A	2029
				• Dieldrin				

				◦ Source Unknown	5.5 Miles	2006	5B	2006
				• Malathion ◦ Source Unknown	5.5 Miles	2014	5A	2029
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	5.5 Miles	1996	5B	2006
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	5.5 Miles	2002	5B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	5.5 Miles	2002	5B	2008
				• Toxaphene ◦ Source Unknown	5.5 Miles	1988	5B	2006
4	Canada Larga (Ventura River Watershed)	River & Stream	40210010 / 18070103	• Indicator Bacteria ◦ Source Unknown	8 Miles	2014	5A	2027
				Horse stables, land use, cattle, and wildlife may be sources.				
				• Oxygen, Dissolved ◦ Source Unknown	8 Miles	2014	5B	2013
				• Total Dissolved Solids ◦ Source Unknown	8 Miles	2010	5A	2021
4	Casitas, Lake	Lake & Reservoir	40220032 / 18070101	• Mercury ◦ Natural Sources ◦ Source Unknown	2069 Acres	2010	5A	2021
4	Castaic Lagoon	Lake & Reservoir	40351000 / 18070102	• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	183 Acres	2014	5A	2027
4	Castaic Lake	Lake & Reservoir	40351000 / 18070102	• Mercury ◦ Source Unknown	2282 Acres	2010	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	2282 Acres	2014	5A	2027
4	Colorado Lagoon	Wetland, Tidal	40512000 / 18070104	• Chlordane ◦ Source Unknown	13 Acres	2014	5B	2011
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	13 Acres	2014	5B	2011
				• Dieldrin				

				◦ Source Unknown	13 Acres	2014	5B	2011
				• Indicator Bacteria ◦ Source Unknown	13 Acres	2006	5A	2019
				• Lead ◦ Source Unknown	13 Acres	2014	5B	2011
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Source Unknown	13 Acres	2014	5B	2011
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	13 Acres	2014	5B	2011
				• Toxicity ◦ Source Unknown	13 Acres	2014	5B	2011
				• Zinc ◦ Source Unknown	13 Acres	2014	5B	2011
4	Compton Creek	River & Stream	40515010 / 18070104	• Benthic Community Effects ◦ Source Unknown	8.5 Miles	2014	5A	2021
				• Copper ◦ Source Unknown	8.5 Miles	1996	5B	2008
				• Indicator Bacteria ◦ Source Unknown	8.5 Miles	2014	5A	2009
				• Iron ◦ Source Unknown	8.5 Miles	2014	5A	2027
				• Lead ◦ Source Unknown	8.5 Miles	1996	5B	2005
				• Trash ◦ Nonpoint Source	8.5 Miles	2006	5B	2008
				• Zinc ◦ Source Unknown	8.5 Miles	2014	5B	2008
				• pH ◦ Nonpoint Source ◦ Point Source	8.5 Miles	1996	5B	2004
4	Coyote Creek	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	13 Miles	1996	5B	2016
				• Iron ◦ Source Unknown	13 Miles	2014	5A	2027
				• Malathion ◦ Source Unknown	13 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	13 Miles	2002	5A	2008
				• pH ◦ Source Unknown	13 Miles	2006	5A	2019
4	Coyote Creek, North Fork	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	5 Miles	2010	5B	2016
				• Selenium ◦ Source Unknown	5 Miles	2010	5A	2021

4	Crystal Lake	Lake & Reservoir	40543000 / 18070106	• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	3.7 Acres	1998	5A	2019
4	Dominguez Channel (lined portion above Vermont Ave)	River & Stream	40351000 / 18070104	• Copper ◦ Source Unknown	6.7 Miles	1996	5B	2012
				• Indicator Bacteria ◦ Source Unknown	6.7 Miles	2006	5A	2027
				• Lead ◦ Source Unknown	6.7 Miles	1800	5B	2012
				• Toxicity ◦ Source Unknown	6.7 Miles	2010	5B	2012
				• Zinc ◦ Source Unknown	6.7 Miles	1800	5B	2012
4	Dominguez Channel Estuary (unlined portion below Vermont Ave)	Estuary	40512000 / 18070104	• Benthic Community Effects ◦ Source Unknown	140 Acres	1996	5A	2019
				• Benzo(a)anthracene ◦ Agriculture-storm runoff	140 Acres	2006	5B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	140 Acres	1996	5B	2012
				• Chrysene (C1-C4) ◦ Source Unknown	140 Acres	2006	5B	2012
				• Copper ◦ Other	140 Acres	2014	5B	2012
				• Indicator Bacteria ◦ Source Unknown	140 Acres	2014	5A	2007
				• Lead ◦ Source Unknown	140 Acres	1800	5B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Agriculture ◦ Agriculture-animal ◦ Agriculture-grazing	140 Acres	1996	5B	2012
				• Phenanthrene ◦ Source Unknown	140 Acres	2006	5B	2012
				• Pyrene ◦ Source Unknown	140 Acres	2006	5B	2012
				• Toxicity ◦ Source Unknown	140 Acres	2014	5B	2012
4	Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)	Bay & Harbor	40512000 / 18070104	• Copper ◦ Source Unknown	83 Acres	2014	5A	2027
				• Oxygen, Dissolved	83 Acres	2014	5A	2027

				◦ Source Unknown				
4	Dry Canyon Creek	River & Stream	40521000 / 18070104	• Indicator Bacteria ◦ Source Unknown	3.9 Miles	2014	5A	2027
4	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2	River & Stream	40311000 / 18070103	• Bifenthrin ◦ Source Unknown	12 Miles	2014	5A	2027
				• ChemA ◦ Nonpoint Source	12 Miles	2014	5B	2006
				• Chlordane ◦ Source Unknown	12 Miles	1800	5B	2006
				• Chlorpyrifos ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	12 Miles	2014	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	12 Miles	1800	5B	2006
				• Nitrogen ◦ Nonpoint Source	12 Miles	1996	5B	2003
				• Toxaphene ◦ Source Unknown	12 Miles	1800	5B	2006
				• Toxicity ◦ Nonpoint Source	12 Miles	1996	5B	2005
4	Elderberry Forebay	Lake & Reservoir	40351000 / 18070102	• Dieldrin ◦ Source Unknown	464 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	464 Acres	2014	5A	2027
4	Elizabeth Lake	Lake & Reservoir	40351000 / 18070102	• Eutrophic ◦ Source Unknown	123 Acres	1996	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	123 Acres	1998	5A	2019
				• Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	123 Acres	1996	5B	2008
				• pH ◦ Source Unknown	123 Acres	1996	5A	2019
4	Ellsworth Barranca	River & Stream	40321000 / 18070103	• Chlorpyrifos ◦ Source Unknown	10 Miles	2014	5A	2027

				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	10 Miles	2014	5A	2030
4	Honda Barranca	River & Stream	40361000 / 18070103	• Bifenthrin ◦ Source Unknown	5.7 Miles	2014	5A	2027
				• Chlordane ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• Chlorpyrifos ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	5.7 Miles	2014	5B	2006
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	5.7 Miles	2014	5B	2006
4	Hopper Creek	River & Stream	40341000 / 18070102	• Sulfates ◦ Source Unknown	13 Miles	2002	5A	2015
				• Total Dissolved Solids ◦ Source Unknown	13 Miles	2220	5A	2019
4	Hueneme Drain	River & Stream	40311000 / 18070103	• Escherichia coli (E. coli) ◦ Source Unknown	1.7 Miles	2014	5A	2027
				• Trash ◦ Source Unknown	1.7 Miles	2014	5C	
4	Javon Canyon	River & Stream	40100011 / 18070101	• Benthic Community Effects ◦ Source Unknown	0.9 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	0.9 Miles	2014	5A	2027
4	Lake Hughes	Lake & Reservoir	40351000 / 18070102	• Algae ◦ Source Unknown	21 Acres	1996	5A	2019
				• Eutrophication ◦ Source Unknown	21 Acres	2014	5A	2019
				• Odor ◦ Source Unknown	21 Acres	1996	5A	2019
				• Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	21 Acres	1996	5B	2008
4	Lake Lindero	Lake & Reservoir	40423000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems	15 Acres	1996	5B	2003

				(Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Chloride ◦ Source Unknown	15 Acres	1996	5A	2019
				• Eutrophic ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1996	5B	2003
				• Odor ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1996	5B	2003
				• Selenium ◦ Source Unknown	15 Acres	1996	5A	2019
				• Specific Conductivity ◦ Source Unknown	15 Acres	1996	5A	2019
				• Trash ◦ Source Unknown	15 Acres	1996	5B	2008
4	Las Virgenes Creek	River & Stream	40422010 / 18070104	• Benthic Community Effects ◦ Source Unknown	12 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Nonpoint Source	12 Miles	2014	5B	2005
				• Invasive Species ◦ Source Unknown	12 Miles	2010	5A	2021
				• Nutrients (Algae) ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	12 Miles	1998	5B	2003
				• Organic Enrichment/Low Dissolved Oxygen ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings	12 Miles	1996	5B	2003

				Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	12 Miles	1996	5B	2003
				• Sedimentation/Siltation ◦ Source Unknown	12 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	12 Miles	1996	5A	2019
				• Trash ◦ Source Unknown	12 Miles	1996	5B	2008
4	Legg Lake	Lake & Reservoir	40531000 / 18070105	• Ammonia ◦ Source Unknown	25 Acres	1996	5B	2012
				• Copper ◦ Source Unknown	25 Acres	1996	5B	2012
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	25 Acres	2014	5A	2027
				• Lead ◦ Source Unknown	25 Acres	1996	5B	2012
				• Odor ◦ Source Unknown	25 Acres	1996	5B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	25 Acres	2014	5A	2027
				• Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	25 Acres	1996	5B	2008
				• pH ◦ Source Unknown	25 Acres	1996	5A	2019
4	Lincoln Park Lake	Lake & Reservoir	40515010 / 18070104	• Ammonia ◦ Source Unknown	3.8 Acres	1996	5B	2012
				• Eutrophic ◦ Source Unknown	3.8 Acres	1996	5B	2012
				• Odor ◦ Source Unknown	3.8 Acres	1996	5B	2012
				• Organic Enrichment/Low Dissolved Oxygen	3.8 Acres	1998	5B	2012

				◦ Source Unknown				
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	3.8 Acres	2014	5A	2027
				• Trash ◦ Source Unknown	3.8 Acres	1996	5B	2012
4	Lindero Creek Reach 1	River & Stream	40423000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	3 Miles	1996	5B	2003
				• Benthic Community Effects ◦ Source Unknown	3 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Nonpoint Source	3 Miles	2014	5B	2006
				• Invasive Species ◦ Source Unknown	3 Miles	2010	5A	2021
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	3 Miles	1996	5B	2003
				• Selenium ◦ Source Unknown	3 Miles	1996	5A	2019
				• Trash ◦ Source Unknown	3 Miles	1996	5B	2008
4	Lindero Creek Reach 2 (Above Lake)	River & Stream	40425000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	4.5 Miles	1998	5B	2003
				• Indicator Bacteria ◦ Source Unknown	4.5 Miles	2014	5B	2006
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition	4.5 Miles	1998	5B	2003

				Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Selenium ◦ Source Unknown	4.5 Miles	1998	5A	2019
				• Trash ◦ Source Unknown	4.5 Miles	1998	5B	2008
4	Los Angeles Harbor - Consolidated Slip	Bay & Harbor	40512000 / 18070104	• 2-Methylnaphthalene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Benthic Community Effects ◦ Source Unknown	36 Acres	1998	5A	2019
				• Benzo(a)anthracene ◦ Source Unknown *This listing was made by USEPA for 2006.*	36 Acres	1998	5B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	36 Acres	1998	5B	2012
				• Chromium ◦ Source Unknown	36 Acres	2014	5B	2012
				• Chrysene (C1-C4) ◦ Source Unknown	36 Acres	1998	5B	2012
				• Dieldrin ◦ Source Unknown	36 Acres	1998	5B	2012
				• Phenanthrene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Pyrene ◦ Source Unknown	36 Acres	1998	5B	2012
				• Toxicity ◦ Source Unknown	36 Acres	2014	5B	2012
4	Los Angeles River Estuary (Queensway Bay)	Estuary	40512000 / 18070104	• Chlordane ◦ Source Unknown	207 Acres	1800	5B	2012
				• Toxicity ◦ Source Unknown	207 Acres	2014	5A	2019
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	207 Acres	2006	5B	2008
4	Los Angeles River Reach 1 (Estuary to Carson Street)	River & Stream	40512000 / 18070104	• Ammonia ◦ Nonpoint Source ◦ Point Source	3.4 Miles	2002	5B	2004
				• Cadmium ◦ Source Unknown	3.4 Miles	2002	5B	2005

				• Cyanide ◦ Source Unknown	3.4 Miles	2006	5A	2019
				• Indicator Bacteria ◦ Source Unknown	3.4 Miles	2014	5B	2003
				• Lead ◦ Nonpoint Source ◦ Point Source	3.4 Miles	1996	5B	2005
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	3.4 Miles	1998	5B	2004
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	3.4 Miles	2006	5B	2008
				• pH ◦ Nonpoint Source ◦ Point Source	3.4 Miles	1996	5B	2003
4	Los Angeles River Reach 2 (Carson to Figueroa Street)	River & Stream	40515010 / 18070104	• Ammonia ◦ Nonpoint Source ◦ Point Source	19 Miles	1996	5B	2004
				• Copper ◦ Source Unknown	19 Miles	2006	5B	2005
				• Indicator Bacteria ◦ Source Unknown	19 Miles	2014	5B	2012
				• Lead ◦ Nonpoint Source ◦ Point Source	19 Miles	1996	5B	2005
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	19 Miles	1996	5B	2004
				• Oil ◦ Natural Sources	19 Miles	1996	5A	2019
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	19 Miles	1996	5B	2008
4	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	River & Stream	40521000 / 18070104	• Ammonia ◦ Nonpoint Source ◦ Point Source	7.9 Miles	1996	5B	2004
				• Copper ◦ Source Unknown	7.9 Miles	2006	5B	2008
				• Indicator Bacteria ◦ Source Unknown	7.9 Miles	2014	5B	2012
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	7.9 Miles	1996	5B	2004
				• Toxicity ◦ Source Unknown	7.9 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source	7.9 Miles	1996	5B	2008

				◦ Surface Runoff ◦ Urban Runoff/Storm Sewers				
4	Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	River & Stream	40521000 / 18070105	• Benthic Community Effects ◦ Source Unknown	11 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	11 Miles	2014	5A	2019
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	11 Miles	1996	5B	2004
				• Toxicity ◦ Source Unknown	11 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	11 Miles	1996	5B	2008
4	Los Angeles River Reach 5 (within Sepulveda Basin)	River & Stream	40521000 / 18070105	• Ammonia ◦ Source Unknown	1.9 Miles	1996	5B	2004
				• Copper ◦ Source Unknown	1.9 Miles	2006	5B	2005
				• Lead ◦ Source Unknown	1.9 Miles	2006	5B	2005
				• Nutrients (Algae) ◦ Nonpoint Source ◦ Point Source	1.9 Miles	1996	5B	2004
				• Oil ◦ Source Unknown	1.9 Miles	1996	5A	2019
				• Toxicity ◦ Source Unknown	1.9 Miles	2014	5A	2027
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	1.9 Miles	1996	5B	2008
4	Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	River & Stream	40521000 / 18070105	• Copper ◦ Source Unknown	7 Miles	2014	5B	2008
				• Indicator Bacteria ◦ Source Unknown	7 Miles	2014	5B	2012
				• Selenium ◦ Source Unknown	7 Miles	1992	5B	2005
				• Toxicity ◦ Source Unknown	7 Miles	2014	5A	2027
4	Los Cerritos Channel	Wetland, Tidal	40515010 / 18070104	• Ammonia ◦ Source Unknown	30 Acres	2002	5A	2015
				• Bis(2ethylhexyl)phthalate (DEHP) ◦ Source Unknown	30 Acres	2006	5A	2019

				• Copper ◦ Source Unknown	30 Acres	2002	5A	2019
				• Indicator Bacteria ◦ Source Unknown	30 Acres	2014	5A	2019
				• Lead ◦ Source Unknown	30 Acres	2002	5A	2019
				• Trash ◦ Source Unknown	30 Acres	2006	5A	2019
				• Zinc ◦ Source Unknown	30 Acres	2002	5A	2019
				• pH ◦ Source Unknown	30 Acres	2014	5A	2021
4	Los Sauces Creek	River & Stream	40100010 / 18070101	• Selenium ◦ Source Unknown	2.8 Miles	2014	5A	2027
4	Machado Lake (Harbor Park Lake)	Lake & Reservoir	40512000 / 18070104	• Algae ◦ Atmospheric Deposition ◦ Highway/Road/Bridge Runoff ◦ Internal Nutrient Cycling (primarily lakes) ◦ Urban Runoff--Industrial Permitted ◦ Urban Runoff/Storm Sewers	45 Acres	1996	5B	2009
				• Ammonia ◦ Atmospheric Deposition ◦ Highway/Road/Bridge Runoff ◦ Internal Nutrient Cycling (primarily lakes) ◦ Urban Runoff--Industrial Permitted ◦ Urban Runoff/Storm Sewers	45 Acres	1996	5B	2009
				• ChemA ◦ Source Unknown	45 Acres	2014	5B	2012
				• Eutrophic ◦ Atmospheric Deposition ◦ Highway/Road/Bridge Runoff ◦ Internal Nutrient Cycling (primarily lakes) ◦ Urban Runoff--Industrial Permitted ◦ Urban Runoff/Storm Sewers	45 Acres	1992	5B	2009
				• Odor ◦ Atmospheric Deposition ◦ Highway/Road/Bridge Runoff ◦ Internal Nutrient Cycling (primarily lakes) ◦ Urban Runoff--Industrial Permitted ◦ Urban Runoff/Storm Sewers	45 Acres	1996	5B	2009
				• Trash ◦ Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	45 Acres	1996	5B	2008
				• Benthic Community Effects				

4	Madranio Canyon	River & Stream	40100010 / 18070101	◦ Source Unknown	3.8 Miles	2014	5A	2027
				• Copper ◦ Source Unknown	3.8 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	3.8 Miles	2014	5A	2027
4	Malibou Lake	Lake & Reservoir	40424000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	40 Acres	1996	5B	2003
				• Dieldrin ◦ Source Unknown	40 Acres	2014	5A	2027
				• Eutrophic ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	40 Acres	1996	5B	2003
				• Organic Enrichment/Low Dissolved Oxygen ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	40 Acres	1998	5B	2003
4	Malibu Creek	River & Stream	40421000 / 18070104	• Benthic Community Effects ◦ Source Unknown	11 Miles	2014	5A	2021
				• Fish Barriers (Fish Passage) ◦ Source Unknown	11 Miles	1996	5A	2019
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	11 Miles	2014	5B	2002
				• Invasive Species ◦ Source Unknown	11 Miles	2010	5A	2021
				• Nutrients (Algae) ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities	11 Miles	1996	5B	2003

				◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Nonpoint Source ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Scum/Foam-unnatural ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	11 Miles	1996	5B	2003
				• Sedimentation/Siltation ◦ Source Unknown	11 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	11 Miles	2006	5A	2019
				• Sulfates ◦ Source Unknown	11 Miles	2006	5A	2019
				• Toxicity ◦ Source Unknown	11 Miles	2010	5A	2027
				• Trash ◦ Nonpoint Source	11 Miles	1996	5B	2009
4	Malibu Lagoon	Estuary	40421000 / 18070104	• Benthic Community Effects ◦ Source Unknown	15 Acres	1998	5A	2011
				• Eutrophic ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2003
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	15 Acres	2014	5B	2006
				• Swimming Restrictions ◦ Agriculture-animal ◦ Illicit Connections/Illegal Hook-ups/Dry Weather Flows ◦ Natural Sources ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Spills ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2006

				Viruses (enteric) ◦ Agriculture-animal ◦ Illicit Connections/Illegal Hook-ups/Dry Weather Flows ◦ Natural Sources ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Spills ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	15 Acres	1998	5B	2006
				• **pH** ◦ Source Unknown	15 Acres	2002	5A	2006
				Possible sources might be septic systems, storm drains, and birds.				
4	**Marina del Rey Harbor - Back Basins**	**Bay & Harbor**	**40517000 / 18070104**	• **Chlordane** ◦ Nonpoint Source	391 Acres	2014	5B	2005
				• **Copper** ◦ Source Unknown	391 Acres	1800	5B	2006
				• **DDT (Dichlorodiphenyltrichloroethane)** ◦ Source Unknown	391 Acres	1800	5A	2005
				A USEPA-approved TMDL has made a finding of non-impairment for this pollutant.				
				• **Dieldrin** ◦ Source Unknown	391 Acres	1800	5A	2005
				A USEPA-approved TMDL has made a finding of non-impairment for this pollutant.				
				• **Indicator Bacteria** ◦ Nonpoint Source	391 Acres	2006	5B	2004
				• **Lead** ◦ Nonpoint Source	391 Acres	2014	5B	2006
				• **Oxygen, Dissolved** ◦ Source Unknown	391 Acres	2014	5A	2027
				• **PCBs (Polychlorinated biphenyls)** ◦ Nonpoint Source	391 Acres	2014	5B	2006
				Historical use of pesticides, storm water runoff/aerial deposition from urban areas. Shellfish harvesting advisory for PCBs in tissue.				
				• **Toxicity** ◦ Nonpoint Source	391 Acres	2014	5B	2005
				• **Zinc** ◦ Nonpoint Source	391 Acres	2014	5B	2006
4	**McCoy Canyon Creek**	**River & Stream**	**40521000 / 18070104**	• **Indicator Bacteria** ◦ Source Unknown	4 Miles	2014	5A	2027
				• **Nitrate** ◦ Source Unknown	4 Miles	2002	5B	2003
				• **Nitrogen, Nitrate** ◦ Source Unknown	4 Miles	2002	5B	2003
4	**McGrath Lake**	**Lake & Reservoir**	**40311000 / 18070103**	• **Chlordane** ◦ Source Unknown	20 Acres	2014	5B	2011
				• **DDT (Dichlorodiphenyltrichloroethane)**	20 Acres	2014	5B	2011

				• Source Unknown				
				• Indicator Bacteria ◦ Source Unknown	20 Acres	2014	5A	2027
				• Toxicity ◦ Source Unknown	20 Acres	2014	5B	2011

4	Medea Creek Reach 1 (Lake to Confl. with Lindero)	River & Stream	40424000 / 18070104	• Algae
				  ◦ Agriculture-animal
				  ◦ Atmospheric Deposition
				  ◦ Golf course activities
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
				  ◦ Urban Runoff/Storm Sewers
					2.6 Miles	1996	5B	2003

				• Benthic Community Effects ◦ Source Unknown	2.6 Miles	2014	5A	2027
				• Indicator Bacteria ◦ Nonpoint Source	2.6 Miles	2014	5B	2006
				• Sedimentation/Siltation ◦ Source Unknown	2.6 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	2.6 Miles	1996	5A	2027
				• Trash ◦ Source Unknown	2.6 Miles	1996	5B	2008

4	Medea Creek Reach 2 (Abv Confl. with Lindero)	River & Stream	40423000 / 18070104	• Algae
				  ◦ Agriculture-animal
				  ◦ Atmospheric Deposition
				  ◦ Golf course activities
				  ◦ Groundwater Loadings
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
				  ◦ Urban Runoff/Storm Sewers
					5.4 Miles	1996	5B	2003

				• Benthic Community Effects ◦ Source Unknown	5.4 Miles	2014	5A	2021
				• Indicator Bacteria ◦ Nonpoint Source	5.4 Miles	2014	5B	2006
				• Invasive Species ◦ Source Unknown	5.4 Miles	2010	5A	2021
				• Sedimentation/Siltation ◦ Source Unknown	5.4 Miles	2002	5B	2013
				• Selenium ◦ Source Unknown	5.4 Miles	1996	5A	2019
				• Trash ◦ Source Unknown	5.4 Miles	1996	5B	2008
				• Eutrophic				

4	Munz Lake	Lake & Reservoir	40351000 / 18070102	◦ Source Unknown	6.6 Acres	1996	5A	2019
				• Trash ◦ Agriculture-storm runoff ◦ Nonpoint Source ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers	6.6 Acres	1996	5B	2008
4	Ormond Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Source Unknown	3.1 Miles	2002	5A	2027
4	Ormond Beach Wetlands	Wetland, Tidal	40311000 / 18070103	• Trash ◦ Source Unknown	99 Acres	2014	5C	
				• pH ◦ Source Unknown	99 Acres	2014	5A	2027
4	Oxnard Drain	River & Stream	40311000 / 18070103	• Escherichia coli (E. coli) ◦ Source Unknown	3 Miles	2014	5A	2027
				• Trash ◦ Source Unknown	3 Miles	2014	5C	
				• pH ◦ Source Unknown	3 Miles	2014	5A	2027
4	Padre Juan Canyon	River & Stream	40100011 / 18070101	• Benthic Community Effects ◦ Source Unknown	1.9 Miles	2014	5A	2027
				• Selenium ◦ Source Unknown	1.9 Miles	2014	5A	2027
4	Peninsula Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Source Unknown *Area affected is beach area north of South Jetty.*	0.15 Miles	2002	5A	2019
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	River & Stream	40342000 / 18070102	• Chloride ◦ Source Unknown	67 Miles	2006	5A	2019
				• Toxicity ◦ Source Unknown	67 Miles	2014	5A	2027
				• pH ◦ Source Unknown	67 Miles	2002	5A	2019
4	Point Mugu Beach	Coastal & Bay Shoreline	40311000 / 18070104	• Indicator Bacteria ◦ Other	0.36 Miles	2010	5A	2027
4	Pole Creek (trib to Santa Clara River Reach 3)	River & Stream	40331000 / 18070102	• Sulfates ◦ Source Unknown	9 Miles	2002	5A	2019
				• Total Dissolved Solids ◦ Source Unknown	9 Miles	2002	5A	2019

4	Port Hueneme Beach Park	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Other	1.2 Miles	2010	5A	2027
4	Port Hueneme Harbor (Back Basins)	Bay & Harbor	40311000 / 18070103	• Arsenic ◦ Source Unknown	65 Acres	2014	5A	2027
				• Cadmium ◦ Source Unknown	65 Acres	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	65 Acres	2014	5C	
				• Dieldrin ◦ Source Unknown	65 Acres	2014	5A	2027
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Source Unknown	65 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	65 Acres	2014	5C	
4	Port Hueneme Pier	Coastal & Bay Shoreline	40311000 / 18070103	• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.33 Miles	2006	5A	2019
4	Potrero Canyon Creek	River & Stream	40425000 / 18070104	• Oxygen, Dissolved ◦ Source Unknown	0.95 Miles	2014	5A	2027
4	Puddingstone Reservoir	Lake & Reservoir	40552000 / 18070106	• Chlordane ◦ Source Unknown	243 Acres	2014	5A	2019
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	243 Acres	2014	5A	2019
				• Mercury ◦ Source Unknown	243 Acres	2014	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	243 Acres	1996	5A	2019
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	243 Acres	2014	5A	2019
4	Puente Creek	River & Stream	40515010 / 18070104	• Indicator Bacteria ◦ Source Unknown	5.8 Miles	2010	5A	2027
				• Selenium ◦ Source Unknown	5.8 Miles	2010	5A	2021
4	Pyramid Lake	Lake & Reservoir	40342000 / 18070102	• Chlordane ◦ Source Unknown	1483 Acres	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1483 Acres	2014	5A	2027
				• Dieldrin ◦ Source Unknown	1483 Acres	2014	5A	2027

				• Mercury ◦ Source Unknown	1483 Acres	2010	5A	2021
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1483 Acres	2014	5A	2027
4	Rincon Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Indicator Bacteria ◦ Source Unknown *Area affected is 50 yards south of mouth of Rincon Creek.*	0.38 Miles	2002	5A	2015
4	Rincon Parkway Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Indicator Bacteria ◦ Source Unknown	0.03 Miles	2014	5A	2027
4	Rio De Santa Clara/Oxnard Drain No. 3	River & Stream	40311000 / 18070103	• ChemA (tissue) ◦ Source Unknown	1.9 Miles	1996	5B	2011
				• DDD (Dichlorodiphenyldichloroethane) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• DDE (Dichlorodiphenyldichloroethylene) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• Nitrogen ◦ Major Municipal Point Source-dry and/or wet weather discharge	1.9 Miles	1996	5B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.9 Miles	2014	5B	2011
				• Toxicity ◦ Source Unknown	1.9 Miles	2014	5A	2019
4	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	River & Stream	40515010 / 18070104	• Copper ◦ Nonpoint Source ◦ Point Source	4.6 Miles	1996	5B	2005
				• Indicator Bacteria ◦ Source Unknown	4.6 Miles	2014	5B	2012
				• Lead ◦ Nonpoint Source ◦ Point Source	4.6 Miles	1996	5B	2005
				• Toxicity ◦ Source Unknown	4.6 Miles	2010	5A	2021
				• Trash ◦ Nonpoint Source ◦ Surface Runoff ◦ Urban Runoff/Storm Sewers	4.6 Miles	1996	5B	2008
				• Zinc ◦ Nonpoint Source ◦ Point Source	4.6 Miles	1996	5B	2005
				• pH ◦ Nonpoint Source ◦ Point Source	4.6 Miles	1996	5B	2004

4	Rio Hondo Reach 2 (At Spreading Grounds)	River & Stream	40515010 / 18070104	• Cyanide ◦ Source Unknown	4.9 Miles	2010	5A	2021
4	Rio Hondo Reach 3 (above Spreading Grounds)	River & Stream	4412.310000 / 18070104	• Indicator Bacteria ◦ Source Unknown	8.1 Miles	2014	5B	2012
				• Iron ◦ Source Unknown	8.1 Miles	2014	5A	2027
				• Oxygen, Dissolved ◦ Source Unknown	8.1 Miles	2014	5A	2027
4	San Antonio Creek (Tributary to Ventura River Reach 4)	River & Stream	40220023 / 18070101	• Indicator Bacteria ◦ Source Unknown	9.8 Miles	2010	5A	2021
				• Nitrogen ◦ Source Unknown	9.8 Miles	2002	5B	2013
				• Total Dissolved Solids ◦ Source Unknown	9.8 Miles	2010	5A	2023
4	San Buenaventura Beach	Coastal & Bay Shoreline	40210000 / 18070103	• Indicator Bacteria ◦ Source Unknown *This listing includes the area of San Buenaventura Beach at San Jon Rd.*	1.8 Miles	1800	5A	2015
4	San Gabriel River Estuary	River & Stream	40516000 / 18070104	• Copper ◦ Source Unknown	3.4 Miles	1996	5B	2007
				• Dioxin ◦ Source Unknown	3.4 Miles	2010	5A	2021
				• Indicator Bacteria ◦ Source Unknown	3.4 Miles	2014	5B	2016
				• Nickel ◦ Source Unknown	3.4 Miles	2010	5A	2021
				• Oxygen, Dissolved ◦ Source Unknown	3.4 Miles	2010	5A	2021
4	San Gabriel River Reach 1 (Estuary to Firestone)	River & Stream	40515010 / 18070104	• Temperature, water ◦ Source Unknown	6.4 Miles	2014	5A	2027
				• pH ◦ Source Unknown	6.4 Miles	1996	5A	2009
4	San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam	River & Stream	40515010 / 18070104	• Cyanide ◦ Source Unknown	12 Miles	2010	5A	2021

				• Lead
				  ◦ Nonpoint Source
				  ◦ Point Source
					12 Miles	1996	5B	2007

				• Temperature, water ◦ Source Unknown	12 Miles	2014	5A	2027

4	San Gabriel River, East Fork	River & Stream	40543000 / 18070106	• Benthic Community Effects ◦ Source Unknown	5.9 Miles	2014	5A	2029
				• Trash ◦ Nonpoint Source	5.9 Miles	1996	5B	2000
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	River & Stream	4405.200000,4405.510000 / 18070105	• Ammonia ◦ Nonpoint Source ◦ Point Source	29 Miles	1996	5C	
				• Indicator Bacteria ◦ Source Unknown	29 Miles	2014	5B	2016
				• Temperature, water ◦ Source Unknown	29 Miles	2014	5A	2027
				• Total Dissolved Solids ◦ Source Unknown	29 Miles	2010	5A	2021
				• Toxicity ◦ Source Unknown	29 Miles	1996	5A	2019
				• pH ◦ Source Unknown	29 Miles	2010	5A	2021
4	Sanjon Barranca Creek	River & Stream	40210000 / 18070101	• Escherichia coli (E. coli) ◦ Source Unknown	0.22 Miles	2014	5A	2027
				• Trash ◦ Source Unknown	0.22 Miles	2014	5C	
4	Santa Clara River Estuary	Estuary	40311000 / 18070103	• Ammonia ◦ Source Unknown	49 Acres	2014	5A	2027
				• ChemA ◦ Source Unknown	49 Acres	1998	5B	2011
				• Indicator Bacteria ◦ Source Unknown	49 Acres	2014	5B	2012
				• Nitrogen, Nitrate ◦ Source Unknown	49 Acres	2010	5B	2004
				• Toxaphene ◦ Source Unknown	49 Acres	1998	5B	2011
				• Toxicity ◦ Source Unknown	49 Acres	2010	5A	2019
				• pH ◦ Source Unknown	49 Acres	2014	5A	2027
4	Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)	River & Stream	40311000 / 18070103	• Oxygen, Dissolved ◦ Source Unknown	10 Miles	2014	5A	2027
				• Toxicity ◦ Source Unknown	10 Miles	2006	5A	2019
				• Trash ◦ Source Unknown	10 Miles	2014	5C	
				• pH ◦ Source Unknown	10 Miles	2014	5A	2027

4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	River & Stream	40331000 / 18070103	• **Chloride** ◦ Nonpoint Source ◦ Point Source	31 Miles	2002	5B	2010
				• **Escherichia coli (E. coli)** ◦ Source Unknown	31 Miles	2014	5A	2027
				• **Indicator Bacteria** ◦ Source Unknown	31 Miles	2014	5B	2012
				• **Mercury** ◦ Source Unknown	31 Miles	2014	5A	2027
				• **Selenium** ◦ Source Unknown	31 Miles	2014	5A	2027
				• **Total Dissolved Solids** ◦ Source Unknown	31 Miles	2002	5A	2015
				• **Toxicity** ◦ Source Unknown	31 Miles	2010	5A	2021
				• **Trash** ◦ Source Unknown	31 Miles	2014	5C	
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	River & Stream	4403.410000,4403.510000 / 18070102	• **Benthic Community Effects** ◦ Source Unknown	8.7 Miles	2014	5A	2029
				• **Chloride** ◦ Nonpoint Source ◦ Point Source	8.7 Miles	2006	5B	2005
				• **Indicator Bacteria** ◦ Source Unknown	8.7 Miles	2014	5B	2012
				• **Iron** ◦ Source Unknown	8.7 Miles	2010	5A	2029
				• **Trash** ◦ Source Unknown	8.7 Miles	2014	5C	
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	River & Stream	4403.510000 / 18070102	• **Benthic Community Effects** ◦ Source Unknown	3.6 Miles	2014	5A	2027
				• **Chloride** ◦ Nonpoint Source ◦ Point Source *Chloride was relisted by USEPA in 2002.*	3.6 Miles	1998	5B	2005
				• **Chlorpyrifos** ◦ Source Unknown	3.6 Miles	2006	5A	2029
				• **Temperature, water** ◦ Source Unknown	3.6 Miles	2014	5A	2027

				Toxicity ∘ Source Unknown	3.6 Miles	2006	5A	2029
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	River & Stream	40341000 / 18070102	• Boron ∘ Source Unknown	6.2 Miles	2006	5A	2019
				• Specific Conductance ∘ Source Unknown	6.2 Miles	2010	5A	2021
				• Sulfates ∘ Source Unknown	6.2 Miles	2006	5A	2019
				• Total Dissolved Solids ∘ Source Unknown	6.2 Miles	2010	5A	2021
4	Santa Fe Dam Park Lake	Lake & Reservoir	40531000 / 18070105	• Copper ∘ Source Unknown	20 Acres	1996	5B	2012
				• Lead ∘ Source Unknown	20 Acres	1996	5B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	20 Acres	2014	5A	2027
				• pH ∘ Source Unknown	20 Acres	1996	5B	2012
4	Santa Monica Bay Offshore/Nearshore	Bay & Harbor	40513000 / 18070104	• Arsenic ∘ Source Unknown	146645 Acres	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	146645 Acres	2014	5B	2012
				• Mercury ∘ Source Unknown	146645 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	146645 Acres	1800	5B	2012
				• Trash ∘ Source Unknown	146645 Acres	2014	5B	2012
4	Santa Monica Canyon	River & Stream	40513000 / 18070104	• Indicator Bacteria ∘ Nonpoint Source	2.7 Miles	1996	5B	2003
				• Lead ∘ Source Unknown	2.7 Miles	1996	5A	2019
4	Sawpit Creek	River & Stream	40531000 / 18070105	• Bis(2ethylhexyl)phthalate (DEHP) ∘ Source Unknown	3.9 Miles	2006	5A	2019
				• Indicator Bacteria ∘ Source Unknown	3.9 Miles	2014	5A	2027
4	Sespe Creek (from 500 ft below confluence with	River & Stream	40332020 / 18070102	• Chloride ∘ Source Unknown	54 Miles	2006	5A	2019

	Little Sespe Cr to headwaters)							
				• pH ∘ Source Unknown	54 Miles	2006	5A	2019
4	Solstice Canyon Creek	River & Stream	40432000 / 18070104	• Invasive Species ∘ Source Unknown	4.8 Miles	2010	5A	2021
4	South San Jose Creek (Los Angeles County)	River & Stream	40551000 / 18070106	• Ammonia ∘ Source Unknown	3.3 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	3.3 Miles	2014	5A	2027
				• pH ∘ Source Unknown	3.3 Miles	2014	5A	2027
4	Surfers Point at Seaside	Coastal & Bay Shoreline	40210000 / 18070101	• Indicator Bacteria ∘ Source Unknown	0.4 Miles	2002	5A	2015
				Area affected is the end of the access path via a wooden gate.				
4	Tapo Canyon	River & Stream	40341000 / 18070103	• Chlordane ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Chloride ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• DDD (Dichlorodiphenyldichloroethane) ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Malathion ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Sulfates ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Total Dissolved Solids ∘ Source Unknown	4.1 Miles	2014	5A	2027
				• Toxicity ∘ Source Unknown	4.1 Miles	2014	5A	2027
4	Timber Canyon	River & Stream	40331000 / 18070102	• Chlorpyrifos ∘ Source Unknown	5.4 Miles	2014	5A	2027
4	Topanga Canyon Creek	River & Stream	40411000 / 18070104	• Lead ∘ Source Unknown	8.6 Miles	1996	5A	2019
4	Torrance Carson Channel	River & Stream	40512000 / 18070104	• Copper ∘ Source Unknown	3.4 Miles	1996	5B	2012
				• Indicator Bacteria ∘ Source Unknown	3.4 Miles	2014	5A	2007
				• Lead ∘ Source Unknown	3.4 Miles	1996	5B	2012
4	Triunfo Canyon	River &	40424000 / 18070104	• Benthic Community Effects ∘ Source Unknown	2.5 Miles	2014	5A	2029

	Creek Reach 1	Stream						
				• Lead ◦ Source Unknown	2.5 Miles	1996	5A	2019
				• Mercury ◦ Source Unknown	2.5 Miles	1996	5A	2019
				• Sedimentation/Siltation ◦ Source Unknown	2.5 Miles	2002	5A	2019
4	Triunfo Canyon Creek Reach 2	River & Stream	40424000 / 18070104	• Benthic Community Effects ◦ Source Unknown	3.3 Miles	2014	5A	2021
				• Lead ◦ Source Unknown	3.3 Miles	1996	5A	2019
				• Mercury ◦ Source Unknown	3.3 Miles	1996	5A	2019
				• Sedimentation/Siltation ◦ Source Unknown	3.3 Miles	2002	5A	2019
4	Ventura Harbor: Ventura Keys	Bay & Harbor	40311000 / 18070103	• Arsenic ◦ Source Unknown	179 Acres	2014	5A	2027
				• Cadmium ◦ Source Unknown	179 Acres	2014	5A	2027
				• Chlordane ◦ Source Unknown	179 Acres	2014	5A	2027
				• Coliform Bacteria ◦ Source Unknown	179 Acres	1996	5A	2019
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	179 Acres	2014	5A	2027
				• Dieldrin ◦ Source Unknown	179 Acres	2014	5A	2027
				• Indicator Bacteria ◦ Source Unknown	179 Acres	2014	5A	2027
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	179 Acres	2014	5A	2027
4	Ventura Marina Jetties	Coastal & Bay Shoreline	40311000 / 18070103	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.69 Miles	2006	5A	2019
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.69 Miles	2006	5A	2019
4	Ventura River Estuary	River & Stream	40210011 / 18070101	• Algae ◦ Source Unknown	0.2 Miles	1998	5B	2013
				• Eutrophic ◦ Source Unknown	0.2 Miles	1998	5B	2013
				• Indicator Bacteria ◦ Source Unknown *Stables and horse property may be the sources.*	0.2 Miles	2014	5A	2019
				• Trash	0.2 Miles	1998	5B	2008

				Agriculture-storm runoff ◦ Recreational and Tourism Activities (non-boating) ◦ Urban Runoff/Storm Sewers				
4	Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)	River & Stream	40210011 / 18070101	• Algae ◦ Source Unknown	4.5 Miles	1996	5A	2019
				• Benthic Community Effects ◦ Source Unknown	4.5 Miles	2014	5A	2029
				• Temperature, water ◦ Source Unknown	4.5 Miles	2014	5A	2027
4	Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)	River & Stream	40210011 / 18070101	• Benthic Community Effects ◦ Source Unknown	2.8 Miles	2014	5A	2029
				• Indicator Bacteria ◦ Source Unknown	2.8 Miles	2010	5A	2021
				• Toxicity ◦ Source Unknown	2.8 Miles	2014	5A	2027
4	Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)	River & Stream	40220021 / 18070101	• Benthic Community Effects ◦ Source Unknown	19 Miles	2014	5A	2029
				• Pumping ◦ Source Unknown *This is Category 4c - impairment due to pollution and does not require a TMDL or any other specific regulatory action.*	19 Miles	1996	5A	2019
				• Temperature, water ◦ Source Unknown	19 Miles	2014	5A	2027
				• Water Diversion ◦ Source Unknown *This is Category 4c - impairment due to pollution and does not require a TMDL or any other specific regulatory action.*	19 Miles	1996	5A	2019
4	Walnut Creek Wash (Drains from Puddingstone Res)	River & Stream	40531000 / 18070106	• Benthic Community Effects ◦ Source Unknown	12 Miles	2014	5A	2012
				• Indicator Bacteria ◦ Source Unknown	12 Miles	2010	5A	2027
				• pH ◦ Source Unknown	12 Miles	1996	5A	2007
4	Westlake Lake	Lake & Reservoir	40425000 / 18070104	• Algae ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge	119 Acres	1996	5B	2003

				Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers				
				• Ammonia ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	119 Acres	1996	5B	2003
				• Eutrophic ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	119 Acres	1996	5B	2003
				• Lead ◦ Source Unknown	119 Acres	1996	5A	2019
				• Organic Enrichment/Low Dissolved Oxygen ◦ Agriculture-animal ◦ Atmospheric Deposition ◦ Golf course activities ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet weather discharge ◦ Onsite Wastewater Systems (Septic Tanks) ◦ Urban Runoff/Storm Sewers	119 Acres	1996	5B	2003
4	Wheeler Canyon/Todd Barranca	River & Stream	40321000 / 18070102	• Chlordane ◦ Source Unknown	10 Miles	2014	5A	2027
				• Cypermethrin ◦ Source Unknown	10 Miles	2014	5A	2027
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	10 Miles	2014	5A	2027
				• Nitrate and Nitrite ◦ Nonpoint Source	10 Miles	1998	5B	2004
				• Sulfates ◦ Source Unknown	10 Miles	2002	5A	2019
				• Total Dissolved Solids ◦ Source Unknown	10 Miles	2002	5A	2019
				• Toxaphene ◦ Source Unknown	10 Miles	2014	5A	2027

				• Toxicity ◦ Source Unknown	10 Miles	2014	5A	2027
4	Wildlife Lake	Lake & Reservoir	40521000 / 18070105	• Ammonia ◦ Source Unknown	15 Acres	2014	5B	2004
				• Oxygen, Dissolved ◦ Source Unknown	15 Acres	2014	5A	2027
4	Wilmington Drain	River & Stream	40342000 / 18070104	• Indicator Bacteria ◦ Source Unknown	0.56 Miles	2014	5A	2007

2016 CALIFORNIA WATERS IMPACTED BY POLLUTION

Category 4C Criteria: A water that is impacted by non-pollutant related cause(s).

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = is the State Water Resources Control Board hydrological subunit area or even smaller area delineation.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	POLLUTION	ESTIMATED AREA ASSESSED
4	Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)	River & Stream	40220012 / 18070101	• Fish Barriers (Fish Passage)	0.63 Miles
4	Matilija Creek Reach 2 (Above Reservoir)	River & Stream	40220010 / 18070101	• Fish Barriers (Fish Passage)	15 Miles
4	Matilija Reservoir	Lake & Reservoir	40220012 / 18070101	• Fish Barriers (Fish Passage)	121 Acres

2016 CALIFORNIA LIST OF WATER QUALITY LIMITED SEGMENTS
BEING ADDRESSED BY ACTIONS OTHER THAN TMDLS

Category 4B Criteria: A water segment where ALL its 303(d) listings are being addressed by action(s) other than TMDL.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = is the State Water Resources Control Board hydrological subunit area or even smaller area delineation.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• POLLUTANT ◦ POTENTIAL SOURCES *Relevant Notes*	ESTIMATED AREA ASSESSED	FIRST YEAR LISTED	PROGRAM COMPLETION DATE
4	J Street Drain (Ventura County)	River & Stream	40311000 / 18070103	• Trash ◦ Source Unknown	2.3 Miles	2014	2027
4	Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)	River & Stream	40331000 / 18070102	• Trash ◦ Source Unknown	9 Miles	2014	2027
4	Santa Clara River Reach 4A (A Street, Fillmore to Piru Creek)	River & Stream	4403.310000,4403.410000 /	• Trash ◦ Source Unknown	7.9 Miles	2014	2027
4	Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)	River & Stream	40321000 / 18070102	• Trash ◦ Source Unknown	1.8 Miles	2014	2027

2016 CALIFORNIA LIST OF WATER QUALITY LIMITED SEGMENTS
BEING ADDRESSED BY USEPA APPROVED TMDLS

Category 4A Criteria: 1) A water segment where ALL its 303(d) listings are being addressed; and 2) at least one of those listings is being addressed by a USEPA approved TMDL.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

** "Addressed By" is defined as: B = Being addressed by USEPA approved TMDL and C = Being addressed by action(s) other than a TMDL

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	POLLUTANT POTENTIAL SOURCES *Relevant Notes*	ESTIMATED AREA ASSESSED	FIRST YEAR LISTED	ADDRESSED BY**	USEPA TMDL APPROVAL DATE
4	Abalone Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown	1.1 Miles	2014	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown	1.1 Miles	1998	B	2012
4	Aliso Canyon Wash	River & Stream	40521000 / 18070105	• Copper ∘ Source Unknown	10 Miles	1996	B	2008
				• Indicator Bacteria ∘ Source Unknown	10 Miles	2014	B	2012
				• Selenium ∘ Nonpoint Source	10 Miles	1996	B	2005
4	Amarillo Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ∘ Source Unknown *Fish Consumption Advisory for DDT.*	0.64 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ∘ Source Unknown *Fish Consumption Advisory for PCBs.*	0.64 Miles	1998	B	2012
4	Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)	River & Stream	40515010 / 18070104	• Indicator Bacteria ∘ Source Unknown	4.4 Miles	2014	B	2012
				• Trash ∘ Nonpoint Source ∘ Surface Runoff ∘ Urban Runoff/Storm Sewers	4.4 Miles	1996	B	2008
4	Avalon Beach	Coastal & Bay Shoreline	40511000 / 18070107	• Indicator Bacteria ∘ Source Unknown	0.67 Miles	2002	B	2014
4	Ballona Creek Estuary	River & Stream	40513000 / 18070104	• Cadmium ∘ Source Unknown	2.3 Miles	1992	B	2005
				• Chlordane ∘ Nonpoint Source ∘ Point Source	2.3 Miles	2014	B	2005

				• Copper ◦ Source Unknown	2.3 Miles	1992	B	2005
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• Indicator Bacteria ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2007
				• Lead ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• PCBs (Polychlorinated biphenyls) ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
				• Silver ◦ Source Unknown	2.3 Miles	1992	B	2005
				• Toxicity ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2010	B	2005
				• Zinc ◦ Nonpoint Source ◦ Point Source	2.3 Miles	2014	B	2005
4	Ballona Creek Wetlands	Wetland, Tidal	40517000 / 18070104	• Exotic Vegetation ◦ Source Unknown	289 Acres	1996	B	2012
				• Habitat alterations ◦ Source Unknown	289 Acres	1996	B	2012
				• Hydromodification ◦ Source Unknown	289 Acres	1996	B	2012
				• Reduced Tidal Flushing ◦ Source Unknown	289 Acres	1996	B	2012
				• Trash ◦ Nonpoint Source	289 Acres	1996	B	2019
4	Bell Creek	River & Stream	40521000 / 18070104	• Indicator Bacteria ◦ Source Unknown	8.9 Miles	2014	B	2012
4	Big Rock Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	0.74 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.74 Miles	1998	B	2012

4	Bluff Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ See TMDL documentation	0.55 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ See TMDL documentation	0.55 Miles	1998	B	2012

4	Brown Barranca/Long Canyon	River & Stream	40321000 / 18070103	• Nitrate and Nitrite
				  ◦ Agriculture-storm runoff
				  ◦ Atmospheric Deposition
				  ◦ Groundwater Loadings
				  ◦ Groundwater Withdrawal
				  ◦ Irrigated Crop Production
				  ◦ Major Municipal Point Source-dry and/or wet weather discharge
				  ◦ Onsite Wastewater Systems (Septic Tanks)
					2.6 Miles	1998	B	2004

4	Bull Creek	River & Stream	40521000 / 18070105	• Indicator Bacteria ◦ Source Unknown	2.3 Miles	2010	B	2012
4	Cabrillo Beach (Outer)	Coastal & Bay Shoreline	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.58 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.58 Miles	1998	B	2012
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Estuary	40311000 / 18070103	• Chlordane (tissue) ◦ Nonpoint Source	344 Acres	1992	B	2005

				• Copper
				  ◦ Nonpoint Source
				  ◦ Point Source
					344 Acres	1996	B	2007

				• Dieldrin ◦ Source Unknown	344 Acres	2006	B	2006
				• Endosulfan (tissue) ◦ Agriculture-storm runoff	344 Acres	2006	B	2006

				• Mercury
				  ◦ Nonpoint Source
				  ◦ Point Source
					344 Acres	1996	B	2007

				• Nickel
				  ◦ Nonpoint Source
				  ◦ Point Source
					344 Acres	1996	B	2007

				• Nitrogen
				  ◦ Nonpoint Source
				  ◦ Point Source
					344 Acres	1996	B	2003

				• PCBs (Polychlorinated biphenyls) (tissue)
				  ◦ Nonpoint Source
				  ◦ Point Source
					344 Acres	1996	B	2005

				• Sedimentation/Siltation	344 Acres	1992	B	2007

				◦ Agriculture ◦ Natural Sources				
				• Toxaphene ◦ Source Unknown	344 Acres	2006	B	2006
				• Toxicity ◦ Nonpoint Source ◦ Point Source	344 Acres	2014	B	2005
				• Zinc ◦ Source Unknown	344 Acres	1996	B	2007
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	River & Stream	40368000 / 18070104	• Ammonia ◦ Nonpoint Source ◦ Point Source	17 Miles	1996	B	2003
				• ChemA (tissue) ◦ Agriculture-storm runoff	17 Miles	1996	B	2006
				• Chlordane ◦ Source Unknown	17 Miles	1996	B	2006
				• Chloride ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	17 Miles	2002	B	2008
				• Dieldrin ◦ Source Unknown	17 Miles	2006	B	2006
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	17 Miles	1996	B	2006
				• Sulfates ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge ◦ Surface Runoff	17 Miles	2002	B	2008
				• Total Dissolved Solids ◦ Atmospheric Deposition ◦ Domestic Use of Ground Water ◦ Groundwater Loadings ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry weather discharge	17 Miles	2002	B	2008

				◦ Surface Runoff				
				• [Toxicity] ◦ Nonpoint Source ◦ Point Source	17 Miles	1996	B	2006
4	Carbon Beach	Coastal & Bay Shoreline	40416000 / 18070104	• [DDT (Dichlorodiphenyltrichloroethane)] ◦ Source Unknown	1.5 Miles	1998	B	2012
				• [Indicator Bacteria] ◦ Source Unknown	1.5 Miles	1998	B	2003
				• [PCBs (Polychlorinated biphenyls)] ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	1.5 Miles	1998	B	2012
4	Castlerock Beach	Coastal & Bay Shoreline	40513000 / 18070104	• [DDT (Dichlorodiphenyltrichloroethane)] ◦ Source Unknown	0.21 Miles	1998	B	2012
				• [Indicator Bacteria] ◦ Nonpoint Source ◦ Point Source	0.21 Miles	1998	B	2003
				• [PCBs (Polychlorinated biphenyls)] ◦ Source Unknown	0.21 Miles	1998	B	2012
4	Channel Islands Harbor Beach	Coastal & Bay Shoreline	40311000 / 18070103	• [Indicator Bacteria] ◦ Major Municipal Point Source-wet weather discharge ◦ Natural Sources ◦ Unknown Nonpoint Source	0.03 Miles	2002	B	2008
4	Dan Blocker Memorial (Coral) Beach	Coastal & Bay Shoreline	40431000 / 18070104	• [Indicator Bacteria] ◦ Source Unknown	2.1 Miles	2014	B	2002
4	Dockweiler Beach	Coastal & Bay Shoreline	40512000 / 18070104	• [Indicator Bacteria] ◦ Nonpoint Source	4.6 Miles	1998	B	2003
4	Echo Park Lake	Lake & Reservoir	40515010 / 18070104	• [Algae] ◦ Source Unknown	13 Acres	1996	B	2012
				• [Chlordane] ◦ Source Unknown	13 Acres	2014	B	2012
				• [Dieldrin] ◦ Source Unknown	13 Acres	2014	B	2012
				• [Eutrophic] ◦ Source Unknown	13 Acres	1996	B	2012
				• [Odor] ◦ Source Unknown	13 Acres	1996	B	2012
				• [PCBs (Polychlorinated biphenyls)] ◦ Source Unknown	13 Acres	2014	B	2012
				• [Trash]	13 Acres	1996	B	2012

				Source Unknown				
				pH Source Unknown	13 Acres	1996	B	2012
4	El Dorado Lakes	Lake & Reservoir	40515010 / 18070104	Algae Source Unknown	31 Acres	1996	B	2012
				Ammonia Source Unknown	31 Acres	1996	B	2012
				Copper Source Unknown	31 Acres	1996	B	2012
				Eutrophic Source Unknown	31 Acres	1996	B	2012
				Lead Source Unknown	31 Acres	1996	B	2012
				pH Source Unknown	31 Acres	1996	B	2012
4	Escondido Beach	Coastal & Bay Shoreline	40434000 / 18070104	DDT (Dichlorodiphenyltrichloroethane) Source Unknown	1.2 Miles	1998	B	2012
				Indicator Bacteria Nonpoint Source	1.2 Miles	1998	B	2003
				PCBs (Polychlorinated biphenyls) Source Unknown	1.2 Miles	1998	B	2012
4	Flat Rock Point Beach Area	Coastal & Bay Shoreline	40511000 / 18070104	DDT (Dichlorodiphenyltrichloroethane) Source Unknown	0.11 Miles	1998	B	2012
				Indicator Bacteria Nonpoint Source	0.11 Miles	1998	B	2003
				PCBs (Polychlorinated biphenyls) Source Unknown	0.11 Miles	1998	B	2012
				Fish Consumption Advisory for PCBs.				
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	River & Stream	40362000 / 18070103	Boron Other	6.7 Miles	1998	B	2008
				Chlordane Source Unknown	6.7 Miles	2014	B	2006
				DDE (Dichlorodiphenyldichloroethylene) Source Unknown	6.7 Miles	2014	B	2006
				DDT (Dichlorodiphenyltrichloroethane) Source Unknown	6.7 Miles	2014	B	2006
				Nitrate and Nitrite Nonpoint Source	6.7 Miles	1998	B	2003

				• Sulfates ◦ Other	6.7 Miles	1998	B	2006
				• Total Dissolved Solids ◦ Other	6.7 Miles	1998	B	2006
4	Hobie Beach (Channel Islands Harbor)	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Natural Sources ◦ Nonpoint Source ◦ Urban Runoff/Storm Sewers	0.1 Miles	2002	B	2008
4	Inspiration Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.14 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.14 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.14 Miles	1998	B	2012
4	La Costa Beach	Coastal & Bay Shoreline	40416000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	0.74 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.74 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	0.74 Miles	1998	B	2012
4	Lake Calabasas	Lake & Reservoir	40521000 / 18070105	• Ammonia ◦ Source Unknown	18 Acres	1996	B	2012
				• Eutrophic ◦ Source Unknown	18 Acres	1996	B	2012
				• Odor ◦ Source Unknown	18 Acres	1996	B	2012
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	18 Acres	1998	B	2012
				• pH ◦ Source Unknown	18 Acres	1996	B	2012
4	Lake Sherwood	Lake & Reservoir	40426000 / 18070104	• Algae ◦ Agriculture-animal ◦ Golf course activities	135 Acres	1996	B	2003
				• Eutrophic ◦ Agriculture-animal ◦ Golf course activities	135 Acres	1996	B	2003
				• Mercury (tissue) ◦ Source Unknown	135 Acres	1996	B	2012
				• DDT				

4	Las Flores Beach	Coastal & Bay Shoreline	40415000 / 18070104	(Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.1 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	1998	B	2012
4	Las Tunas Beach	Coastal & Bay Shoreline	40412000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.2 Miles	1998	B	2012
				• Indicator Bacteria ◦ Source Unknown	1.2 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.2 Miles	1998	B	2012
4	Long Beach City Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Indicator Bacteria ◦ Source Unknown	4.7 Miles	2006	B	2012
				This listing includes the beach area at 3rd pl., 5th pl., 10th pl., 16th pl., 36th pl., 72nd pl., Coronado ave., Molino ave., and the east side and west side of Belmont Pier.				
4	Long Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.7 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.7 Miles	1998	B	2012
4	Los Angeles Harbor - Cabrillo Marina	Bay & Harbor	40512000 / 18070104	• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	77 Acres	2010	B	2012
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	77 Acres	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	77 Acres	1998	B	2012
4	Los Angeles Harbor - Fish Harbor	Bay & Harbor	40518000 / 18070104	• Benzo(a)anthracene ◦ Source Unknown	91 Acres	1998	B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	91 Acres	1998	B	2012
				• Chlordane ◦ Source Unknown	91 Acres	1998	B	2012
				• Chrysene (C1-C4) ◦ Source Unknown	91 Acres	1998	B	2012
				• Copper ◦ Source Unknown	91 Acres	1998	B	2012
				• DDT (Dichlorodiphenyltrichloroethane)	91 Acres	1998	B	2012

				◦ Source Unknown				
				• Dibenz[a,h]anthracene ◦ Source Unknown	91 Acres	1998	B	2012
				• Lead ◦ Source Unknown	91 Acres	1998	B	2016
				• Mercury ◦ Source Unknown	91 Acres	1998	B	2012
				• PAHs (Polycyclic Aromatic Hydrocarbons) ◦ Source Unknown	91 Acres	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	91 Acres	1998	B	2012
				• Phenanthrene ◦ Source Unknown	91 Acres	1998	B	2012
				• Pyrene ◦ Source Unknown	91 Acres	1998	B	2012
				• Toxicity ◦ Source Unknown	91 Acres	2014	B	2013
				• Zinc ◦ Source Unknown	91 Acres	1998	B	2012
4	Los Angeles Harbor - Inner Cabrillo Beach Area	Bay & Harbor	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	82 Acres	1998	B	2012
				• Indicator Bacteria ◦ Source Unknown	82 Acres	1998	B	2004
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown *Fish Consumption Advisory for PCBs.*	82 Acres	1998	B	2013
4	Los Angeles/Long Beach Inner Harbor	Bay & Harbor	40518000 / 18070104	• Benthic Community Effects ◦ Source Unknown	3003 Acres	1998	B	2012
				• Benzo(a)pyrene (3,4-Benzopyrene -7-d) ◦ Source Unknown	3003 Acres	2010	B	2012
				• Chrysene (C1-C4) ◦ Source Unknown	3003 Acres	2010	B	2012
				• Copper ◦ Source Unknown	3003 Acres	1998	B	2012
				• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	3003 Acres	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	3003 Acres	1998	B	2012

				• Toxicity ◦ Source Unknown	3003 Acres	2014	B	2012
				• Zinc ◦ Source Unknown	3003 Acres	1988	B	2012
4	Los Angeles/Long Beach Outer Harbor (inside breakwater)	Bay & Harbor	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	4042 Acres	1988	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	4042 Acres	1988	B	2012
				• Toxicity ◦ Source Unknown	4042 Acres	2014	B	2011
4	Lunada Bay Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.63 Miles	1998	B	2003
4	Malaga Cove Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ See TMDL documentation	0.39 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ See TMDL documentation	0.39 Miles	1998	B	2012
4	Malibu Beach	Coastal & Bay Shoreline	40421000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.77 Miles	1998	B	2012
				• Indicator Bacteria ◦ Source Unknown	0.77 Miles	1998	B	2003
4	Malibu Lagoon Beach (Surfrider)	Coastal & Bay Shoreline	40421000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	1 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1 Miles	1998	B	2012
4	Marina del Rey Harbor Beach	Coastal & Bay Shoreline	40517000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.29 Miles	1998	B	2004
4	McGrath Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Indicator Bacteria ◦ Nonpoint Source	1.7 Miles	2014	B	2003
4	Mint Canyon Creek Reach 1 (Confl to Rowler Cyn)	River & Stream	40351000 / 18070102	• Nitrate and Nitrite ◦ Agriculture-storm runoff ◦ Atmospheric Deposition ◦ Groundwater Loadings ◦ Groundwater Withdrawal ◦ Irrigated Crop Production ◦ Major Municipal Point Source-dry and/or wet	8.1 Miles	1998	B	2004

				weather discharge ◦ Onsite Wastewater Systems (Septic Tanks)				
4	Monrovia Canyon Creek	River & Stream	40531000 / 18070105	• Lead ◦ Nonpoint Source	3.4 Miles	1996	B	2005
4	Nicholas Canyon Beach	Coastal & Bay Shoreline	40444000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.7 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Palo Comado Creek	River & Stream	40423000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	6.8 Miles	2014	B	2006
4	Palo Verde Shoreline Park Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Pathogens ◦ Nonpoint Source	0.24 Miles	1998	B	2003
				• Pesticides ◦ Source Unknown	0.24 Miles	1998	B	2012
4	Paradise Cove Beach	Coastal & Bay Shoreline	40435000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.7 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.7 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Peck Road Park Lake	Lake & Reservoir	40531000 / 18070105	• Chlordane (tissue) ◦ Source Unknown	103 Acres	1996	B	2012
				• DDT (tissue) ◦ Source Unknown	103 Acres	1996	B	2012
				• Lead ◦ Source Unknown	103 Acres	1996	B	2012
				• Odor ◦ Source Unknown	103 Acres	1996	B	2012
				• Organic Enrichment/Low Dissolved Oxygen ◦ Source Unknown	103 Acres	1996	B	2012
				• Trash ◦ Source Unknown	103 Acres	1996	B	2012
4	Point Dume Beach	Coastal & Bay Shoreline	40435000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	2.5 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	2.5 Miles	1996	B	2012
4	Point Fermin	Coastal &	40512000 / 18070104	• DDT	1.6 Miles	1996	B	2012

	Park Beach	Bay Shoreline		(Dichlorodiphenyltrichloroethane) ◦ Source Unknown				
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.6 Miles	1998	B	2012
4	Point Vicente Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.63 Miles	1994	B	2003
4	Portuguese Bend Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown *Fish Consumption Advisory for DDT.*	1.4 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.4 Miles	1998	B	2012
4	Puerco Beach	Coastal & Bay Shoreline	40431000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.5 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.5 Miles	1998	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.5 Miles	1998	B	2012
4	Redondo Beach	Coastal & Bay Shoreline	40512000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.5 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.5 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.5 Miles	1998	B	2012
4	Resort Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	0.15 Miles	1998	B	2003
4	Robert H. Meyer Memorial Beach	Coastal & Bay Shoreline	40441000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.2 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.2 Miles	1998	B	2012
4	Royal Palms Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	1998	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	1998	B	2012
4	San Gabriel River Reach 3 (Whittier	River & Stream	40531000 / 18070104	• Indicator Bacteria ◦ Source Unknown	7.2 Miles	2010	B	2016

	Narrows to Ramona)							
4	San Jose Creek Reach 2 (Temple to I-10 at White Ave.)	River & Stream	4405.510000,4405.520000 / 18070106	• Indicator Bacteria ◦ Source Unknown	12 Miles	2014	B	2016
4	San Pedro Bay Near/Off Shore Zones	Bay & Harbor	40512000 / 18070104	• Chlordane ◦ Source Unknown	8173 Acres	2006	B	2012
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	8173 Acres	1996	B	2012
				• Total DDT (sum of 4,4'- and 2,4'-isomers of DDT, DDE, and DDD) ◦ Source Unknown	8173 Acres	2014	B	2012
				• Toxicity ◦ Source Unknown	8173 Acres	2014	B	2012
4	Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)	River & Stream	40351000 / 18070102	• Indicator Bacteria ◦ Source Unknown	21 Miles	2014	B	2012
4	Santa Monica Beach	Coastal & Bay Shoreline	40513000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	3 Miles	1998	B	2003
4	Sea Level Beach	Coastal & Bay Shoreline	40441000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	0.21 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	0.21 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	0.21 Miles	1998	B	2012
4	Sepulveda Canyon	River & Stream	40513000 / 18070104	• Copper ◦ Source Unknown	0.83 Miles	2006	B	2005
				• Indicator Bacteria ◦ Nonpoint Source	0.83 Miles	1996	B	2003
				• Lead ◦ Nonpoint Source	0.83 Miles	1996	B	2005
				• Selenium ◦ Source Unknown	0.83 Miles	2006	B	2005
				• Zinc ◦ Source Unknown	0.83 Miles	2006	B	2005

4	Stokes Creek	River & Stream	40422020 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	4.7 Miles	2014	B	2006
4	Topanga Beach	Coastal & Bay Shoreline	40413000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	2.5 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	2.5 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	2.5 Miles	1998	B	2012
4	Torrance Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	1.1 Miles	2014	B	2003
4	Torrey Canyon Creek	River & Stream	40341000 / 18070103	• Nitrate and Nitrite ◦ Nonpoint Source	1.7 Miles	1998	B	2004
4	Trancas Beach (Broad Beach)	Coastal & Bay Shoreline	40437000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.7 Miles	1998	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.7 Miles	2014	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.7 Miles	1998	B	2012
4	Tujunga Wash (LA River to Hansen Dam)	River & Stream	40521000 / 18070105	• Ammonia ◦ Nonpoint Source	9.7 Miles	1996	B	2004
				• Copper ◦ Nonpoint Source	9.7 Miles	1996	B	2005
				• Indicator Bacteria ◦ Source Unknown	9.7 Miles	2014	B	2012

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					9.7 Miles	1996	B	2008

4	Venice Beach	Coastal & Bay Shoreline	40513000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	2.5 Miles	2006	B	2003
4	Verdugo Wash Reach 1 (LA River to Verdugo Rd.)	River & Stream	40521000 / 18070105	• Copper ◦ Source Unknown	2 Miles	2010	B	2008
				• Indicator Bacteria ◦ Source Unknown	2 Miles	2014	B	2012

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					2 Miles	1996	B	2008

4	Verdugo Wash Reach 2 (Above Verdugo Road)	River & Stream	40524000 / 18070105	• Indicator Bacteria ◦ Source Unknown	7.6 Miles	2014	B	2012

				• Trash
				  ◦ Nonpoint Source
				  ◦ Surface Runoff
				  ◦ Urban Runoff/Storm Sewers
					7.6 Miles	1996	B	2008

4	Whites Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.1 Miles	2006	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.1 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.1 Miles	2006	B	2012
4	Will Rogers Beach	Coastal & Bay Shoreline	40513000 / 18070104	• Indicator Bacteria ◦ Nonpoint Source	3 Miles	2006	B	2003
4	Zuma Beach (Westward Beach)	Coastal & Bay Shoreline	40436000 / 18070104	• DDT (Dichlorodiphenyltrichloroethane) ◦ Source Unknown	1.6 Miles	2006	B	2012
				• Indicator Bacteria ◦ Nonpoint Source	1.6 Miles	2006	B	2003
				• PCBs (Polychlorinated biphenyls) ◦ Source Unknown	1.6 Miles	2006	B	2012

2016 CALIFORNIA WATERS WITH INSUFFICIENT INFORMATION TO ASSESS BENEFICIAL USE SUPPORT BUT SOME USES MAY BE POTENTIALLY THREATENED

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 3 Criteria: A water with water quality information that is insufficient to determine an appropriate decision recommendation, but the available data and information that does exist indicates beneficial uses may be potentially threatened.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ◦ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	**Cold Creek (Los Angeles County)**	**River & Stream**	**40421000 / 18070104**	• **Drinking Water Supply** ◦ ***Municipal & Domestic Supply*** **Sulfates** • **Aquatic Life Support** ◦ ***Cold Freshwater Habitat*** **Benthic Community Effects, Invasive Species, Oxygen, Dissolved, pH**	**0.85 Miles**
4	**Cold Creek, unnamed tributary along Dry Canyon Cold Creek Road (Los Angeles County)**	**River & Stream**	**40421000 / 18070104**	• **Secondary Contact** ◦ ***Non-Contact Recreation*** **pH** • **Swimming** ◦ ***Water Contact Recreation*** **Manganese, pH** • **Aquatic Life Support** ◦ ***Fish Spawning*** **Oxygen, Dissolved** ◦ ***Cold Freshwater Habitat*** **Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel,**	**2.5 Miles**

				Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	La Vista Drain (Ventura County)	River & Stream	40361000 / 18070103	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* Indicator Bacteria, pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Cadmium, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), Endrin aldehyde, Manganese, Nitrogen, Nitrate, Nitrogen, Nitrite, Specific Conductivity, alpha.-BHC (Benzenehexachloride or alpha-HCH), beta-BHC (Benzenehexachloride or beta-HCH) • Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Azinphos-methyl (Guthion), Benthic Community Effects, Bifenthrin, Cadmium, Chlordane, Chloride, Chlorpyrifos, Chromium, Copper, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Iron, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Mercury, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Nickel, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, Toxicity, Zinc, pH	1.2 Miles
4	Lachusa Canyon Creek	River & Stream	40442000 / 18070104	• Drinking Water Supply ◦ *Municipal & Domestic Supply* Sulfates	2.9 Miles

				- Aquatic Life Support
				  - *Warm Freshwater Habitat*
				    Benthic Community Effects	

4	Las Virgenes Creek, East	River & Stream	40422010 / 18070104	- Secondary Contact
				  - *Non-Contact Recreation*
				    pH
				- Swimming
				  - *Water Contact Recreation*
				    pH
				- Aquatic Life Support
				  - *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH
				  - *Marine Habitat*
				    Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc, pH
				  - *Estuarine Habitat*
				    Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc
				  - *Fish Spawning*
				    Ammonia, Oxygen, Dissolved
				  - *Cold Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Temperature, water, Toxicity, Zinc, pH
				- Fish Consumption
				  - *Commercial or recreational collection of fish, shellfish, or organisms*
				    Manganese, Nickel, Selenium
					2 Miles

				- Aquatic Life Support	

4	San Gabriel River Reach 4 (Morris Dam to Ramona Blvd)	River & Stream	40531000 / 18070106	◦ *Warm Freshwater Habitat* Benthic Community Effects	16 Miles
4	San Gabriel River, West Fork	River & Stream	40543000 / 18070106	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Ammonia, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH ◦ *Marine Habitat* pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Ammonia, Benthic Community Effects, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH	9.3 Miles
4	San Jose Creek, unnamed tributary at Rose Hill (Los Angeles County)	River & Stream	40531000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	2.2 Miles
4	San Nicolas Island at Freighter Dock	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Arsenic, Cadmium, Chlordane, Chlorpyrifos, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Selenium	0.28 Miles
4	Santa Clara River Reach 2	River & Stream	40311000 / 18070103	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming	17 Miles

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Water Contact Recreation
pH

Aquatic Life Support

Warm Freshwater Habitat
Alkalinity as CaCO3, Aluminum, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, ammonia (Total Ammonia), Oxygen, Dissolved, Permethrin, total, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH
Marine Habitat
Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead , Nickel, Permethrin, total, Selenium, Silver, Zinc, pH
Estuarine Habitat
Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, total, Selenium, Silver, Zinc
Fish Spawning
Oxygen, Dissolved
Cold Freshwater Habitat
Alkalinity as CaCO3, Aluminum, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, ammonia (Total Ammonia), Oxygen, Dissolved, Permethrin, total, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH

Fish Consumption

Commercial or recreational collection of fish, shellfish, or organisms
Manganese, Nickel, Selenium

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<td>Santa Clara River Reach 4B (Piru Creek to Blue Cut Gaging Station)</td>
<td>River & Stream</td>
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Secondary Contact

Non-Contact Recreation
pH

Swimming

Water Contact Recreation

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Manganese, pH

- Aquatic Life Support
  - *Warm Freshwater Habitat*

    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chloride, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH

4	Wiley Canyon	River & Stream	40351000 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Manganese, Specific Conductivity • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH ◦ *Estuarine Habitat* Chromium ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* pH	1.3 Miles

2016 CALIFORNIA WATERS WITH INSUFFICIENT INFORMATION TO ASSESS BENEFICIAL USE SUPPORT

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 2 Criteria: A water with water quality information that is insufficient to determine an appropriate decision recommendation, for reasons such as: monitoring data have poor quality assurance, not enough samples in a dataset, no existing numerical objective or evaluation guideline, the information alone cannot support an assessment, etc.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ◦ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	Ashland Avenue Drain	River & Stream	40513000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Aquatic Life Support ◦ *Warm Freshwater Habitat* Organic Enrichment/Low Dissolved Oxygen, Toxicity	2.3 Miles
4	Avalon Drain	River & Stream	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aluminum, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Nickel, Selenium, Zinc	2.2 Miles
4	Belvedere Park Lake	Lake & Reservoir	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT	3.6 Acres

				(Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	

4	Big Sycamore Canyon	River & Stream	40447000 / 18070104	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Ammonia, Arsenic, Azinphos-methyl (Guthion), Cadmium, Chloride, Chlorpyrifos, Copper, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Ethoprop, Lead , Malathion, Methidathion, Methyl Parathion, Molinate, Nickel, Oxygen, Dissolved, Parathion, Phorate, Phosmet, Selenium, Silver, Temperature, water, Terbufos, Thiobencarb/Bolero, Zinc, pH
				  ◦ *Cold Freshwater Habitat*
				    Benthic Community Effects, Oxygen, Dissolved, Toxicity, pH
					6.2 Miles

4	Bouquet Canyon Creek (below Bouqet Reservoir)	River & Stream	40352000 / 18070102	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin,
					14 Miles

				Cadmium, Chlordane, Chlorpyrifos, Chromium, Copper, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Deltamethrin, Diazinon, Dieldrin, Endrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Fipronil, Fipronil Sulfide, Fipronil Sulfone, Iron, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	Camarillo Hills Drain (tributary to Revolon Slough)	River & Stream	40311000 / 18070103	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Azinphos-methyl (Guthion), Chlordane, Chlorpyrifos, Demeton, Diazinon, Endosulfan, Endrin, Methoxychlor, Methyl Parathion, Metribuzin, Mirex, Pentachlorophenol (PCP)	3.2 Miles
4	Carbon Canyon Creek	River & Stream	40515010 / 18070104	• Drinking Water Supply ◦ *Municipal & Domestic Supply* Chloride, Sulfates	8.8 Miles
4	Carlisle Canyon Creek	River & Stream	40426000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	3.3 Miles
4	Castaic Creek Reach 1 (confluence of Santa Clara River to Castaic Lagoon)	River & Stream	40351000 / 18070102	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Ammonia, Chlorpyrifos, Diazinon, Nitrate/Nitrite (Nitrite + Nitrate as N), Toxicity	11 Miles
4	Cheeseboro Canyon	River & Stream	40423000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects, Oxygen, Dissolved, pH	5.3 Miles
4	Compton Creek, unnamed tributary at Santa Fe Rd	River & Stream	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aluminum, Arsenic, Cadmium, Chlorpyrifos, Chromium, Copper, Demeton, Diazinon, Iron, Lead ,	1.1 Miles

				Malathion, Methyl Parathion, Nickel, Selenium, Zinc	
4	Corral Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply ∘ *Municipal & Domestic Supply* Sulfates	4.1 Miles
4	Drain along Gerry Rd to Calleguas Creek Reach 9	River & Stream	40363000 / 18070103	• Secondary Contact ∘ *Non-Contact Recreation* pH • Swimming ∘ *Water Contact Recreation* DDD (Dichlorodiphenyldichloroethane), Endrin aldehyde, pH • Aquatic Life Support ∘ *Warm Freshwater Habitat* Aldrin, Ammonia, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, pH ∘ *Marine Habitat* Aldrin, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Demeton, Diazinon, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Permethrin, Toxaphene, pH ∘ *Fish Spawning* Oxygen, Dissolved	1.7 Miles
4	Encinal Canyon Creek	River & Stream	40441000 / 18070104	• Secondary Contact ∘ *Non-Contact Recreation*	2.7 Miles

				pH
				
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	

4	Escondido Canyon Creek	River & Stream	40434000 / 18070104	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH
					4.6 Miles

4	Hammond Canyon	River & Stream	40210010 / 18070101	• Aquatic Life Support ◦ *Warm Freshwater Habitat*	4.5 Miles

				Benthic Community Effects	
4	Hansen Lake	Lake & Reservoir	40523000 / 18070105	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) ◦ *Cold Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	118 Acres
4	Hidden Valley Creek (Ventura County)	River & Stream	40426000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	2.2 Miles
4	Hollenback Park Lake	Lake & Reservoir	40515010 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls) ◦ *Cold Freshwater Habitat* Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma	4.5 Acres

				Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				
				• **Fish Consumption**
				  ◦ ***Commercial or recreational collection of fish, shellfish, or organisms***
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	

4	**John Ford Park Lake**	**Lake & Reservoir**	**40515010 / 18070104**	• **Aquatic Life Support**
				  ◦ ***Warm Freshwater Habitat***
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				
				• **Fish Consumption**
				  ◦ ***Commercial or recreational collection of fish, shellfish, or organisms***
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium
					14 Acres

4	**Kenneth Hahn Park Lake**	**Lake & Reservoir**	**40513000 / 18070104**	• **Aquatic Life Support**
				  ◦ ***Warm Freshwater Habitat***
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				
				• **Fish Consumption**
				  ◦ ***Commercial or recreational collection of fish, shellfish, or organisms***
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane),
					28 Acres

				Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	

4	La Jolla Canyon Creek	River & Stream	40448000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved
					0.9 Miles

4	Lake Eleanor Creek	River & Stream	40425000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					2.7 Miles

4	Lang Creek	River & Stream	40368000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					8.2 Miles

4	Las Flores Canyon Creek	River & Stream	40415000 / 18070104	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH
					3.6 Miles

4	Las Virgenes Reservoir	Lake & Reservoir	40424000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma
					123 Acres

				Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium	

4	Latigo Canyon Creek	River & Stream	40433000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					2.9 Miles

4	Lion Creek (from confluence w San Antonio Creek to Resservoir)	River & Stream	40231010 / 18070101	• Aquatic Life Support
				  ◦ *Cold Freshwater Habitat*
				    Benthic Community Effects
					5.2 Miles

4	Los Alisos Canyon Creek	River & Stream	40442000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					2.9 Miles

4	Los Cerritos Estuary	Estuary	40512000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Aquatic Life Support
				  ◦ *Marine Habitat*
				    Oxygen, Dissolved
				  ◦ *Estuarine Habitat*
				    pH
					53 Acres

4	Malaga Canyon Creek	River & Stream	40512000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Sulfates
					2.6 Miles

4	Mandeville Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					1.5 Miles

4	Marie Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					1.8 Miles

4	Pena Canyon Creek	River & Stream	40413000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					1.6 Miles

4	Piru, Lake	Lake & Reservoir	40341000 / 18070102	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				  ◦ *Cold Freshwater Habitat*
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium
					1220 Acres

4	Puerco Canyon Creek	River & Stream	40431000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					2.4 Miles

4	Ramirez Canyon Creek	River & Stream	40435000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					4.2 Miles

4	Rocky Point Beach	Coastal & Bay Shoreline	40511000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Beach Closures
					0.49 Miles

4	Rustic Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					7.6 Miles

4	San Clemente Island Darter	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Arsenic, Cadmium, Mercury, Selenium
					0.25 Miles

4	San Nicolas Canyon Creek	River & Stream	40443000 / 18070104	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    Trash
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					2.4 Miles

4	Santa Clara Drain (Ventura County)	River & Stream	40311000 / 18070103	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Nitrogen, Nitrate, Specific Conductivity, Total Dissolved Solids
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aldrin, Ammonia, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Sulfates, Temperature, water, Toxaphene, pH
				  ◦ *Marine Habitat*
				    Aldrin, Azinphos-methyl (Guthion),
					2.4 Miles

Bifenthrin, Chlordane, Chlorpyrifos, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Demeton, Diazinon, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Permethrin, Toxaphene, pH

- *Estuarine Habitat*

  Aldrin, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Demeton, Diazinon, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Permethrin, Toxaphene

- *Fish Spawning*

  Oxygen, Dissolved

- *Cold Freshwater Habitat*

  Aldrin, Ammonia, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Temperature, water, Toxaphene, pH

- Fish Consumption
  - *Commercial or recreational collection of fish, shellfish, or organisms*

    Aldrin, Chlordane, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor, Heptachlor epoxide, Toxaphene, alpha.-BHC (Benzenehexachloride or alpha-HCH), beta-BHC (Benzenehexachloride or beta-HCH), delta-BHC

				(Benzenehexachloride or delta-HCH)	

4	Santa Ynez Canyon	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
					5 Miles

4	South Catalina Island Bird Rock	Coastal & Bay Shoreline	40511000 / 18070107	• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Arsenic, Cadmium, Chlordane, Chlorpyrifos, Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Selenium, Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)
					0.24 Miles

4	Sullivan Canyon Creek	River & Stream	40513000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved
					5.3 Miles

4	Sweetwater Canyon Creek	River & Stream	40421000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Sulfates
					1.6 Miles

4	Temescal Canyon Creek (Los Angeles County)	River & Stream	40513000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved
					4.2 Miles

4	Thacher Creek	River & Stream	40232011 / 18070101	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aldrin, Ammonia, Chlordane, Chloride, Chlorpyrifos, DDD (Dichlorodiphenyldichloroethane), DDE
					2.2 Miles

(Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Dacthal, Diazinon, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Nitrogen, Nitrate, Phorate, Specific Conductivity, Sulfates, Total Dissolved Solids, Toxaphene, alpha.-BHC (Benzenehexachloride or alpha-HCH), beta-BHC (Benzenehexachloride or beta-HCH), pH

- **Aquatic Life Support**
  - ***Warm Freshwater Habitat***

    Aldrin, Ammonia, Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Permethrin, Phorate, Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, Toxicity, pH
  - ***Fish Spawning***

    Oxygen, Dissolved
  - ***Cold Freshwater Habitat***

    Aldrin, Ammonia, Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Permethrin, Phorate,

				Sulfates, Temperature, water, Total Dissolved Solids, Toxaphene, pH
				• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Aldrin	

4	Toluca Lake	Lake & Reservoir	40521000 / 18070105	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Aldrin, Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), PCBs (Polychlorinated biphenyls)
				• Fish Consumption
				  ◦ *Commercial or recreational collection of fish, shellfish, or organisms*
				    Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Endosulfan, Endrin, Heptachlor epoxide, Hexachlorobenzene/ HCB, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, Mirex, PCBs (Polychlorinated biphenyls), Selenium
					4.3 Acres

4	Trancas Canyon Creek	River & Stream	40437000 / 18070104	• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Chloride, Sulfates
					6.4 Miles

4	Trancas Canyon Creek, West Fork	River & Stream	40437000 / 18070104	• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Oxygen, Dissolved, pH
					1.9 Miles

4	Tuna Canyon Creek	River & Stream	40412000 / 18070104	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    Trash
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Sulfates
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Nitrate
					2.4 Miles

4	Zone Ditch 1 (LA River Watershed)	River & Stream	40531000 / 18070104	• Swimming ◦ *Water Contact Recreation*	1.5 Miles

				Indicator Bacteria • Aquatic Life Support ◦ *Warm Freshwater Habitat* Arsenic, Cadmium, Chromium, Copper, Lead , Mercury, Nickel, Selenium, Silver, Zinc	
4	Zuma Canyon	River & Stream	40436000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Oxygen, Dissolved, Permethrin, Selenium, Silver, Temperature, water, Toxicity, Zinc, pH	7.5 Miles

2016 CALIFORNIA WATERS SUPPORTING ALL ASSESSED BENEFICIAL USES

Common Beneficial Uses	Applicable California Beneficial Uses
Aquatic Life Support	Cold Freshwater Habitat, Estuarine Habitat, Fish Migration, Fish Spawning, Freshwater Replenishment, Inland Saline Water Habitat, Limited Warmwater, Marine Habitat, Preservation of Areas of Special Biological Significance, Preservation of Rare & Endangered Species, Warm Freshwater Habitat, Wetland Habitat, Wildlife Habitat
Drinking Water Supply	Municipal & Domestic Supply
Fish Consumption	Commercial or recreational collection of fish, shellfish, or organisms, Subsistence Fishing
Secondary Contact	Non-Contact Recreation
Shellfishing	Shellfish Harvesting
Swimming	Water Contact Recreation

Category 1 Criteria: 1) A water that fully supports at least one of its California beneficial uses; 2) has other uses that are not assessed or lack sufficient information to be assessed; and 3) No assessed uses are not supported.

* USGS HUC = US Geological Survey Hydrologic Unit Code. Calwater = State Water Resources Control Board hydrological subunit area or even smaller planning watershed.

REGION	WATER BODY NAME	WATER TYPE	WATERSHED* CALWATER / USGS HUC	• COMMON BENEFICIAL USE ◦ *California Beneficial Use* Pollutant Assessed	ESTIMATED AREA ASSESSED
4	**Agua Blanca Creek and its tributaries (above Lake Piru)**	**River & Stream**	**4403.320200,4403.420000 /**	• **Aquatic Life Support** ◦ ***Cold Freshwater Habitat*** **Benthic Community Effects**	**169 Miles**
4	**Arroyo Seco Reach 3 (above Devils Gate Dam)**	**River & Stream**	**40532000 / 18070105**	• **Aquatic Life Support** ◦ ***Warm Freshwater Habitat*** **Benthic Community Effects**	**4.1 Miles**
4	**Arroyo Sequit (from confluence of East and West Forks to mouth)**	**River & Stream**	**40444000 / 18070104**	• **Aquatic Life Support** ◦ ***Warm Freshwater Habitat*** **Benthic Community Effects, Oxygen, Dissolved, pH**	**3.2 Miles**
4	**Bear Canyon and its tributaries**	**River & Stream**	**4412.320000 /**	• **Aquatic Life Support** ◦ ***Cold Freshwater Habitat*** **Benthic Community Effects**	**6.7 Miles**
4	**Bear Creek (Los Angeles County)**	**River & Stream**	**40543000 / 18070106**	• **Secondary Contact** ◦ ***Non-Contact Recreation*** **pH** • **Swimming** ◦ ***Water Contact Recreation*** **pH** • **Aquatic Life Support**	**11 Miles**

				◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Ammonia, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Ammonia, Benthic Community Effects, Chloride, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Sulfates, Temperature, water, pH	
4	Bear Creek and its tributaries	River & Stream	4405.430000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic-Macroinvertebrate Bioassessments	59 Miles
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list), unnamed tributary at Olsen Road	River & Stream	40364000 / 18070103	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Cyanide, Lead , Zinc	2.8 Miles
4	Channel Islands Harbor	Bay & Harbor	40311000 / 18070103	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Aquatic Life Support ◦ *Marine Habitat* 2-Methylnaphthalene, Aldrin, Arsenic, Azinphos-methyl (Guthion), Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Cadmium, Chlordane, Chlorpyrifos, Chromium, Chrysene (C1-C4), Copper, DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endrin, Heptachlor, Heptachlor epoxide, Lead , Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Mercury, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls),	209 Acres

				Phenanthrene, Pyrene, Selenium, Silver, Toxicity, Zinc, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2), pH • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Acenaphthene, Aldrin, Anthracene, Arsenic, Benzo(a)anthracene, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo[k]fluoranthene, Cadmium, Chlordane, Chlorpyrifos, Chrysene (C1-C4), DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Diazinon, Dibenz[a,h]anthracene, Dieldrin, Endosulfan, Endosulfan sulfate, Endrin, Endrin aldehyde, Fluoranthene, Fluorene, Heptachlor, Heptachlor epoxide, Hexachlorobenzene/ HCB, Indeno[1,2,3-cd]pyrene, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Manganese, Mercury, Mirex, Nickel, PAHs (Polycyclic Aromatic Hydrocarbons), PCBs (Polychlorinated biphenyls), Pyrene, Selenium, alpha-Endosulfan (Endosulfan 1), beta-Endosulfan (Endosulfan 2)	
4	Clearwater Canyon	River & Stream	40351000 / 18070102	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* Manganese, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	1.8 Miles

4	County Line Beach	Coastal & Bay Shoreline	40445000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					0.7 Miles

4	Deer Creek Beach	Coastal & Bay Shoreline	40446000 / 18070104	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
				• Shellfishing
				  ◦ *Shellfish Harvesting*
				    Indicator Bacteria
					1.2 Miles

4	Elizabeth Lake Canyon	River & Stream	40351000 / 18070102	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Drinking Water Supply
				  ◦ *Municipal & Domestic Supply*
				    Aluminum, Ammonia, Arsenic, Cadmium, Chloride, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrogen, Nitrate, Nitrogen, Nitrite, Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chloride, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH
				  ◦ *Cold Freshwater Habitat*
				    Benthic Community Effects
					12 Miles

4	Emma Woods State Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					1.6 Miles

				Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	
4	Faria County Park Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria	0.68 Miles
4	Hermosa Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	2 Miles
4	Hobson County Park	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.1 Miles
4	Hollywood Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	1.4 Miles
4	La Conchita Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	1.3 Miles
4	Leo Carillo Beach (South of County Line)	Coastal & Bay Shoreline	40444000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria	1.8 Miles
4	Lion Canyon and its tributaries	River & Stream	4403.320200 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	56 Miles
4	Little Sycamore Canyon	River & Stream	40445000 / 18070104	• Secondary Contact ◦ *Non-Contact Recreation* pH	4.8 Miles

				• Swimming ◦ *Water Contact Recreation* Manganese, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Azinphos-methyl (Guthion), Benthic Community Effects, Bifenthrin, Cadmium, Chlorpyrifos, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Dyfonate (Fonofos or Fonophos), Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Iron, Lead , Malathion, Methidathion, Methyl Parathion, Molinate, Nickel, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Selenium, Silver, Sulfates, Temperature, water, Terbufos, Thiobencarb/Bolero, Toxicity, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved	
4	Mandos Cove Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.69 Miles
4	Manhattan Beach	Coastal & Bay Shoreline	40512000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	2 Miles
4	Marina Park Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.33 Miles
4	Matilija Creek, North Fork	River & Stream	40220014 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria	7.7 Miles

				• Drinking Water Supply ◦ *Municipal & Domestic Supply* Total Dissolved Solids • Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	
4	McGrath Lake Agricultural Drain	River & Stream	40311000 / 18070103	• Aquatic Life Support ◦ *Preservation of Rare & Endangered Species* Chloride ◦ *Cold Freshwater Habitat* Aldrin, Ammonia, Azinphos-methyl (Guthion), Bifenthrin, Chlordane, Chlorpyrifos, Cyfluthrin, Cyhalothrin, Lambda, Cypermethrin, DDT (Dichlorodiphenyltrichloroethane), Dacthal, Deltamethrin, Demeton, Diazinon, Dichlorvos, Dicofol, Dieldrin, Dimethoate, Disulfoton, Endosulfan, Endosulfan sulfate, Endrin, Esfenvalerate/Fenvalerate, Ethoprop, Fenpropathrin, Heptachlor, Heptachlor epoxide, Lindane/gamma Hexachlorocyclohexane (gamma-HCH), Malathion, Methidathion, Methoxychlor, Methyl Parathion, Mirex, Oxygen, Dissolved, Parathion, Permethrin, Phorate, Phosmet, Temperature, water, Toxaphene, pH	0.57 Miles
4	Mussel Shoals Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.39 Miles
4	North Fork San Gabriel River and its Tributaries	River & Stream	4405.430000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	84 Miles
4	Oil Piers Beach	Coastal & Bay Shoreline	40100010 / 18070101	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	1.2 Miles

4	Oxnard Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					1 Miles

4	Oxnard Beach Park	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					0.65 Miles

4	Piedra Blanca Creek and its Tributaries	River & Stream	4403.320200,4403.420000 /	• Aquatic Life Support
				  ◦ *Cold Freshwater Habitat*
				    Benthic Community Effects
					63 Miles

4	Promenade Park Beach	Coastal & Bay Shoreline	40210000 / 18070101	• Swimming
				  ◦ *Water Contact Recreation*
				    Indicator Bacteria
					0.58 Miles

4	Rose Valley Creek	River & Stream	40332020 / 18070102	• Secondary Contact
				  ◦ *Non-Contact Recreation*
				    pH
				• Swimming
				  ◦ *Water Contact Recreation*
				    pH
				• Aquatic Life Support
				  ◦ *Warm Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH
				  ◦ *Marine Habitat*
				    Arsenic, Bifenthrin, Cadmium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc, pH
				  ◦ *Estuarine Habitat*
				    Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cypermethrin, Lead , Nickel, Permethrin, Selenium, Silver, Zinc
				  ◦ *Fish Spawning*
				    Ammonia, Oxygen, Dissolved
				  ◦ *Cold Freshwater Habitat*
				    Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic
					2.6 Miles

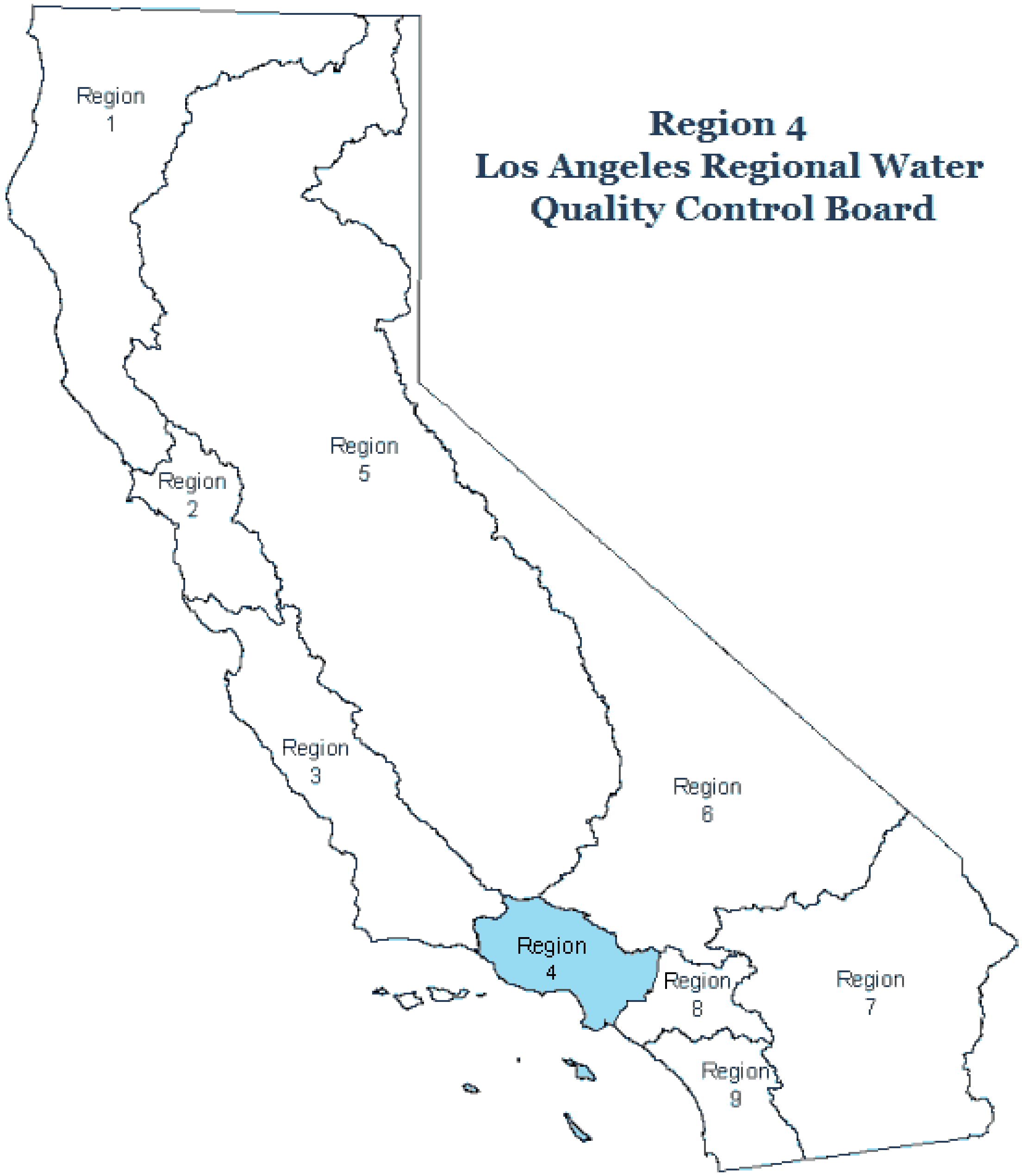
				Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH • Fish Consumption ◦ *Commercial or recreational collection of fish, shellfish, or organisms* Manganese, Nickel, Selenium	
4	San Gabriel River, North Fork	River & Stream	40543000 / 18070106	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	10 Miles
4	Santa Ana Creek, North Fork	River & Stream	40220030 / 18070101	• Secondary Contact ◦ *Non-Contact Recreation* pH • Swimming ◦ *Water Contact Recreation* pH • Drinking Water Supply ◦ *Municipal & Domestic Supply* Aluminum, Ammonia, Arsenic, Cadmium, Chromium, Copper, Iron, Lead , Manganese, Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Selenium, Silver, Specific Conductivity, Sulfates, Total Dissolved Solids, pH • Aquatic Life Support ◦ *Warm Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Zinc, pH ◦ *Fish Spawning* Ammonia, Oxygen, Dissolved ◦ *Cold Freshwater Habitat* Alkalinity as CaCO3, Aluminum, Ammonia, Arsenic, Benthic	2.8 Miles

				Community Effects, Bifenthrin, Cadmium, Chromium, Copper, Cyhalothrin, Lambda, Cypermethrin, Deltamethrin, Esfenvalerate/Fenvalerate, Fenpropathrin, Iron, Lead , Nickel, Nitrate/Nitrite (Nitrite + Nitrate as N), Oxygen, Dissolved, Permethrin, Selenium, Silver, Sulfates, Temperature, water, Total Dissolved Solids, Toxicity, Zinc, pH	
4	Santa Clara River Estuary Beach-Surfers Knoll	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria • Shellfishing ∘ *Shellfish Harvesting* Indicator Bacteria	1 Miles
4	Santa Paula Creek and its Tributaries	River & Stream	4403.210000,4403.220000 /	• Aquatic Life Support ∘ *Cold Freshwater Habitat* Benthic Community Effects	103 Miles
4	Seaside Wilderness Park Beach	Coastal & Bay Shoreline	40210011 / 18070101	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria • Shellfishing ∘ *Shellfish Harvesting* Indicator Bacteria	0.74 Miles
4	Silverstrand Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria • Shellfishing ∘ *Shellfish Harvesting* Indicator Bacteria	0.98 Miles
4	Sisar Creek and its Tributaries	River & Stream	4403.220000 /	• Aquatic Life Support ∘ *Cold Freshwater Habitat* Benthic Community Effects	32 Miles
4	Solimar Beach	Coastal & Bay Shoreline	40100011 / 18070101	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria	1.6 Miles
4	South Jetty Beach	Coastal & Bay Shoreline	40311000 / 18070103	• Swimming ∘ *Water Contact Recreation* Indicator Bacteria • Shellfishing	0.24 Miles

				◦ *Shellfish Harvesting* Indicator Bacteria	
4	Southern Tributary to Sespe Creek (Between Potrero John Creek and Munson Creek)	River & Stream	4403.320200 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	5.2 Miles
4	Staircase Beach (Leo Carillo Beach, North of County Line)	Coastal & Bay Shoreline	40445000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.51 Miles
4	Susanna Canyon and East Fork Susanna Canyon	River & Stream	4405.430000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	4.8 Miles
4	Sycamore Cove Beach	Coastal & Bay Shoreline	40447000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	0.32 Miles
4	Thacher Creek and its Tributaries	River & Stream	4402.320001 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	14 Miles
4	Thornhill Broome Beach	Coastal & Bay Shoreline	40447000 / 18070104	• Swimming ◦ *Water Contact Recreation* Indicator Bacteria • Shellfishing ◦ *Shellfish Harvesting* Indicator Bacteria	1.3 Miles
4	Tributary to East Fork San Gabriel River	River & Stream	4405.430000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic-Macroinvertebrate Bioassessments	1.4 Miles
4	Tributary to Lockwood	River & Stream	4403.420000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat*	14 Miles

	Creek			Benthic-Macroinvertebrate Bioassessments	
4	Tributary to North Fork Matilija Creek	River & Stream	4402.200104 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	7.2 Miles
4	Tributary to South Fork Santa Clara River	River & Stream	4403.510000 /	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Benthic Community Effects	10 Miles
4	Upper North Fork Matilija Creek and its tributaries	River & Stream	4402.200102,4402.200103 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	53 Miles
4	West Fork Coyote Creek and its Tributaries	River & Stream	4402.200301 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	11 Miles
4	West Fork San Gabriel River and its Tributaries	River & Stream	4405.430000 /	• Aquatic Life Support ◦ *Cold Freshwater Habitat* Benthic Community Effects	26 Miles
4	Westlake Creek	River & Stream	40425000 / 18070104	• Aquatic Life Support ◦ *Warm Freshwater Habitat* Oxygen, Dissolved, pH	4.3 Miles

Draft California 2014 Integrated Report (303(d) List/305(b) Report) Supporting Information



Region 4
Los Angeles Regional Water Quality Control Board

Draft

Draft California 2014 Integrated Report (303(d) List/305(b) Report)

Supporting Information

REGIONAL BOARD 4 - LOS ANGELES REGION

- **New or Revised Fact Sheets**
  These lines of evidence and/or decisions, which were developed during the last listing cycle, are new or have been revised.
- **Original Fact Sheets**
  These lines of evidence and/or decisions were developed during the last listing cycle.

New or Revised Fact Sheets

Delist from 303(d) list (TMDL required list)	Regional Board 4

- **Ballona Creek**
  - Cadmium (33380)
  - Chlordane (32617)
  - DDT (Dichlorodiphenyltrichloroethane) (32717)
  - Dieldrin (33158)
- **Burbank Western Channel**
  - Excess Algal Growth (34342)
- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Sulfates (42845)
  - Total Dissolved Solids (42771)
- **Channel Islands Harbor**
  - Lead (42844)
  - Zinc (42376)
- **Coyote Creek**
  - Diazinon (33100)
  - Zinc (32733)
- **Dominguez Channel (lined portion above Vermont Ave)**
  - Ammonia (35134)
- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Ammonia (34669)

- [Chromium (total) (34075)]

- Echo Park Lake
  - Ammonia (34696)
  - Copper (33998)
  - Lead (34700)

- Lake Calabasas
  - DDT (Dichlorodiphenyltrichloroethane) (42257)

- Lake Hughes
  - Fish Kills (34344)

- Los Angeles River Estuary (Queensway Bay)
  - Zinc (43337)

- Los Angeles River Reach 1 (Estuary to Carson Street)
  - Diazinon (32542)

- Los Angeles/Long Beach Outer Harbor (inside breakwater)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (33119)

- Promenade Park Beach
  - Indicator Bacteria (42266)

- San Gabriel River Reach 1 (Estuary to Firestone)
  - Indicator Bacteria (38273)
  - Toxicity (32625)

- San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam
  - Copper (33327)
  - Zinc (32705)

- San Gabriel River Reach 3 (Whittier Narrows to Ramona)
  - Toxicity (32521)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Selenium (33931)

- San Pedro Bay Near/Off Shore Zones
  - Copper (44434)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (43259)
  - Zinc (42798)

- Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)
  - Copper (35886)
  - Diazinon (44805)
  - Indicator Bacteria (34307)
  - Iron (36249)

- Santa Monica Bay Offshore/Nearshore
  - Chlordane (37492)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (32656)
  - Toxicity (34120)

- **Sepulveda Canyon**
    - [Ammonia (36981)]
- **Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)**
    - [Pumping (34271)]
- **Walnut Creek Wash (Drains from Puddingstone Res)**
    - [Toxicity (42360)]
- **Wilmington Drain**
    - [Copper (44676)]
    - [Lead (35085)]

Delist from 303(d) list (being addressed by USEPA approved TMDL)	**Regional Board 4**

- **Abalone Cove Beach**
    - [Indicator Bacteria (32427)]
- **Ballona Creek**
    - [Selenium (32566)]
- **Bluff Cove Beach**
    - [Indicator Bacteria (32848)]
- **Cabrillo Beach (Outer)**
    - [Indicator Bacteria (32486)]
- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
    - [Endosulfan (tissue) (43177)]
- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)**
    - [Ammonia (36414)]
- **Coyote Creek**
    - [Lead (43334)]
- **Dominguez Channel (lined portion above Vermont Ave)**
    - [Diazinon (33061)]
- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
    - [Zinc (sediment) (38512)]
- **Hermosa Beach**
    - [Indicator Bacteria (32408)]
- **Lake Sherwood**
    - [Ammonia (34406)]
    - [Organic Enrichment/Low Dissolved Oxygen (43370)]
- **Leo Carillo Beach (South of County Line)**

Indicator Bacteria (33000)

- **Lincoln Park Lake**
  - Lead (34817)

- **Long Point Beach**
  - Indicator Bacteria (33003)

- **Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)**
  - Lead (34632)

- **Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)**
  - Ammonia (32913)
  - Copper (33749)
  - Lead (37137)

- **Los Angeles/Long Beach Inner Harbor**
  - Beach Closures (34207)

- **Malaga Cove Beach**
  - Indicator Bacteria (32565)

- **Manhattan Beach**
  - Indicator Bacteria (32409)

- **Nicholas Canyon Beach**
  - Indicator Bacteria (33001)

- **Point Fermin Park Beach**
  - Indicator Bacteria (32429)

- **Portuguese Bend Beach**
  - Indicator Bacteria (32379)

- **Rio Hondo Reach 2 (At Spreading Grounds)**
  - Ammonia (32501)

- **Robert H. Meyer Memorial Beach**
  - Beach Closures (44531)

- **Royal Palms Beach**
  - Indicator Bacteria (32423)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Indicator Bacteria (32640)

- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
  - Ammonia (32846)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - Ammonia (34352)

Delist from 303(d) list (being addressed by action other than TMDL) Regional Board 4

- **Coyote Creek**
  - Ammonia (37877)

Do Not Delist from 303(d) list (TMDL required list) Regional Board 4

- **Alamitos Bay**
  - Indicator Bacteria (42846)
- **Arroyo Seco Reach 1 (LA River to West Holly Ave.)**
  - Benthic Community Effects (44553)
- **Ballona Creek**
  - Cyanide (32970)
- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Indicator Bacteria (32899)
- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Fecal Coliform (32738)
- **Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)**
  - Indicator Bacteria (32747)
- **Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)**
  - Indicator Bacteria (32697)
- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - Indicator Bacteria (32585)
- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - Indicator Bacteria (33490)
- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - Indicator Bacteria (32561)
- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Indicator Bacteria (32574)
- **Canada Larga (Ventura River Watershed)**
  - Indicator Bacteria (32883)
- **Casitas, Lake**
  - Mercury (40196)
- **Castaic Lake**
  - Mercury (40191)
- **Colorado Lagoon**

- [Indicator Bacteria (44721)]
- **Coyote Creek**
    - [Toxicity (35132)]
    - [pH (32677)]
- **Dominguez Channel (lined portion above Vermont Ave)**
    - [Indicator Bacteria (32822)]
- **Dry Canyon Creek**
    - [Indicator Bacteria (34674)]
- **Hopper Creek**
    - [Sulfates (33395)]
    - [Total Dissolved Solids (33405)]
- **Lake Lindero**
    - [Selenium (33135)]
- **Las Virgenes Creek**
    - [Benthic Community Effects (44467)]
    - [Selenium (44477)]
- **Lindero Creek Reach 2 (Above Lake)**
    - [Selenium (33006)]
- **Los Angeles River Estuary (Queensway Bay)**
    - [PCBs (Polychlorinated biphenyls) (sediment) (33886)]
- **Machado Lake (Harbor Park Lake)**
    - [PCBs (Polychlorinated biphenyls) (tissue) (33285)]
- **Malibu Creek**
    - [Benthic Community Effects (44554)]
    - [Selenium (32716)]
    - [Sulfates (32394)]
- **McCoy Canyon Creek**
    - [Indicator Bacteria (32548)]
- **McGrath Lake**
    - [Indicator Bacteria (33512)]
- **Medea Creek Reach 1 (Lake to Confl. with Lindero)**
    - [Selenium (34182)]
- **Medea Creek Reach 2 (Abv Confl. with Lindero)**
    - [Benthic Community Effects (44495)]
    - [Selenium (44642)]
- **Ormond Beach**
    - [Indicator Bacteria (42278)]
- **Peninsula Beach**

Indicator Bacteria (32757)

- Piru Creek (from gaging station below Santa Felicia Dam to headwaters)
  - Chloride (32547)
  - pH (33044)

- Pole Creek (trib to Santa Clara River Reach 3)
  - Sulfates (33347)

- Puddingstone Reservoir
  - Chlordane (44911)
  - DDT (Dichlorodiphenyltrichloroethane) (36272)
  - Mercury (33092)
  - PCBs (Polychlorinated biphenyls) (34832)

- Puente Creek
  - Indicator Bacteria (40779)

- Pyramid Lake
  - Mercury (39684)

- Rincon Beach
  - Indicator Bacteria (42386)

- Rio De Santa Clara/Oxnard Drain No. 3
  - Toxaphene (tissue) (33565)
  - Toxicity (35083)

- San Antonio Creek (Tributary to Ventura River Reach 4)
  - Total Dissolved Solids (39724)

- San Buenaventura Beach
  - Indicator Bacteria (44599)

- San Gabriel River Estuary
  - Nickel (38039)
  - Oxygen, Dissolved (38237)

- San Gabriel River Reach 1 (Estuary to Firestone)
  - pH (33507)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Toxicity (33989)
  - pH (35237)

- Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)
  - Toxicity (33258)

- Santa Clara River Reach 3 (Freeman Diversion to A Street)
  - Total Dissolved Solids (33967)

- Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)
  - Iron (35383)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Chlorpyrifos (33024)
  - Toxicity (33550)

- **Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**
  - Sulfates (33366)
  - Total Dissolved Solids (37475)

- **Sawpit Creek**
  - Indicator Bacteria (32719)

- **Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)**
  - Chloride (36680)
  - pH (34156)

- **Surfers Point at Seaside**
  - Indicator Bacteria (36752)

- **Topanga Canyon Creek**
  - Lead (34158)

- **Triunfo Canyon Creek Reach 1**
  - Lead (34225)

- **Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)**
  - Indicator Bacteria (39229)

- **Walnut Creek Wash (Drains from Puddingstone Res)**
  - Benthic Community Effects (43696)

- **Wheeler Canyon/Todd Barranca**
  - Sulfates (32633)
  - Total Dissolved Solids (32647)

Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL) Regional Board 4

- **Avalon Beach**
  - Indicator Bacteria (39065)

- **Ballona Creek**
  - Copper (32340)
  - Indicator Bacteria (33769)
  - Lead (34316)
  - Toxicity (34253)
  - Zinc (32927)

- **Bell Creek**
  - Indicator Bacteria (34439)

- **Big Rock Beach**
  - Coliform Bacteria (32468)

- **Burbank Western Channel**
  - Indicator Bacteria (44606)

- **Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)**
  - Chlordane (tissue) (34564)
  - DDT (tissue & sediment) (39503)
  - Dieldrin (33966)
  - Endosulfan (tissue) (33982)
  - Mercury (33758)
  - PCBs (Polychlorinated biphenyls) (tissue) (34667)

- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Ammonia (33002)
  - Chlordane (39436)
  - DDT (Dichlorodiphenyltrichloroethane) (32727)
  - Dieldrin (34728)
  - Endosulfan (34175)
  - Toxaphene (34561)

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - Ammonia (33436)
  - Chlordane (34193)
  - Chloride (42314)
  - DDT (Dichlorodiphenyltrichloroethane) (33979)
  - Dieldrin (33929)
  - PCBs (Polychlorinated biphenyls) (44060)

- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Chlordane (tissue & sediment) (33351)
  - Chlorpyrifos (tissue) (34402)
  - Diazinon (34729)
  - Dieldrin (tissue) (34531)
  - Endosulfan (tissue & sediment) (34641)
  - Selenium (34524)
  - Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (36487)
  - Toxaphene (tissue & sediment) (33712)

- **Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)**
  - Ammonia (32814)
  - Sulfates (42710)
  - Total Dissolved Solids (42961)
  - Toxicity (33983)

- **Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)**
  - Chlorpyrifos (33794)
  - Diazinon (39437)
  - Toxicity (34714)

- **Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)**
  - Sulfates (42815)
  - Total Dissolved Solids (42401)

- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - Nitrogen, Nitrate (32706)
  - Sulfates (42315)
  - Total Dissolved Solids (34332)

- Copper (37227)
- Lead (37347)
- Toxicity (43000)
- Zinc (33114)

- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Benzo(a)anthracene (33810)
  - Benzo(a)pyrene (3,4-Benzopyrene -7-d) (33025)
  - Chlordane (tissue) (34671)
  - Chrysene (C1-C4) (33807)
  - DDT (tissue & sediment) (34076)
  - Lead (34613)
  - PCBs (Polychlorinated biphenyls) (33063)
  - Phenanthrene (33588)
  - Pyrene (33568)
  - Toxicity (43062)

- Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2
  - Chlordane (33912)
  - DDT (Dichlorodiphenyltrichloroethane) (33978)
  - Toxaphene (33913)
  - Toxicity (33660)

- Echo Park Lake
  - PCBs (Polychlorinated biphenyls) (33999)

- El Dorado Lakes
  - Mercury (tissue) (37448)

- Fox Barranca (tributary to Calleguas Creek Reach 6)
  - Sulfates (43740)
  - Total Dissolved Solids (43728)

- Hobie Beach (Channel Islands Harbor)
  - Indicator Bacteria (33239)

- Lake Calabasas
  - Odor (38524)

- Lake Sherwood
  - Mercury (tissue) (32850)

- Las Tunas Beach
  - DDT (Dichlorodiphenyltrichloroethane) (44943)
  - PCBs (Polychlorinated biphenyls) (44476)

- Las Virgenes Creek
  - Indicator Bacteria (34006)
  - Organic Enrichment/Low Dissolved Oxygen (42753)

- Lindero Creek Reach 1
  - Indicator Bacteria (34063)

- Lindero Creek Reach 2 (Above Lake)
  - Indicator Bacteria (33974)

- Chlordane (tissue) (33013)
- DDT (tissue) (33211)
- Dieldrin (tissue) (33643)

- **Malibu Lagoon Beach (Surfrider)**
  - Coliform Bacteria (32362)

- **Marina del Rey Harbor - Back Basins**
  - Copper (34465)
  - Toxicity (32544)

- **Marina del Rey Harbor Beach**
  - Indicator Bacteria (32348)

- **McCoy Canyon Creek**
  - Nitrogen, Nitrate (33430)

- **McGrath Beach**
  - Indicator Bacteria (32583)

- **McGrath Lake**
  - DDT (Dichlorodiphenyltrichloroethane) (38916)
  - Toxicity (33434)

- **Paradise Cove Beach**
  - Indicator Bacteria (32489)

- **Peck Road Park Lake**
  - Chlordane (tissue) (34202)
  - DDT (tissue) (37716)

- **Point Dume Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34206)
  - PCBs (Polychlorinated biphenyls) (34209)

- **Redondo Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (36273)
  - PCBs (Polychlorinated biphenyls) (34833)

- **Rio De Santa Clara/Oxnard Drain No. 3**
  - Chlordane (tissue) (33192)
  - DDT (tissue) (33564)

- **Royal Palms Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34247)
  - PCBs (Polychlorinated biphenyls) (37733)

- **San Antonio Creek (Tributary to Ventura River Reach 4)**
  - Nitrogen (33348)

- **San Gabriel River Estuary**
  - Copper (38252)

- **San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam**
  - Lead (32995)

- **San Gabriel River Reach 3 (Whittier Narrows to Ramona)**
    - Indicator Bacteria (38851)

- **San Jose Creek Reach 1 (SG Confluence to Temple St.)**
    - Indicator Bacteria (37897)

- **San Jose Creek Reach 2 (Temple to I-10 at White Ave.)**
    - Indicator Bacteria (34242)

- **San Pedro Bay Near/Off Shore Zones**
    - Chlordane (34442)
    - PCBs (Polychlorinated biphenyls) (33722)
    - Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (33721)
    - Toxicity (34701)

- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
    - Chloride (44278)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
    - Chloride (32396)
    - Indicator Bacteria (34306)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
    - Chloride (32397)

- **Santa Monica Bay Offshore/Nearshore**
    - DDT (Dichlorodiphenyltrichloroethane) (35166)
    - PCBs (Polychlorinated biphenyls) (33180)

- **Santa Monica Beach**
    - Indicator Bacteria (32401)

- **Topanga Beach**
    - Indicator Bacteria (32578)

- **Trancas Beach (Broad Beach)**
    - Indicator Bacteria (32480)

- **Venice Beach**
    - Indicator Bacteria (32952)

- **Will Rogers Beach**
    - Indicator Bacteria (32965)

Do Not Delist from 303(d) list (being addressed with action other than TMDL)	Regional Board 4

- **Port Hueneme Harbor (Back Basins)**
    - PCBs (Polychlorinated biphenyls) (42748)

- Agua Blanca Creek and its tributaries (above Lake Piru)
  - Benthic Community Effects (67421)

- Alamitos Bay
  - Copper (54822)
  - Toxicity (55141)
  - Zinc (54879)
  - pH (54878)

- Alhambra Wash
  - Alkalinity as CaCO3 (55200)
  - Chloride (55204)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (55209)
  - Oxygen, Dissolved (60207)
  - Sulfates (55195)
  - Temperature, water (56151)
  - pH (55147)

- Alondria Park Lake
  - Aldrin (60210)
  - Chlordane (60212)
  - DDT (Dichlorodiphenyltrichloroethane) (60219)
  - Dieldrin (60216)
  - Endosulfan (60218)
  - Endrin (60213)
  - Heptachlor (60214)
  - Heptachlor epoxide (60215)
  - Hexachlorobenzene/ HCB (60221)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60222)
  - Mercury (60223)
  - Mirex (60220)
  - Selenium (60217)

- Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)
  - Benthic Community Effects (65548)

- Arroyo Seco Reach 3 (above Devils Gate Dam)
  - Benthic Community Effects (65554)

- Arroyo Sequit (from confluence of East and West Forks to mouth)
  - Benthic Community Effects (65655)
  - Oxygen, Dissolved (60209)
  - pH (60208)

- Avalon Drain
  - Aluminum (60230)
  - Arsenic (60231)
  - Cadmium (60232)
  - Chromium (60243)
  - Copper (60245)
  - Iron (60249)
  - Lead (60250)
  - Nickel (60226)
  - Selenium (60227)

- Ballona Creek Estuary
  - Antimony | Arsenic | Benzo(a)anthracene | Benzo(a)pyrene (3,4-Benzopyrene -7-d) | Chromium (total) | Chrysene (C1-C4) | Dibenz[a,h]anthracene | Mercury | Phenanthrene | Pyrene | Sediment Toxicity (34273)

- Bear Canyon and its tributaries
  - Benthic Community Effects (67422)

- Bear Creek (Los Angeles County)
  - Alkalinity as CaCO3 (60409)
  - Ammonia (60411)
  - Benthic Community Effects (65657)
  - Chloride (60412)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (60415)
  - Oxygen, Dissolved (60418)
  - Sulfates (60421)
  - Temperature, water (60422)
  - pH (60419)

- Bear Creek and its tributaries
  - Benthic-Macroinvertebrate Bioassessments (67423)

- Belvedere Park Lake
  - Aldrin (60427)
  - Chlordane (60436)
  - DDT (Dichlorodiphenyltrichloroethane) (60444)
  - Dieldrin (60437)
  - Endosulfan (60439)
  - Endrin (60440)
  - Heptachlor (60428)
  - Heptachlor epoxide (60441)
  - Hexachlorobenzene/ HCB (60429)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60442)
  - Mercury (60431)
  - Mirex (60432)
  - PCBs (Polychlorinated biphenyls) (60443)
  - Selenium (60435)

- Big Sycamore Canyon
  - Ammonia (60469)
  - Arsenic (60447)
  - Azinphos-methyl (Guthion) (60448)
  - Cadmium (60449)
  - Chloride (60450)
  - Chlorpyrifos (60451)
  - Copper (60452)
  - Diazinon (60453)
  - Dichlorvos (60454)
  - Dimethoate (60455)
  - Disulfoton (60456)
  - Dyfonate (Fonofos or Fonophos) (60457)
  - Ethoprop (60458)
  - Lead (60459)
  - Malathion (60461)
  - Methidathion (60462)
  - Methyl Parathion (60464)
  - Molinate (60465)
  - Nickel (60466)
  - Oxygen, Dissolved (60479)

- Heptachlor epoxide (60641)
- Hexachlorobenzene/ HCB (60642)
- Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60644)
- Mirex (60645)
- PAHs (Polycyclic Aromatic Hydrocarbons) (60646)
- Selenium (60922)

- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Aldrin (60934)
  - Azinphos-methyl (Guthion) (60936)
  - Bifenthrin (60937)
  - Chloride (61022)
  - Chlorpyrifos (60939)
  - Cyfluthrin (60941)
  - Cyhalothrin, Lambda (60942)
  - Cypermethrin (60943)
  - DDD (Dichlorodiphenyldichloroethane) (67330)
  - Dacthal (60946)
  - Deltamethrin (60947)
  - Demeton (60951)
  - Diazinon (60952)
  - Dichlorvos (60959)
  - Dicofol (60960)
  - Dimethoate (60961)
  - Disulfoton (60963)
  - Endosulfan sulfate (60965)
  - Endrin (60966)
  - Endrin aldehyde (61007)
  - Esfenvalerate/Fenvalerate (60967)
  - Ethoprop (60969)
  - Fenpropathrin (60970)
  - Heptachlor (60971)
  - Heptachlor epoxide (60972)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (60973)
  - Malathion (60974)
  - Methidathion (60991)
  - Methoxychlor (60982)
  - Methyl Parathion (60988)
  - Mirex (60990)
  - Oxygen, Dissolved (61000)
  - Parathion (60992)
  - Permethrin (60993)
  - Phorate (60984)
  - Phosmet (60985)
  - Sulfates (61012)
  - Temperature, water (61002)
  - Total Dissolved Solids (61035)
  - pH (60986)

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - Alkalinity as CaCO3 (61058)
  - Aluminum (61059)
  - Arsenic (61060)
  - Bifenthrin (61061)
  - Cadmium (61062)
  - Chlorpyrifos (61063)
  - Chromium (61064)
  - Copper (61065)
  - Cyfluthrin (61066)
  - Cyhalothrin, Lambda (61067)

- Endrin aldehyde (67482)
- Esfenvalerate/Fenvalerate (62417)
- Ethoprop (62493)
- Fenpropathrin (62494)
- Heptachlor (62436)
- Heptachlor epoxide (62437)
- Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (62438)
- Malathion (62418)
- Methidathion (62495)
- Methoxychlor (62420)
- Methyl Parathion (62496)
- Mirex (62497)
- Oxygen, Dissolved (62503)
- Parathion (62499)
- Permethrin (62478)
- Phorate (62426)
- Phosmet (62427)
- Sulfates (62504)
- Temperature, water (62510)
- Total Dissolved Solids (62505)
- Toxaphene (62439)
- pH (62506)

- **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2**
  - Aldrin (62595)
  - Ammonia (62611)
  - Azinphos-methyl (Guthion) (62600)
  - Chloride (62593)
  - Cypermethrin (62601)
  - Dacthal (62602)
  - Demeton (62604)
  - Diazinon (62587)
  - Dieldrin (62596)
  - Dimethoate (62603)
  - Disulfoton (62605)
  - Endosulfan (62588)
  - Endosulfan sulfate (62589)
  - Endrin (62597)
  - Endrin aldehyde (62590)
  - Heptachlor (62598)
  - Heptachlor epoxide (62599)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (62591)
  - Malathion (62606)
  - Methoxychlor (62607)
  - Oxygen, Dissolved (62644)
  - Permethrin (62614)
  - Phorate (62612)
  - Phosmet (62613)
  - alpha.-BHC (Benzenehexachloride or alpha-HCH) (62592)
  - beta-BHC (Benzenehexachloride or beta-HCH) (62594)
  - delta-BHC (Benzenehexachloride or delta-HCH) (62610)
  - pH (62619)

- **Echo Park Lake**
  - Aldrin (62663)
  - DDT (Dichlorodiphenyltrichloroethane) (62678)
  - Endosulfan (62674)
  - Endrin (62675)
  - Heptachlor (62664)
  - Heptachlor epoxide (62677)

- Mirex (63016)
- Nitrogen, Nitrate (62986)
- Oxygen, Dissolved (63028)
- Parathion (63020)
- Permethrin (63021)
- Phorate (62998)
- Phosmet (63022)
- Specific Conductivity (63033)
- Temperature, water (63032)
- Toxaphene (63023)
- Toxicity (63034)
- alpha.-BHC (Benzenehexachloride or alpha-HCH) (62987)
- beta-BHC (Benzenehexachloride or beta-HCH) (62988)
- pH (63027)

- **Hansen Lake**
  - Aldrin (63055)
  - Chlordane (63052)
  - DDT (Dichlorodiphenyltrichloroethane) (63047)
  - Dieldrin (63053)
  - Endosulfan (63050)
  - Endrin (63049)
  - Heptachlor (63056)
  - Heptachlor epoxide (63054)
  - Hexachlorobenzene/ HCB (63057)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (63048)
  - Mercury (63059)
  - Mirex (63060)
  - PCBs (Polychlorinated biphenyls) (63051)
  - Selenium (63058)

- **Hidden Valley Creek (Ventura County)**
  - Oxygen, Dissolved (63096)
  - pH (63099)

- **Hobson County Park**
  - Indicator Bacteria (44182)

- **Hollenback Park Lake**
  - Aldrin (63120)
  - Chlordane (63115)
  - DDT (Dichlorodiphenyltrichloroethane) (63103)
  - Dieldrin (63114)
  - Endosulfan (63107)
  - Endrin (63109)
  - Heptachlor (63125)
  - Heptachlor epoxide (63110)
  - Hexachlorobenzene/ HCB (63127)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (63105)
  - Mercury (63129)
  - Mirex (63130)
  - PCBs (Polychlorinated biphenyls) (63112)
  - Selenium (63128)

- **Honda Barranca**
  - Aldrin (63160)
  - Ammonia (63157)
  - Azinphos-methyl (Guthion) (63164)
  - Chloride (63182)

- Endosulfan sulfate (63236)
- Endrin (63237)
- Endrin aldehyde (67484)
- Esfenvalerate/Fenvalerate (63238)
- Ethoprop (63210)
- Fenpropathrin (63211)
- Heptachlor (63250)
- Heptachlor epoxide (63251)
- Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (63239)
- Malathion (63240)
- Methidathion (63224)
- Methoxychlor (63241)
- Methyl Parathion (63212)
- Mirex (63213)
- Oxygen, Dissolved (63259)
- Parathion (63222)
- Permethrin (63223)
- Phorate (63244)
- Phosmet (63254)
- Temperature, water (63261)
- Toxaphene (63255)
- Toxicity (63278)
- pH (63279)

- Hueneme Drain
  - 2-Methylnaphthalene (63303)
  - Acenaphthene (63287)
  - Aldrin (63298)
  - Anthracene (63306)
  - Arsenic (63307)
  - Azinphos-methyl (Guthion) (63289)
  - Benzo(a)anthracene (63308)
  - Benzo(a)pyrene (3,4-Benzopyrene -7-d) (63309)
  - Benzo[k]fluoranthene (63290)
  - Cadmium (63311)
  - Chlordane (63312)
  - Chlorpyrifos (63313)
  - Chromium (63314)
  - Chrysene (C1-C4) (63316)
  - Copper (63317)
  - DDD (Dichlorodiphenyldichloroethane) (67353)
  - DDE (Dichlorodiphenyldichloroethylene) (67354)
  - DDT (Dichlorodiphenyltrichloroethane) (63301)
  - Diazinon (63318)
  - Dibenz[a,h]anthracene (63320)
  - Dieldrin (63347)
  - Endosulfan (63323)
  - Endosulfan sulfate (63291)
  - Endrin (63348)
  - Endrin aldehyde (63292)
  - Fluoranthene (63324)
  - Fluorene (63357)
  - Heptachlor (63299)
  - Heptachlor epoxide (63346)
  - Hexachlorobenzene/ HCB (63328)
  - Indeno[1,2,3-cd]pyrene (63358)
  - Lead (63349)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (63350)
  - Manganese (63293)
  - Mercury (63351)

- Toxicity (64356)

- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
  - 1,1,2-Trichloroethane (64357)
  - Acrolein (64358)
  - Aldrin (64366)
  - Arsenic (64367)
  - Benthic Community Effects (66229)
  - Cadmium (64368)
  - Chlordane (64359)
  - Cyanide (64369)
  - DDD (Dichlorodiphenyldichloroethane) (64372)
  - DDE (Dichlorodiphenyldichloroethylene) (64373)
  - DDT (Dichlorodiphenyltrichloroethane) (64381)
  - Dieldrin (64378)
  - Endosulfan (64374)
  - Endrin (64375)
  - Heptachlor (64363)
  - Heptachlor epoxide (64361)
  - Mercury (64370)
  - Methoxychlor (64376)
  - Mirex (64377)
  - Nickel (64379)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (64380)
  - Oxygen, Dissolved (64385)
  - PCBs (Polychlorinated biphenyls) (64427)
  - Pentachlorophenol (PCP) (64360)
  - Selenium (64382)
  - Silver (64383)
  - Temperature, water (64386)
  - Toxaphene (64362)
  - Zinc (64371)
  - pH (64384)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
  - 1,1,2-Trichloroethane (64438)
  - Acrolein (64443)
  - Arsenic (64456)
  - Azinphos-methyl (Guthion) (64439)
  - Cadmium (64436)
  - Chlordane (64428)
  - Chromium (64457)
  - Cyanide (64461)
  - Demeton (64460)
  - Endrin (64430)
  - Heptachlor (64431)
  - Heptachlor epoxide (64432)
  - Malathion (64440)
  - Mercury (64462)
  - Methoxychlor (64437)
  - Methyl Parathion (64441)
  - Mirex (64433)
  - Nickel (64458)
  - Oxygen, Dissolved (64464)
  - PCBs (Polychlorinated biphenyls) (64435)
  - Pentachlorophenol (PCP) (64444)
  - Selenium (64662)
  - Silver (64442)
  - Temperature, water (64663)
  - Toxaphene (64434)

- Padre Juan Canyon
    - Ammonia (62479)
    - Arsenic (62333)
    - Azinphos-methyl (Guthion) (62335)
    - Cadmium (62337)
    - Chlorpyrifos (62467)
    - Copper (62339)
    - Diazinon (62340)
    - Dichlorvos (62341)
    - Dimethoate (62342)
    - Disulfoton (62346)
    - Dyfonate (Fonofos or Fonophos) (62348)
    - Ethoprop (62468)
    - Lead (62475)
    - Malathion (62469)
    - Methidathion (62470)
    - Methyl Parathion (62471)
    - Molinate (62472)
    - Nickel (62477)
    - Oxygen, Dissolved (62492)
    - Parathion (62481)
    - Phorate (62483)
    - Phosmet (62484)
    - Silver (62511)
    - Temperature, water (62514)
    - Terbufos (62486)
    - Thiobencarb/Bolero (62488)
    - Toxicity (62512)
    - Zinc (62513)
    - pH (62515)

- Palo Comado Creek
    - Alkalinity as CaCO3 (62516)
    - Aluminum (62517)
    - Ammonia (62616)
    - Arsenic (62518)
    - Bifenthrin (62519)
    - Cadmium (62520)
    - Chloride (62550)
    - Chromium (62522)
    - Copper (62523)
    - Cyhalothrin, Lambda (62524)
    - Cypermethrin (62526)
    - Deltamethrin (62527)
    - Esfenvalerate/Fenvalerate (62529)
    - Fenpropathrin (62531)
    - Iron (62532)
    - Lead (62533)
    - Nickel (62535)
    - Nitrate/Nitrite (Nitrite + Nitrate as N) (62615)
    - Oxygen, Dissolved (62554)
    - Permethrin (62537)
    - Selenium (62547)
    - Silver (62548)
    - Sulfates (62551)
    - Temperature, water (62552)
    - Total Dissolved Solids (62553)
    - Toxicity (62555)
    - Zinc (62549)

- Pyramid Lake
  - Aldrin (62839)
  - Endosulfan (62842)
  - Endrin (62872)
  - Heptachlor (62876)
  - Heptachlor epoxide (62877)
  - Hexachlorobenzene/ HCB (62879)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (65945)
  - Mirex (65947)
  - Selenium (65946)

- Ramirez Canyon Creek
  - Oxygen, Dissolved (65958)
  - pH (65959)

- Redondo Beach
  - Arsenic (65984)
  - Cadmium (65966)
  - Chlordane (65967)
  - Chlorpyrifos (65968)
  - Dieldrin (65986)
  - Endosulfan (65969)
  - Endrin (65970)
  - Heptachlor epoxide (65971)
  - Hexachlorobenzene/ HCB (65972)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (65980)
  - Mercury (65981)
  - Mirex (65987)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (65982)
  - Selenium (65983)

- Rio De Santa Clara/Oxnard Drain No. 3
  - Aldrin (66021)
  - Ammonia (66059)
  - Azinphos-methyl (Guthion) (66026)
  - Bifenthrin (66025)
  - Chloride (66081)
  - Chlorpyrifos (66023)
  - Cypermethrin (66005)
  - Dacthal (66028)
  - Demeton (66006)
  - Diazinon (66017)
  - Dieldrin (66022)
  - Dimethoate (66027)
  - Disulfoton (66049)
  - Endosulfan (66007)
  - Endosulfan sulfate (66008)
  - Endrin (66020)
  - Endrin aldehyde (66009)
  - Heptachlor (66019)
  - Heptachlor epoxide (66018)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (66015)
  - Malathion (66057)
  - Methoxychlor (66058)
  - Oxygen, Dissolved (66083)
  - Permethrin (66010)
  - Phorate (66072)
  - Phosmet (66073)
  - alpha.-BHC (Benzenehexachloride or alpha-HCH) (66011)

- pH (63302)

- San Gabriel River, North Fork
    - Benthic Community Effects (67407)

- San Gabriel River, West Fork
    - Alkalinity as CaCO3 (63269)
    - Ammonia (66365)
    - Chloride (63270)
    - Nitrate/Nitrite (Nitrite + Nitrate as N) (66362)
    - Oxygen, Dissolved (63272)
    - Sulfates (63273)
    - Temperature, water (63271)
    - pH (63280)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
    - Aluminum (65132)
    - Arsenic (65133)
    - Cadmium (65134)
    - Chromium (65512)
    - Copper (65135)
    - Diazinon (65136)
    - Endosulfan (65505)
    - Endrin (65506)
    - Heptachlor epoxide (65507)
    - Iron (65508)
    - Lead (65518)
    - Malathion (65521)
    - Mercury (65522)
    - Nickel (65523)
    - Nitrogen, ammonia (Total Ammonia) (66397)
    - Oxygen, Dissolved (66407)
    - Parathion (66399)
    - Silver (66400)
    - Toxaphene (66398)
    - Zinc (66406)

- San Nicolas Canyon Creek
    - Trash (67427)

- San Nicolas Island at Freighter Dock
    - Arsenic (66426)
    - Cadmium (66412)
    - Chlordane (66413)
    - Chlorpyrifos (66414)
    - DDT (Dichlorodiphenyltrichloroethane) (66424)
    - Dieldrin (66415)
    - Endosulfan (66416)
    - Endrin (66417)
    - Heptachlor epoxide (66418)
    - Hexachlorobenzene/ HCB (66419)
    - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (66420)
    - Mercury (66421)
    - Mirex (66425)
    - PAHs (Polycyclic Aromatic Hydrocarbons) (66422)
    - PCBs (Polychlorinated biphenyls) (66427)
    - Selenium (66423)

San Pedro Bay Near/Off Shore Zones
  - Arsenic (66440)
  - Cadmium (66430)
  - Chlorpyrifos (66431)
  - Dieldrin (66441)
  - Endosulfan (66432)
  - Endrin (66433)
  - Heptachlor epoxide (66434)
  - Hexachlorobenzene/ HCB (66436)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (66437)
  - Mercury (66438)
  - Mirex (66442)
  - Oxygen, Dissolved (66435)
  - Selenium (66439)
  - pH (66443)

- Santa Ana Creek, North Fork
  - Alkalinity as CaCO3 (63097)
  - Aluminum (63098)
  - Ammonia (63192)
  - Arsenic (63100)
  - Benthic Community Effects (66886)
  - Bifenthrin (63101)
  - Cadmium (63102)
  - Chromium (63104)
  - Copper (63106)
  - Cyhalothrin, Lambda (63108)
  - Cypermethrin (63111)
  - Deltamethrin (63113)
  - Esfenvalerate/Fenvalerate (63116)
  - Fenpropathrin (63117)
  - Iron (63118)
  - Lead (63119)
  - Manganese (63121)
  - Nickel (63122)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (63191)
  - Oxygen, Dissolved (63123)
  - Permethrin (63124)
  - Selenium (63126)
  - Silver (63183)
  - Specific Conductivity (63184)
  - Sulfates (63185)
  - Temperature, water (63186)
  - Total Dissolved Solids (63187)
  - Toxicity (63188)
  - Zinc (63189)
  - pH (63190)

- Santa Clara Drain (Ventura County)
  - Aldrin (66521)
  - Ammonia (66502)
  - Azinphos-methyl (Guthion) (66507)
  - Bifenthrin (66509)
  - Chlordane (66523)
  - Chloride (66548)
  - Chlorpyrifos (66538)
  - Cyfluthrin (66479)
  - Cyhalothrin, Lambda (66480)
  - Cypermethrin (66539)
  - DDD (Dichlorodiphenyldichloroethane) (66542)

- Nitrogen, ammonia (Total Ammonia) (67098)
- Oxygen, Dissolved (67134)
- PCBs (Polychlorinated biphenyls) (67129)
- Permethrin, total (67100)
- Selenium (67104)
- Silver (67101)
- Specific Conductivity (67135)
- Sulfates (33259)
- Temperature, water (67137)
- Total Dissolved Solids (67132)
- Toxicity (67103)
- Zinc (67099)
- pH (67133)

- **Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**
  - Alkalinity as CaCO3 (64838)
  - Aluminum (64839)
  - Arsenic (64840)
  - Bifenthrin (64841)
  - Cadmium (64842)
  - Chloride (33439)
  - Chromium (64846)
  - Copper (64847)
  - Cyhalothrin, Lambda (64848)
  - Cypermethrin (64849)
  - Deltamethrin (64850)
  - Esfenvalerate/Fenvalerate (64851)
  - Fenpropathrin (64852)
  - Iron (64853)
  - Lead (64854)
  - Manganese (64855)
  - Nickel (64856)
  - Nitrate/Nitrite (Nitrite + Nitrate as N) (67140)
  - Nitrogen, Nitrate (67141)
  - Nitrogen, Nitrite (67142)
  - Nitrogen, ammonia (Total Ammonia) (67138)
  - Oxygen, Dissolved (64857)
  - Permethrin (64858)
  - Selenium (64859)
  - Silver (64860)
  - Specific Conductivity (64861)
  - Temperature, water (64863)
  - Toxicity (64862)
  - Zinc (64864)
  - pH (64865)

- **Santa Clara River Reach 2**
  - Alkalinity as CaCO3 (67180)
  - Aluminum (67143)
  - Arsenic (67159)
  - Bifenthrin (67152)
  - Cadmium (67160)
  - Chromium (67153)
  - Copper (67161)
  - Cyhalothrin, Lambda (67144)
  - Cypermethrin (67154)
  - Deltamethrin (67145)
  - Esfenvalerate/Fenvalerate (67146)
  - Fenpropathrin (67147)

- **Sullivan Canyon Creek**
  - Oxygen, Dissolved (67260)

- **Susanna Canyon and East Fork Susanna Canyon**
  - Benthic Community Effects (67439)

- **Sycamore Cove Beach**
  - Indicator Bacteria (42268)

- **Tapo Canyon**
  - Aldrin (64346)
  - Ammonia (67272)
  - Azinphos-methyl (Guthion) (64347)
  - Bifenthrin (64349)
  - Chlorpyrifos (64352)
  - Cyfluthrin (64353)
  - Cyhalothrin, Lambda (64354)
  - Cypermethrin (64355)
  - DDT (Dichlorodiphenyltrichloroethane) (64447)
  - Dacthal (64448)
  - Deltamethrin (64475)
  - Demeton (64449)
  - Diazinon (64492)
  - Dichlorvos (64502)
  - Dicofol (64504)
  - Dieldrin (64507)
  - Dimethoate (64450)
  - Disulfoton (64451)
  - Endosulfan (64452)
  - Endosulfan sulfate (64453)
  - Endrin (64510)
  - Endrin aldehyde (64512)
  - Esfenvalerate/Fenvalerate (64454)
  - Ethoprop (64515)
  - Fenpropathrin (64517)
  - Heptachlor (64518)
  - Heptachlor epoxide (64522)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (64523)
  - Methidathion (64527)
  - Methoxychlor (64455)
  - Methyl Parathion (64528)
  - Mirex (64529)
  - Oxygen, Dissolved (64532)
  - Parathion (64533)
  - Permethrin (64534)
  - Phorate (64535)
  - Phosmet (64537)
  - Temperature, water (64541)
  - Toxaphene (64543)
  - pH (64547)

- **Temescal Canyon Creek (Los Angeles County)**
  - Oxygen, Dissolved (64548)

- **Thacher Creek**
  - Aldrin (64299)
  - Ammonia (67279)
  - Bifenthrin (64300)

- Cyfluthrin (64726)
- Cyhalothrin, Lambda (64727)
- Cypermethrin (64728)
- DDD (Dichlorodiphenyldichloroethane) (64729)
- DDT (Dichlorodiphenyltrichloroethane) (64731)
- Dacthal (64740)
- Deltamethrin (64756)
- Demeton (64758)
- Diazinon (64741)
- Dichlorvos (64759)
- Dicofol (64761)
- Dieldrin (64742)
- Dimethoate (64743)
- Disulfoton (64744)
- Endosulfan (64745)
- Endosulfan sulfate (64746)
- Endrin (64747)
- Endrin aldehyde (64762)
- Esfenvalerate/Fenvalerate (64748)
- Ethoprop (64763)
- Fenpropathrin (64764)
- Heptachlor (64752)
- Heptachlor epoxide (64753)
- Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (64750)
- Malathion (64754)
- Methidathion (64765)
- Methoxychlor (64749)
- Methyl Parathion (64766)
- Mirex (64767)
- Oxygen, Dissolved (64772)
- Parathion (64768)
- Permethrin (64769)
- Phorate (64751)
- Phosmet (64770)
- Sulfates (64774)
- Temperature, water (64775)
- Total Dissolved Solids (64776)
- Toxaphene (64771)
- Toxicity (64777)
- pH (64780)

- **Toluca Lake**
  - Aldrin (67306)
  - Chlordane (67303)
  - DDT (Dichlorodiphenyltrichloroethane) (67302)
  - Dieldrin (67298)
  - Endosulfan (67299)
  - Endrin (67300)
  - Heptachlor (67307)
  - Heptachlor epoxide (67305)
  - Hexachlorobenzene/ HCB (67308)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (67301)
  - Mercury (67309)
  - Mirex (67311)
  - PCBs (Polychlorinated biphenyls) (67304)
  - Selenium (67310)

- **Topanga Canyon Creek**
  - Alkalinity as CaCO3 (64266)
  - Aluminum (64272)

List on 303(d) list (TMDL required list) — Regional Board 4

- **Balboa Lake**
  - [Oxygen, Dissolved (60379)]
  - [Toxicity (60276)]

- **Boulder Creek (Ventura County)**
  - [Bifenthrin (60530)]
  - [Toxicity (60538)]

- **Bull Creek (Los Angeles County)**
  - [Toxicity (60592)]

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - [Indicator Bacteria (61084)]

- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)**
  - [Chlorpyrifos (67492)]
  - [Diazinon (67493)]
  - [Malathion (67491)]

- **Castaic Lagoon**
  - [PCBs (Polychlorinated biphenyls) (61757)]

- **Castaic Lake**
  - [PCBs (Polychlorinated biphenyls) (61776)]

- **Compton Creek**
  - [Iron (62052)]

- **Coyote Creek**
  - [Iron (62167)]
  - [Malathion (62166)]

- **Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones)**
  - [Copper (62243)]
  - [Oxygen, Dissolved (62242)]

- **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2**
  - [Bifenthrin (62625)]

- **Elderberry Forebay**
  - [Dieldrin (62708)]
  - [PCBs (Polychlorinated biphenyls) (62709)]

- **Ellsworth Barranca**
  - [Chlorpyrifos (62845)]
  - [DDE (Dichlorodiphenyldichloroethylene) (67360)]

- **Honda Barranca**
  - [Bifenthrin (63180)]

- **Hueneme Drain**
  - [Escherichia coli (E. coli) (67434)]

- **Javon Canyon**
  - [Benthic Community Effects (66198)]

- Selenium (63524)

- Lake Hughes
  - Algae (34270)
  - Eutrophication (34330)
  - Odor (35009)

- Legg Lake
  - DDT (Dichlorodiphenyltrichloroethane) (64060)
  - PCBs (Polychlorinated biphenyls) (64059)

- Lincoln Park Lake
  - PCBs (Polychlorinated biphenyls) (64083)

- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
  - Toxicity (64389)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
  - Benthic Community Effects (66232)
  - Toxicity (64465)

- Los Angeles River Reach 5 (within Sepulveda Basin)
  - Toxicity (64489)

- Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)
  - Toxicity (64536)

- Los Sauces Creek
  - Selenium (64837)

- Madranio Canyon
  - Benthic Community Effects (66243)
  - Copper (64916)
  - Selenium (64917)

- Malibou Lake
  - Dieldrin (61549)

- Malibu Creek
  - Fish Barriers (Fish Passage) (34814)
  - Toxicity (42865)

- Marina del Rey Harbor - Back Basins
  - Oxygen, Dissolved (61605)

- Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)
  - Fish Barriers (Fish Passage) (35724)

- Matilija Creek Reach 2 (Above Reservoir)
  - Fish Barriers (Fish Passage) (34162)

- Matilija Reservoir
  - Fish Barriers (Fish Passage) (34241)

- Medea Creek Reach 1 (Lake to Confl. with Lindero)

- Sanjon Barranca Creek
  - Escherichia coli (E. coli) (67429)

- Santa Clara River Estuary
  - Ammonia (66589)
  - pH (66591)

- Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)
  - Oxygen, Dissolved (66628)
  - pH (66629)

- Santa Clara River Reach 3 (Freeman Diversion to A Street)
  - Escherichia coli (E. coli) (67437)
  - Mercury (66954)
  - Selenium (66955)

- Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)
  - Benthic Community Effects (44468)

- Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)
  - Benthic Community Effects (44626)
  - Temperature, water (67068)

- Santa Fe Dam Park Lake
  - PCBs (Polychlorinated biphenyls) (67199)

- Santa Monica Bay Offshore/Nearshore
  - Arsenic (67208)
  - Mercury (67209)

- South San Jose Creek (Los Angeles County)
  - Ammonia (67259)
  - Toxicity (64781)
  - pH (64824)

- Tapo Canyon
  - Chlordane (64350)
  - Chloride (64351)
  - DDD (Dichlorodiphenyldichloroethane) (64445)
  - Malathion (64525)
  - Sulfates (64540)
  - Total Dissolved Solids (64542)
  - Toxicity (64544)

- Timber Canyon
  - Chlorpyrifos (64725)

- Triunfo Canyon Creek Reach 1
  - Benthic Community Effects (66897)

- Ventura Harbor: Ventura Keys
  - Arsenic (67176)
  - Cadmium (67177)

- Chlordane (67207)
- DDT (Dichlorodiphenyltrichloroethane) (67211)
- Dieldrin (67212)
- Indicator Bacteria (67293)
- PCBs (Polychlorinated biphenyls) (67271)

- **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)**
  - Benthic Community Effects (66899)
  - Temperature, water (66824)

- **Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)**
  - Benthic Community Effects (66900)
  - Toxicity (63974)

- **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)**
  - Benthic Community Effects (66901)
  - Pumping (44793)
  - Temperature, water (63875)
  - Water Diversion (44534)

- **Walnut Creek Wash (Drains from Puddingstone Res)**
  - Indicator Bacteria (42989)

- **Wheeler Canyon/Todd Barranca**
  - Chlordane (63509)
  - Cypermethrin (63563)
  - DDT (Dichlorodiphenyltrichloroethane) (63592)
  - Toxaphene (63587)
  - Toxicity (67369)

- **Wildlife Lake**
  - Oxygen, Dissolved (66373)

List on 303(d) list (being addressed by USEPA approved TMDL)	Regional Board 4

- **Abalone Cove Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (35058)
  - PCBs (Polychlorinated biphenyls) (34339)

- **Aliso Canyon Wash**
  - Copper (32949)
  - Indicator Bacteria (32515)

- **Amarillo Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (34340)

- **Arroyo Seco Reach 1 (LA River to West Holly Ave.)**
  - Indicator Bacteria (35135)

- **Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)**
  - Indicator Bacteria (34670)

- **Artesia-Norwalk Drain**

- Indicator Bacteria (36938)

- Balboa Lake
  - Ammonia (60378)

- Ballona Creek Wetlands
  - Exotic Vegetation (44746)
  - Habitat alterations (34697)
  - Hydromodification (34699)
  - Reduced Tidal Flushing (44747)

- Big Rock Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34441)
  - PCBs (Polychlorinated biphenyls) (34611)

- Bluff Cove Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34721)
  - PCBs (Polychlorinated biphenyls) (34588)

- Bull Creek
  - Indicator Bacteria (43227)

- Bull Creek (Los Angeles County)
  - Ammonia (60597)

- Cabrillo Beach (Outer)
  - DDT (Dichlorodiphenyltrichloroethane) (44611)
  - PCBs (Polychlorinated biphenyls) (35005)

- Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)
  - Nitrogen, Nitrite (33703)

- Carbon Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34248)
  - Indicator Bacteria (44248)
  - PCBs (Polychlorinated biphenyls) (36216)

- Castlerock Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34249)
  - PCBs (Polychlorinated biphenyls) (34250)

- Colorado Lagoon
  - Toxicity (34304)

- Compton Creek
  - Zinc (62054)

- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Copper (33751)
  - Dieldrin (tissue) (34645)

- Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2
  - Chlorpyrifos (62638)
  - DDD (Dichlorodiphenyldichloroethane) (67337)
  - DDE (Dichlorodiphenyldichloroethylene) (67338)

- Echo Park Lake
  - Algae (34030)
  - Chlordane (62679)
  - Dieldrin (62680)
  - Eutrophic (34698)
  - Odor (34756)
  - Trash (32435)
  - pH (44748)

- El Dorado Lakes
  - Algae (34440)
  - Ammonia (38445)
  - Copper (34610)
  - Eutrophic (34720)

- Escondido Beach
  - DDT (Dichlorodiphenyltrichloroethane) (39085)
  - Indicator Bacteria (34279)
  - PCBs (Polychlorinated biphenyls) (35052)

- Fox Barranca (tributary to Calleguas Creek Reach 6)
  - Chlordane (63031)
  - DDE (Dichlorodiphenyldichloroethylene) (67361)
  - DDT (Dichlorodiphenyltrichloroethane) (63029)

- Honda Barranca
  - Chlordane (63179)
  - Chlorpyrifos (63146)
  - DDD (Dichlorodiphenyldichloroethane) (67363)
  - DDT (Dichlorodiphenyltrichloroethane) (63181)

- Inspiration Point Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34834)
  - PCBs (Polychlorinated biphenyls) (44913)

- La Costa Beach
  - DDT (Dichlorodiphenyltrichloroethane) (34835)

- Lake Calabasas
  - Ammonia (34334)
  - Eutrophic (34222)
  - Organic Enrichment/Low Dissolved Oxygen (34223)
  - pH (39032)

- Lake Lindero
  - Trash (44910)

- Las Flores Beach
  - DDT (Dichlorodiphenyltrichloroethane) (33820)
  - PCBs (Polychlorinated biphenyls) (44612)

- Las Virgenes Creek
  - Trash (34348)

- Legg Lake

- **Los Angeles/Long Beach Inner Harbor**
  - Benthic Community Effects (34208)
  - Benzo(a)pyrene (3,4-Benzopyrene -7-d) (42749)
  - Chrysene (C1-C4) (42671)

- **Machado Lake (Harbor Park Lake)**
  - ChemA (34362)

- **Malaga Cove Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (35165)
  - PCBs (Polychlorinated biphenyls) (35182)

- **Malibu Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (36696)

- **Malibu Creek**
  - Sedimentation/Siltation (34815)

- **Malibu Lagoon Beach (Surfrider)**
  - DDT (Dichlorodiphenyltrichloroethane) (34239)
  - PCBs (Polychlorinated biphenyls) (34258)

- **McCoy Canyon Creek**
  - Nitrate (37996)

- **McGrath Lake**
  - Chlordane (34166)

- **Medea Creek Reach 1 (Lake to Confl. with Lindero)**
  - Sedimentation/Siltation (34180)
  - Trash (38861)

- **Medea Creek Reach 2 (Abv Confl. with Lindero)**
  - Sedimentation/Siltation (34244)
  - Trash (38862)

- **Nicholas Canyon Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (37686)
  - PCBs (Polychlorinated biphenyls) (35169)

- **Palo Verde Shoreline Park Beach**
  - Pesticides (35170)

- **Paradise Cove Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (37498)
  - PCBs (Polychlorinated biphenyls) (44650)

- **Peck Road Park Lake**
  - Lead (44679)
  - Odor (34130)
  - Organic Enrichment/Low Dissolved Oxygen (34189)
  - Trash (32390)

- **Point Fermin Park Beach**

- [DDT (Dichlorodiphenyltrichloroethane) (35384)]
- [PCBs (Polychlorinated biphenyls) (34210)]

- **Portuguese Bend Beach**
  - [DDT (Dichlorodiphenyltrichloroethane) (34211)]
  - [PCBs (Polychlorinated biphenyls) (34353)]

- **Puerco Beach**
  - [DDT (Dichlorodiphenyltrichloroethane) (44912)]
  - [PCBs (Polychlorinated biphenyls) (43257)]

- **Rio De Santa Clara/Oxnard Drain No. 3**
  - [ChemA (tissue) (33195)]
  - [DDD (Dichlorodiphenyldichloroethane) (66079)]
  - [DDE (Dichlorodiphenyldichloroethylene) (66080)]
  - [PCBs (Polychlorinated biphenyls) (35082)]

- **Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)**
  - [Indicator Bacteria (35084)]

- **Rio Hondo Reach 2 (At Spreading Grounds)**
  - [Coliform Bacteria (35152)]

- **Rio Hondo Reach 3 (above Spreading Grounds)**
  - [Indicator Bacteria (67476)]

- **Robert H. Meyer Memorial Beach**
  - [DDT (Dichlorodiphenyltrichloroethane) (34286)]
  - [PCBs (Polychlorinated biphenyls) (34287)]

- **San Gabriel River Estuary**
  - [Indicator Bacteria (67332)]

- **Santa Clara River Estuary**
  - [ChemA (34243)]
  - [Indicator Bacteria (35722)]
  - [Nitrogen, Nitrate (35380)]
  - [Toxaphene (36274)]

- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
  - [Indicator Bacteria (66965)]

- **Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) (was named Santa Clara River Reach 9 on 2002 303(d) list)**
  - [Indicator Bacteria (44532)]

- **Santa Fe Dam Park Lake**
  - [Copper (34321)]
  - [Lead (44765)]
  - [pH (35145)]

- **Santa Monica Bay Offshore/Nearshore**
  - [Trash (34119)]

- **Sea Level Beach**

- [DDT (Dichlorodiphenyltrichloroethane) (35902)]
- [PCBs (Polychlorinated biphenyls) (36557)]

- **Topanga Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (36309)
  - PCBs (Polychlorinated biphenyls) (34157)

- **Torrance Carson Channel**
  - Copper (44916)
  - Lead (34159)

- **Trancas Beach (Broad Beach)**
  - DDT (Dichlorodiphenyltrichloroethane) (36325)
  - PCBs (Polychlorinated biphenyls) (34224)

- **Tujunga Wash (LA River to Hansen Dam)**
  - Indicator Bacteria (35044)

- **Ventura River Estuary**
  - Algae (35061)

- **Verdugo Wash Reach 1 (LA River to Verdugo Rd.)**
  - Copper (42106)
  - Indicator Bacteria (35010)

- **Verdugo Wash Reach 2 (Above Verdugo Road)**
  - Indicator Bacteria (39840)

- **Whites Point Beach**
  - DDT (Dichlorodiphenyltrichloroethane) (39841)
  - PCBs (Polychlorinated biphenyls) (44279)

- **Wildlife Lake**
  - Ammonia (66374)

- **Zuma Beach (Westward Beach)**
  - DDT (Dichlorodiphenyltrichloroethane) (44589)
  - PCBs (Polychlorinated biphenyls) (37494)

List on 303(d) list (being addressed by action other than TMDL)	Regional Board 4

- **Hueneme Drain**
  - Trash (67433)

- **J Street Drain (Ventura County)**
  - Trash (63443)

- **Ormond Beach Wetlands**
  - Trash (67430)

- **Oxnard Drain**
  - Trash (67436)

- **Sanjon Barranca Creek**
  - [Trash (67428)]
- **Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)**
  - [Trash (66631)]
- **Santa Clara River Reach 3 (Freeman Diversion to A Street)**
  - [Trash (67446)]
- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - [Trash (67445)]
- **Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)**
  - [Trash (67448)]
- **Santa Clara River Reach 4A (A Street, Fillmore to Piru Creek)**
  - [Trash (67453)]
- **Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)**
  - [Trash (67447)]

REGIONAL BOARD 4 - LOS ANGELES REGION

- **New or Revised Fact Sheets**
  These lines of evidence and/or decisions, which were developed during the last listing cycle, are new or have been revised.
- **Original Fact Sheets**
  These lines of evidence and/or decisions were developed during the last listing cycle.

ORIGINAL FACT SHEETS

Delist from 303(d) list (TMDL required list)	Regional Board 4

- **Arroyo Seco Reach 1 (LA River to West Holly Ave.)**
  - [Excess Algal Growth (32855)]
- **Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)**
  - [Excess Algal Growth (32354)]
- **Ashland Avenue Drain**
  - [Indicator Bacteria (33906)]
  - [Organic Enrichment/Low Dissolved Oxygen (34056)]
  - [Toxicity (33740)]

- Ballona Creek
  - ChemA (32784)
  - PCBs (Polychlorinated biphenyls) (32743)
  - Silver (32417)
  - pH (32951)

- Bluff Cove Beach
  - Beach Closures (34417)

- Burbank Western Channel
  - Cadmium (32938)
  - Scum/Foam-unnatural (34503)
  - Taste and odor (34575)

- Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)
  - Boron (42741)
  - Excess Algal Growth (34416)

- Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)
  - Dacthal (sediment) (34396)
  - Excess Algal Growth (34541)

- Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)
  - Excess Algal Growth (33816)

- Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)
  - Excess Algal Growth (34542)

- Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)
  - Excess Algal Growth (39590)

- Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)
  - Excess Algal Growth (34456)

- Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)
  - Excess Algal Growth (34457)

- Carbon Beach
  - Beach Closures (32854)

- Coyote Creek
  - Abnormal Fish Histology (Lesions) (33373)
  - Excess Algal Growth (36718)

- Dockweiler Beach
  - Beach Closures (37565)

- Dominguez Channel (lined portion above Vermont Ave)
  - Aldrin (34620)
  - ChemA (34426)
  - Chlordane (34427)
  - Chromium (34430)
  - DDT (Dichlorodiphenyltrichloroethane) (36720)
  - Dieldrin (42330)

- Scum/Foam-unnatural (34379)
- Taste and odor (36753)

- **Ventura River Reach 3 (Weldon Canyon to Confl. w/ Coyote Cr)**
  - Water Diversion (33817)

- **Verdugo Wash Reach 1 (LA River to Verdugo Rd.)**
  - Excess Algal Growth (32931)

- **Verdugo Wash Reach 2 (Above Verdugo Road)**
  - Excess Algal Growth (32932)

- **Wilmington Drain**
  - Ammonia (34349)

- **Zuma Beach (Westward Beach)**
  - Beach Closures (32372)

Delist from 303(d) list (being addressed by USEPA approved TMDL) — Regional Board 4

- **Burbank Western Channel**
  - Ammonia (32774)

- **Point Dume Beach**
  - Indicator Bacteria (34118)

- **Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)**
  - Nitrate and Nitrite (32484)

- **Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)**
  - Ammonia (32462)

Do Not Delist from 303(d) list (TMDL required list) — Regional Board 4

- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Sedimentation/Siltation (34228)

- **Compton Creek**
  - Benthic Community Effects (44498)

- **Los Angeles River Estuary (Queensway Bay)**
  - Toxicity (37684)

- **Los Cerritos Channel**
  - Ammonia (44252)
  - Chlordane (sediment) (33506)

- **Malibu Lagoon**

- [Benthic Community Effects (42364)]
- [pH (32543)]

- **Marina del Rey Harbor - Back Basins**
  - DDT (Dichlorodiphenyltrichloroethane) (34405)
  - Dieldrin (34355)

- **McGrath Lake**
  - Dieldrin (sediment) (33442)
  - PCBs (Polychlorinated biphenyls) (sediment) (32981)

- **Pole Creek (trib to Santa Clara River Reach 3)**
  - Total Dissolved Solids (33055)

- **Ventura River Estuary**
  - Indicator Bacteria (32663)

Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL) — Regional Board 4

- **Ballona Creek Estuary**
  - Toxicity (39181)

- **Los Angeles Harbor - Fish Harbor**
  - PCBs (Polychlorinated biphenyls) (44513)

- **Los Angeles/Long Beach Inner Harbor**
  - Toxicity (34495)

Do Not Delist from 303(d) list (being addressed with action other than TMDL) — Regional Board 4

- **Port Hueneme Harbor (Back Basins)**
  - DDT (Dichlorodiphenyltrichloroethane) (36221)

Do Not List on 303(d) list (TMDL required list) — Regional Board 4

- **Aliso Canyon Wash**
  - Diazinon (32856)
  - Zinc (32402)

- **Artesia-Norwalk Drain**
  - Copper (32461)

- **Balboa Lake**
  - Lead (60257)

- **Ballona Creek**
  - Ammonia (32758)

- Ballona Creek Estuary
  - [Dieldrin (38268)]
- Big Sycamore Canyon
  - [Benthic Community Effects (66082)]
- Bouquet Canyon Creek (below Bouqet Reservoir)
  - [Benthic Community Effects (66084)]
- Bull Creek
  - [Toxicity (39159)]
- Bull Creek (Los Angeles County)
  - [Benthic Community Effects (66085)]
- Burbank Western Channel
  - [Aluminum (32875)]
  - [Diazinon (32750)]
  - [Oxygen, Dissolved (32355)]
  - [Toxicity (43316)]
  - [Zinc (32842)]
- Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)
  - [Benthic Community Effects (66087)]
- Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)
  - [Benthic Community Effects (66141)]
- Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)
  - [Benthic Community Effects (66151)]
- Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)
  - [Benthic Community Effects (66152)]
- Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)
  - [Benthic Community Effects (66156)]
- Canada Larga (Ventura River Watershed)
  - [Benthic Community Effects (66157)]
- Carbon Canyon Creek
  - [Chloride (33497)]
  - [Sulfates (33742)]
- Cheeseboro Canyon
  - [Benthic Community Effects (66159)]
- Cold Creek (Los Angeles County)
  - [Benthic Community Effects (66163)]
  - [Invasive Species (43544)]
  - [Sulfates (36237)]
- Cold Creek, unnamed tributary along Dry Canyon Cold Creek Road (Los Angeles County)
  - [Benthic Community Effects (66164)]
  - [pH (61981)]

- **Compton Creek**
  - Toxicity (42688)

- **Corral Canyon Creek**
  - Sulfates (34513)

- **Coyote Creek**
  - Chloride (37293)
  - Cyanide (32958)
  - Fluoride (37930)
  - Lindane/gamma Hexachlorocyclohexane (gamma-HCH) (35757)
  - Nitrogen, Nitrite (32337)
  - Pentachlorophenol (PCP) (37184)

- **Coyote Creek, North Fork**
  - Copper (39223)
  - Zinc (39542)

- **Dominguez Channel (lined portion above Vermont Ave)**
  - Aluminum (33261)
  - Cadmium (33501)
  - Iron (36719)
  - Manganese (33476)
  - Mercury (32728)
  - Silver (32670)
  - Thallium (38761)
  - Turbidity (33344)

- **Dominguez Channel Estuary (unlined portion below Vermont Ave)**
  - Mercury (33676)

- **Encinal Canyon Creek**
  - Benthic Community Effects (66183)

- **Escondido Canyon Creek**
  - Benthic Community Effects (66190)

- **Hammond Canyon**
  - Benthic Community Effects (66195)

- **Hollywood Beach**
  - Indicator Bacteria (42922)

- **La Vista Drain (Ventura County)**
  - Benthic Community Effects (66222)

- **Lachusa Canyon Creek**
  - Benthic Community Effects (66223)
  - Sulfates (33321)

- **Las Flores Canyon Creek**
  - Benthic Community Effects (66224)

- **Las Virgenes Creek, East**

- Benthic Community Effects (66225)

- Latigo Canyon Creek
  - Sulfates (33139)

- Lindero Creek Reach 2 (Above Lake)
  - Benthic Community Effects (66226)

- Lion Creek (from confluence w San Antonio Creek to Resservoir)
  - Benthic Community Effects (66227)

- Little Sycamore Canyon
  - Benthic Community Effects (66228)

- Los Alisos Canyon Creek
  - Sulfates (33367)

- Los Angeles Harbor - Cabrillo Marina
  - Chlordane (33811)
  - Chrysene (C1-C4) (37035)
  - Copper (33939)
  - Lead (34067)
  - Mercury (33149)
  - Nickel (33988)
  - PAHs (Polycyclic Aromatic Hydrocarbons) (33197)
  - Phenanthrene (37583)
  - Pyrene (33553)
  - Toxicity (33825)
  - Zinc (44555)

- Los Angeles Harbor - Fish Harbor
  - 2-Methylnaphthalene (33702)
  - Benthic Community Effects (36714)
  - Nickel (44512)

- Los Angeles Harbor - Inner Cabrillo Beach Area
  - Toxicity (37867)

- Los Angeles River Reach 1 (Estuary to Carson Street)
  - Nickel (32708)
  - Turbidity (32894)

- Los Angeles River Reach 5 (within Sepulveda Basin)
  - ChemA (32930)
  - Chlorpyrifos (33468)

- Los Cerritos Channel
  - Aluminum (33471)

- Los Sauces Creek
  - Benthic Community Effects (66237)

- Malaga Canyon Creek
  - Chloride (34539)
  - Sulfates (36695)

- **Malibu Creek**
  - [Toxaphene (61578)]
- **Malibu Lagoon**
  - [Antimony | Arsenic | Benzo(a)anthracene | Benzo(a)pyrene (3,4-Benzopyrene -7-d) | Chrysene (C1-C4) | Copper | Dibenz[a,h]anthracene | Lead | Phenanthrene | Pyrene | Zinc (36054)]
  - [Toxicity (42897)]
- **Mandeville Canyon Creek**
  - [Sulfates (33688)]
- **Marie Canyon Creek**
  - [Sulfates (33209)]
- **Matilija Creek Reach 1 (Jct. With N. Fork to Reservoir)**
  - [Benthic Community Effects (66258)]
  - [Indicator Bacteria (39636)]
- **Matilija Creek Reach 2 (Above Reservoir)**
  - [Benthic Community Effects (66260)]
  - [Indicator Bacteria (39659)]
- **Matilija Creek, North Fork**
  - [Benthic Community Effects (66262)]
  - [Indicator Bacteria (39875)]
  - [Total Dissolved Solids (39224)]
- **McGrath Lake Agricultural Drain**
  - [Demeton (62089)]
- **Oxnard Beach Park**
  - [Indicator Bacteria (42348)]
- **Palo Comado Creek**
  - [Benthic Community Effects (66268)]
- **Pena Canyon Creek**
  - [Sulfates (33210)]
- **Piru Creek (from gaging station below Santa Felicia Dam to headwaters)**
  - [Benthic Community Effects (66875)]
- **Pole Creek (trib to Santa Clara River Reach 3)**
  - [Benthic Community Effects (66876)]
- **Puerco Canyon Creek**
  - [Sulfates (33911)]
- **Ramirez Canyon Creek**
  - [Sulfates (33096)]
- **Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)**
  - [Benthic Community Effects (66877)]

- Rustic Canyon Creek
  - Sulfates (33437)

- San Antonio Creek (Tributary to Ventura River Reach 4)
  - Benthic Community Effects (66879)

- San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam
  - Chloride (32628)
  - Nitrogen, Nitrite (38365)
  - Total Dissolved Solids (32629)

- San Gabriel River Reach 4 (Morris Dam to Ramona Blvd)
  - Benthic Community Effects (66881)

- San Gabriel River, West Fork
  - Benthic Community Effects (66882)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Benthic Community Effects (67457)

- San Jose Creek, unnamed tributary at Rose Hill (Los Angeles County)
  - Benthic Community Effects (66885)

- San Nicolas Canyon Creek
  - Sulfates (33438)

- Santa Clara River Estuary
  - Arsenic (36060)

- Santa Clara River Estuary Beach-Surfers Knoll
  - Indicator Bacteria (42384)

- Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)
  - Chlorodibromomethane (35726)
  - DDT (Dichlorodiphenyltrichloroethane) (35969)
  - Dichlorobromomethane (36115)
  - PCBs (Polychlorinated biphenyls) (37728)

- Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)
  - Bis(2ethylhexyl)phthalate (DEHP) (35899)
  - Chlordane (67064)
  - Chlorodibromomethane (36390)
  - Dichlorobromomethane (36189)
  - Nitrate and Nitrite (37051)
  - Specific Conductance (36575)

- Santa Clara River Reach 10 (Sespe Creek, from confl with Santa Clara River Reach 3 to above gaging station - 500 ft downstream from Little Sespe Cr)
  - Benthic Community Effects (66887)

- Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)
  - Benthic Community Effects (66888)

- **Santa Clara River Reach 2**
    - [Benthic Community Effects (66889)]
- **Santa Clara River Reach 4B (Piru Creek to Blue Cut Gaging Station)**
    - [Benthic Community Effects (66890)]
- **Santa Monica Canyon**
    - [Sulfates (33440)]
- **Santa Paula Creek Reach 1 (confluence w Santa Clara River to Diverson Dam)**
    - [Benthic Community Effects (66891)]
- **Santa Ynez Canyon**
    - [Sulfates (33257)]
- **Sawpit Creek**
    - [Aluminum (33269)]
    - [Iron (33270)]
- **Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)**
    - [Benthic Community Effects (66893)]
- **Solstice Canyon Creek**
    - [Benthic Community Effects (66894)]
- **Stokes Creek**
    - [Benthic Community Effects (66895)]
- **Sullivan Canyon Creek**
    - [Sulfates (34444)]
- **Sweetwater Canyon Creek**
    - [Chloride (34445)]
    - [Sulfates (36142)]
- **Topanga Canyon Creek**
    - [Benthic Community Effects (66896)]
- **Trancas Canyon Creek**
    - [Chloride (34497)]
    - [Sulfates (36161)]
- **Triunfo Canyon Creek Reach 1**
    - [Invasive Species (43301)]
- **Tujunga Wash (LA River to Hansen Dam)**
    - [Benthic Community Effects (66898)]
    - [Toxicity (42808)]
- **Tuna Canyon Creek**
    - [Nitrate (42329)]
    - [Sulfates (37306)]
- **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)**

- Indicator Bacteria (39258)
- Total Dissolved Solids (39564)

- **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)**
  - Indicator Bacteria (39961)

- **Walnut Creek Wash (Drains from Puddingstone Res)**
  - Copper (35700)
  - Lead (36401)

- **Wiley Canyon**
  - Benthic Community Effects (66902)

- **Zuma Canyon**
  - Benthic Community Effects (66903)

List on 303(d) list (TMDL required list) Regional Board 4

- **Artesia-Norwalk Drain**
  - Selenium (35869)

- **Burbank Western Channel**
  - Cyanide (32817)
  - Selenium (43271)

- **Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)**
  - Sedimentation/Siltation (35163)
  - Trash (43407)

- **Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)**
  - Sedimentation/Siltation (34346)
  - Trash (41500)

- **Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list)**
  - Sedimentation/Siltation (35074)

- **Calleguas Creek Reach 5 (was Beardsley Channel on 1998 303d list)**
  - Sedimentation/Siltation (34278)

- **Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)**
  - Sedimentation/Siltation (34461)

- **Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)**
  - Sedimentation/Siltation (34462)
  - Trash (36548)

- **Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)**
  - Sedimentation/Siltation (35125)

- **Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)**
  - Trash (43452)

Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)
  - Trash (43453)

- Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)
  - Malathion (67483)
  - Trash (43400)

- Canada Larga (Ventura River Watershed)
  - Total Dissolved Solids (39621)

- Compton Creek
  - Indicator Bacteria (40596)

- Coyote Creek, North Fork
  - Selenium (40415)

- Crystal Lake
  - Organic Enrichment/Low Dissolved Oxygen (35133)

- Dominguez Channel Estuary (unlined portion below Vermont Ave)
  - Benthic Community Effects (38511)
  - Indicator Bacteria (34672)

- Elizabeth Lake
  - Eutrophic (34264)
  - Organic Enrichment/Low Dissolved Oxygen (34384)
  - pH (34266)

- Lake Lindero
  - Chloride (33005)
  - Specific Conductivity (35057)

- Las Virgenes Creek
  - Invasive Species (42701)

- Legg Lake
  - pH (35262)

- Lindero Creek Reach 1
  - Benthic Community Effects (44366)
  - Invasive Species (42791)
  - Selenium (34167)

- Los Angeles Harbor - Consolidated Slip
  - Benthic Community Effects (35168)

- Los Angeles River Reach 1 (Estuary to Carson Street)
  - Cyanide (32807)

- Los Angeles River Reach 2 (Carson to Figueroa Street)
  - Oil (34203)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
  - Indicator Bacteria (37153)

- Los Angeles River Reach 5 (within Sepulveda Basin)
  - Oil (34188)

- Los Cerritos Channel
  - Bis(2ethylhexyl)phthalate (DEHP) (36398)
  - Copper (35154)
  - Indicator Bacteria (35153)
  - Lead (33933)
  - Trash (34110)
  - Zinc (35155)
  - pH (44691)

- Malibu Creek
  - Invasive Species (42700)

- Medea Creek Reach 2 (Abv Confl. with Lindero)
  - Invasive Species (43364)

- Munz Lake
  - Eutrophic (34263)

- Port Hueneme Pier
  - PCBs (Polychlorinated biphenyls) (36256)

- Puddingstone Reservoir
  - Organic Enrichment/Low Dissolved Oxygen (34831)

- Puente Creek
  - Selenium (40656)

- Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)
  - Toxicity (33392)

- Rio Hondo Reach 2 (At Spreading Grounds)
  - Cyanide (44719)

- San Antonio Creek (Tributary to Ventura River Reach 4)
  - Indicator Bacteria (39972)

- San Gabriel River Estuary
  - Dioxin (38323)

- San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam
  - Cyanide (38135)

- San Jose Creek Reach 1 (SG Confluence to Temple St.)
  - Total Dissolved Solids (36679)

- Santa Clara River Estuary
  - Toxicity (35422)

- Santa Clara River Reach 3 (Freeman Diversion to A Street)
  - Toxicity (34614)

- **Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)**
  - Boron (36292)
  - Specific Conductance (37476)

- **Santa Monica Canyon**
  - Lead (44822)

- **Sawpit Creek**
  - Bis(2ethylhexyl)phthalate (DEHP) (32627)

- **Solstice Canyon Creek**
  - Invasive Species (43291)

- **Torrance Carson Channel**
  - Indicator Bacteria (36310)

- **Triunfo Canyon Creek Reach 1**
  - Mercury (35059)
  - Sedimentation/Siltation (44766)

- **Triunfo Canyon Creek Reach 2**
  - Benthic Community Effects (43610)
  - Lead (36162)
  - Mercury (35242)
  - Sedimentation/Siltation (35060)

- **Ventura Harbor: Ventura Keys**
  - Coliform Bacteria (35045)

- **Ventura Marina Jetties**
  - DDT (Dichlorodiphenyltrichloroethane) (33138)
  - PCBs (Polychlorinated biphenyls) (33187)

- **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)**
  - Algae (44533)

- **Walnut Creek Wash (Drains from Puddingstone Res)**
  - pH (35243)

- **Westlake Lake**
  - Lead (36569)

- **Wilmington Drain**
  - Indicator Bacteria (34234)

List on 303(d) list (being addressed by USEPA approved TMDL)	Regional Board 4

- **Aliso Canyon Wash**
  - Selenium (34184)

- **Amarillo Beach**

- [PCBs (Polychlorinated biphenyls) (46186)]

- Arroyo Seco Reach 1 (LA River to West Holly Ave.)
    - Trash (42303)

- Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam)
    - Trash (34673)

- Ballona Creek
    - Trash (32421)
    - Viruses (enteric) (33738)

- Ballona Creek Estuary
    - Cadmium (33948)
    - Chlordane (33453)
    - Copper (39502)
    - DDT (Dichlorodiphenyltrichloroethane) (33943)
    - Indicator Bacteria (33739)
    - Lead (44280)
    - PAHs (Polycyclic Aromatic Hydrocarbons) (33985)
    - PCBs (Polychlorinated biphenyls) (32536)
    - Silver (34520)
    - Zinc (33452)

- Ballona Creek Wetlands
    - Trash (34068)

- Brown Barranca/Long Canyon
    - Nitrate and Nitrite (32863)

- Burbank Western Channel
    - Copper (32764)
    - Lead (32882)
    - Trash (34265)

- Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)
    - Copper (34363)
    - Nickel (34337)
    - Nitrogen (32724)
    - Sedimentation/Siltation (40121)
    - Toxaphene (40366)
    - Toxicity (34009)
    - Zinc (34443)

- Calleguas Creek Reach 2 (estuary to Potrero Rd- was Calleguas Creek Reaches 1 and 2 on 1998 303d list)
    - ChemA (34291)
    - Copper (32841)
    - Nitrogen (32859)
    - PCBs (Polychlorinated biphenyls) (34665)
    - Toxicity (34176)

- Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)
    - Nitrate and Nitrite (32860)
    - Total Dissolved Solids (40367)
    - Toxaphene (33435)

- Endosulfan (tissue) (39311)
- Lindane/gamma-Hexachlorocyclohexane (gamma-HCH) (tissue) (35116)
- Nitrate as Nitrate (NO3) (40304)
- PCBs (Polychlorinated biphenyls) (tissue) (32631)
- Toxaphene (tissue & sediment) (39730)

- **Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)**
  - ChemA (tissue) (34500)
  - Chlordane (34715)
  - Chloride (42816)
  - Chlorpyrifos (34218)
  - DDT (tissue) (34074)
  - Diazinon (39748)
  - Dieldrin (33674)
  - Endosulfan (tissue) (35126)
  - PCBs (Polychlorinated biphenyls) (33944)
  - Toxaphene (tissue & sediment) (39574)

- **Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)**
  - Ammonia (33927)
  - ChemA (tissue) (37471)
  - Chloride (36639)
  - DDT (tissue) (36215)
  - Dieldrin (33616)
  - Nitrogen, Nitrite (32562)
  - PCBs (Polychlorinated biphenyls) (34638)
  - Sulfates (42818)
  - Total Dissolved Solids (35161)
  - Toxicity (34060)

- **Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)**
  - Ammonia (33656)
  - ChemA (tissue) (34407)
  - Chlordane (34639)
  - DDT (tissue) (36413)
  - Dieldrin (35078)
  - Endosulfan (tissue) (36227)
  - PCBs (Polychlorinated biphenyls) (34380)
  - Sulfates (35162)
  - Total Dissolved Solids (32637)
  - Toxaphene (tissue & sediment) (34251)
  - Toxicity (34748)

- **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)**
  - Dieldrin (33958)
  - PCBs (Polychlorinated biphenyls) (34679)

- **Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)**
  - Ammonia (33015)
  - ChemA (tissue) (39073)
  - Chlordane (33923)
  - Chloride (37624)
  - DDT (tissue) (33872)
  - Dieldrin (34591)
  - Endosulfan (tissue) (34256)
  - PCBs (Polychlorinated biphenyls) (34680)
  - Sulfates (42415)
  - Total Dissolved Solids (42414)

- Indicator Bacteria (34294)

- Las Virgenes Creek
  - Nutrients (Algae) (35124)
  - Scum/Foam-unnatural (42711)
  - Sedimentation/Siltation (44917)

- Legg Lake
  - Trash (42363)

- Lindero Creek Reach 1
  - Algae (43232)
  - Scum/Foam-unnatural (43276)

- Lindero Creek Reach 2 (Above Lake)
  - Algae (34181)
  - Scum/Foam-unnatural (34252)

- Long Point Beach
  - PCBs (Polychlorinated biphenyls) (44664)

- Los Angeles Harbor - Consolidated Slip
  - Benzo(a)anthracene (34653)

- Los Angeles River Estuary (Queensway Bay)
  - Trash (34111)

- Los Angeles River Reach 1 (Estuary to Carson Street)
  - Ammonia (32973)
  - Cadmium (32639)
  - Copper, Dissolved (32523)
  - Lead (37995)
  - Nutrients (Algae) (33456)
  - Trash (37050)
  - Zinc, Dissolved (32604)
  - pH (32926)

- Los Angeles River Reach 2 (Carson to Figueroa Street)
  - Ammonia (32911)
  - Copper (34080)
  - Lead (34174)
  - Nutrients (Algae) (32959)
  - Trash (32437)

- Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
  - Nutrients (Algae) (34204)
  - Trash (32466)

- Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)
  - Nutrients (Algae) (44326)
  - Trash (32389)

- Los Angeles River Reach 5 (within Sepulveda Basin)
  - Nutrients (Algae) (35160)
  - Trash (33672)

- Ammonia (32873)
- Copper (34354)
- Trash (34107)

- **Ventura River Estuary**
  - Eutrophic (35046)
  - Trash (42352)

- **Verdugo Wash Reach 1 (LA River to Verdugo Rd.)**
  - Trash (42302)

- **Verdugo Wash Reach 2 (Above Verdugo Road)**
  - Trash (42853)

- **Westlake Lake**
  - Algae (43360)
  - Ammonia (43319)
  - Eutrophic (43361)
  - Organic Enrichment/Low Dissolved Oxygen (42712)

- **Wheeler Canyon/Todd Barranca**
  - Nitrate and Nitrite (32788)

- **Whites Point Beach**
  - Indicator Bacteria (32426)

- **Zuma Beach (Westward Beach)**
  - Indicator Bacteria (33659)

List on 303(d) list (being addressed by action other than TMDL) — Regional Board 4

- **San Jose Creek Reach 1 (SG Confluence to Temple St.)**
  - Ammonia (35062)

Regional Board 4 - Los Angeles Region References

- Comments
- Data and Information
- QA Document
- Standards and Guidelines

Comments

Parent #	Ref #	Description	Date Received
	3353	Centers for Biological Diversity. 2009. Letter from Miyoko Sakashita, Centers for Biological Diversity, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
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	3329	Centers for Biological Diversity. 2007. Letter from Miyoko Sakashita, Centers for Biological Diversity, to Deborah Neiter, Los Angeles RWQCB, Requesting addition of CA ocean waters to the list of impaired waters due to carbon dioxide pollution resolution in ocean acidification..	02/28/2007
	3356	City of Calabasas. 2009. Letter from Anthony Coroalles, City of Calabasas, to Samuel Unger, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/16/2009
	3357	City of Los Angeles. 2009. Letter from Enrique C. Zaldivar, City of Los Angeles, to Tracy Egoscue, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
3357	3358	City of Los Angeles. 2009. Appendix Technical Comments proposed 2008 CWA 303(d) List.	06/17/2009
3357	3359	City of Los Angeles. 2009. Letter and Appendices from Rita L. Robinson, City of Los Angeles, to Tam Doduc, SWRCB, Commenting on the 2006 303(d) List.	06/17/2009
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	3361	City of Santa Clarita. 2009. Letter from Travis Lange, City of Santa Clarita, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
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	3363	City of Ventura. 2009. Letter from Ray Olson, City of Ventura, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3337	City of Ventura and Ventura Port District. 2007. Letter from Vicki V. Musgrove, City of San Ventura, and Oscar Pena, Ventura Port District, to Deborah Neiter, Los Angeles RWQCB, Containing Information for Delisting Harbor Cove (Pennisula) Beach..	03/02/2007
	3366	Coalition for Practical Regulations. 2009. Letter from Larry Forester, Coalition for Practical Regulations, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3364	County of Los Angeles. 2009. Letter from Gary Hildebrand, County of Los Angeles, to Tracy Egoscue, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3318	Davenport, S.. 2006. Letter from Stephanie L. Davenport, University of Southern California, to Deborah Neiter, Los Angeles RWQCB, Containing Trash data for Echo Park Lake..	12/14/2006
	3367	Heal the Bay. 2009. Letter from Mark Gold and Kirsten James, Heal the Bay, to Tracy Egoscue, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3333	Heal the Bay. 2007. Letter from Mark Gold and Kirsten James, Heal the Bay, to Deborah Neiter, Los Angeles RWQCB, Regarding Solicitation of Data for the 2008 Integrated Report.	02/28/2007
	3365	LACSD. 2009. Letter, Attachments, and Appendices, from Phillip L. Friess, LACSD, to Man Voong, Los	06/17/2009

		Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	
	3332	LACSD. 2007. Letter, Attachments, Appendices, and Exhibits from Robert Asgian, LACSD, to Jonathan Bishop, Los Angeles RWQCB, Regarding Solicitation of Data for the 2008 Integrated Report.	02/28/2007
	3368	Lake Sherwood Joint Advisory Committee. 2009. Letter from Timothy Bramet, Lake Sherwood Joint Advisory Committee, to Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/16/2009
	3369	Las Virgenes Municipal Water District. 2009. Letter and Attachments from John R. Mundy, Las Virgenes Municipal Water District, to Tracy Egoscue, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3371	Los Padres Chapter of the Sierra Club. 2009. Letter and Attachments from Trevor Smith, Los Padres Chapter of the Sierra Club, to Man Voong, Los Angeles RWQCB, Including Data and Requesting the Addition of Watershed that Drains to Ormond Beach Lagoon to the List of Impaired Waters..	06/17/2009
	3316	McCard, J. 2006. Letter from Jennifer McCard, University of Southern California, to Deborah Neiter, Los Angeles RWQCB, Containing Data for Lake in MacArthur Park..	12/12/2006
	3320	Morales, A. 2006. Letter from Alison Morales, University of Southern California, to Deborah Neiter, Los Angeles RWQCB, Regarding Solicitation of Data for the 2008 Integrated Report.	12/12/2006
	3373	Newhall Land and Farming Company. 2009. Letter and Attachments from Matt Carpenter, Newhall Land and Farming Company, to Tracy Egoscue, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
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	3314	Porter, D. 2006. Letter from Dylan Porter, University of Southern California, to Deborah Neiter, Los Angeles RWQCB, Containing Data for Peck Road Park Reservoir Lagoon..	12/08/2006
	3376	Santa Barbara Channelkeeper. 2009. Letter from Ben Pitterle, Santa Barbara Channelkeeper, to Man Voon, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/16/2009
	3335	Santa Barbara Channelkeeper. 2007. Letter from Ben Pitterle, Santa Barbara Channelkeeper, to Deborah Neiter, Los Angeles RWQCB, Requesting the Addition of Waterbodies in the Ventura River Watershed to the List of Impaired Waters..	02/28/2007
	3377	Teresa Jordan. 2009. Letter from Teresa Jordan, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	05/18/2009
	3372	The Nature Conservancy. 2009. Electronic Mail and Attachments from Richard Handley, the Nature Conservancy, to Man Voong, Los Angeles RWQCB, Requesting the Addition of the J Street Lagoon at Ormond Beach to the List of Impaired Waters..	06/17/2009
	3378	USEPA. 2009. Letter from Peter Kozelka, USEPA, to Man Voong, Los Angeles RWQCB, Commenting on the 2008 305(b) Report and 303(d) List.	06/17/2009
	3394	USEPA. 2007. Letter and Attachments from Alexis Stauss, USEPA, to Letter to Dorothy Rice, SWRCB, Approving the 2006 303(d) List with Additions.	08/11/2009
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Data and Information

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2996	Ambrose, F. and Antony, R. Orme. 2000. Lower Malibu Creek and Lagoon Resource Enhancement and Management Final Report to the California State Coastal Conservancy. Ambrose, Richard F. and Antony, R. Orme. University of California, Los Angeles. May 2000. Chapter 3. .	02/11/2009
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Comment Deadline: March 30, 2017

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3. City of Rosemead, March 28, 2017
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5. City of Redondo Beach, March 29, 2017
6. City of Santa Clarita, March 29, 2017
7. Farm Bureau of Ventura County, March 29, 2017
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30. TECS Environmental Compliance Services, March 30, 2017
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Revised Response to Comments on the Draft 2016 303(d) List
Comment Deadline: March 30, 2017

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
1.	Wishtoyo Foundation and Ventura Coastkeeper (VCK), March 24, 2017		
1.1	In reviewing the Draft 303(d)/305(b) List and in corresponding with Los Angeles Regional Water Quality Control Board ("Los Angeles Regional Board") staff, it has come to our attention that almost all of the proposed 303(d)/305(b) listings (See Attachment A) and accompanying supporting data timely submitted on August 30, 2010 by Wishtoyo Foundation's Ventura Coastkeeper Program ("VCK") were not assessed for inclusion in the Draft 303(d)/305(b) List. Attachment A and Attachment B **<u>Nicholas Canyon Creek (San Nicolas Canyon Creek)</u>** Trash. Five out of 7 Nicholas Canyon Creek monitoring events showed the presence of trash.	Inadvertently, the data submitted by Wishtoyo was not entered into the CalWQA database for assessment. Los Angeles Water Board Staff is working with State Board staff to assess all the data from Wishtoyo that were submitted by August 30, 2010. These data will be assessed and used in decision-making either as the State Board staff prepares the 303(d) list for approval by the State Board in the fall, or prior to the next listing cycle that includes the Los Angeles Region.	The data collected by Wishtoyo has been entered into the CalWQA database. For trash in Nicholas Canyon Creek, trash was assessed as 4 out of 6 exceedances and the recommended decision is "do not list" due to insufficient information per Table 3.2 of the Listing Policy. Data collected the same week from site NC-1 were averaged per the Listing Policy 6.1.5.6.
1.2	**<u>San Jon Barranca / Creek (Sanjon Barranca Creek)</u>** Trash. Eight out of 8 San Jon Barranca / Creek monitoring events showed the presence of trash. E. Coli. Five out of 8 San Jon Barranca / Creek monitoring events showed exceedance of E coli.	See response to comment 1.1.	The data has been entered into the CalWQA database. The recommended decision for *E. coli* is "list" and the recommended decision for trash is "list, being addressed by an action other than TMDL." The trash related impairment is being addressed by implementation actions required under State Water Resources Control Board Resolution 2015-0019 "Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California".

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
			."
1.3	**<u>Ormond Beach Lagoon (Ormond Beach Wetlands)</u>** Trash. Nine out of 9 Ormond Beach Lagoon monitoring events showed the presence of trash. E. Coli. Six out of 32 monitoring events showed exceedance of E coli. pH. Six out of 8 monitoring events showed exceedance of pH. Nitrate. Eleven out of 14 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.	The data has been entered into the CalWQA database. The recommended decision for pH is "list" and the recommended decision for trash is "list." The recommended decision for total coliform is "do not list" due to insufficient information per Table 3.2 of the Listing Policy (3 exceedances out of eleven). Data collected the same week from the same site were averaged per the Listing Policy 6.1.5.6. The recommended decision for trash is "list, being addressed by an action other than TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL." Nitrate was not assessed because the Ormond Beach Wetlands do not have an MUN beneficial use and no evaluation guideline is available for nitrate for other beneficial uses.
1.4	**<u>Bubbling Springs (Hueneme Drain)</u>** Trash. Nine out of 9 monitoring events showed presence of trash. VCK's Data not assessed E. coli. Five out of 11 monitoring events showed exceedance of E coli. VCK's Data not assessed	See response to comment 1.1.	The data has been entered into the CalWQA database. The recommended decision for *E. coli* is "list" and the recommended decision for trash is "list, being addressed by an action other than TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.5	**<u>J-Street Drain</u>**	See response to comment 1.1.	The data has been entered into the CalWQA

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Trash. Nine out of 9 monitoring events showed presence of trash.		database. The recommended decision for trash is "list, being addressed by an action other than TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.6	**<u>Oxnard Industrial Drain (Oxnard Drain)</u>** Trash. Eight out of 8 monitoring events showed presence of trash. E. Coli. Five out of 11 monitoring events showed exceedance of E coli. pH. Six out of 7 monitoring events showed exceedance of pH. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate.	See response to comment 1.1.	The data has been entered into the CalWQA database. The recommended decision for pH is "list" and the recommended decision for *E coli* is "list." The recommended decision for trash is "list, being addressed by an action other than TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL." Nitrate was not assessed because Oxnard Drain does not have an MUN beneficial use and no evaluation guideline is available for nitrate for other beneficial uses.
1.7	**<u>Santa Clara River Estuary</u>** Trash. Eight out of 8 monitoring events showed presence of trash. Dissolved Oxygen. The City's sondes, violated the Basin Plan numeric water quality standard for Dissolved Oxygen of 5 mg/l for surface waters designated as WARM and 6mg/l for surface waters designated as COLD on over 40 days between 2009 and 2010. Nitrate. Eight out of 8 monitoring events showed exceedance of Nitrate.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.	The trash data has been entered into the CalWQA database. The recommended decision for trash is "do not list" with one out of five exceedances. The recommended nitrate decision is "list, being addressed by a TMDL." The phosphate data was added to the CalWQA database, but there is no evaluation guideline for phosphate at this time.

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No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Phosphate. Ten out of 10 monitoring events showed exceedance of Phosphate. pH. E recordings taken on separate days in the Santa Clara River Estuary via the City's North and South Sondes, pH levels in the Santa Clara River Estuary water column exceeded Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults		The pH data has been entered into the CalWQA database. The recommended decision for pH is "list."
1.8	**<u>Santa Clara River Reach 1</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults. Trash. Nine out of 9 monitoring events showed presence of trash.	See response to comment 1.1. The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.	The recommended decision for trash is "list, being addressed by an action other than TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.9	**<u>Santa Clara River Reach 2</u>** Low Flows. Santa Clara River Reach 1, and Santa Clara River Reach 2 are deprived of sufficient flows during the wet season for Southern California Steelhead smolt and migrating adults Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1-21.11 for a detailed discussion of flow.	
1.10	**<u>Santa Clara River Reach 3</u>** E Coli. Five out of 27 monitoring events showed exceedance of E coli. Trash. Trash. Twenty-six out of 31 monitoring events showed presence of trash.	The Los Angeles Water Board is not considering listing decisions for flow at this time. See response to comments 21.1 21.11 for a detailed discussion of flow.	The data has been entered into the CalWQA database. The recommended decision for E. coli is "list" (this will be revised to "list, being addressed by a TMDL" during the State Board Public

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	Fish Passage. the Vern Freeman Diversion Dam with its current fish ladder are a fish barrier to migrating Southern California Steelhead in Santa Clara River Reach 2 and 3.		Comment Period) and the recommended decision for trash is "list, being addressed by an action other than a TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.11	**Santa Clara River Reach 4a** Trash. Seven out of 8 monitoring events showed presence of trash.	See response to comment 1.1.	The data has been entered into the CalWQA database. The recommended decision for trash is "list, being addressed by an action other than a TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.12	**Santa Clara River Reach 5 or 6** Trash. Five out of 7 monitoring events showed presence of trash.	See response to comment 1.1.	The data has been entered into the CalWQA database in Reach 5. The recommended decision for trash is "list, being addressed by an action other than a TMDL." See response to comment 1.2 for trash as "being addressed by an action other than TMDL."
1.13	We thus respectfully request the Los Angeles Regional Board assess all of VCK's proposed 303(d)/305(b) listings and accompanying data submitted in 2010, and ensure VCK's proposed listings are included in the 2016 303(d)/305(b) List. All of VCK's proposed listings meet the requirements for listing in the State Water Resources Control Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. Notably, as demonstrated by VCK August 30, 2010 proposed listing submission, VCK's watershed monitoring data supporting the proposed listings were collected and analyzed in accordance with VCK's Quality Assurance Project Plan (QAPP) approved by the Los Angeles Regional Water Quality Control Board.	See response to comment 1.1.	

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1.14	Furthermore, we ask the Board to include on the list, the dissolved oxygen (“DO”) data submitted by VCK that supports the Santa Clara River Estuary (“Estuary”) being included on the 2016 Draft 303(d)/305(b) list for DO impairment. Even one event where DO levels drops below Basin Plan thresholds can be catastrophic for native and endangered aquatic life, including the Southern California Steelhead and Tidewater Goby that use the Estuary as habitat and that need healthy and suitable water quality in the Estuary to survive and recover. It only takes one event of low DO for these species to perish, and the Los Angeles Regional Board was provided over 200 separate data entries indicating that DO fell in the Estuary below Basin Plan thresholds and non-harmful levels for aquatic life. Attached to this letter is are two studies by a Regional Board Scientist (Carter 2005 and 2008) that further details the harms of low DO on aquatic life and native and endangered species, including Southern California Steelhead.	See responses to comments 1.1 and 1.7.	
1.15	VCK’s mission is to protect, preserve, and restore the ecological integrity and water quality of Ventura County’s inland and coastal waterways. In 2009 and 2010, VCK, in coordination with the Los Angeles Regional Water Quality Control Board and State Water Resources Control Board Clean Water Team, dedicated a tremendous amount of resources to its watershed monitoring program that resulted in VCK’s proposed 303(d)/305(b) listings. These resources include VCK running volunteer stream teams, utilizing staff time to collect and analyze water quality data, purchasing and maintaining field equipment, and running a laboratory. It would be a shame, and detrimental to Ventura County’s inland and coastal waterways and their beneficial uses, if the water quality impairments discovered, rigorously documented by VCK, and provided to the state did not result in 2016 303(d)/305(b) listings, especially on the account that they were not assessed. It is without second thought that the Los Angeles Regional Board assessing our proposed 303(d)/305(b) listings and accompanying data from August 30, 2010, and ensuring these proposed listings are included in the 2016 303(d)/305(b) List, is critical to the protection of Ventura County’s waters for all the people, wildlife, communities, and the Chumash Native American Peoples that depend upon clean	See response to comment 1.1.	

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	and healthy waters to sustain their health, wellbeing, and life ways.		
2.	City of Rolling Hills Estates, March 28, 2017		
2.1	The City is pleased that that Palos Verdes Peninsula beaches are being proposed for delisting for indicator bacteria. This is also consistent with Regional Board Resolution No. 2006-008 reviewing the Implementation Plan submitted by Jurisdictional Group 7 for the Santa Monica Bay Beaches Bacteria Wet Weather TMDL which noted that "Palos Verdes Peninsula have had historically fewer exceedances than the reference beach". and " .... existing water quality is equivalent to compliance with the Santa Monica Bay Beaches Wet Weather TMDL."	Comment noted.	
2.2	**City of Rolling Hills Estates Comments on Proposed Revisions to 303(d) List** **Water Body/Pollutant: Los Angeles-Long Beach Inner Harbor/Zinc** **Comment:** We are in agreement with Decision ID 33644 LARWCB staff recommendation to delist the water body both due to flaws in the original listing and because applicable water quality standards are not being exceeded this recommendation, however Appendix A does not reflect this proposed change. **Recommendation:** Add a "Y" in the New Delistings column in Appendix A for Zinc in Los Angeles-Long Beach Inner Harbor.	The Los Angeles-Long Beach Inner Harbor recommendation for Zinc is DO NOT DELIST. This is unchanged from 2006. The Water Board recommendation in 2006 was to delist, however EPA decided to not delist based on information in the LOEs indicating sediment toxicity. The factsheet has been edited for clarity and to update that the listing is being addressed by the Dominguez Channel Los Angeles and Long Beach Greater Harbor Waters Toxic Pollutants TMDL.	
2.3	**Wilmington Drain/Lead** **Comment:** We are in agreement with Appendix G Decision ID 35085 to delist the Wilmington Drain for lead based on the weight of evidence. Additionally, the weight of evidence is stronger than indicated because data was included in this fact sheet from Compton Creek. LOE 90133 included in Fact Sheet 35085	As noted by the commenter, the current decision is to delist Wilmington Drain for lead. Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, if necessary, as the State Board staff prepare the Integrated	The LOE 90133 has been removed from the listing decision for lead in Wilmington Drain. The decision remains "delist."

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	describes data collected in Compton Creek which is unrelated to the Wilmington Drain. **Recommendation:** Remove LOE 90133 from Fact Sheet 35085 and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that "0 of 33 samples exceeded the CRITERIA."	Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.	
2.4	**Wilmington Drain/Copper** **Comment:** The Appendix G Decision ID 44676 regarding copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation:** Remove LOE ID data set 90473 from Decision ID 44676 and revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff will work with State Board staff to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or not later than the next listing cycle that includes the Los Angeles Region.	The LOE 90473 has been removed from the listing decision for copper in Wilmington Drain. The recommended decision has been revised to "delist."
2.5	**Machado Lake/Algae, Ammonia, ChemA, Eutrophic, Odor, Trash** **Comment:** These listings for Machado Lake are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these pollutant listings are being addressed by USEPA approved TMDLs. **Recommendation:** These listings should be moved to Category 4a in Appendix C. An explanation that "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" should be included in Appendix A under the "Other Revisions" column for each of these pollutants in Machado Lake.	The Machado Lake listings for Algae, Ammonia, Eutrophic, Odor and Trash were assigned to category 4a in 2010 and that assessment has not changed. ChemA was reassigned to 4a in this listing cycle. Because all the individual Machado Lake listings were categorized as 5B (category 5B is for listings "being addressed by a TMDL"), the waterbody as a whole should have been in the Category 4 Appendix, not the Category 5 Appendix. The Category Appendices have been updated to make	

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		this correction.	
2.6	**Los Angeles-Long Beach Outer Harbor (inside breakwater)/DDT, PCBs and Toxicity; Los Angeles Harbor Inner Cabrillo Beach/DDT, PCBs; San Pedro Bay Near-Off Shore/Chlordane, PCBs, Total DDT, and Toxicity** **Comment:** These are included in Appendix B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however all of these listings are being addressed by the USEPA approved TMDL for Dominguez Channel and Greater Los Angeles and Long Beach Harbors. These changes are explained in Appendix A summary under "other revisions". **Recommendation:** These listings for DDT, PCBs and Toxicity should be moved to Category 4a in Appendix C.	Although the Los Angeles-Long Beach Outer Harbor (inside breakwater) DDT and PCBs listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a. Los Angeles Harbor Inner Cabrillo Beach DDT and PCBs listings have been reassigned to "being addressed by a TMDL" and the waterbody as a whole will move to category 4a. Although the San Pedro Bay Near-Off Shore Chlordane, PCBs, and Total DDT listings were included in the Category 5 Appendix, they were listed as "being addressed by a TMDL" (5B); however, the toxicity listing was incorrectly categorized as needing a TMDL (5A). The toxicity listing has now been updated to "being addressed by a TMDL," so the waterbody as a whole will move to category 4a.	
2.7	**San Pedro Bay Near-Off Shore Zones/Zinc** **Comment:** Appendix G Decision ID 42798 to Delist San Pedro Bay Near/Off Shore Zones for Zinc because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of	Zinc was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting.	

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	recommended changes. **Recommendation:** Insert a “Y” in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for zinc.	Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
2.8	**San Pedro Bay Near-Off Shore Zones/Chromium** **Comment:** Appendix G Decision ID 42525 restates and does not revise the original recommendation to delist San Pedro Bay Near/Off Shore Zones for Chromium, however delisting does not seem to have occurred since the pollutant-waterbody combination still appears in Appendix A. **Recommendation:** Insert a “Y” in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs and remove the “Y” from the Pollutant Name Changes column since there does not appear to have been any name change made for this pollutant.	Chromium was delisted in the 2010 303(d) list. This is not a New Delisting. The name has been changed. In the 2010 list it was “chromium (sediment)” and now it is “chromium”. Chromium is included in Appendix A to show the recommended name change. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
2.9	**San Pedro Bay Near-Off Shore Zones/Copper** **Comment:** Appendix G Decision ID 44434 to Delist San Pedro Bay Near/Off Shore Zones for Copper based on flaws in the original listing. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a “Y” in the New Delistings column of Appendix A for	Copper was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains “delist.” This is not a New Delisting. The name has been changed. In the 2010 list it was “Copper (sediment)” and now it is “copper”. Copper is included in Appendix A to show the recommended name change.	

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	San Pedro Bay Near/Off Shore Zones for copper.	Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
2.10	**San Pedro Bay Near-Off Shore Zones/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Decision ID 43259 to Delist San Pedro Bay Near/Off Shore Zones for PAHs because applicable water quality standards are not being exceeded. This recommendation is not reflected in Appendix A summary of recommended changes. **Recommendation:** Insert a "Y" in the New Delistings column of Appendix A for San Pedro Bay Near/Off Shore Zones for PAHs.	PAHs (Polycyclic Aromatic Hydrocarbons) was delisted in the 2010 303(d) list. New data was assessed during this listing cycle but the decision remains "delist." This is not a New Delisting. The name has been changed. In the 2010 list it was "PAHs (Polycyclic Aromatic Hydrocarbons) (sediment)" and now it is "PAHs (Polycyclic Aromatic Hydrocarbons)". PAHs (Polycyclic Aromatic Hydrocarbons) is included in Appendix A to show the recommended name change.	
2.11	**Santa Monica Bay Offshore- Nearshore/Chlordane** **Comment:** The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
2.12	**Santa Monica Bay Offshore- Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)**	PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list	

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	Comment: The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation:** Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
2.13	**Santa Monica Bay Offshore- Nearshore/ Arsenic** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5—these sampling areas are north of Redondo Beach Pier. **Recommendation:** This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet (Decision ID 67208) should be revised to discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. However, the fact sheet does state where the fish were collected. At the time a TMDL is developed, or other regulatory program is developed, for arsenic in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement. However, a review of this decision is in process at this time in order to review the data included in the analysis and the applicable evaluation guideline.	See response to comment 11.21 for a discussion of the arsenic evaluation guideline.
2.14	**Santa Monica Bay Offshore- Nearshore/Mercury** **Comment:** Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5.	The CalWQA database does not at this time allow for listing only portions of defined waterbodies. The fact sheet does state where the fish were collected.	The mercury data has been re-assessed and the appropriate data was used and the decision remains "list."

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	Recommendation: This listing should be narrowed in geographic scope and should exclude Offshore-Nearshore waters of the Palos Verdes Peninsula because the data supporting the listing is not spatially representative of the Palos Verdes Peninsula waters since there is little to no influence from the Hyperion Wastewater Treatment Plant discharge on these waters. The fact sheet should be revised to (Decision ID 67209) discuss the spatial extent of this listing in relation to the data supporting the listing and to exclude areas south of Redondo Beach Pier which are outside of Zones 4 and 5.	At the time a TMDL is developed, or other regulatory program is developed, for mercury in Santa Monica Bay, then the more detailed geographic scope can be identified considering collection sites and fish movement. However, a review of this decision is in process at this time in order to review the data included in the analysis.	
3.	City of Rosemead, March 28, 2017		
3.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:	Comments on TMDLs and MS4 permits are outside the scope of this action. Pollutants, including metals, are assessed as "de-list," "do not list," "list," and “do not delist” based on available data, not on the status of TMDLs. See also, response to comment 3.2, 3.3, and 3.4.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.		
3.2	**California Toxic Rule** CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are	Comments on TMDLs are outside the scope of this proposed action.	The CTR criteria apply at all times during wet and dry weather to inland surface waters. (See, 40 CFR 131.38(a), (c)(1), and (d)(1).) There is no exception for wet-weather conditions. Aquatic life is present in wet weather conditions and the CTR is legally necessary to protect these uses.

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	measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.		
3.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	The Los Angeles Water Board disagrees. While the current and past 303(d) lists of impaired waterbodies pre-date the State's Listing Policy, this does not invalidate previous listing decisions. The Listing Policy does not support delisting a waterbody pollutant combination simply because it was listed prior to adoption of the Listing Policy and, as such, a different data assessment method may have been used. The 303(d) list includes assessments of readily available data and uses data assessment guidelines	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		available at the time of preparation. The list is periodically updated based on newer readily available data and, if newer assessment guidelines or methods are available, these are used. Accordingly, several of the existing waterbody pollutant combinations originally listed in the TMDL are recommended for delisting, while several are not recommended for delisting. Additionally, several new waterbody pollutant combinations for metals are recommended for listing based on new readily available data since the last update of the list for the Los Angeles Region. Finally, comments on the LA River Metals TMDL are outside the scope of this proposed action.	
3.4	MS4 Permittees located in Reach 2 of the Rio Hondo will be pleased to know that the 2016 303(d) list does not propose to list it for any of the metals covered by the LARMTDL. This makes sense given that this reach was not listed for metals impairment on the 2010 303(d) list. Further, LAR-MTMDL makes no mention of Reach 2 of the Rio Hondo. As result, the following cities should not be subject to this TMDL: Alhambra (partially); Arcadia; Bradbury; Duarte; El Monte; Irwindale (partially); Montebello (partially); Monterey Park; Pasadena (partially); Rosemead; San Gabriel; San Marino; South El Monte; Irwindale (partially); and South Pasadena (partially). However, it is noted that Reaches 1 and 2 of the Arroyo Seco was not placed on the "do not list" for metals. It should have been for the same reason Reach 2 of the Rio Hondo was. Neither Reach 1 nor Reach 2 of the Arroyo Seco appears on the 2010, 2006, or 2002 303(d) list for metals. The Regional Board may wish to update the 2016 303(d) list to place the Arroyo Seco on the "do not list" category.	Comments on the applicability of TMDLs are outside the scope of this action. The Integrated Report and the 303(d) list do not include any decisions for metals in the Arroyo Seco because no metals data were available or assessed for the Arroyo Seco. The decision "do not list" is only made when there are data in the CalWQA database that support a "do not list" decision.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
4.	City of Compton, March 29, 2017		
4.1	**I. Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LARMTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because: 1. Although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. The LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.	See response to comment 3.1.	
4.2	**California Toxic Rule**	See comment 3.2.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-MTMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.		
4.3	**California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this fact alone the LAR-MTMDL should be voided.	See comment 3.3.	
4.4	**II. Los Angeles River Reach/Tributary Specific Comments** Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories. **1. Compton Creek**	"DO NOT DELIST" is the appropriate recommendation for copper and lead. Section 3.1 and Table 3.1 of the Listing Policy include a *minimum* sample size to *list* a pollutant, while Section 4.1 of the Listing Policy states, "[t]he binomial distribution cannot be used to support a delisting with sample sizes less than 28." Listed waterbodies are evaluated and delisting decisions	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Of the 4 subject LAR-MTMDL metals, the 2016 303(d) list only places selenium on the "do not list" for the Creek. According to the fact sheet, copper is placed on the "do not de-list" based on 1 of 15 samples that exceeded dissolved copper. This result, however, does not meet the 3.1 Listing Policy's binomial test requirement. The policy explains that the application of the binomial test requires a minimum sample size between 2 and 24, with at least 2 exceedances required for 303(d) listing placement. But, the Listing Policy also mentions that a sample size less than 16 is insufficient to meet the listing test. Lead is also placed under the "do not de-list" category. This appears to be in error. According to the fact sheet, 1 of 15 samples and 0 of 3 samples exceeded the criteria for this sample size to determine the applicable beneficial use. However, 1 exceedance out of 15 and 0 out of 3 samples do not meet the Listing Policy for 303(d) list placement. Not only is the exceedance frequency insufficient, but the sample size is too small. The same is true of zinc, which was placed on the "list" category because 2 of the 15 samples exceeded the allowable frequency. That cannot be. Once again, a sample size of 15 is too small. Further, it is not clear whether the samples were taken from the Creek during a storm event or during an ambient water body condition. It should also be noted that according Regional Board SWAMP data taken in June of 2005, no exceedances were reported for copper, lead, or zinc. Based on the foregoing, it is recommended that copper, lead, and zinc be placed on the "do not list" category. Table I Compton Creek **[See the posted letter for Table I]**	are made based on Section 4 of Listing Policy, not Section 3. Based on Section 4, there are insufficient samples to delist based on the binomial distribution. The SWAMP line of evidence has also been considered in the decision recommendation. The LOEs that support the copper and lead listings are "placeholder" LOEs to show a finding of impairment made prior to 2006. The lead recommendation also includes a third LOE, which is a "placeholder" LOE to show a finding of impairment made prior to 2006. The "placeholder" LOEs are valid LOEs; however, the data for these are not in the CalWQA database. However, Section 4.1 of the Listing Policy still requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. See response to comment 3.3 for additional discussion on listing prior to the adoption of the Listing Policy.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
4.5	**2. Los Angeles River Reach 1 (Estuary to Carson)** Copper, lead, and zinc were listed, while selenium was not. The justification for their listing is questionable. The listing fact sheet indicates 7 out of 18 samples exceeded CTR criteria. Because the LAR-MTMDL asserts that CTR limitations can be based on both wet weather and dry weather (ambient) sampling, the Regional Board needs to provide data that shows which samples were based on wet weather and dry weather. As mentioned above, CTR limitations are exclusively expressed as ambient standards. Wet weather samples should be excluded. If the number of excluded samples does not meet the Listing Policy requirement for minimum sample size, then the sampling data is invalid. Further, it is not clear when the samples were taken, nor whether the actual hardness value was applied. Based on this information, copper, lead, and zinc should be de-listed. Table II LAR Reach 1. **[See the posted letter for Table II]**	The decisions for copper, lead, and zinc are previous listing decisions. No new data were assessed by the Board for the current cycle. See response to comment 4.4 regarding "placeholder" LOEs. The Listing Policy neither indicates that wet weather data should be excluded from the assessment nor that data from wet and dry weather must be assessed separately. While Section 6.1.5.3 of the Listing Policy states "*… If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision*", it does not state that wet weather samples should be excluded from the assessment. Comments on the TMDL are outside the scope of this action.	
4.6	**3. Los Angeles River Reach 2 (Carson to Figueroa)** Copper and lead are carried-over from the 2010 303(d) list and placed in the "do not delist" category. Selenium and zinc were not listed. Copper and lead should be de-listed because according to the 303(d) listing fact sheet, 0 samples were taken.	The LOEs which support the copper and lead listings are "placeholder" LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include the "placeholder" LOE data from decisions made prior to 2006.	

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<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td>Based on this information copper and lead should be should be de-listed.

Table III LAR Reach 2. [See the posted letter for Table III]</td><td>There is no additional data in the CalWQA database that would support delisting.

See, also, response to comment 4.4.</td><td></td></tr>
<tr><td>5.</td><td colspan="2">City of Redondo Beach, March 29, 2017</td><td></td></tr>
<tr><td>5.1</td><td>However, after reviewing the proposed changes to the 303(d) List, the City remains concerned about a number of specific issues, which are detailed below. The City's comments are generally grouped within two categories:

• Segment specific comments on the proposed 303(d) List; and
• Inconsistencies within the 303(d) List.

I. Segment Specific Comments on the Proposed 303(d) List

A. Dominguez Channel (lined portion above Vermont)
<u>Comment 1: The benthic community effects listing (Decision ID 66165) appears to be flawed and should be removed.</u>
The listing for benthic community effects should be removed because it is based on flawed data and/or analyses. The basis for this comment is as follows:
The sample size did not meet the minimum criteria pursuant to the Listing Policy. According to Section 3.9 Degradation of Biological Populations and Communities of the Listing Policy, The analysis should rely on measurements from at least two stations. The Appendix G Fact Sheets list only one sample site, however it treats the data from the one site as three separate samples, which is incorrect. As a result, there are not enough data to justify a listing.
The benthic community effects listing for the lined portion of Dominguez Channel lacks a sufficient reference site. Since this section of the Dominguez channel is lined, it does not have a traditional bed structure or substrates found in a typical stream. The classic Index of Biotic Integrity (181) stream assessment score does not take into consideration that lined</td><td>Listings related to benthic community impairment in the Dominguez Channel and other channels that are lined entirely with concrete have been reassigned to Category 3 (i.e., insufficient information to assess beneficial use support, but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels.

See response to comments 11.19 and 11.24.</td><td></td></tr>
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No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	channels naturally have lower IBI scores as noted in the recently released SCCWRP Special Study on Engineered Channels. In order to make a robust assessment, the reference site should also be a lined channel that has not been subject to anthropogenic influences, however such a reference site was not used in the analysis. • The IBI is not the assessment tool that should be used to determine benthic community effects. As acknowledged in the Appendix G Fact Sheets: *The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).* We agree with this statement and also note that some IBI scores are especially skewed when utilized for hardened channels since they heavily rely on macroinvertebrates, which are inherently more common in natural bottom stream beds. Other assessment tools such as the diatom IBI may also be used to assess the benthic community of a hardened channel as demonstrated by the SCCWRP Study on Engineered Channels referenced earlier. Therefore, the IBI assessment tool should not be used as the sole basis for a listing in this lined channel. • The benthic community effects exceedance should not be linked to diazinon as a way to establish a causal effect since this pollutant has been delisted with respect to the Dominguez Channel (lined portion above Vermont) (Decision ID 33061). *Requested Action*: • *Remove the benthic community effects listing/or Dominguez Channel since the sample size does not meet the minimum criteria, this section of channel lacks a proper reference site, and is based on an inappropriate assessment tool*. • *If the listing is not removed, the diazinon linkage to benthic community*		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	effects should be removed since this pollutant has been delisted.		
5.2	Comment 2: The ammonia listing (Decision ID 35134) should be updated to consider all readily available data. Ammonia was not de listed based on the existence of 2 exceedances out of 21 samples collected from 7/1/2009 to 8/13/2009 at Western Ave., Manhattan Beach Blvd, and El Segundo Blvd. Additional samples were also collected at a sample site just across Vermont Ave. (33° 52' 16" N, 118° 17' 23" W), however these samples were not included in the analysis. The Basin Plan lists Vermont Ave. as the reach break between the Dominguez Channel and Dominguez Channel Estuary and, therefore, it appears a decision was made to include the Vermont Ave. samples in the downstream segment - the Dominguez Channel Estuary (unlined portion below Vermont Ave.) The City maintains that the Vermont Ave. samples should be considered in the Dominguez Channel (lined portion above Vermont) based on their direct proximity to the end of the reach, offering optimal spatial representation of the water body segment. Furthermore, the sample site is located less than 100 meters from the lined portion of Dominguez Channel and according to the Listing Policy, a sample collected 200 meters upstream, in the lined portion of the Channel, would be considered the same station location. If the additional 8 samples from the Vermont Ave. station are included in the Dominguez Channel (lined portion above Vermont) analysis, the total samples in exceedance would be 2 out of 29. These data would then meet the requirement to delist ammonia as stated in Section 4.1 of the California Delisting Factors set in the Listing Policy - i.e., these samples support rejection of the null hypothesis using the binomial distribution and the sample size is greater than 28. Specifically, Table 4.1 at page 14 of the Listing Policy demonstrates that where 2 or less exceedances are identified in a sample size of 28-36 samples, such as here, then the water segment shall be removed from the 303(d) List. Therefore, based on the	See response to comment 11.6.	The LOE has been revised to include the data from the Vermont Ave sampling site. The recommended decision has been revised to "delist."

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<tr><td></td><td>updated and appropriate sample size, which includes Vermont Ave. samples, and number of exceedances, ammonia should be delisted for this reach.

Requested Action:
• Include the Vermont Ave. sampling data in the analysis of the ammonia listing for Dominguez Channel (lined portion above Vermont).
• Delist ammonia based on the updated analysis.</td><td></td><td></td></tr>
<tr><td>5.3</td><td>B. Dominguez Channel Estuary (unlined portion below Vermont Ave)
<u>Comment 3: Delist Ammonia (unionized) due to lack of exceedances.</u>
A listing for ammonia was shown in the Appendix G Fact Sheets, however none of the cited lines of evidence (LOE) shows evidence of an exceedance. One LOE is an unspecified placeholder for a listing decision made prior to 2006, however the other two LOE show 0 out of 28 and 0 out of 7 exceedances. Based on the data, this pollutant meets the Section 4 California Delisting Factors set in the Listing Policy.

Requested Action:
• Delist ammonia (unionized) (Decision ID 34669) based on lack of evidence and exceedances.</td><td>The decision has been updated to “DELIST.”</td><td></td></tr>
<tr><td>5.4</td><td>C. Santa Monica Bay Offshore/Nearshore
<u>Comment 4: The arsenic and mercury fish tissue listings are not based on all readily available data, are not spatially representative of the water body, and samples were not treated as temporally independent.</u>

The samples used for the proposed 5A Arsenic and Mercury fish tissue listings (Decision ID: 67208 and 67209) are not spatially representative of the water body. Samples used for these listings were collected for the City of Los Angeles Hyperion Treatment Plant NPDES Permit (NO. CA0109991). The permit designates 5 different sampling zones along the coast of the Santa Monica Bay of</td><td>See response to comment 2.13 for Arsenic and 2.14 for Mercury and spatial representativeness.

See response to comment 32.3 for a discussion of readily available data.

See response to comment 11.21 and 11.22 for fish temporal independence.</td><td>See response to comment 11.21 for a discussion of the arsenic evaluation guideline.</td></tr>
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No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	which the City falls along the border of zones 4 and 3 (see map in Attachment B). All of the samples used for these listings were collected from zones 4 and 5 - no representative samples were collected from zone 3, which includes the southern end of Santa Monica Bay and a substantial portion of the City's drainage area. Therefore, using current samples to list the entire Santa Monica Bay Offshore/Nearshore would incorrectly list zone 3 of the bay despite a lack of representative samples from this area. This would contradict the Listing Policy which states that "*samples should represent statistically or in a consistent targeted manner the segment of the water body*". The spatial coverage of the samples should be considered and the listing reassessed by either segmenting the water body or using samples from all representative zones of Santa Monica Bay. In addition, sampling data beyond the 19 samples collected in 2006-2007 should be available from the City of Los Angeles' Hyperion Treatment Plant NPDES permit. It is unclear why only the 2006-2007 samples were used when there are presumably more samples available from the Hyperion Treatment Plant NPDES monitoring program. The City requests that the Water Board review all available data for fish tissue before making a listing for Arsenic and/or Mercury. Finally, the fish tissue assessment for arsenic and mercury did not properly categorize the data in a way that is temporally independent. The Listing Policy states that samples should be temporally independent; however, in some cases fish collected on the same day were treated as unique data points. In addition, the samples collected were from August 2006, October 2007- November 2007, and August - September 2007. Because both arsenic and mercury bioaccumulate over the lifetime of the individual species an averaging period of at least a year should be considered. Therefore, instead of considering 19 individual samples these data should only be considered representative of 2 years thus supporting the need for additional data as previously requested. *Requested Action*:		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• *Either (1) segment the Santa Monica Bay listing since the data used to list arsenic and mercury are not representative of the entire water body as required by the Listing Policy, or (2) seek additional data from all zones<~(Santa Monica Bay to ensure proper spatial representation of the data prior to listing.* • *Seek and reanalyze additional sample data from the City of Los Angeles beyond the 19 samples from 2006 and 2007 that were originally used/or the analysis*. • *The mercury and arsenic fish tissue data should be aggregated based on a more reasonable temporal resolution*.		
5.5	<u>Comment 5: Sediment toxicity should be delisted; no justification was provided for the name change in the Fact Sheets</u>. The Santa Monica Bay Offshore/Nearshore toxicity listing (Decision ID 34120) was marked only as a name change in Appendix A. However, a TMDL for DDTs and PCBs was developed and approved by USEPA in 201210 which evaluated sediment toxicity resulting in a recommendation for delisting: *"Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list."* Based on the statement above and data summarized on pages 19 and 20 of the TMDL there is sufficient evidence to delist sediment toxicity for Santa Monica Bay Offshore/Nearshore. The listed name change appears to be a change from "sediment toxicity" to "toxicity" based on the Appendix G Fact Sheets. We assume that this name change	The decision recommendation has been updated to "DELIST." The name change is not in error. The 303(d) list no longer includes separate listings for different environmental media, that is, data for sediment toxicity and data for water toxicity are both considered in an assessment of toxicity. In fact, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	is the result of the Water Board's acknowledged systems and clerical errors in Appendix A. In the event that it is not a mere error that will be corrected by the Water Board, the City requests that justification be provided to support the name change. This name change should only occur if new data is used to support the observation of toxicity in the water column as outlined in section 3.6 of the Listing Policy, however no new data was presented and a reason for this name change was not discussed in the staff report. *Requested Action*: • *Delist sediment toxicity for Santa Monica Bay based on the data analysis performed in the 2012 DDTs and PCBs TMDL.* • *Correct the name change error*		
5.6	**II. Inconsistencies within the 303(d) List** As noted by Water Board staff, the Appendices of the proposed 303(d) List have a number of inconsistencies. The inconsistencies listed below are a few examples and should not be considered an exhaustive list. We request that the Water Board do a thorough review of all of the Appendices to ensure that they are internally consistent with the changes listed in the Appendix G Fact Sheets. Table 1. Inconsistencies in the Proposed 303(d) List Appendices **Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Diazinon **Comment/Requested Action**: This pollutant is shown as "delisted" in Appendix A with a note "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL ". In Appendix G the same pollutant is listed as "Delist from 303(d) list (being addressed by USEPA approved TMDL)".	Diazinon is recommended for delisting for the Dominguez Channel above Vermont. Los Angles Water Board staff found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with the fact sheets in Appendix G.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The City would like clarification that this listing will be entirely removed from the 303(d) list and not categorized as 4A as indicated by the note in Appendix A.		
5.7	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s):** Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs **Comment/Requested Action**: These pollutants are shown as delisted in the Appendix G factsheets, however they are not listed as changed in Appendix A. **All of these pollutants should be delisted due to flaws in the original listing (as noted within the factsheets).**	Aldrin, Chem A, Chlordane, Chromium, DDT, Dieldrin, PAHs, and PCBs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
5.8	**Waterbody Segment: Dominguez Channel (lined portion above Vermont)** **Pollutant(s)**: Chromium and Dieldrin **Comment/Requested Action**: These pollutants are shown as "name changes" in Appendix A, however we could find no evidence of a name change throughout the rest of the document. **Any name change should be supported by a reason detailing the need for the change in the Fact Sheets. Furthermore both of these listing should be delisted based on the comment above.**	In prior 303(d) lists, "Chromium" was "Chromium (total)" and "Dieldrin" was "Dieldrin (tissue)."	
5.9	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Aldrin, Chem A, Chromium (total), and PAHs **Comment/Requested Action**: These pollutants are not listed as a change in Appendix A, but shown as "delisted" in Appendix G.	Aldrin, Chem A, Chromium (total), and PAHs were delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	All listings should be delisted either because of flaws in the original listing or lack of an exceedance.	A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
5.10	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: DDT **Comment/Requested Action**: This listing is missing from Appendix B or C and has not been listed as changed in Appendix A, however the Appendix G factsheets lists DDT as being addressed with a USEPA approved TMDL and therefore **should be categorized as 5B or 4A**.	The waterbody pollutant combination, Dominguez Channel Estuary/DDT, is categorized 5B because it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.	
5.11	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Dieldrin **Comment/Requested Action**: Listed in Appendix A as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*", however the pollutant does not appear in Appendix B or C and is listed as "*List on 303(d) list (being addressed by USEPA approved TMDL*)" in Appendix G. **This pollutant should be listed as 4A or delisted.**	The waterbody pollutant combination, Dominguez Channel Estuary/Dieldrin is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. Appendix G is correct and Appendix A has been revised to align with it.	
5.12	**Waterbody Segment: Dominguez Channel Estuary (unlined portion below Vermont Ave)** **Pollutant(s)**: Chlordane (tissue) **Comment/Requested Action**: Listed in Appendix A as unchanged but not found in Appendix B or C. The Appendix G Fact Sheets list this pollutant as "*Do not delist (being addressed with USEPA approved TMDL)*". **The City would like clarification if this pollutant has been delisted or recategorized as 5B.**	The waterbody pollutant combination, Dominguez Channel Estuary/Chlordane is categorized 5B; it is being addressed by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL. The pollutant was recategorized as 5B.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
5.13	**Waterbody Segment: The Santa Monica Bay Offshore/Nearshore** **Pollutant(s)**: Chlordane and PAHs **Comment/Requested Action**: Not listed as a change in Appendix A but shown as "delisted" in Appendix G. **These pollutants should be delisted.**	Chlordane and PAHs were recommended for delisting in the 2010 303(d) list. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
5.14	**Waterbody Segment: Redondo Beach** **Pollutant(s)**: DDT **Comment/Requested Action**: Listed in Appendix A only as a "name change", however Appendix G lists this as "*TMDL status changed from TMDL still required to Being Addressed by Completed TMDL*". The 2010 303(d) list shows Redondo Beach DDT listing was Category SA however in the newly proposed 303(d) list the pollutant is listed as 4A in Appendix C. Category 4A is the correct category for this pollutant since a USEPA-approved TMDL does exist to manage DDT which is expected to result in full attainment of the water quality standard within a specified time frame. **The City would like Appendix A edited to reflect new 4A listing**. Furthermore if this is in fact a name change, as stated in Appendix A, **an explanation including supporting data for the name change should be included in the Appendix G Fact Sheets**.	Redondo Beach DDT is both a name change and a TMDL status change. Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised to align with it. In prior 303(d) lists, "DDT" was "DDT (Dichlorodiphenyltrichloroethane)."	
6.	City of Santa Clarita, March 29, 2017		
6.1	**Change All Listings to "*Being Addressed by Action Other Than a TMDL*"** Due to the extensive studies and long term implementation efforts contained in the	The implementation of the EWMPs is likely to make a significant improvement in water quality in the affected watersheds. However, MS4	

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	EWMP, the City requests all pollutants remaining on the 303(d) list without a developed TMDL should be changed to the Category 4B for the Clean Water Act as "Being Addressed by Action Other Than a TMDL." More specifically, the pollutants will be addressed through the long-term implementation of the EWMP. In addition, the City requests a focus be placed on "Delisting" pollutants by the Regional Board so that limited resources can be better applied to applying long-term strategies of the approved EWMP.	discharges may not be the only source of pollutants causing the impairment of these waterbodies; therefore, the actions identified in the EWMPs may not be the only implementation required. A source assessment and linkage analysis, during development of a TMDL, or during development of another regulatory program, or as a special study would be necessary to determine the relative contribution of all the sources and all the actions necessary to restore affected waterbodies to a condition of full water quality standards attainment.	
6.2	The City requests the following amendments for the 2017 303(d) List. The affected water quality objectives are listed below. **Affected Waterbodies, Water Quality Objectives, and Suggested Revisions** *Santa Clara River Reach 5 (Blue Cut Gauging Station to West Pier Highway 99 Bridge)* Ammonia should be revised to “Being Addressed by Completed TMDL.” The Nitrogen and Effects TMDL for the Santa Clara River was completed in 2004. The Los Angeles County Sanitation Districts revised their operations at the Saugus Water Reclamation Plant and the Valencia Water Reclamation Plant and installed a Nitrification-Denitrification (NDN) process in 2004. The applicable water quality standards for nitrate, nitrite, and ammonia are not being exceeded. Decision ID 34352 states that no discharges exceeded limits.	Because the applicable water quality standard for ammonia is not being exceeded, Santa Clara River Reach 5 Ammonia is proposed to be delisted (CalWQA Decision 34352). The listing decision is "Delist from 303(d) list (being addressed by USEPA approved TMDL)."	
6.3	Benthic Community Effects should be revised to “Being Addressed by Action Other Than a TMDL.” Decision ID 44468 states that the water body is impaired	See response to comment 6.1.	

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	with multiple pollutants, including zinc, iron, bacteria, and chloride. However, Line of Evidence 88732 states that 0 out of 153 samples had any exceedance for zinc. Although iron is naturally occurring in the Santa Clara River watershed, Line of Evidence 88656 found 6 of 81 samples exceeded and Line of Evidence 88648 found 0 of 2 samples exceeding water quality limits. There were no samples taken for coliform bacteria, and therefore, no exceedances recorded as per Line of Evidence 4156. Line of Evidence 88792 states that none of the two samples taken exceeded the criterion for chloride. Further, the listing was based on the Southern Coastal California Index of Biotic Integrity (SCIBI). However, the SCIBI-based analysis is inadequate for use in low-gradient and low-elevation waters, such as the Upper Santa Clara River. Through the implementation of the EWMP, the benthic community should rebound to its natural populations as the EWMP addresses toxicity, metals, pesticides, and other metrics that affect benthic communities.	For a discussion of low elevation and benthic macroinvertebrate impairments, see response to comment 26.13.	
6.4	Chloride should be revised to “Being Addressed by Completed TMDL.” The Santa Clara River chloride TMDL was approved by the United States Environmental Protection Agency (USEPA) on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	The listing decision (Decision 32396) is, in fact, "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" and so does not require revision.	
6.5	Indicator bacteria should be revised to “Being Addressed by Action Other Than a TMDL.” Through the implementation of the EWMP, indicator bacteria should fall to levels found in ambient waters.	The listing decision (Decision 34306) is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed	

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		by the TMDL for Indicator Bacteria in Santa Clara River Estuary and Reaches 3, 5, 6, and 7 (approved by USEPA on Jan. 31, 2012). The listing decision does not require revision.	
6.6	Iron should be revised to "Being Addressed by Action Other Than a TMDL." Iron was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.	
6.7	Nitrate and nitrite should be revised to "Being Addressed by Completed TMDL." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003, specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32484 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.	The listing decision for Decision 32484 is "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Santa Clara River Nitrogen Compounds TMDL. The listing decision does not require revision.	
6.8	Toxicity should be revised to "Being Addressed by Action Other Than a TMDL." Toxicity was modeled and will be addressed by the implementation of the EWMP for the Upper Santa Clara River.	See response to comment 6.1.	
6.9	*Santa Clara River Reach 6 (West Pier Highway 99 to Bouquet Canyon Road)* Ammonia should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Nitrogen and Effects TMDL for the Santa Clara River was approved by the USEPA in 2004. The original listing was made in 1998. Since then, the Los Angeles County Sanitation Districts underwent significant upgrades to their operations, including incorporation of nitrification/de-nitrification treatment at the Valencia Water Reclamation Plant in 2003,	Santa Clara River Reach 6 Ammonia is proposed to be delisted. The listing decision (Decision 32462) is "Delist from 303(d) list (being addressed by USEPA approved TMDL)" and does not require revision.	

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	specifically aimed at addressing nitrogen in the Upper Santa Clara River. Decision ID 32462 states that the decision to delist from 303(d) list was previously approved by the State Water Resources Control Board and the USEPA.		
6.10	Chloride should be revised to "Being Addressed by Completed TMDL" or "Delist from 303(d) list." The Santa Clara River chloride TMDL was approved by the USEPA on April 28, 2005. The site-specific water quality objective for Santa Clara River Reach 5 is 100 mg/L. The primary source of chloride was determined to be potable water derived from a blend of the State Water Project and local groundwater. Santa Clarita Valley residents have relinquished over 8,200 salt-based water softeners that had previously contributed to excessive chloride levels found in the Santa Clara River. The Los Angeles County Sanitation Districts has proposed to install reverse-osmosis technology at their Valencia Water Reclamation Plant and Saugus Water Reclamation Plant, as part of an overall chloride reduction plan.	Decision 32397 is a “carryover” decision. No new data was assessed or LOE created, so the listing remains what it was on the last 303(d) list. The listing decision is "List on 303(d) list (being addressed by USEPA approved TMDL)" as the waterbody pollutant combination is currently being addressed by the Upper Santa Clara River Chloride TMDL. The listing decision does not require revision.	
6.11	For chlorpyrifos, Decision ID 33024 states samples were collected from August 2002 through April 2003. It should be noted that USEPA phased out all residential use of chlorpyrifos products since 2004. Since the samples were taken prior to being phased out and no further positive results are presented, this information is no longer relevant. Due to the long term implementation efforts contained in the EWMP, this pollutant should be changed to “Being Addressed by Action Other Than a TMDL.”	Decision 33024 was made based on LOE 2134, where 10 of 39 samples were found to exceed the evaluation guidelines. While USEPA phased out all residential use of chlorpyrifos products since 2004 and the data used in LOE 2134 were collected from August 2002 to April 2003, there is no new evidence/data in CalWQA to support a delisting decision. Therefore, the listing decision remains as "Do Not Delist". See, also, response to comment 6.1.	
6.12	Copper was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Copper should be revised to “Being Addressed by Action Other Than a TMDL.”	See response to comment 6.1.	

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6.13	Decision ID 44805 states samples for diazinon were collected from August 2002 through April 2003. It should be noted that USEP A phased out all residential use of diazinon products since 2004. Only data generated from after the ban should be considered. For a sample size of 28-36, Table 4.1 of the State's Listing Policy recommends delisting a previously listed pollutant if the numbers of exceedances are less than two. Since no other samples show an exceedance, diazinon should be delisted. In addition, due to the implementation of the EWMP, this pollutant could also be changed to "Being Addressed by Action Other Than a TMDL."	Decision 44805 was made based on LOE 2135, where 28 of 29 samples were found to exceed the evaluation guideline. While USEPA phased out all residential use of diazinon products since 2004 and the data used in LOE 2135 were collected from August 2002 to April 2003, there is no new evidence/data indicating that the waterbody is not impaired by diazinon. Therefore, the listing decision should remain as "Do Not Delist". See, also, response to comment 6.1.	
6.14	Iron is abundant in the natural soils in the Santa Clarita Valley. In addition, iron was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Iron should be revised to "Being Addressed by Action Other Than a TMDL."	Regional board staff reassessed the LOEs associated with this decision. The listing decision has been changed to "Delist from 303(d) list".	
6.15	According to the National Weather Service, ambient air temperature for Santa Clarita during the summer months regularly exceeds 100 degrees Fahrenheit due to a semi-arid climate. The Santa Clara River is an ephemeral stream with water flow quickly subsiding into the natural sandy, soft- bottom riverbed. It is noted that all samples registering over 80 degrees Fahrenheit occurred between the months of May and August. It is reasonable that hot and dry air temperatures correlate to warmer water temperatures in shallow, sandy soils. Receiving waters in the Santa Clara River registering above 80 degrees Fahrenheit are the result of natural, ambient conditions and should not be considered as a result of storm drain or treatment discharge.	See response to comment 17.4.	
6.16	In Line of Evidence 88683, it is noted that toxicity data was not reported with a control, and therefore anything reported as < 100% (chronic) or < 100% survival	Decision 33550 is supported by two LOEs. 4 of 4 samples were in exceedance in LOE 2137 and 4 of	LOE 88683 has been revised to show zero exceedances.

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	(acute) was considered an exceedance. In addition, toxicity was modeled for and will be addressed by the implementation of the EWMP for the Upper Santa Clara River. Toxicity should be revised to "Being Addressed by Action Other Than a TMDL."	40 samples were in exceedance in LOE 88683. Even though there was lack of control data for LOE 88683, the original listing decision was justified by LOE 2137 and there is no new evidence/data supporting a delisting decision. Therefore, the listing decision will remain as "Do Not Delist". A review of LOE 88683 is in process at this time. For a more detailed discussion of toxicity, see response to comment 26.7. See, also, response to comment 6.1.	
7.	Farm Bureau of Ventura County (FBVC), March 29, 2017		
7.1	Approximately 98 of the new 303(d) listings being proposed by the Los Angeles Regional Water Quality Control Board (Regional Board) are in Ventura County, and many are apparently driven by data collected through VCAILG's Conditional Waiver monitoring program. We have reviewed these proposed listings, and found numerous factual and legal errors that must be corrected. In some cases, the errors or ambiguities in the proposed listings are such that we and our technical consultants found it impossible to properly analyze them.	See response to comment 7.4 -7.102 for specific responses.	
7.2	The development and implementation of TMDLs represents a significant investment of our members' resources, and compliance imposes a significant burden on agricultural operators, so it is critical that the 303(d) list be based on sound science and methodologies. We therefore ask that the issues identified in this letter be addressed, and that the proposed 303(d) list be revised and released for another 60-day comment period before adoption.	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend	

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		exclusively on the 303(d) list or the data contained therein (currently only through 2010). See response to comment 32.1 for additional discussion of additional comment periods.	
7.3	The requested modifications fall into four general categories: 1. New Category 4 and 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and incorrect interpretation of the data (e.g. mismatched units, incorrectly assigned sample locations). This comment category also addresses the issue of agricultural drains and ditches — which are not legally recognized as waterbodies — being inappropriately included in the listings. 2. Potential delistings that may be justified if all watershed data were evaluated (e.g. TMDL monitoring program and all wastewater treatment plant NPDES monitoring). 3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants. 4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives.	See response to comment 7.4 -7.102 for specific responses. Los Angeles Water Board staff will make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year, or during the next Listing Cycle that includes the Los Angeles Region.	
7.4	The remaining sections of this letter provide the detailed list of requested changes to the 303(d) list and the rationale for the requests. In summary, FBVC requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, that waterbody pollutant combinations in Table 3 and Table 4 be designated as being addressed by a TMDL if they remain on the 303(d) list after the	See response to comment 7.4 -7.102 for specific responses.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	reassessment, and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies. Furthermore, FBVC supports the 303(d) list comment letter submitted by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed.		
7.5	**I. REQUESTED MODIFICATIONS TO THE LISTING STATUS** Based on a review of the proposed Category 4 and 5 waterbody pollutant combinations, FBVC has identified a number of waterbodies that we feel should either be delisted based on available data, or which should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table. **Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83044 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region. J-flagged data was incorrectly used in the original assessment. LOE 83043 will be modified. Decision 60531 will be changed to "Do Not List" due to insufficient information. Los Angeles Water Board staff's intention will be to enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.	Nearly all the LOEs and decisions depending on a P*MUN beneficial use have been reassessed. The majority of these P*MUN LOEs were retired and their associated decisions were either modified or retired as well. In cases where the P*MUN LOE was the only LOE that supported a decision, an alternative beneficial use was assigned to the LOE, which was then re-evaluated and modified based on the water quality objective associated with the alternative beneficial use. There are about 60 remaining P*MUN LOEs that need to be reassessed, which will be either retired or re-evaluated based on a alternative beneficial use during the State Water Board's public comment period. LOE 83043 has been revised and Decision 60531 has been changed to "do not list."
7.6	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN	LOE 83048 and Decision 60506 have been retired and Boulder Creek is no longer recommended for

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	Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	beneficial use designation. LOE 83048 and Decision 60506 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.	a Nitrogen, Nitrate listing.
7.7	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83138 and Decision 60539 will be retired. Los Angeles Water Board staff's intention will be to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.	LOE 83138 and Decision 60539 have been retired and Boulder Creek is no longer recommended for a Specific Conductivity listing.
7.8	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification: • Listed based on toxicity observed during a single sampling event (6/4/07). According to the Listing Policy, a larger number of samples is required to justify this listing.	Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site. However, a review of the decision is in process at this time in order to confirm the number of toxicity tests completed.	The LOE and decision will be reassessed during the State Board public comment period.
7.9	Waterbody segment: **McGrath Lake Agricultural Drain** Pollutant: Bifenthrin	The decision for this waterbody-pollutant combination has been changed to "do not list,"	

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	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	due to insufficient information at this time to determine whether the McGrath Lake Agricultural Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.	
7.10	**McGrath Lake Agricultural Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, as noted by the commenter, should McGrath Lake Agricultural Drain be included in the region's water quality assessment, chlordane would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	
7.11	**McGrath Lake Agricultural Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.9.	
7.12	**McGrath Lake Agricultural Drain** Pollutant: DDT Justification:	See response to comment 7.9. This notwithstanding, as noted by the commenter,	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	should McGrath Lake Agricultural Drain be included in the region's water quality assessment, DDT would be categorized as 5B, which recognizes that it is being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	
7.13	**McGrath Lake Agricultural Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	See response to comment 7.9. This notwithstanding, note that toxaphene as an individual pollutant was not addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL.	
7.14	Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The decisions for Calleguas Creek Reach 2 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site at Broome Ranch Road (02D_BROOM). This site is not located in Calleguas Creek Reach 2. If the Los Angeles Water Board determines that this monitoring site should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff will work with the State Water Board to modify the GIS mapping component of CalWQA and re-evaluate the LOE(s). Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis	LOE 83361 has been modified and does not reference a MUN use.

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		of a P* MUN beneficial use designation. LOE 83361 will be modified. These changes are in process at this time.	
7.15	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83362 will be modified. These changes are in process at this time.	The Calleguas Creek Reach 2 listing decisions have been modified and do not reference a MUN use.
7.16	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. The LOE will be modified. These changes are in process at this time.	Dimethoate LOEs are now evaluated for protection of the Warm Freshwater Habitat and Cold Freshwater Habitat Beneficial Uses.
7.17	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83204 and Decision 61025 will be retired. These changes are in process at this time.	LOE 83204 and Decision 61025 have been retired and the waterbody is no longer recommended for a Nitrogen, Nitrate listing.
7.18	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification:	See response to comment 7.14. Additionally, the Los Angeles Water Board will	LOE 83257 and Decision 61028 have been retired and the waterbody is no longer recommended for a Specific Conductivity listing.

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83257 and Decision 61028 will be retired. These changes are in process at this time.	
7.19	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Salts criteria do not apply below Potrero Rd.	See response to comment 7.14. Additionally, there is no water quality objective applied to this waterbody segment, since this reach is tidally influenced. LOE 83270 and Decision 61035 will be retired. These changes are in process at this time.	LOE 83270 and Decision 61035 have been revised to no longer refer to the MUN beneficial use.
7.20	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83210 will be modified. Decision 61085 will be changed to "Do Not List". These changes are in process at this time.	LOE 83210 has been modified. Decision 61085 has been changed to "Do Not List".
7.21	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.	The decisions for Calleguas Creek Reach 4 have been revised to not use the data from the VCAILG monitoring sites at Etting Road (04D_ETTG) and S. Las Posas Road (04D_LAS). These sites are not located in Calleguas Creek Reach 4. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff will work with the State Water Board to modify	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		the GIS mapping component of CalWQA and re-evaluate the LOE(s). For a discussion of readily available data see response to comment 32.3	
7.22	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.	
7.23	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83171 will be retired. These changes are in process at this time.	LOE 83171 has been retired.
7.24	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.	
7.25	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.26	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Malathion Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.21.	
7.27	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 83434 will be modified. Decision 61211 will be changed to "Do Not List". These changes are in process at this time.	LOE 83434 has been modified. Decision 61211 has been changed to "Do Not List".
7.28	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. Additionally, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83450 and Decision 61212 will be retired. These changes are in process at this time.	LOE 83450 and Decision 61212 have been retired.
7.29	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.21. Permethrin is not addressed in the Calleguas Creek Toxicity TMDL.	
7.30	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification:	See response to comment 7.21. The Los Angeles Water Board will not assess any	LOE 83410 and Decision 61214 have been retired.

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	• Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83410 and Decision 61214 will be retired. These changes are in process at this time.	
7.31	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83411 will be retired. Decision 42845 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.	LOE 83411 has been retired. Decision 42845 has been changed to "Do Not List" due to insufficient information.
7.32	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.21. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 83416 will be retired. Decision 42771 will be changed to "Do Not List" due to insufficient information. These changes are in process at this time.	LOE 83416 has been retired. Decision 42771 has been changed to "delist" due to insufficient information. Because the previous listing cycle decision was "delist" the decision remains "delist."
7.33	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	A review of the Calleguas Creek Reach 12 decisions are in process at this time. This requested change may require a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues where they exist, and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing	The Chlorpyrifos LOE was moved to Calleguas Creek Reach 10. The decision for Calleguas Creek Reach 10/chlorpyrifos has been updated to "do not delist." Calleguas Creek Reach 12 is no longer recommended for a Chlorpyrifos listing.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		Cycle that includes the Los Angeles Region.	
7.34	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.33.	The diazinon LOE was moved to Calleguas Creek Reach 10. The decision for Calleguas Creek Reach 10/diazinon has been updated to "do not delist." Calleguas Creek Reach 12 is no longer recommended for a diazinon listing.
7.35	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Malathion Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.33.	The Malathion LOE was moved to Calleguas Creek Reach 10. The decision for Calleguas Creek Reach 10/ Malathion has been updated to "list." Calleguas Creek Reach 12 is no longer recommended for a Malathion listing.
7.36	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	LOE 83538 was based on the correct criteria/objective, which states "For waters designated WARM, water temperature shall not be altered by more than 5 deg. F above the natural temperature. At no time shall these WARM-designated waters be raised above 80 deg. F as a result of waste discharges." The decision (#61523) does not require revision. See, also, response to comment 17.4.	See response to comment 29.58.
7.37	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not	Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2 are tributaries to Mugu Lagoon; therefore, they will be assessed for the same beneficial uses and objectives as the downstream Mugu Lagoon.	The Nitrogen, Nitrate decision, 62626, has been retired.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	applicable to waterbody.	The MUN beneficial use does not apply and a review of the decision is in process at this time.	
7.38	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.	Nitrogen was listed prior to 2006 and is being addressed by the Calleguas Creek Nitrogen TMDL.
7.39	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.	The Sulfate decision has been retired.
7.40	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.	The Specific Conductivity decision has been retired.
7.41	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.37.	The Total Dissolved Solids decision has been retired.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.42	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.	J-flagged data was incorrectly used in the assessment. LOE 84178, LOE 84179 and LOE 84180, which include J-flagged data will be modified. Additionally, see response to comment 7.37. A review of the decision is in process at this time. Decision 33913, however, will remain as "Do Not Delist from 303(d) list (being addressed with USEPA approved TMDL)" as LOE 2030, which was established in 2006, supports the listing decision.	LOEs will be reassessed during the State Board public comment period.
7.43	Waterbody segment: **Ellsworth Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84304 will be modified. These changes are in process at this time. Additionally, staff is reviewing the data to ensure that J-flagged data were not incorrectly used in the original assessment.	LOEs will be reassessed during the State Board public comment period.
7.44	Waterbody segment: **Fox Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not	A review of the decision is in process at this time. The "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection	LOEs will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	applicable to waterbody.	Continuous Concentration of 0.001 ug/L will be used. LOE 84487 will be modified.	
7.45	Waterbody segment: **Honda Barranca** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE84752 will be modified.	The LOE has been revised. The DDD(p,p) criterion for the protection of human health from the fish consumption component of the water contact recreation (REC-1) use is 0.00084 ug/L and the listing decision recommended for Honda Barranca/DDD is “list.”
7.46	**Honda Barranca** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. The “Beneficial Use Assessed” will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 84758 will be modified.	The Honda Barranca listing decisions have been modified and do not reference a MUN use.
7.47	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.	The Nitrogen, Nitrate decision has been retired.
7.48	**Rio De Santa Clara/Oxnard Drain No. 3**	See response to comment 7.47.	Nitrogen was listed prior to 2006 and is being

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Pollutant: Nitrogen Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.		addressed by the Calleguas Creek Nitrogen TMDL.
7.49	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.	The Sulfate decision has been retired.
7.50	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply.	The Specific Conductivity decision has been retired.
7.51	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	A review of the decision is in process at this time. Rio De Santa Clara/Oxnard Drain No. 3 is tributary to Mugu Lagoon and the MUN beneficial use does not apply..	The Total Dissolved Solids decision has been retired.
7.52	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	The "DO NOT DELIST" decision was based on LOE 4382, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. There is insufficient information to support	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		a delisting decision.	
7.53	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the La Vista Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to remove J-flagged data.	
7.54	**La Vista Drain (Ventura County)** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.	
7.55	**La Vista Drain (Ventura County)**	See response to comment 7.53.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.		
7.56	**La Vista Drain (Ventura County)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.	
7.57	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.53. This notwithstanding, as noted by the commenter, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.	
7.58	**La Vista Drain (Ventura County)** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.59	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.53.	
7.60	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.53. This notwithstanding, should La Vista Drain (Ventura County) be included in the region's water quality assessment, the LOE 85332 would be modified.	
7.61	Waterbody segment: **Santa Clara Drain** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decision for this waterbody-pollutant combination has been changed to "do not list," due to insufficient information at this time to determine whether the Santa Clara Drain should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.	
7.62	**Santa Clara Drain** Pollutant: Chlorpyrifos	See response to comment 7.61.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.		
7.63	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.	
7.64	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61. This notwithstanding, should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the COMM beneficial use. Santa Clara Drain drains to Calleguas Creek Reach 4 and COMM is not a beneficial use for Calleguas Creek Reach 4. Beneficial Use Assessed would be changed to "Warm Freshwater Habitat" for LOE 88067.	
7.65	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61 and 7.64.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.66	**Santa Clara Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.61 and 7.64.	
7.67	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.	
7.68	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.	
7.69	**Santa Clara Drain** Pollutant: Sulfate Justification:	See response to comment 7.61.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data from agricultural drain rather than waterbody used as basis for listing decision.		
7.70	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.61. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. Should Santa Clara Drain be included in the region's water quality assessment, the LOE would be reassessed to not reference the MUN beneficial use.	
7.71	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.61.	
7.72	Waterbody segment: **Santa Clara River Reach 3** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	The decisions for Santa Clara River Reach 3 have been revised to not use the data from the Ventura County Agriculture Irrigated Lands Group (VCAILG) monitoring site S03D_BARDS or from the Ventura County Stormwater Monitoring Program site, 11th Street Drain. These sites are not located in Santa Clara River Reach 3. If the Los Angeles Water Board determines that these monitoring sites should be included in the region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act, staff will work with the State Water Board to modify	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		the GIS mapping component of CalWQA and re-evaluate the LOE(s).	
7.73	**Santa Clara River Reach 3** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.	
7.74	**Santa Clara River Reach 3** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Criterion listed is for 2,4,5-TP, not cyfluthrin.	See response to comment 7.72. This notwithstanding, should a waterbody including the monitoring sites be included in the region's water quality assessment, LOE 88712 will be modified to reflect the correct evaluation guideline - "UC Davis Aquatic Life Criteria: Aquatic life should not be affected unacceptably if the 4-day average concentration of cyfluthrin does not exceed 0.00005 ug/L and if the 1-h average concentration does not exceed 0.0003 ug/L. For this assessment, the 4-day average concentration was used. Mixtures of cyfluthrin and other pyrethroids should be considered in an additive manner. (Fojut et al. 2012) ". These changes are in process at this time.	
7.75	**Santa Clara River Reach 3** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.76	**Santa Clara River Reach 3** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.72. This notwithstanding, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. These changes are in process at this time.	
7.77	**Santa Clara River Reach 3** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.72. The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88736 will be modified. These changes are in process at this time.	
7.78	**Santa Clara River Reach 3** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.	
7.79	**Santa Clara River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.72. This notwithstanding, the data did not exceed the objectives. LOE 88761 will be modified. These changes are in process at this time.	LOEs will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.80	Waterbody segment: **Tapo Canyon** Pollutant: Chlordane Justification: • Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	Toxicity LOE 89343 will be removed from Decision 64350. The listing decision for Decision 64350, however, will not be affected and will remain the same. These changes are in process at this time.	Toxicity LOE 89343 has been removed from Decision 64350. The listing decision remains "list."
7.81	**Tapo Canyon** Pollutant: DDD Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89233, the "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. Decision 64445 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64445, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64445, however, will not be affected and will remain the same. These changes are in process at this time.	The LOE has been revised. The DDD(p,p) criterion for the protection of human health from the fish consumption component of the water contact recreation (REC-1) use is 0.00084 ug/L and the listing decision recommended for Tapo Canyon/DDD is "list." The Toxicity LOE has been removed from the decision.
7.82	**Tapo Canyon** Pollutant: DDE Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. In LOE 89247, the "Beneficial Use Assessed" will be changed to "Warm Freshwater Habitat" and the evaluation	LOEs will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	guideline for Freshwater Aquatic Life Protection Continuous Concentration of 0.001 ug/L will be used. LOE 89247 will be modified. Decision 64446 however, will not be affected and will remain the same. Additionally, the Toxicity LOE 89343 will be removed from Decision 64446, since it is already associated with Decision 64544 for Toxicity. The listing decision for Decision 64446, however, will not be affected and will remain the same. These changes are in process at this time.	
7.83	**Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 89235 and Decision 67273 will be retired. These changes are in process at this time.	LOE 89235 and Decision 67273 have been retired.
7.84	**Tapo Canyon** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 88296 and Decision 64538 will be retired. These changes are in process at this time.	LOE 89296 and Decision 64538 have been retired.
7.85	Waterbody segment: **Wheeler Canyon/Todd Barranca** Pollutant: Chlordane Justification: • J-flagged data incorrectly used in assessment.	The LOEs for this waterbody pollutant combination will be modified to remove J-flagged data. However, chlordane data is a sum of cis- and trans- chlordane, cis- and trans- nonachlor,	LOEs will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Includes LOE for toxicity to support the chlordane listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	and oxychlordane. Disregarding the j-flagged data, the remaining valid data still show chlordane having 2 of 2 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision for Decision 63509, therefore will remain the same. Toxicity LOE 90290 will be removed from Decision 63509. The listing decision for Decision 63509, however, will not be affected and will remain the same. These changes are in process at this time.	
7.86	**Wheeler Canyon/Todd Barranca** Pollutant: Specific Conductivity Justification: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	The Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. LOE 90237 and Decision 63585 will be retired. These changes are in process at this time.	The Specific Conductivity decision has been retired.
7.87	Waterbody segment: **Ventura River Reach 3** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	Data did not exceed the objectives. LOE 89901 will be modified. Decision 63958 will be changed to "Do Not List". Use rating will be changed to "Fully Supporting". These changes are in process at this time.	LOE 89901 has been modified. Decision 63958 has been changed to "Do Not List".
7.88	**1. *Agricultural Drain monitoring data incorrectly used as basis for listing***	See response to comments 7.9, 7.14, 7.21, 7.53,	

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	decisions. There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates	7.61, and 7.72.	

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	maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. McGrath Lake Agricultural Drain is also an agricultural drain comprised of a small open ditch that conveys water from surrounding agricultural lands. A monitoring site was selected on this drain for VCAILG Conditional Waiver monitoring to represent agricultural discharges and was not designed to characterize receiving waters. Moreover, discharges from this drain are already being addressed under the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL, which has identified this drain as the “Central Ditch” (the Monitoring Program for the Conditional Waiver also identifies this monitoring site as the Central Ditch). Implementation activities that reduce loadings of chlorinated pesticides and PCBs will also reduce loadings of toxaphene, bifenthrin and chlorpyrifos. For the foregoing reasons, McGrath Lake Agricultural Drain should be removed from the Draft Category 5 list. **Requested Action:** **• Remove all listings shown in Table 1 that were based on VCAILG Conditional Waiver monitoring data from agricultural drains not representative of the listed waterbody, and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.** **• Remove La Vista Drain and Santa Clara drain from the list as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) list.** **• Remove the McGrath Lake Agricultural Drain because it is not a waterbody**		

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	that falls under the jurisdiction of the 303(d) list, and because there is an effective TMDL that addresses discharges from this agricultural drain ("Central Ditch") to McGrath Lake.		
7.89	2. ***Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply***. Numerous listings were based on water quality objectives for the protection of municipal drinking water for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated, or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans) state, "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards… (with certain exceptions which must be adopted by the Regional Board)." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan, except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water	As stated in previous responses, the Los Angeles Water Board will not assess any water body or pollutant on the basis of a P* MUN beneficial use designation. See response to comments 7.5- 7.7, 7.14 - 7.19, 7.28, 7.30-7.32, 7.37-7.41, 7.43-7.51, 7.56, 7.57, 7.67, 7.68, 7.70, 7.76, 7.77, 7.81-7.84, and 7.86.	

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	quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*") in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."* In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified, "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision fact sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1:		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty." Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate, as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3", where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in Table 1		

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	should be removed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence, which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which, as described above, cannot be used to justify a listing. Furthermore, the fact sheet cites a guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process, and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** **• Revise all of the new listings in the fact sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** **• Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) list.**		
7.90	**3. *Reassess mercury listings using correct objective and correct units*.** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, La Vista Drain, Santa Clara Reach 3, and Ventura River Reach 3 are in ng/L and the objective is in µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. Our consultants believe that after this calculation has been performed, the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. Regional Board staff should explain why they used a recommended criterion instead of an established water quality objective.	As indicated in previous responses, the corrections are in process at this time. . See response to comments 7.20, 7.27, 7.60, 7.79, and 7.87.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Requested Action: **• Repeat the mercury analysis after correcting the units error.**		
7.91	**4. *Remove toxicity Lines of Evidence (LOE) from pollutant fact sheets when an LOE specifically for toxicity already exists.*** Numerous pollutants listed for Calleguas Creek Reach 3, Tapo Canyon and Wheeler Canyon/Todd Barranca include an LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the fact sheet. The toxicity LOE listed for the waterbody is sufficient as it is intended to identify the cause of observed toxicity through established and accepted methodologies.	As indicated in previous responses, Toxicity LOEs are being removed as LOEs from pollutant specific factsheets where a Decision for Toxicity already exists (and those LOEs are associated with that decision). See response to comments 7.80, 7.81, 7.82, and 7.85.	
7.92	**5. Incorrect location and data were used for listings in Reach 12.** The name of the monitoring site presented in the fact sheet for chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12, and TO1 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, TO1 should not be used for a 303(d) listing decision, and University data are not from Reach 12. A review of the datasets provided in the link on the fact sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the fact sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, FBVC requests that only data collected after applicable pesticide-use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrate a marked reduction in these pesticides in receiving water since the use restrictions were implemented	See response to comments 7.33, 7.34, and 7.35. In addition, for a discussion of the readily available data assessed in this listing cycle see response to comment 32.3. The next listing cycle which includes the Los Angeles Region will assess more recent data and, should the information on pesticide use restrictions and the data support not considering data collected before a use restriction, a decision to assess only data collected after the use restriction may be appropriate.	

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	(approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide-use restrictions, monitoring data collected prior to 2009 are not representative of current waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates continued impairment. **Requested Action:** **• Remove listings for Reach 12 that are not based on receiving water data from that reach.** **• Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide-use restrictions.**		
7.93	**6. *Ensure no J-flagged data were used in the assessment.*** The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states: "*When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit*." All listings based on the use of J-flagged data should therefore be removed from the draft 303(d) list. Specific instances are included in Table 1 and further explained in Table 2 below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings.	For J-flagged data, see response to comments 7.5, and 7.42, 7.43, 7.53, and 7.85. For Boulder Creek, chlordane, see response to comment 7.5. For Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, toxaphene, see response to comment 7.42. For La Vista Drain, chlordane, see response to comment 7.53. In regards to chlordane in the Rio de Santa Clara, chlordane data are a sum of cis- and trans- chlordane, cis- and trans- nonachlor, and oxychlordane. Disregarding the j-flagged data, the	In regards to chlordane in the Rio de Santa Clara, LOEs will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Table 2. Incorrect use of J-flagged data • Waterbody segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Comment: The LOE for Chlordane erroneously states that three out of five samples exceed the objectives. A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. • Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2** Pollutant: Toxaphene Comment: The Lines of Evidence (LOE) for Toxaphene lists the number of exceedances incorrectly at two. However, only one of six samples exceeded the indicated criterion. The other sample was reported by the laboratory as "estimated" (J-flagged). Because only one of six samples showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. • Waterbody segment: **Rio de Santa Clara/Oxnard Drain No. 3** Pollutant: Chlordane Comment: The LOE for Chlordane erroneously states that four out of five samples exceed the objectives. A review of the data shows that only 3 out of 5 samples exceed indicated criteria. The remaining 2 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. • Waterbody segment: **La Vista Drain** Pollutant: Chlordane	reaming valid data still shows Chlordane having 4 of 5 exceedances for the beneficial use of Commercial or Recreational Collection of Fish, Shellfish or Organisms. This meets the requirements for listing. The listing decision (Decision 33192), therefore, will remain the same. These changes are in process at this time.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Comment: The LOE for chlordane shows that one of the samples used to justify the listing is based solely on estimated (J-flagged) data because results were below the reporting limit. Because Chlordane has only one detected value for two sampling events, more monitoring data are needed to justify the listing and the proposed listing should be removed. Additionally, refer to comment 1 regarding the inappropriateness of this drain being a listed waterbody. **Requested Action:** **• Review all fact sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** **• Delist toxaphene for Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No. 2, chlordane for La Vista Drain (though we also disagree with the listing of this as a waterbody to begin with), and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.**		
7.94	**7. *Remove listings where a waterbody assessment does not meet listing thresholds based on data provided*.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) list. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) list. **Requested Action:** **• Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3, based on failure to meet listing threshold requirements in the Listing Policy.**	See response to comment 7.52.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
7.95	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** As manager of the VCAILG program, FBVC is a stakeholder in the Calleguas Creek Watershed TMDL monitoring program and represents the agricultural responsible parties listed in the TMDLs. As such, FBVC supports the comments made by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed regarding the use of all appropriate monitoring data for the 303(d) listing process. The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. Please refer to the letter submitted by the Calleguas Creek Watershed Stakeholders for details regarding the waterbody/pollutant combinations eligible for delisting. While this comment is specific to knowledge regarding monitoring programs in the Calleguas Creek Watershed, it should be applied to the other watersheds in Ventura County. **Requested Action:** **• Reassess all Ventura County waterbodies using all available data.**	See response to comment 32.3.	
7.96	III. **REQUESTED CATEGORY ASSIGNMENT CHANGES** ***8. Correct pollutants listed as Category 5A that should be 5B based on coverage by an existing TMDL.*** There are number of proposed new listings for pollutants that are already covered	For the McGrath Lake Agricultural Drain toxaphene, see response to comment 7.13. For the La Vista Drain and Santa Clara Drain, see responses to comments 7.53- 7.71.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	by an existing TMDL and are incorrectly categorized as 5A. Although we contend that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B as applicable. Because discharges from the McGrath Lake Agricultural Drain (i.e., "Central Ditch") are already being addressed by the McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL (effective June 30, 2011), toxaphene should be changed from Category 5A to Category 5B. A Calleguas Creek nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DDE, DDD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), and although we oppose the inclusion of these listings on the grounds that they are not waterbodies, the actual receiving waters are already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, the Nitrogen TMDL, and the Metals TMDL, and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for chlorpyrifos – Honda Barranca and Duck Pond Agricultural Drains – but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL. The nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed under the Santa Clara River TMDL, in effect since 2004. • We request that any listings in Table 3 and Table 4 that are maintained after addressing the issues in Comment I also be corrected to be designated in Category 5B.	The list and the factsheets have been updated to reflect the nitrogen, nitrate listings on Boulder Creek and Tapo Canyon are being addressed by the Santa Clara River Nitrogen TMDL. The Calleguas Creek Toxicity TMDL specifically addresses the organophosphate pesticides, chlorpyrifos and diazinon, and does not apply to pyrethroids. The Toxicity TMDL would need to be revised to identify pyrethroid targets, and include the other required elements of a TMDL for pyrethroids specifically. For Calleguas Creek Reach 2 listings see response to comments 7.18 and 7.19 The list and the factsheets have been updated to reflect the Calleguas Creek Reach 3 mercury listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the Calleguas Creek Reach 4 mercury has been updated to being addressed by a TMDL. Also see responses to comments 7.30, 7.31, and 7.32. The list and the factsheets have been updated to reflect the Calleguas Creek Reach 9A nitrate listing is being addressed by a TMDL The list and the factsheets have been updated to	

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	Table 3. 303(d) Category 5A listings which should be changed to 5B listings (see comment letter) In addition, we believe the Calleguas Creek Watershed Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion), if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity, and the Conditional Waiver includes a bifenthrin water quality benchmark triggering management practice implementation in response to exceedances, in addition to the organophosphate pesticides included in the TMDL. Additionally, the structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. As a result, if the waterbodies are placed on the 303(d) list as new listings, we request that the waterbodies in Table 4 be moved from 5A to 5B. Table 4. Pyrethroid and Organophosphate listings covered by the existing Toxicity TMDL (see comment letter) **Requested Action:** **• Change all pollutant-waterbody segment combinations in Table 3 and Table 4 from 5A to 5B or 4A based on coverage by an existing USEPA approved TMDL.**	reflect the Calleguas Creek Reach 12 Chlorpyrifos and diazinon listing are being addressed by a TMDL. The list and the factsheets have been updated to reflect the Honda Barranca DDT listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the Fox Barranca DDE listing is being addressed by a TMDL. The list and the factsheets have been updated to reflect the La Vista Drain and Santa Clara Drain listings which are being addressed.	
7.97	***9. Remove waterbody-pollutant combinations for agricultural drains listed as Category 2.*** Two new agricultural drains were included inappropriately on the Category 2 list (i.e., assessed for listing) and should be removed: Drain Along Gerry Road to Calleguas Creek Reach 9, and Oxnard Drain.	The decisions for the waterbody-pollutant combinations associated with “Drain along Gerry Road” and “Oxnard Drain” have been changed to ”do not list” due to insufficient information at this time to determine whether the Drain along Gerry Road and Oxnard Drain should be included in the	

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	The Gerry Road agricultural drain is a small drainage ditch with intermittent flows that exists solely to collect non-potable water from the adjacent agricultural lands before it drains into Calleguas Creek Reach 9; it is not a tributary to Calleguas Creek Reach 9. A VCAILG monitoring site was selected on this drain to be representative of agricultural discharges to Calleguas Creek Reach 9 and is not representative of receiving water conditions. Accordingly, neither the MUN beneficial use nor the MAR beneficial uses apply to this agricultural drain. The new listing for Oxnard Drain also should be removed from the Draft Category 2 list. The monitoring site indicated for this drain is located in the Ormond Beach Wetlands area where flows from the Hueneme Drain, the J St. Drain (now "Chumash Creek"), and the Oxnard Industrial Drain (formerly known as the Oxnard Drain but now known as the "Ormond Lagoon Waterway") commingle. In order to list the "Ormond Lagoon Waterway" (formerly the Oxnard Industrial Drain), a monitoring station would have to be established on that channel upstream of the wetlands area to ascertain water quality in that waterbody.	region's water quality assessment pursuant to sections 305(b) and 303(d) of the Clean Water Act. Once such a determination is made by the Los Angeles Water Board, necessary changes, if any, will be transmitted to the State Water Board, so that the GIS mapping component of CalWQA can be updated. Additionally, the Los Angeles Water Board will re-evaluate the LOE(s), as appropriate.	
7.98	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** FBVC's staff and consultants have identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified. The list is not comprehensive, because in many cases the information provided made it difficult or impossible to conduct a proper analysis. **10.** ***Correct Appendix G fact sheets.*** The Appendix G fact sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include:	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing Cycle that includes the Los Angeles Region.	

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	• Incorrect Evaluation Guideline and Guideline Reference. For example, the Evaluation Guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200 and 88712 actually is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited Guideline Reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final fact sheets and 303(d) list. • Incorrect beneficial uses assigned to objectives. For example, MUN beneficial uses listed when aquatic life objectives are presented in the fact sheet. • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally influenced waterbody (e.g., Duck Ponds Agricultural Drain), and MAR and EST beneficial uses assigned to a waterbody that is too far upstream to be tidally influenced (e.g., Wheeler Canyon/Todd Barranca). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 and on Wheeler Canyon/Todd Barranca is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in fact sheets, including 3 samples with results of "ND". Stating in fact sheets that a pollutant exceeds criteria in 100% of samples, instead of the true figure of 40%, conveys an inflated impression of the degree of impairment by that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies.		

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	Requested Action: **• Correct the Appendix G fact sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples / number of exceedances.**		
7.99	**11. *Correct the Appendices and Fact Sheet Categories*.** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent, which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow FBVC to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are no associated fact sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The fact sheets for the following name changes should provide justification or explanation for the name change, as many appear to be switching tissue or sediment listings to water listings. If this is in fact the change being made, justification for the water listing needs to be provided in the fact sheet. It is not appropriate to characterize changing the medium that is the basis for the listing as a name change. Table 5. Listed as Name Changes in Appendix A (see comment letter) There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies.	Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data. The 303(d) list is being revised to no longer include separate listings for different environmental media, that is, water, sediment and tissue may be considered in one assessment for waterbodies that have data for all three environmental media.	

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	Table 6. Incorrectly listed waterbody segment-pollutant combinations (see comment letter) There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) list were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. We request clarification as to whether these waterbody-pollutant combinations are, in fact, being delisted, as some align with the assessment provided by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed. Table 7. Not described as delisted in Appendix A but not found Appendix B or C (see comment letter) **Requested Action:** **• Correct the numerous inconsistencies described above in Table 5, Table 6, and Table 7 and ensure that all of the proposed 303(d) list appendices are internally consistent.**		
7.100	12. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Calwater numbers to reflect those listed in the Basin Plan*.** There are multiple instances of what appear to be incorrect Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) list to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues including HUCs for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.	

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	assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **• Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**		
7.101	**13.** ***Correct or clarify inconsistencies in the staff report*.** There is inconsistent discussion about some proposed listings in the staff report, which should be clarified to avoid confusion. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants: "*For example, the proposed new listings for DDE and DDD in Calleguas Creek Reach 3 … are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL … and would then be in Category 4A.*" However, we could find no listings of DDE and DDD for Reach 3 in any Appendix of the report including Appendix C – Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that DDE and DDD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement, and clarify any other inconsistencies between the staff report and the list. **Requested Action:** **• Correct or remove language cited on page 10 of the staff report regarding DDE and DDD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**	The Staff Report has been corrected.	
7.102	**14.** ***Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy*.** In many cases, the same pollutant is assessed using different thresholds without	As the State Water Board staff and Los Angeles Water Board staff review waterbody pollutant data for this and future listing cycles, they will continue to review the appropriateness of the	

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	any explanation for the basis of the threshold. Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment. This is inconsistent with the Listing Policy, which states that it must be demonstrated that an evaluation guideline is "applicable to the beneficial use, protective of the beneficial use, scientifically based and peer reviewed, and well described." Because it has not been demonstrated that the individual species' response to these pollutants is applicable and protective of the beneficial use, these guidelines should not be used to make a listing. The Regional Board should review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin), as well as applicability to the beneficial use as described in the listing policy. Table 8. 303(d) Pollutants Using Thresholds for Interpreting Narrative Objectives (See comment letter) The 303(d) list includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in Ventura County watersheds. Currently no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 and Santa Clara River Reach 3 is inappropriate. LC50s do not meet the standard set forth in the listing policy as stated on page 20: *" the evaluation guideline… identifies a range above*	guidelines and thresholds.	

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	which impacts occur and below which no or few impacts are predicted." By definition an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002μg/L based on the UC Davis criteria. However, upon reviewing the UC Davis source, we found the listed chronic standard for permethrin is 2 ng/L (page 92), which is 0.002μg/L not 0.0002μg/L as listed in the 303(d) list. **Requested Action:** **• Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.** **• Remove all guidelines that do not comply with the stated listing policy as described above.**		
8.	Castaic Lake Water Agency, March 30, 2017		
8.1	One of the subject proposed revisions would add polychlorinated biphenyls (PCBs) to the 303(d) listing for Castaic Lake and Lagoon. The data referenced in the proposed PCB listing is from a relatively small number of fish tissue samples analyzed in 2007. The Agency samples and analyzes water from the lake prior to treatment. Our data does not indicate that PCBs are present in the lake water. Because of this, and the limited data described above, we believe additional study should be conducted to look at longer term trends in PCB concentrations in fish tissue, and PCB source determination.	As indicated by the commenter, Castaic Lake is proposed for inclusion on 303(d) list for PCBs. This listing decision is based on 3 LOEs and supported by LOE 94733. In LOE 94733, a total of 4 fish tissue composites were generated from largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) from 2 sampling locations (20 fish, total). All four composite samples were found in exceedance of the criterion for PCB. The commenter is encouraged to submit the additional PCB water column data into CEDEN so that it can be assessed during future listing cycles.	

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		The longer-term trends in PCB concentrations in fish tissue, and PCB source determination are important determinations, which would take place if a TMDL or other regulatory program is developed to address PCBs in the Lake.	
9.	City of Azusa, March 30, 2017		
9.1	**Summary** Of the 22 metals reported for all San Gabriel River water quality segments, 19 (84.3%) of them fall under the "de-list" and "do not list" categories. The City believes that 3 additional metals (15.7%) should be de-listed, which would raise the total to 22 (100%), for reasons more particularly described below. Based on the de-listing of these metals, the City contends that the Regional Board should remove the San Gabriel Metals TMDL from the Los Angeles Basin Plan. **I. San Gabriel River: Estuary** As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. Whether or not this was an oversight on the part of the Regional Board, there is ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter	Specific comments on the 303(d) list are addressed below; comments on the San Gabriel Metals and Selenium TMDL are outside the scope of this action. Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. The listing for copper in the San Gabriel River Estuary is carried over to the 2016 303(d) list. See Appendix A as well as Appendix G. The decision to "do not delist" copper is supported by data in CalWQA. Copper was first listed for the San Gabriel River Estuary in 2006 and has remained on the list in 2010, 2012 and 2016. For the 2016 303(d) list, the copper listing was "carried over" and new LOEs were added with new data for this listing cycle. The LOEs in the factsheet for the San Gabriel River Estuary copper listing do not support delisting copper.	

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	(using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/I for hardness is only intended to be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998. 3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the comment letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3.7 ug/1 (see Table I(a) below).	The decisions to "do not list" lead, selenium and zinc are supported by the data in CalWQA. The commenter may be assuming that a default hardness value was used, but the factsheet states, "***If no hardness data were available***, a value of 100 mg/L was used" (emphasis added). In this case, site-specific hardness data were available and were used as indicated in the data set "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010." See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Comments on TMDL and the Los Angeles County MS4 Permit and the provisions therein are outside the scope of this action.	

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	Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
9.2	**II. San Gabriel River: Reach 1 (Estuary to Firestone)** Metals for San Gabriel River, Reach 1 from the Estuary to Firestone were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table I(a), despite the fact that copper was not listed on the 2010 303(d) list in the first place. Table II. San Gabriel River: Reach 1 (Estuary to Firestone) **[See the comment letter for Table II]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	The decisions to "do not list" copper, lead, selenium and zinc are supported by the data in CalWQA. Comments on MS4 permit requirements and the San Gabriel River Metals and Selenium TMDL are outside the scope of this action.	
9.3	**III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)** As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons: 1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced).	The decisions to "do not delist" lead is supported by the data in CalWQA. Lead is not a "legacy" pollutant; there are current uses and sources of lead in the watershed.	

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	2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above. 3. The Regional Board did not follow the State's 303(d) Listing Policy. More specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in zero exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement. 4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected. Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the comment letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	Comments on the TMDLs and the MS4 permits are outside the scope of this action. There are three LOEs for lead in the San Gabriel River Estuary Reach 2 including data collected under the MS4 permit and a County of Sanitation District of Los Angeles County permit.	
9.4	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d)	The decisions to “do not list” copper, lead, and zinc are supported by the data in CalWQA. Comments on TMDLs and MS4 permits are	

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	"do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit Attachment P: TMDLs in San Gabriel River Watershed Management Area. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table l(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals, the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81.34 ug/1; and (2) Coyote Creek lists copper target of 24. 71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the comment letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the comment letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	outside the scope of this action.	
9.5	**V. San Gabriel River: Coyote Creek** The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons:	 The decision to "do not delist" for copper is supported by data in CalWQA.	

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	1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2. 2. Wet weather water quality data was used to justify placing copper on the 303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees. Table V. Coyote Creek **[See the comment letter for Table V]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	Comments on the TMDLs and the MS4 permits are outside the scope of this action. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, CTR criteria apply to water quality in both dry and wet weather.	
9.6	**VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)** Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below). Table VI: San Jose Creek Reach 1 **[See the comment letter for Table VI]** **Recommendation to Regional Board**: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not	Comments on the TMDLs and the MS4 permits are outside the scope of this action.	

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	list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
9.7	**VII. South San Jose Creek (Los Angeles County)** This is Reach is a new listing under the 2016 303(d) List. VII. South San Jose Creek (Los Angeles County) **[See the posted letter for Table VII]** **Recommendation to Regional Board**: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	Comments on the TMDLs and the MS4 permits are outside the scope of this action.	
10.	City of Gardena, March 30, 2017		
10.1	The City of Gardena (City) appreciates the opportunity to comment on the revised 2016 303(d) Integrated Report for the Dominguez Channel. The City also welcomes the proposed "de-list" and "do not list" of pollutants, particularly metals and toxics. These pollutants are the basis for the Dominguez Channel Harbor Toxics TMDL (DCHT-TMDL), which is derived from the 2010 303(d) list. The elimination of these pollutants should effectively eliminate the need for the DCHT-TMDL, which the Dominguez Channel Watershed Management Program was created to comply with. **I. 2010 303(d)/2016 303(d) List Dominguez Channel, Reaches 1 and 2** This list, on which the DCHT-TMDL was developed, contains the following toxics for Reach 1 and 2 as shown in the tables presented below. The tables also show the status of toxic pollutants, including metals, which the 2016 303(d) list revises in terms of the following categories: (1) list; (2) de-list; and (3) don't de-	Adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. In regards to PAHs, while PAHs is delisted, the data in CalWQA support the listing of the individual PAHs of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene. The fact sheet for the PAH delisting states: *Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing the PAH sediment-pollutant combination and replacing this general PAH*	

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	list. II. Reach 1 Dominguez Channel (unlined portion below Vermont) **[See the posted letter for Table]** In sum, the 2016 303(d) list for toxics and metals proposes to de-list PAHs and zinc (in sediment) and not list Methylnaphthalene 2. However, because PAHs are to be de-listed, Chryslene, Phenanthrene, and Pyrene must also be de-listed because they are specific types of PAHs. Thus, the total number of toxics to be eliminated from the 2016 303(d) list is 8. Copper should be delisted as well because: (1) it was not listed on the 2010 303(d) Integrated Report for toxics and metals for Reach 1 of the Dominguez Channel; (2) the 2012 303(d) list recommended that copper not be listed;" and (4) SWAMP data (2003) for all reaches of the Dominguez Channel resulted in only a few slight exceedances for dissolved copper (but not for total recoverable copper, which is the California Toxics Rule (CTR) compliance standard). Should the Regional Board insist on retaining copper on the 2016 303(d) list, it should provide sampling data based on the CTR for establishing ambient water quality standards. Excluding the aforementioned metals and toxics from the 2016 303(d) list eliminates 9 of them - 56% of the total. On this basis alone, the DCHT-TMDL should be voided.	*listing with the individually listings of Pyrene, Phenanthrene, Chrysene, and Benzo (a) pyrene on the section 303(d) list in the Water Quality Limited Segments category*. The decision to “do not list” Naphthalene is based on one LOE in the CalWQA database that shows no exceedances of 15 samples. The decision to “de-list” zinc is based on three LOEs in the CalWQA database that show no exceedances. In regards to copper, the decision to “list’ copper is supported by the data in CalWQA. This is a new “list” decision based on data added to the CalWQA database this listing cycle from both water and sediment. Both dissolved and total water column data (and sediment data) are used for metals assessments. See response to 3.3 regarding assessments based on readily available data.	
10.2	As discussed below the metals and toxics on the proposed 2016 303(d) list that have not been de-listed for Reach 1 of the Dominguez Channel should be de-listed.	Chlordane was listed for the Dominguez Channel Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database.	

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	1. ***Chlordane*** This toxic should be de-listed for the following reasons: (1) no justification to list chlordane was provided in Decision ID 20199 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) the 2016 303(d) list proposes that chlordane be de-listed for Reach 2 of the Dominguez Channel (); and (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for chlordane.	There is insufficient data in the CalWQA database to justify a decision to “delist.” Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.	
10.3	**2.** ***DDT (tissue/sediment)*** This toxic should be de-listed for the following reasons: (1) no justification was provided in Decision ID 19790 of the proposed 2016 303(d) list to list DDT in keeping with 303(d) Listing Policy; (2) DDT is de-listed for Reach 2 of the Dominguez Channel; (3) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in non-detects for DDT; and (4) DDT is a legacy pollutant that has been banned for several decades.	Decision ID 19790 is the reference to the 2012 303(d) list which did not consider new data for the Los Angeles Region (the 2012 303(d) list considered data from Regions 1, 6 and 7); the decision simply “carried over” a previous decision. Decision ID 34076 is the relevant 2016 decision. Decision ID 34076 includes six LOEs and supports a decision to “do not delist.” The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is not a consideration in the data analysis. Reaches may be influenced by different sources. In regards to “legacy” pollutants, see response to comment 17.7.	
10.4	**3.** ***Dieldrin (tissue)***	Dieldrin was listed for the Dominguez Channel	

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	Dieldrin (tissue) should be de-listed for the following reasons: (1) no 303(d) listing policy justification for was provided in Decision ID 34645 of the proposed 2016 303(d) list to list dieldrin; (2) the proposed 2016 303(d) list recommends that dieldrin be de-listed for Reach 2 of the Dominguez Channel (despite the fact that the two reaches are connected); (3) dieldrin is a legacy pollutant; and (4) SWAMP data (2003) based on multiple grab samples for both Dominguez Channel reaches resulted in non-detects for dieldrin.	Estuary in 1998 or prior; data assessed prior to 2006 is not in the CalWQA database. There is insufficient data in the CalWQA database to justify a decision to "delist." The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.	
10.5	**4. *Lead (including tissue)*** Lead (tissue) should be de-listed for the following reasons: (1) no justification to list lead was provided in Decision ID 34645 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy; (2) SWAMP data (2003), based on multiple grab samples for both reaches, resulted in no exceedances for dissolved lead in Reach 1 of the Dominguez Channel; (3) according to the DCHT-TMDL, the samples taken for lead do not comply with the federal California Toxic Rule (CTR), in that they were not based exclusively on ambient samples and incorrectly used a hardness default value of 49 mg/13); and (4) lead as legacy	It is clear from the context of the comment that commenter is actually referring to Decision ID 34613 for lead and not Decision ID 34645 which is for dieldrin. Decision ID 34613 includes six LOEs and supports a decision to "do not delist." Comments on the Dominguez Channel and Greater Harbor Waters Toxic Pollutants TMDL	

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	pollutant has been significantly reduced in the environment as a result of de-leaded fuels).	are outside the scope of this action. Lead is not a "legacy" pollutant; there are current uses and sources of lead in the watershed.	
10.6	**5.** ***Polychlorinated Bi-phenyls (PCBs)*** PCBs should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 33063 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy); (2) PCBs are de-listed for Reach 2 of the Dominguez Channel; (3) PCBs are legacy pollutants that have been banned for decades; and (4) SWAMP data (2003) based on multiple grab samples for both reaches resulted in non-detects for PCBs.	Decision ID 33063 includes five LOEs, which were all analyzed with respect to the binomial distribution per the Listing Policy. The decision for Reach 1 of the Dominguez Channel is based, appropriately, on data from that reach. Whether or not another reach is listed is not a consideration in the data analysis. The reaches may be influenced by different sources. In regards to "legacy" pollutants, see response to comment 17.7. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.	
10.7	**6.** ***Toxicity*** Toxicity should be de-listed for the following reasons: (1) no justification to list was provided in Decision ID 43000 of the proposed 2016 303(d) Integrated Report in keeping with 303(d) Listing Policy (does not conform to the binomial distribution requirement contained in Section 3.1 of the policy)4 ; (2) SWAMP data (2003) based on multiple grab samples for both reaches resulted in nondetects	Decision ID 43000 includes two LOEs both of which assessed data using the binomial distribution per the Listing Policy. Decision ID 43000 refers to Dominguez Channel (lined portion above Vermont). Los Angeles Water Board staff encourages the	

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	for most toxics (both Dominguez Channel reaches); and a few detects but no exceedances; and a very few exceedances for metals; and (3) the 2016 303(d) list proposes to de-list toxics affecting Dominguez Channel R1 and R2 that contribute to toxicity5 (there can be no toxicity if many of the toxics are to be de-listed).	commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region. There can be toxicity even when the cause of the toxicity is undetermined. Section 3.6 of the Listing Policy states, *"Waters may also be placed on the section 303(d) list for toxicity alone."*	
10.8	**7. *Sediment Toxicity*** Sediment toxicity cannot be commented on because it is not addressed in the 2016 303(d) listing report, although it is listed in both the 2010 and 2012 303(d) reports. It is not certain if the Regional Board intended to de-list sediment toxicity or to carry it over. Against this background it is recommended the all of following toxics and metals be eliminated from the proposed 2016 303(d) Integrated Report for Reach 1 of the Dominguez Channel: 1. Benzo(a)pyrene (PAH) 2. Benzo(a)anthracene (PAH) 3. Chlordane (tissue) 4. Chryslene (PAH) 5. Copper 6. DDT(tissue and sediment) 7. Dieldrin (tissue) 8. Lead (tissue) 9. Methylnaphthlene 2 10. Polychlorinated Bi-phenyls (PCBs) 11. Polyaromatic-Hydrocarbons (PAHs)	Sediment toxicity data for Dominguez Channel Estuary (unlined portion below Vermont) is included as part of the toxicity listing. The decision to "do not delist" toxicity include two LOEs. For PAHs, see response to comment 10.1. For chlordane, see response to comment 10.2. For copper, see response to comment 10.1. For DDT, see response to comment 10.3. For Dieldrin, see response to comment 10.4. For lead, see response to comment 10.5. For Methylnaphthlene 2, see response to comment 10.1. For PCBs, see response to comment 10.6. For toxicity, also see response to comment 10.6 and 10.7. For zinc, see response to comment 10.1.	

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	12. Phenanthrene (PAH) 13. Pyrene (PAH) 14. Sediment Toxicity 15. Toxicity 16.Zinc (sediment) Eliminating all of these toxics/metals should be sufficient justification for eliminating or significantly revising the DCHT-TMDL.		
10.9	**III. Reach 2 Dominguez Channel (lined portion above Vermont)** **[See the posted letter for Table]** The 2016 303(d) list proposes to carry-over from the 2010 303(d) all of the toxics except diazinon, which is de-listed. Copper, lead, zinc, and toxicity should be de-listed for the same reasons for de-listing Dominguez Channel R1 metals and toxics. The 2016 (303d) list also adds "Benthic-Macroinvertebrate Bioassessment" (8MB), which should not be listed for the following reasons: • BMB is not a pollutant. • BMB is used to evaluate the health of wadeable streams using a scoring system. Reach 1 of the Dominguez Channel is not wadeable. The Los Angeles County Flood Control District forbids entry into this and other flood control channels. • The Index of Biotic Integrity (IBI) score of 40, on which the BMB is justified, is considered to be on the edge of "poor" to "fair." But it was based only on 3 samples, taken in 2006, 2007, and 2008. Not only is the sample size not statistically significant, and therefore not in keeping with the 303(d) Listing	See response to comment 10.1 to 10.7 regarding to metals and toxics listings. The Benthic Community Effects listings are associated with other pollutant listings so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a. See response to comment 11.19. Benthic Community Listings for channels that are lined entirely with concrete, which includes Dominguez Channel (above Vermont), have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24. For sample size, see response to comment 11.24.	

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	Policy, but the data is not current. • BMB decision ID, 83960, also uses as lines of evidence toxicity, which is associated with copper, lead, zinc, and diazinon. However, copper, lead, zinc, and toxicity should not be listed on the proposed 2016 303(d) list for the same reasons they should not be listed for Reach 2 of the Dominguez Channel. Further, the 2016 303(d) list proposes to de-list diazinon, a toxic. • According to the Southern California Coastal Water Research Project (SCCWRP), Technical Report 88, which is a bioassessment study concluded in 2015, metals, toxicity, and pyrethroids were only weakly or rarely associated with poor stream health in the Southern region. • Biota, including fish, located in Reach 1 or Reach 2 of the Dominguez Channel has not been specifically identified as being impaired by metals or toxics. The Regional Board has not been able to demonstrate that fish and other wildlife have been impaired. Admittedly, this would be difficult given that Dominguez Channel is a non-perennial stream; it only flows when it rains. There are no studies that have identified the number and species of fish in the Dominguez Channel during storm events. If there were any fish in the channel traveling from up-stream they would probably perish when moving from a freshwater to a saltwater environment.	For copper, lead and zinc see response to comment 10.3, 10.5 and 10.1. Commenter may mean Technical Report 844 *“Bioassessment of Perennial Streams in Southern California: A Report on the First Five Years of the Stormwater Monitoring Coalition’s Regional Stream Survey.”* Dominguez Channel was not assessed in this Report. Fish are not part of a Benthic Macroinvertebrate bioassessment.	
10.10	**III. Conclusions** In the final analysis, each of the metals and toxic pollutants on the proposed 2016 303(d) list for Reaches 1 and 2 of the Dominguez Channel should be de-listed. The bases for the delistings are, in the aggregate, defective because: 1. The data supporting the listings are out-dated (in some cases by almost 15 years). It is unclear why more current water quality data is not available,	For a discussion of readily available data, see response to comment 32.3. The Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL was based on a thorough review of data that confirmed impairments for the pollutants addressed by the TMDL; it did not solely rely on	See also response to comment 3.2.

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	especially given that each MS4 in the State is required to pay an annual SWAMP surcharge along with its regular annual MS4 Permit fee to the State. Unlike most non-SWAMP monitoring (sampling and analysis), the Regional Board's SWAMP unit conducts monitoring in accordance with USEPA guidance and State policy. The data SWAMP generates is accurate, objective, and extremely useful. Had SWAMP been allowed to conduct monitoring on a regular basis, the DCHT-TMDL may not have been necessary. 2. Over the past two decades, water quality undoubtedly has improved. Many toxic pollutants are no longer in the environment (e.g., DDT, various pesticides, cleaning solvents, lead in gasoline, etc.). Substantial credit should also be given to municipalities. Since the Los Angeles County MS4 program began in the nineties, cities have dutifully implemented best management practices (BMPs) that have been effective in source-controlling pollutants and reducing them from outfalls through post-construction runoff pollution mitigation controls. Community sensitivity to mitigating runoff pollution is another factor attributable to MS4 public education and outreach programs. 3. The pollutant listings claim to be based on water quality standards developed in conformance with CTR, but they are not. CTR standards for metals and toxics are intended to be ambient standards, derived from dry weather sampling and analysis from receiving water. Instead, they were derived from wet weather conditions. Further, CTR requires an actual hardness value to calculate water quality standards. Many of the 303(d) pollutants were CTR calculated using average hardness values or in some cases the hardness factor of 100 mg/L. According to CTR, this factor was intended only to be used for illustrative purposes when calculating ambient standards for metals and toxics. 4. The pollutant listings, with the exception of those based on the Regional Board's Surface Water Ambient Monitoring Program (SWAMP), do not comply with the State's 303(d) Listing Policy's requirement of meeting the statistical	past 303(d) listings. As noted earlier, adjustments to the 303(d) list do not alter TMDLs. The revision of a TMDL, when warranted, is a separate Board action. Additionally, while the Los Angeles Water Board acknowledges the efforts of MS4 permittees, comments on MS4 permits are outside the scope of this action. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately; additionally, CTR criteria apply to water quality in both dry and wet weather. For these data assessments, when hardness data was available, the hardness was used in the calculation of the criterion, per CTR. When hardness was not available, the default value of 100 mg/L was used, per CTR. In regards to the binomial distribution see response to comments 10.6 and 10.7.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	frequency test using a binomial distribution in accordance with a null hypothesis. It should be noted that the DCHT-TMDL was based on faulty 303(d) metals and toxic pollutant listings. What is regrettable is that the costly Dominguez Channel EWMP is based on the DCHT-TMDL.		
11.	City of Los Angeles, Bureau of Sanitation (LASAN), March 30, 2017		
11.1	It is crucial that the 303(d) List be revised based on sound science and methodologies following the requirements of the State's Listing Policy. Revisions to the 303(d) List may result in changes to our Enhanced Watershed Management Programs, Coordinated Integrated Monitoring Programs, as well as affecting requirements for the four Water Reclamation Plants operated by LASAN. As such, we feel it is imperative that the listings reflect our understanding of the watersheds to the best of our abilities given the available data.	Comment noted.	
11.2	Attachment 1: Detailed Technical Comments on the 2016 Revisions to the Los Angeles Region 303(d) List **Water Body / Pollutant**: Wilmington Drain / Zinc **Technical Comment:** The Fact Sheet for Decision ID 63330 states that one line of evidence is available to assess zinc in Wilmington Drain (90159). LOE 90159 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 3 of 5 samples exceeded the evaluation guideline (i.e., the CTR). However, data collected by Heal the Bay's, "Compton Creek Monitoring Program", were collected from Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between <u>Williamington</u> and <u>Wilmington</u>). As such, LOE 90159 consists of data that should not be included when assessing whether or not a zinc impairment exists in	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.	The data from Compton Creek has been removed from the Wilmington Drain assessments. LOE 90159 and Decision 63330 have been retired. Compton Creek remains listed for zinc.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Wilmington Drain. Excluding LOE 90159 results in no data available to assess the waterbody pollutant combination. ***Requested Action: Remove Decision ID 63330 for the zinc listing for Wilmington Drain as there are no data to assess the waterbody pollutant combination.***		
11.3	Wilmington Drain / Copper Although the Fact Sheet for Decision ID 44676 states that only two lines of evidence are available in the administrative record to assess the pollutant, Appendix G shows three distinct lines of evidence (4280, 90131, and 90473). LOE 4280 is a placeholder LOE to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 90131 includes data collected by the City of Los Angeles where 2 of 33 samples exceeded the evaluation guideline (i.e., the CTR). LOE 90473 includes data collected by Heal the Bay's, "Compton Creek Monitoring Program" where 2 of 5 samples exceeded the evaluation guideline (i.e., the CTR). The Fact Sheet for Decision ID 44676 combines these three LOEs to state that 4 of 38 samples exceed the CRITERIA and this exceeds the allowable frequency listed in Table 4.1 of the Listing Policy. However, as previously noted, the third LOE includes data collected by Heal the Bay's, "Compton Creek Monitoring Program", which was focused on Compton Creek in the Los Angeles River watershed, not in Wilmington Drain. It appears as if the source of confusion is that the samples were collected from a site located at Cressy Street Drain—Williamington Drain (note the difference between Williamington and Wilmington). As such, LOE 90473 consists of data that should not be included when assessing whether or not a copper impairment exists in Wilmington Drain. Excluding LOE 90473 results in the sample exceedance frequency being 2 of 33 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy. ***Requested Action: Revise Decision ID 44676 for the copper listing for***	Los Angeles Water Board staff intends to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.	The data from Compton Creek has been removed from the Wilmington Drain assessments. LOE 90473 has been retired and Decision 44676 has been revised to "delist." Compton Creek remains listed for copper.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Wilmington Drain to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.		
11.4	Los Angeles River Estuary (Queensway Bay) / Copper The Fact Sheet for Decision ID 64264 presents one line of evidence related to copper in the Los Angeles River Estuary (85965). LOE 85965 presents information from a State of California program that sampled marinas throughout California and assess the data provided as follows: *"A total of six grab samples were collected during each sampling event. Four separate grab samples were collected from inside the marina basin (Sites 1, 2, 3, & 4) and two separate grab samples were collected from outside the marina basin (Sites 5 & 6). Sample results for sites inside the marina basin and sites outside the marina basin were averaged per sample event, resulting in two sample results per sampling event."* Per the LOE, the Regional Board utilized data collected from inside the Downtown Shoreline Marina (Sites 1, 2, 3, & 4) and data collected outside the marina basin (Sites 5 & 6) to make a determination that 3 of 6 samples exceeded the copper criterion. No site location information is provided specific to these sites (GPS locations are provided in the associated documents, but no sites are specifically named Sites 1, 2, 3, 4, 5, & 6) so it is not possible to verify the locations. Regardless, data from inside the Marina should not be combined with data from the Estuary to assess the Estuary. These are two distinct bodies of water with differing inputs and water quality conditions. Dissolved copper data collected inside the Marina shows an average concentration of 7 ug/L and represents three of the three exceedances identified in the Fact Sheet. Dissolved copper data collected outside of the Marina (presumably in the Estuary) shows an average	Site locations in longitude, latitude are given in the "LocationsSamplesDetails" file included in the Data Reference link on the factsheet *"Data for Various Pollutants in California Marinas, 2006."* However, the sites 1, 2, 3, and 4 are within the Marina and should be included with the "San Pedro Bay Near/Off Shore Zones." Los Angeles Water Board staff intend to correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval. These changes are in process at this time.	LOE 85965 has been revised to remove the data from the marina and Decision 64264 has been revised to "do not list." In addition, Downtown Shoreline Marina (part of San Pedro Bay Near/Off Shore Zones) is now recommended for listing for copper.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	concentration of 0.72 ug/L and represents zero of three exceedances. The dissolved copper data collected from inside and outside of the Marina are significantly different from one another, as is to be expected, given that they are separate waterbodies and one is a marina and the other is an estuary. ***Requested Action: Either 1) remove Decision ID 64264 and the corresponding 303(d) listing in Attachment B or 2) revise Decision ID 64264 to reflect the waterbody is the Downtown Shoreline Marina rather than the Los Angeles River Estuary and remove the copper listing for the Los Angeles River Estuary from the 303(d) list (Attachment B).***		
11.5	Ballona Creek / Toxicity The Fact Sheet for Decision ID 34253 presents two lines of evidence that indicate the presence of sediment toxicity (83019 and 83020). LOE 83019 references a Statewide Stream Pollution Trends Study 2008 and LOE 83020 references Statewide Project Urban Pyrethroid Status Monitoring. When reviewing the station locations (404SUP093 and 404BLNAxx) associated with these two LOEs in an August 2012 Surface Water Ambient Monitoring (SWAMP) report titled "Toxicity in California Waters: Los Angeles Region", the sampling locations are identified as (page 11) "approximately one kilometer downstream from the confluence with Sepulveda Channel." In a 2014 SWAMP report titled "Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program Third Report - Five-Year Trends 2008-2012", the site 404BLNAxx is identified as Ballona Creek Downstream of Centinela (33.986 -118.417). In the Ballona Creek Toxics TMDL Staff Report, Ballona Creek Reach 2 and Estuary are defined as follows (page 5): Ballona Creek to Estuary (Reach 2) is the longest segment of the creek (approximately 4 miles) continuing on from National Boulevard and ending at Centinela Avenue where the Estuary begins. As such, the sites identified in LOEs 83019 and 83020 are in the Ballona Creek Estuary rather than in Ballona Creek	The Ballona Creek Estuary Toxics TMDL Staff Report identifies the downstream end of Ballona Creek Reach 2 correctly when it states, *"Centinela Creek drains directly to "Ballona Creek Estuary" just below the boundary with Reach 2"*; however, Ballona Creek Reach 2 does not end at Centinela Ave., as stated. Ballona Creek Reach 2 ends just above the confluence with Centinela Creek as shown in the Los Angeles Region Basin Plan. However, a review of the sampling location is in process at this time.	The sampling location will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	and the Estuary already has a toxics TMDL. ***Requested Action: Remove Decision ID 34253 for toxicity for Ballona Creek as there are no data to assess the waterbody pollutant combination.***		
11.6	Dominguez Channel (lined portion above Vermont Ave) / Ammonia The Fact Sheet for Decision ID 35134 states that two lines of evidence are available in the administrative record to assess pollutant (4098 and 83962). LOE 4098 is a placeholder to support a 303(d) listing decision made prior to 2006. As such, no data are included within this LOE. LOE 83962 includes data collected by the City of Los Angeles (City) and states that samples were collected at 3 locations: Artesia Blvd. @ Western Ave., Manhattan Beach Blvd., and El Segundo Blvd. where 2 of the 21 samples exceeded the Water Quality Objective/Criterion. However, the data included within the Data Reference for LOE 83962 includes eight additional results that did not exceed the Water Quality Objective/Criterion (including samples collected at Vermont Ave., which was not identified within the LOE Spatial Representation). Given that the Basin Plan indicates that Vermont Ave. represents the reach break between Dominguez Channel and the Dominguez Channel Estuary, samples collected at Vermont Ave. are representative of the upstream water body (i.e., Dominguez Channel lined portion above Vermont Ave). Including all of the applicable data included within the Data Reference for LOE 83962 results in the sample exceedance frequency being 2 of 29 samples, which meets the allowable frequency listed in Table 4.1 of the Listing Policy. ***Requested Action: Revise Decision ID 35134 for the ammonia listing for Dominguez Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) because the total number of exceedances is equal to or less than the number of exceedances allowed to delist per the Listing Policy.***	The sample collected at Vermont Ave. was collected just downstream of the Vermont Ave. reach break, so it was not included in the listing decision. That sampling location represents water quality of the downstream reach.	The LOE has been revised to include the data from the Vermont Ave sampling site. The recommended decision has been revised to "delist."
11.7	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Ammonia	The decision has been updated to "DELIST."	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	As presented in LOE 83995, ammonia, pH, and temperature data were collected by the City of Los Angeles at four stations in Dominguez Channel Estuary during July 2009 and August 2009. The following table summarizes the number of samples and exceedances. **Summary of data for Dominguez Channel Estuary (unlined portion below Vermont Ave)** Waterbody: Dominguez Channel Estuary (unlined portion below Vermont Ave); # of Samples: 28; # of Exceedances of 4-Day Criteria: 0; Delist if the # of exceedances equal or is less than[1]: 2 1 For toxicants, the maximum number of exceedances allowed for delisting is shown in Table 4.1 (Page 14) of the Listing Policy. **COMPARISON OF EXCEEDANCES TO LISTING POLICY** As shown in the table above, the total number of exceedances is below the maximum number of exceedances allowed to delist per the Listing Policy. As a result, the available data demonstrates that Dominguez Channel Estuary meets the water quality objectives for ammonia (un-ionized) and should be delisted from the 303(d) list. This decision would be consistent with Decision ID 62240 (which treated the listing as a new listing despite an existing listing being present), which finds that ammonia in the Dominguez Channel Estuary should not be listed and states the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that <u>*there is sufficient justification against placing this water segment-pollutant combination on the CWA section 303(d) List in the Water Quality Limited Segments category*</u>. This conclusion is based on the staff findings that: 1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy. 2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	3. 0 of 28 samples exceeded the CRITERIA and this does not exceed the allowable frequency listed in Table 3.1 of the Listing Policy. 4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met. **Regional Board Staff Decision Recommendation:** After review of the available data and information, *RWQCB staff concludes that the water body-pollutant combination should not be placed on the section 303(d) list* because applicable water quality standards are not being exceeded." ***Requested Action: Revise Decision ID 34669 for the ammonia listing for Dominguez Channel Estuary to Delist from 303(d) list and remove from Category 5 (Appendix B) based on Decision ID 62240 (for the ammonia [un-ionized] listing for Dominguez Channel Estuary) and the data reference provided in LOE 83995.***		
11.8	Compton Creek / Iron The Fact Sheet for Decision ID 62052 states that one LOE (83798) is available in the administrative record to assess iron in Compton Creek. LOE 83798 lists the following as the Evaluation Guideline used as the basis for the listing: "National Recommended Water Quality Criteria Continuous Concentrations are intended to protect freshwater aquatic organisms from chronic exposures and are expressed as 4-day average concentrations. The City has several concerns with this listing: • The only two exceedances are associated with wet-weather samples collected on October 13, 2009. The Evaluation Guideline used as the basis is **Criteria Continuous Concentrations** (i.e., chronic criterion). It is inappropriate to use a chronic criterion as it is meant to protect aquatic life against chronic exposure and the samples were taken during a wet-weather event not representative of chronic conditions. USEPA does not recommend	The review of the decision for Compton Creek iron is in process at this time.	The decision will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	a Criteria Maximum Concentration (acute criterion) for iron within its National Recommended Water Quality Criteria. • The National Recommended Water Quality Criteria Continuous Concentration for iron does not specify whether the criterion applies to the total recoverable or dissolved fraction. None of the dissolved iron results associated with the samples used to assess the water body exceeded the criterion. • Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision." However, multiple samples were collected on the same day during the same storms and each was considered separately. Samples collected on the same day during the same storm (as was the case with the two exceedances) should not be considered independently from one another as they are clearly not temporally independent and do not meet the Listing Policy requirements. Averaging samples collected on the same day results in 1 of 5 exceedances, which does not meet the requirements of the Listing Policy for placing a water body segment on the 303(d) list. ***Requested Action: Revise the decision for Decision ID 62052 for the iron listing for Compton Creek to Do Not List on 303(d) list (TMDL required list) and remove from Category 5 (Appendix B) due to an inappropriate evaluation guideline being used as the basis for the listing, the observed exceedances were not temporally independent, and none of the dissolved results exceeded the evaluation guideline.***		
11.9	Ballona Creek Estuary / Silver The Fact Sheet for Decision ID 34520 states "Silver has not been specifically listed on the 303(d) list." Furthermore, the single Line of Evidence (LOE) does	During the development of the Ballona Creek Estuary Toxics TMDL, USEPA and the Los Angeles Region found that the Ballona Creek listings for sediments (cadmium, copper, lead and silver) were made in error and should be applied	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	not indicate that any data were analyzed (i.e., the number of samples listed is zero). As such, the listing should be removed. ***Requested Action: Revise Decision ID 34520 for the silver listing for Ballona Creek Estuary to Delist from 303(d) list and remove from Category 4 (Appendix C) to be consistent with the Fact Sheet.***	to the Estuary. The original listing (for Ballona Creek) was made in 1998 or prior; LOE 2408 is a "placeholder" to support a previous listing decision. Data for these "placeholder" LOEs are not included in the CalWQA database. The factsheet has been revised for clarity.	
11.10	Dominguez Channel Estuary (unlined portion below Vermont Ave) / Copper The Fact Sheet for Decision ID 33751 states that five LOEs are available to assess copper in the Dominguez Channel Estuary, four of which correspond to sediment and one of which corresponds to water. The sole LOE that presents water data states that 3 of 3 samples exceeded the dissolved California Toxics Rule (CTR) saltwater chronic criterion. However, these sample results were all collected on the same day and appear to be for total copper associated with a wet-weather event. When using the total copper CTR acute criterion (rather than the dissolved CTR chronic criterion), the samples do not exceed. As such, all LOEs that support a listing correspond to the sediment matrix. ***Requested Action: Revise the pollutant for Decision ID 33751 for the copper listing for Dominguez Channel Estuary to "Copper <u>(sediment)</u>" given that the LOEs supporting a listing correspond to the sediment matrix and move the listing to Category 4a (Appendix C).***	The review of the decision for Dominguez Channel Estuary (unlined portion below Vermont Ave) Copper is in process at this time. In addition, copper is included on the list as "being addressed by a TMDL," the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL.	The decision will be reassessed during the State Board public comment period.
11.11	Various waterbodies / Various pollutants For a number of existing listings, it appears as if a significant number of readily	See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	available data were not considered when making the Final Listing Decision. These data are from NPDES Permit monitoring programs (both wastewater and stormwater). When these data are considered, the number of measured exceedances supports rejection of the null hypothesis as presented in Table 4.1 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy). As such, these listings should be removed from the section 303(d) list. Furthermore, with regards to the cyanide listing for Ballona Creek, it appears as if Los Angeles (LA) Regional Water Quality Control Board (Regional Board or LARWQCB) staff applied the chronic CTR criterion to the entire dataset instead of applying the chronic CTR criterion during dry-weather and the acute CTR criterion during wet-weather.	While, in TMDLs, targets and allocations may be developed separately for dry weather and wet weather and may apply chronic criteria to dry weather and acute criteria to wet weather, that is not the procedure used in 303(d) listing decisions. The Listing Policy does not indicate that data from wet and dry weather must be assessed separately, and the more conservative chronic criteria from CTR applies, appropriately, to water quality assessments.	

Water Body	Pollutant	Listing Category	Date Range		# of Samples	# of Exceedances	Max # of Exceedances to Delist
			Start	End			
Ballona Creek	Cyanide	5	10/2000	12/2010	66	5	5
Burbank Western Channel	Selenium	5	10/2003	12/2010	201	15	17
Los Angeles River Reach 1 (Estuary to Carson Street)	Diazinon	5	10/2002	12/2010	56	1	4
	Lead	5	02/2001	12/2010	173	4	14
Los Angeles River Reach 2 (Carson to Figueroa Street)	Lead	5	01/2001	12/2010	241	4	20
Los Angeles River Reach 5 (within Sepulveda Basin)	Lead	5	02/2002	11/2010	78	0	6
Sepulveda Canyon	Lead	4	10/2004	12/2010	98	4	8
	Selenium	4	10/2004	12/2010	98	4	8

Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list and remove from Category 5 (Appendix B) or Category 4 (Appendix C), whichever is applicable.

No.	Comment	Response	Additional / Revised Response
11.12	Burbank Western Channel / Lead	USEPA added lead to the 303(d) list (on the	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The Fact Sheet for Decision ID 32882 finds that lead in the Burbank Western Channel should not be listed and states (emphasis added): "One line of evidence is available in the administrative record to assess this pollutant. None of the samples exceed the water quality objective. Based on the readily available data and information, the weight of evidence indicates that <u>*there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category*</u>." In addition, the analysis conducted as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) did not identify any exceedances from October 2003 through December 2010. ***Requested Action: Revise Decision ID 32882 for the lead listing for Burbank Western Channel to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2003.***	"being addressed by a TMDL" portion of the list) in 2006 because of the data review and the targets and allocations for lead included in the Los Angeles River metals TMDL. The factsheet has been revised for clarity.	
11.13	Los Angeles River Reach 1 (Estuary to Carson Street) / Cadmium The Fact Sheet for Decision ID 32639 finds that cadmium in the Los Angeles River Reach 1 should not be listed and states (emphasis added): "Three lines of evidence are available in the administrative record to assess this pollutant. The CTR criterion for cadmium for the protection of aquatic life was exceeded three out of forty-two samples from data collected between 1996 and 2002 and no samples exceeded CCR Title 22 MCL guidelines for the protection of MUN beneficial uses in data collected between 2000 and 2003. Based on the readily available data and information, the weight of evidence indicates that <u>*there is sufficient justification for removing this water segment pollutant combination from the section 303(d) list.*</u>" In addition, the analysis conducted as part of the ULAR EWMP did not identify any exceedances from February 2001 through December 2010.	In the 2002 303(d) list, a cadmium listing was added for Reach 1 of the Los Angeles River based on stormwater data. Data for listings prior to 2006 are not included in the CalWQA database. In addition, the USEPA final decision for the 2006 303(d) list added this listing to the 'being addressed by USEPA approved TMDL' portion of the 303(d) List on this basis of the data review and the targets and allocations for cadmium included in the Los Angeles River Metals TMDL. The factsheet has been revised for clarity.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Requested Action: Revise Decision ID 32639 for the cadmium listing for Los Angeles River Reach 1 to Delist from 303(d) list and remove from Category 5 (Appendix B) to be consistent with the Fact Sheet and because there have not been any observed exceedances since 2001.		
11.14	Echo Park Lake / Ammonia Decision ID 34696 proposes to change the ammonia listing for Echo Park Lake from List on 303(d) list (TMDL required list) to list on the 303(d) list (being addressed by United States Environmental Protection Agency [USEPA] approved TMDL). However, the TMDL report made a finding of nonimpairment for ammonia, as outlined in the following excerpt from Section 6.2.3.2 of the TMDL report (emphasis added): "Echo Park Lake was listed as impaired for ammonia in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 35 additional samples (7 wet-weather) between May 2003 and February 2010 to evaluate current water quality conditions. There was one ammonia exceedance in 35 samples (Appendix G, Monitoring Data). Therefore, Echo Park Lake meets ammonia water quality standards and USEPA concludes that preparing a TMDL for ammonia is unwarranted at this time. <u>*USEPA recommends that Echo Park Lake not be identified as impaired for ammonia in California's next 303(d) listing*</u>."[1] ***Requested Action: Revise Decision ID 34696 for the ammonia listing for Echo Park Lake to Delist from 303(d) list and remove from Category 4 (Appendix C) based on USEPA's recommendation.*** [1] U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 6.2.3.2 Summary of Ammonia Non-Impairment, March 2012, p.6-13.	The 303(d) list and the factsheet has been updated to "DELIST."	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
11.15	Lincoln Park Lake / Lead Decision ID 34817 proposes to change the lead listing for Lincoln Park Lake from List on 303(d) list (TMDL-required list) to list on the 303(d) list (being addressed by USEPA approved TMDL). However, the TMDL report made a finding of nonimpairment for lead, as outlined in the following excerpt from Section 5.3 of the TMDL report (emphasis added): "Lincoln Park Lake was listed as impaired for lead in 1996 based on an assessment in the Regional Board's Water Quality Assessment and Documentation Report (LARWQCB, 1996). Consistent with project plan recommendations provided in California's Impaired Waters Guidance (SWRCB, 2005), EPA and local agencies collected 40 additional samples (11 wet-weather) between October 2008 and December 2010 to evaluate current water quality conditions. There were zero dissolved lead exceedances in 40 samples (Appendix G, Monitoring Data). USEPA also collected one sediment sample in September 2010 to further evaluate lake conditions. There were zero sediment lead exceedances of the 128 ppm freshwater (Probable Effect Concentrations) sediment target (Appendix G, Monitoring Data). Therefore, Lincoln Park Lake meets lead water quality standards and USEPA concludes that preparing a TMDL for lead is unwarranted at this time. *USEPA recommends that Lincoln Park Lake not be identified as impaired by lead in California's next 303(d) list*." ***Requested Action: Revise Decision ID 34817 for the lead listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B) based on USEPA's recommendation.*** U.S. Environmental Protection Agency, Los Angeles Area Lakes TMDLs, Section 5.3 Lead Impairment, March 2012, p.5-18	The 303(d) list and the factsheet has been updated to "DELIST."	
11.16	Lincoln Park Lake / Ammonia	The Water Quality Assessment Report (LARWQCB, 1996) includes ammonia as not	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The data utilized to develop the original listing in 1998 are not available (these data were requested from USEPA and the Regional Board during development of the TMDL in 2010. Based on USEPA's TMDL report, data collected prior to 2009 were reported as ammonium, without corresponding ammonia, pH, or temperature measurements making it impossible to compare these data to ammonia criteria. Only ammonia data collected with corresponding pH and temperature data can be used to determine if criteria were exceeded. In 2008, the Regional Board collected eight ammonia samples all of which were below the reporting limit of 0.1 mg/L and chronic criterion. In 2009, the City of Los Angeles and USEPA/Regional Board conducted monitoring and collected 15 and three samples, respectively, all of which were below the chronic criterion. As stated in the TMDL report (pg. 5-10): *"There were no exceedances of the acute or chronic ammonia criteria during any recent sampling events with associated pH and temperature measurements."* In summary, there are no ammonia data with corresponding pH and temperature measurements available to support the original listing and all available recent data demonstrate there are no exceedances. ***Requested Action: Revise Decision ID 35004 for the ammonia listing for Lincoln Park Lake to Delist from 303(d) list and remove from Category 5 (Appendix B).***	supporting beneficial uses. Twenty-eight ammonium samples were reported ranging from non-detect to 1.14 mg-N /L which is less than the acute target, but greater than the chronic target for total ammonia N (assuming the analytical method converted all ammonia to ammonium). Data from lines of evidence developed prior to 2006 are not included in the CalWQA database. While the EPA TMDL for the Los Angeles Area Lakes did review data from 2008 and 2009, which did not exceed criteria, unlike for lead, the EPA TMDL for the Los Angeles Area Lakes did not make a finding of non-impairment for ammonia and instead established targets.	
11.17	Los Angeles River Reach 2 (Carson to Figueroa Street) and Los Angeles River Reach 5 (within Sepulveda Basin) / Oil The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized as follows:	The State and Regional Water Boards are currently exploring options to address pollutants that may be naturally elevated in water bodies. Until the natural sources of pollutants are addressed by either an exclusion policy as adopted by the State Water Board or a natural sources exclusion (or other site-specific objective) is	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	An investigation was conducted following seeps of petroleum hydrocarbons into the LA River in June 2001. Based on lab results and borings, it was concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands. Oil was visible in Puente formation seams, partings and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts with younger, less permeable units or layers. The USEPA On-Scene Coordinator (OSC) conducted subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge as a result of a spill, leak, or discharge from any facility and that the oil has been discharging to the river since at least 1943 and there is no practical means of preventing this oil seep from discharging to the River. On April 19, 2002, an email was sent to Steven Pedersen of City of Los Angeles /Watershed Protection Division (WPD) by Steven Poole of the US Coast Guard/National Pollution Funds Center (USGC/NPFC). Mr. Poole stated that City of Los Angeles cannot submit to USGC/NPFC a claim for reimbursement for cost incurred by the City associated with May 2001 oil clean-up efforts in the LA River because Title 1 of the Oil Pollution Act does not allow for reimbursement for **naturally-occurring oil** (natural seepage). In summary, the reports and correspondence discussed herein, indicate that multiple agencies believe that the oil found in the listed reaches of the LA River is associated with naturally-occurring seepage suggesting that a 303(d) listing is not warranted. **Studies Used in the Analysis** The following studies/correspondences were used in the analysis:	developed by the Los Angeles Water Board, oil in the Los Angeles River is an impairment and appropriately on the 303(d) list. There is no alternative regulatory program identified that will reduce oil in the Los Angeles River so the category cannot be 4b. However, the factsheet has been updated to include "natural sources" as the source.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	- Pollution Report (2002), USEPA Region IX - Correspondence (2002) from Michael P. Brown, Manager, Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles - Correspondence (2002) from Steven Poole, Claims Manager, USGC/NPFC Despite repeated efforts by WPD to obtain the historical information utilized to develop the original listing, the Regional Board has not provided the information for inclusion in the analysis. Therefore, the analysis is based solely on recent information available to WPD. **Summary of Findings** The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized below. **Investigations of the Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles – June 2001** An investigation was conducted following seeps of petroleum hydrocarbons into the engineered channel of the LA River across from the Piper Technical Center in June 2001. This study concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands, based on lab results and borings. The samples of the oil seeps and associated bacterial-growth scums revealed that the seeps were predominantly in the oil or heavy-hydrocarbon range. This supports the conclusion that the LA River oil seeps are natural crude oil as opposed to fuel leaks. Drilling of wells along Mission St. (east of the river channel) confirmed that oil-		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	bearing Puente formation sands and fractures are the source of crude oil and gases that migrate into the shallow alluvial soils. The hydrocarbons, visible oil and PID readings generally increased with depth toward the Puente formation. Oil was visible in Puente formation seams, partings, and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts younger, less permeable units or layers. **Pollution Report, EPA – January 2002** The USEPA OSC conducted extensive subsurface investigations of the oil seeps in the LA River during August and September 2001. The OSC found that the oil did not discharge to the River as a result of a spill, leak, or discharge from any facility based on the investigation. The oil has been discharging to the river since the least 1943 and there is no practical means of preventing this oil seep from discharging to the LA River. The OSC also evaluated the use of epoxy or urethane sealants on the seeps to reduce the flow of oil. However, it was concluded that the use of sealants on the seeps would cause the oil to get into the subdrain system and eventually enter the LA River. In summary, WPD attempted to evaluate the original listing information in light of the currently available information. Although the Regional Board did not provide the information, the reports and correspondence discussed herein, and attached to this letter, indicate that multiple agencies believe that the oil found in the listed reaches of the Los Angeles River is associated with naturally-occurring seepage. ***Requested Action: Revise Decision IDs 34118 and 34203 for the oil listings for Los Angeles River Reaches 2 and 5 to Delist from 303(d) list and remove from Category 5 (Appendix B) given that the oil found in the listed reaches of the Los***		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Angeles River is associated with naturally-occurring seepage. Alternatively, move the listing to Category 4b as other regulatory programs are reasonably expected to result in attainment of the water quality standard.		
11.18	Various waterbodies Various / pollutants Section 2 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) states (pg. 3): "At a minimum, the California section 303(d) list shall identify waters where standards are not met, **pollutants or toxicity** contributing to standards exceedance, and the TMDL completion schedule." In addition, Section 2.1 of the Listing Policy titled "Water Quality Limited Segments" states (pg. 3): "Waters shall be placed in this category of the section 303(d) list if it is determined, in accordance with the California Listing Factors that the water quality standard is not attained; **the standards nonattainment is due to toxicity, a pollutant, or pollutants**; and remediation of the standards attainment problem requires one or more TMDLs." As such, all listings that do not identify either toxicity or a pollutant as the impairment do not meet the requirements for being placed in the water quality-limited segments category. This is supported by current listing decisions made by the Los Angeles Regional Water Quality Control Board (Regional Board) in Burbank Western Channel for excess algal growth, scum/foam-unnatural, and taste and odor and Calleguas Creek Reach 13 for excess algal growth that state the following (emphasis added): "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of **removing** these listing from the 303(d) Water Quality Limited Segment list **because the segment pollutant combinations is not a pollutant**." The following table presents water body segments and listings that correspond to instances where there is not a pollutant.	The Benthic Community Effects listings are associated with other pollutant or toxicity listings and, therefore, will require a TMDL (or other regulatory program) to attain standards. The Ballona Creek Wetlands listings were addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation. The impairments identified are associated with sedimentation in addition to metals, trash and other pollutants. The hydromodification listing has been deleted. While pH exceedances may be associated with algae impairment, excessively high pH is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*The pH of all inland surface waters shall not be depressed below 6.5 or raised above 8.5…"* Algae, Eutrophic, Odor, Organic Enrichment, Nutrients (Algae) are discussed in the Listing Policy section 3.7.1: *An acceptable nutrient-related evaluation guideline is exceeded using the binomial distribution as described in section 3.1 for excessive algae growth, unnatural foam, odor, and taste. Waters may also be placed on the*	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	<table><tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr><tr><td>44553</td><td>Arroyo Seco Reach 1 (LA River to West Holly Ave.)</td><td>Benthic Community Effects</td></tr><tr><td>65656</td><td>Ballona Creek</td><td>Benthic Community Effects</td></tr><tr><td>44746</td><td>Ballona Creek Wetlands</td><td>Exotic Vegetation</td></tr><tr><td>34697</td><td>Ballona Creek Wetlands</td><td>Habitat alterations</td></tr><tr><td>34699</td><td>Ballona Creek Wetlands</td><td>Hydromodification</td></tr><tr><td>44747</td><td>Ballona Creek Wetlands</td><td>Reduced Tidal Flushing</td></tr><tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr><tr><td>32967</td><td>Compton Creek</td><td>pH</td></tr><tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr><tr><td>34030</td><td>Echo Park Lake</td><td>Algae</td></tr><tr><td>34698</td><td>Echo Park Lake</td><td>Eutrophic</td></tr><tr><td>34756</td><td>Echo Park Lake</td><td>Odor</td></tr><tr><td>44748</td><td>Echo Park Lake</td><td>pH</td></tr><tr><td>35180</td><td>Lincoln Park Lake</td><td>Eutrophic</td></tr><tr><td>44641</td><td>Lincoln Park Lake</td><td>Odor</td></tr></table>	*section 303(d) list when a significant nuisance condition exists as compared to reference conditions, or when nutrient concentrations cause or contribute to excessive algae growth.* The Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs addresses the Algae, Eutrophic, Odor and Organic Enrichment impairments in both Echo Park Lake and Lincoln Park Lake by developing TMDL targets for ammonia, chlorophyll *a*, dissolved oxygen, pH, Total Nitrogen and Total Phosphorus. The Los Angeles River Nutrients (Algae) listings are being addressed by the Los Angeles River Nitrogen Compounds and Related Effects TMDL. Attaining the nitrogen compound objectives is intended to address impairments caused by pH, scum/foam, and algae as these effects are related to the presence of nitrogen in the waterbody. While temperature exceedances may be associated with "pollution" such as hydromodification or lack of riparian cover, excessively high temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*At no time shall these WARM designated waters be raised above 80 degrees F…*" See also response to comment 17.4 for additional discussion of temperature as a pollutant.	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
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<table>
<tr><td>35223</td><td>Lincoln Park Lake</td><td>Organic Enrichment/Low Dissolved Oxygen</td></tr>
<tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr>
<tr><td>33456</td><td>Los Angeles River Reach 1 (Estuary to Carson Street)</td><td>Nutrients (Algae)</td></tr>
<tr><td>32959</td><td>Los Angeles River Reach 2 (Carson to Figueroa Street)</td><td>Nutrients (Algae)</td></tr>
<tr><td>66229</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Benthic Community Effects</td></tr>
<tr><td>34204</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Nutrients (Algae)</td></tr>
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<tr><td>44326</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Nutrients (Algae)</td></tr>
<tr><td>35160</td><td>Los Angeles River Reach 5 (within Sepulveda Basin)</td><td>Nutrients (Algae)</td></tr>
<tr><td>34207</td><td>Los Angeles/Long Beach</td><td>Beach Closures</td></tr>
</table>
</td><td>The Beach Closures listing for the Los Angeles/Long Beach Inner Harbor is being addressed by the Los Angeles Harbor, Inner Cabrillo Beach and Main Ship Channel Bacteria TMDL, which established targets and allocations for bacterial indicators.

The Machado Lake Algae, Eutrophic, and Odor listings are being addressed by the Machado Lake Nutrients TMDL, which sets targets and allocations for phosphorus, nitrogen and chlorophyll a.

While Dissolved Oxygen exceedances may be associated with other factors such as algae, depressed dissolved oxygen is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At a minimum (see specifics below), the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 m g/L…”

Burbank Western Channel listings for excess algal growth, scum/foam-unnatural, and taste and odor and the Calleguas Creek Reach 13 listing for excess algal growth were delisted in 2010.

Benthic Macroinvertebrate listings are discussed also in response to comment 11.19 and 11.24.</td><td></td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td><table><tr><td></td><td>Inner Harbor</td><td></td></tr><tr><td>34208</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr><tr><td>34305</td><td>Machado Lake (Harbor Park Lake)</td><td>Algae</td></tr><tr><td>42417</td><td>Machado Lake (Harbor Park Lake)</td><td>Eutrophic</td></tr><tr><td>42262</td><td>Machado Lake (Harbor Park Lake)</td><td>Odor</td></tr><tr><td>61605</td><td>Marina del Rey Harbor - Back Basins</td><td>Oxygen, Dissolved</td></tr></table>
Requested Action: Revise the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, and remove from Category 5 (Appendix B) or Category 4 (Appendix C).</td><td></td><td></td></tr>
<tr><td>11.19</td><td>Various waterbodies / Various pollutants

There are numerous listings that include waterbody segments which are in nonattainment due to pollution that is not caused by a pollutant. The 2016 Clean Water Act Sections 305(b) and 303(d) Integrated Report for the Los Angeles Region Staff Report states the following (pg. 9): “Impaired waters are placed in Category 4c if the impairment is not caused by a pollutant, but rather caused by pollution, such as flow alteration or habitat alteration.” Impairments for benthic community effects, exotic vegetation, habitat alterations, hydromodification, reduced tidal flushing, and temperature are caused by either flow and/or habitat alteration (not by a pollutant or combination of pollutants) and; therefore,</td><td>The Benthic Community Effects listings are associated by with other pollutant listings, so waterbodies with Benthic Community Effects listings are appropriately in Category 5 or 4a.

The Ballona Creek Wetlands listings are addressed by the Ballona Creek Wetlands TMDL for Sediment and Invasive Exotic Vegetation; therefore, the appropriate waterbody category is 4a, “A TMDL has been developed and approved by U.S.EPA for any waterbody-pollutant combination and the approved</td><td>Los Angeles River Reach 3 has been reassessed for temperature to use the Basin Plan objective for the WARM Beneficial Use instead of a guideline for trout. The recommended decision for Los Angeles River Reach 3/temperature is now “do not list.”</td></tr>
</table>

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td>waterbody segments under these listings should instead be moved to Category 4c.
<table>
<tr><th>Decision ID</th><th>Water Body Segment</th><th>Listing</th></tr>
<tr><td>44553</td><td>Arroyo Seco Reach 1 (LA River to West Holly Ave.)</td><td>Benthic Community Effects</td></tr>
<tr><td>65656</td><td>Ballona Creek</td><td>Benthic Community Effects</td></tr>
<tr><td>44746</td><td>Ballona Creek Wetlands</td><td>Exotic Vegetation</td></tr>
<tr><td>34697</td><td>Ballona Creek Wetlands</td><td>Habitat alterations</td></tr>
<tr><td>34699</td><td>Ballona Creek Wetlands</td><td>Hydromodification</td></tr>
<tr><td>44747</td><td>Ballona Creek Wetlands</td><td>Reduced Tidal Flushing</td></tr>
<tr><td>44498</td><td>Compton Creek</td><td>Benthic Community Effects</td></tr>
<tr><td>66165</td><td>Dominguez Channel (lined portion above Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>38511</td><td>Dominguez Channel Estuary (unlined portion below Vermont Ave)</td><td>Benthic Community Effects</td></tr>
<tr><td>35168</td><td>Los Angeles Harbor - Consolidated Slip</td><td>Benthic Community Effects</td></tr>
<tr><td>66229</td><td>Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)</td><td>Benthic Community Effects</td></tr>
<tr><td>64386</td><td>Los Angeles River Reach 3</td><td>Temperature, water</td></tr>
</table></td><td>implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.”

Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore, Category 5 is the appropriate category. Temperature is a conventional pollutant with an objective defined in the Los Angeles Basin Plan, “At no time shall these WARM designated waters be raised above 80 degrees F…” See also response to comment 17.4 for additional discussion of temperature as a pollutant.</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	<table><tr><td></td><td>(Figueroa St. to Riverside Dr.)</td><td></td></tr><tr><td>66232</td><td>Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)</td><td>Benthic Community Effects</td></tr><tr><td>34207</td><td>Los Angeles/Long Beach Inner Harbor</td><td>Benthic Community Effects</td></tr></table> ***Requested Action: Notwithstanding the previous comment that supports revising the decision for the segments listed in the preceding table to Delist from 303(d) list or Do Not List on 303(d) list, whichever is applicable, move all segments listed in the preceding table with impairments caused by pollution to Category 4c and revise Appendix B or C as appropriate.***		
11.20	Lincoln Park Lake / PCBs Decision ID 64083 proposes to list PCBs in fish tissue for Lincoln Lake Park. However, this Lake is annually stocked with fish and therefore the lake population does not spend its lifespan in Lincoln Park Lake and may have accumulated PCBs from another waterbody. A number of studies have indicated that farmed salmon accumulate PCBs from the fish meal they are fed. In order to determine the source of the exceedance, fish from the State's stocking system need to be tested prior to introduction and the duration of time they spend in the Lake needs to be determined by a tagging program. The current analysis makes the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments. In addition, the Lake is restocked every year in April which suggests that all fish stocked are immediately removed and consumed. Both of these assumptions need to be fully evaluated prior to determining the source of the exceedance and therefore Lincoln Park Lake does not meet the	The minimum requirement to justify a listing is exceedances of the relevant criteria or guideline per the Listing Policy. Fish in Lincoln Park Lake exceeded the relevant guideline, the OEHHA fish contaminant goal for PCBs. The identification of fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list. The analysis did not make the assumption that fish are introduced to the Lake free of PCBs and subsequently bioaccumulate PCBs from Lake sediments, because a source analysis has not been completed.	

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	minimum requirements to justify a listing. ***Requested Action: Remove Decision ID 64083 from Category 5 (Appendix B) or revise from Category 5 to Category 3 so that further evaluation of whether or not the lake itself is actually impaired.***		
11.21	Santa Monica Bay Offshore/ Nearshore / Arsenic The Fact Sheet for Decision ID 67208 presents two lines of evidence related to arsenic in Santa Monica Bay (88949 and 88950). LOE 88949 presents information related to sediment and found that 0 of 32 samples exceeded the sediment goals utilized in the assessment. LOE 88950 presents information related to fish tissue and indicates that 19 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis and 10% of the total arsenic result represented the amount of inorganic arsenic in the sample for comparison to the guideline. In reviewing LOE 88950, no information/citation can be found supporting the assumption that 10% of the total arsenic result represented the amount of inorganic arsenic in the sample. It is appropriate to utilize inorganic arsenic in assessing potential risk; however, either measured inorganic arsenic or a conversion factor developed from actual measured ratios from Santa Monica Bay should be utilized. In USEPA's 2000 Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 1 Fish Sampling and Analysis Third Edition (EPA 823-B-00-007), USEPA recommends that, in both screening and intensive studies, total inorganic arsenic tissue concentrations be determined for comparison with the recommended screening value for chronic oral exposure. Scientific literature demonstrates that a range of total to inorganic arsenic ratios exist. For example, a 2008 study specifically looking at arsenic speciation in 383 samples of marine fish and shellfish, showed that the inorganic fraction of arsenic is typically <0.5% with a few of the highest samples ranging	A review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic. 10% is a conservative assumption for amount of inorganic arsenic in the sample, though a locally developed conversion factor could be better and could be used in future assessment. Note, the San Diego listing only used 2 samples of shellfish leading to greater uncertainty than this assessment which used 19 samples and all 19 samples exceeded the guideline by a wide margin. The data were collected on several different days in several different zones. Data from different species cannot be aggregated from different species. Composites of different species will have different age profiles, different species occupy different trophic levels and will accumulate pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point. In addition, while the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue	The arsenic decision has been reviewed. The listing has been corrected to the finfish guideline (0.0034 ppm instead of 0.0052 ppm for shellfish) and the applicable reference added. The guideline, 0.0034 ppm, is the screening guideline from "Guidance for Assessing Chemical Contaminant Data for Use In Fish Advisories Volume 1: Fish Sampling and Analysis," 2000, (CalWQA ref 3756) and assumes an average body weight of 70 kg and a consumption rate of 32 g/day for a 30 year exposure over a 70-year lifetime. The assessment used an assumption that 10% of the arsenic would be inorganic. Even if a 0.05% inorganic to total ratio was used in the assessment, the number of exceedances would be 14 out of 19 and sufficient to list.

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	from 1-5% The City's concern with the approach has been expressed in other regions of California as well. The Port of San Diego in an August 11, 2016 comment letter to the San Diego Regional Water Quality Control Board regarding a 303(d) arsenic listing, noted the high level of variability of the proportion of inorganic arsenic across species (typically <10%) as measured in a number of other studies, as well as a methodology that could be used to ground truth the applied proportion through actual sample data. In response to the Port of San Diego's comment the San Diego Regional Board removed an arsenic listing from their draft 303(d) list and stated: *"… there is a high level of uncertainty in the levels of inorganic arsenic in shellfish tissue. The assumption regarding the percent of total arsenic in shellfish tissue is likely conservative, and the San Diego Water Board agrees that a listing based on those assumptions has a high probability of mischaracterizing the results as an impairment. The San Diego Water Board supports the Port's suggestion that future monitoring of shellfish incorporate a measurement of both total and inorganic arsenic."* The City also has concerns with the approach to utilizing the data in comparison to the guidelines. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years and the risk endpoint relates to a carcinogenic effect over a 30-year period, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes, which should be assessed on a case-by-case basis, but	over time. Therefore, the data are, by their nature, spatially and temporally independent.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns. In summary, the lack of inorganic arsenic data and use of an unsupported conversion factor in combination with the approach to comparing tissue data that does not appropriately meet the requirements of temporal independence or reflect actual exposure conditions does support listing arsenic in Santa Monica Bay. The City welcomes the opportunity to discuss approaches to develop inorganic arsenic data for use in future evaluations, as well as an approach to consider tissue data to properly evaluate arsenic in Santa Monica Bay. ***Requested Action: Remove Decision ID 67208 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.*** [3]Peshut, P.J. et al., 2008. Arsenic speciation in marine fish and shellfish from American Samoa. Chemosphere 71 488-492. doi:10.1016/j.chemosphere.2007.10.014 [4]Port of San Diego comment letter to California Water Quality Control Board – San Diego Region. "*Comment – CWA Section 305(b)/303(d) Integrated Report.*" Letter Dated August 11, 2016. [5]Page 47 of San Diego Region Response to Comment on 2014 303(d) list. http://www.swrcb.ca.gov/sandiego/water_issues/programs/303d_list/docs/Response_To_C		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	omments.pdf		
11.22	Santa Monica Bay Offshore/ Nearshore / Mercury The Fact Sheet for Decision ID 67209 presents three lines of evidence related to mercury in Santa Monica Bay (4165, 88894, and 88891). LOE 4165 and 88891 presents information related to sediment toxicity and sediment chemistry, respectively. LOE 88894 presents information related to fish tissue and indicates that 2 of 19 samples collected as part of Hyperion Water Reclamation Plan NPDES Permit during August of 2006, and August, September, October, and November of 2007 exceeded the evaluation guideline with the presumption that results were reported on a wet-weight basis. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, each individual sample was considered on its own without consideration for temporal representation. Samples collected on the same day (i.e., October 2007, November 2007, and September 2008) should not be considered independently from one another as they are clearly not temporally independent. Furthermore, given tissue concentrations represent the accumulation of pollutants over a time period of years, considering samples collected within months of each other (October and November 2007 and August and September 2008) also does not provide the required temporal independence. Data should be aggregated across appropriate temporal timeframes that should be assessed on a case-by-case basis, but should be no less than annually. Lastly, in assessing tissue data, consideration should be given to the fact that multiple samples and species are collected and the range of concentrations within those samples and across species represents exposure and potential risk. Considering each individual sample separately from one another or across species results in an assumption that an individual sample is representative of the exposure condition. Data should not only be aggregated on an appropriate temporal scale, but also across species, potentially weighted based on likely consumption patterns.	Fish collected on the same day, in the same zone, and of the same species, could be aggregated, but this data set represents fish collected on different days or in different zones or they are different species and therefore cannot be aggregated.. In addition, the fact that tissue concentrations represent the accumulation of pollutants over a time period of years, and each fish is a different age and will have moved differently through the environment, provides independence of the tissue sample. However, a review of this decision is in process at this time to confirm the number of exceedances.	The mercury data has been re-assessed and the appropriate data was used and the decision remains "list."

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The City welcomes the opportunity to discuss an approach to appropriately consider tissue data to properly evaluate mercury in Santa Monica Bay. ***Requested Action: Remove Decision ID 67209 from the 303(d) list. However, if the Regional Board feels it is necessary to categorize the information within the Integrated Report, place the waterbody pollutant combination in Category 3 as there is insufficient data and information to make a beneficial use support determination, but information and/or data indicates beneficial uses may be potentially threatened.***		
11.23	Echo Park Lake and Machado Lake (Harbor Park Lake) / Various pollutants Echo Park Lake and Machado Lake (Harbor Park Lake) are two waterbodies located in Los Angeles County which have both been included on the 303(d) impaired waters list since 2006. Because of their water quality impairments, the City invested significant resources to rehabilitate the water quality of the lakes. The $45 million Echo Park Lake Rehabilitation Project was completed in 2015 and included extensive changes to the lake hydrology (e.g., storm drain upgrades, inlet and outlet upgrades, removal of contaminated lake sediments, and installation of lake aeration system) and immediately surrounding areas, including best management practices (BMPs) to reduce the loads of targeted pollutants including trash, metals, coliform, pesticides, and nutrients. The Machado Lake Ecosystem Rehabilitation Project involved dredging and capping the lake bottom, constructing an oxygenation system, adding new storm drain systems, as well as a number of other BMPs to improve water quality. These award-winning projects have been very successful and produced significant water quality improvements; however, these improvements are not reflected in the Regional Board's proposed 303(d) list. The proposed changes for Echo Park Lake includes two delistings for copper and	Echo Park Lake: Chlordane and Dieldrin in Echo Park Lake are addressed by the Los Angeles Area Lakes TMDL for Nitrogen, Phosphorus, Mercury, Trash, OC Pesticides and PCBs. The Los Angeles Area Lakes TMDL included chlordane and reviewed chlordane data from several sources. The Chlordane data included as the LOE in the CalWQA database is from a SWAMP study, *"Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study"* (SWAMP, 2009). Inclusion of this listing is in accordance with the Listing Policy. The Los Angeles Area Lakes TMDL included dieldrin and reviewed dieldrin data from an organics study by UCLA. The dieldrin data included as the LOE in the CalWQA database is	

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	lead, which the City supports; however, two new listings were added for chlordane (tissue) and dieldrin. The other legacy listings for Echo Park Lake and Machado Lakes remain on the proposed 303(d) list (see following table). The City maintains that these legacy listings are inappropriately categorized and should instead be listed as Category 3 based on the significant restoration efforts conducted since the last update to the 303(d) list. The USEPA 2010 Integrated Report Guidance uses the following definition for Category 3 listings: *"The existing and readily available data and information is not representative of current conditions of the water body. This rationale might include a determination that: significant land use changes have occurred in the watershed changing the hydrology and nonpoint source loadings; point source discharges were removed; new discharges are now operating; or the locations of sampling stations did not reflect the character of the segment (e.g., limited to locations near discharge outfalls)."* The extensive restoration projects have entirely changed not only the chemical and physical conditions of the lakes themselves, but have also completely transformed the nonpoint source loadings, and hydrology of the system. Any data collected prior to the restoration efforts (i.e., all of the data used for the current listings) are not representative of the current condition of the lakes; therefore, both of these waterbodies are excellent candidates for a Category 3 listing and should be categorized as such until enough data exists to establish their current condition. It is likely that as a result of both of these restoration efforts, the lakes could be entirely delisted. However, until that time, a Category 3 listing would represent the most conservative listing on the part of the Regional Board. The City appreciates the time and effort that goes into maintaining the 303(d) list and notes that these award-winning restoration projects were facilitated in part by the Regional Board's historical listing actions. The City hopes that the extensive resources put into restoring the beneficial use of these waterbodies can be recognized by assigning the proper Category 3 listing to Echo Park and Machado Lake pollutants.	from a SWAMP study, "*Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study*" (SWAMP, 2009). Inclusion of this listing is in accordance with the Listing Policy. The data available supports listing chlordane and dieldrin for Echo Park Lake in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data is speculative. See response to comment 32.3 for a discussion of "readily available" data for this listing cycle. Machado Park Lake: The Machado Park Lake impairments due to Algae, Ammonia, Eutrophic Conditions and Odor are being addressed by the Machado Lake Nutrient TMDL. The Machado Lake impairments due to Chem A, DDT, Chlordane and Dieldrin are being addressed by the Machado Lake Toxics TMDL. The data available supports listing all these listings in Category 4a per the Listing Policy. A conclusion that new data would support delisting or even be significantly different from existing data (and a movement to Category 3) is speculative. The inconsistences noted by the commenter for Echo Park Lake and Machado Lake in the 303(d)	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	(nested table below)	list have been addressed and all the listings are in category 4a. The significant restoration efforts are expected to be reflected in new data collected after the restoration efforts and submitted to CEDEN to support the next listing cycle for the Los Angeles Region. The Los Angeles Water Board looks forward to the review of that data.	

Decision ID	Water Body Segment	Listing
34030	Echo Park Lake	Algae
34696	Echo Park Lake	Ammonia
62679	Echo Park Lake	Chlordane
62680	Echo Park Lake	Dieldrin
34698	Echo Park Lake	Eutrophic
34756	Echo Park Lake	Odor
33999	Echo Park Lake	PCBs (Polychlorinated biphenyls)
44748	Echo Park Lake	pH
32435	Echo Park Lake	Trash
34305	Machado Lake (Harbor Park Lake)	Algae
42416	Machado Lake (Harbor Park Lake)	Ammonia
34362	Machado Lake (Harbor Park Lake)	ChemA (tissue)
42417	Machado Lake (Harbor Park Lake)	Eutrophic
42262	Machado Lake (Harbor Park Lake)	Odor
35181	Machado Lake (Harbor Park	Trash

<table>
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	Lake)	

In reviewing the proposed listings for the 303(d) list for Echo Park and Machado Lakes a number of inconsistencies were noted. They have been identified below:

- Echo Park Lake PCB (tissue) (Decision ID 33999) is listed as a new 4A listing in Appendix C, but the change is not noted in Appendix A.
- Machado Lake Chlordane (tissue) (Decision ID 33013), Dieldrin (tissue) (Decision ID 33643), and PCBs (tissue) (Decision ID 33285) are not listed as changes in Appendix A, do not appear in Appendix B or C, but are listed in Appendix G.
- Machado Lake DDT (tissue) (Decision ID 33211) is not listed as a change in Appendix A and does not appear in Appendix B or C, but is listed in Appendix G, although incorrectly, as requiring a TMDL despite the fact that DDT is covered by an existing TMDL.
- Machado Lake algae, ammonia, ChemA (tissue), eutrophication, odor and trash are included in Appendix G Fact Sheets as already being addressed by a USEPA-approved TMDL, which is expected to result in attainment of the standard; however, they are all listed as Category 5B in Appendix B and as unchanged in Appendix A in the proposed 303(d) List.

The Regional Board should clarify if these omissions and inconsistencies equate to a delisting of the pollutants. As explained above, the City supports the delisting of the pollutants due to the extensive restoration projects that have been completed. If, for some reason, these listing were omitted in error and the RWQCB disagrees with the City's comment to include them as Category 3, then all of the listings should, at a minimum, be included as Category 4A. Category 4A is defined as "*A TMDL has been developed and approved by USEPA and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.*" Category 4A is supported by the approved TMDLs covering Echo Lake Chlordane and PCB listings, as well as the

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No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Machado Lake Chlordane, DDT, Dieldrin, PCB, algae, ammonia, ChemA(tissue), eutrophication, odor, and trash listings. ***Requested Actions:*** ***(1) Move all segments listed in the preceding table to Category 3 based on the completion of extensive restoration projects, and include the following text to explain the category change: "Due to recent extensive restoration efforts, data from 2010 and prior is not representative of current conditions of the water body. Available data are insufficient to determine attainment status."*** ***(2) If Category 3 listing of suggested pollutants does not occur, ensure that all pollutants listed in the preceding table are correctly categorized as Category 4A based on the existence of USEPA approved TMDLs.*** ***(3) Correct and/or clarify inconsistent listings in Appendices for consistency throughout the entire proposed 303(d) document.***		
11.24	Various waterbodies / Benthic Community Effects Notwithstanding the City's comments related to removing all listings that do not identify either toxicity or a pollutant as the impairment, the City identified the following listings for Benthic Community Effects (summarized in the following table) that are inappropriate: • Ballona Creek: Decision ID 65656 • Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165 • LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229 • LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Benthic Community Listings for waterbodies that	The Benthic Community decision for Arroyo Seco Reach 2 has been changed to "do not list" as the sampling site with the exceedances in the soft bottom section is actually in Arroyo Seco Reach 1. That data is now attributed to Arroyo Seco Reach 1. The Benthic Community decision for Arroyo Seco Reach 1 has been revised to include the data from the soft bottom section and the listing decision remains "do not delist." In addition, the factsheet has been updated to say that the additional data

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553 • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548 • Compton Creek: Decision ID 44498 The City believes the listings are inappropriate, based on the following issues that are described in more detail below: • <u>Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.</u> The listing decisions were based on Southern California Coastal Index of Biotic Integrity (SCIBI). The State Water Board has rejected use of the SCIBI in favor of the California Stream Condition Index (CSCI). The Regional Board Staff Conclusions (Staff Conclusions) for the listing decisions do not acknowledge that the data used to support the decisions were SCIBI scores, not CSCI scores. Instead, the Staff Conclusions imply that the decisions are based on CSCI scores. • <u>There is no established water quality criteria for benthic community condition.</u> Use of a SCIBI score of 40 (or other "cutoffs" promulgated by the authors of the SCIBI) as a listing threshold is not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. The Regional Board use of a CSCI score of 0.79 in other listing decisions (and implied to be appropriate for Ballona Creek) is also not consistent with the State Board's current approach for identifying impairment thresholds for benthic community data. • <u>Listings for concrete-lined channels using current metrics are inappropriate.</u> Reference reaches for concrete-lined channels in highly urbanized catchments are lacking. Physical habitat conditions were apparently not considered during data evaluation. The State Board is planning to develop expectations for benthic community condition for developed landscapes using the CSCI and a new Algal Stream Condition	are lined entirely with concrete have been assessed as "insufficient information" until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. The **Ballona Creek** samples were taken from a fully concrete-lined section and now Ballona Creek benthic community condition has been assessed as "insufficient information". The **Dominguez Channel above Vermont** samples were taken from a fully concrete-lined section and now Dominguez Channel above Vermont benthic community condition has been assessed as "insufficient information". **LA River Reach 3** samples were taken from a fully concrete-lined section and now LA River Reach 3 benthic community condition has been assessed as "insufficient information". Benthic Community Listings which were based on samples taken from un-lined sections of reaches were appropriately assessed. **Arroyo Seco Reach 1** was listed in 2010 for benthic macroinvertebrate assessment (2 out of 2 samples not meeting the standard) in an *unlined* section of the channel. The additional assessment added this listing cycle appears to be from a lined section of the Arroyo Seco and that LOE is classified as "insufficient information." **Compton Creek** was listed in 2010 for benthic macroinvertebrate assessment in an *unlined*	added for the 2016 list was taken from a short soft-bottom section of the channel at the upstream end of the Reach and that both upstream and downstream of that section is fully concrete-lined.

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td>
Index (ASCI). TMDL development for benthic community effects in concrete-lined channels based on unofficial IBI thresholds is premature.
• <u>Insufficient data are available to meet the listing requirements.</u> Notwithstanding the previous issues, several of the listings rely on a single site for data as a basis of the listing inconsistent with the Listing Policy.
<table>
<tr><th rowspan="2">Type of Decision</th><th rowspan="2">Segment / Station</th><th colspan="5">Cited Benthic Community Data</th></tr>
<tr><th>Line of Evidence (LOE) ID</th><th>Data Source</th><th>Metric used in Data Source</th><th>Time Frame</th><th>Scores[a]</th></tr>
<tr><td>New Listing</td><td>Ballona Creek (Station 14)</td><td>82971</td><td rowspan="5">Bioassessment Monitoring Report in LA County, 2006-2008</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>New Listing</td><td>Dominguez Channel (Station 19)</td><td>83960</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>New Listing</td><td>LA River Reach 3 (Stations 11 and 12)</td><td>85994</td><td>SCIBI</td><td>2006, 07</td><td>4/4 scores were below 40</td></tr>
<tr><td>New Listing</td><td>LA River Reach 4 (Station 13)</td><td>86097</td><td>SCIBI</td><td>2006, 07</td><td>2/2 scores were below 40</td></tr>
<tr><td rowspan="2">Do Not Delist</td><td rowspan="2">Compton Creek (Station 8)</td><td>83829</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
<tr><td>30224</td><td rowspan="2">LA County 1994-2005 Integrated Receiving Water Impacts Report. Section 5, LA River Watershed Management Area, pp 5.1 - 5.40</td><td>SCIBI</td><td>2003, 04</td><td>2/2 scores were “very poor”</td></tr>
<tr><td rowspan="2">Previous Listing</td><td rowspan="2">Arroyo Seco Reach 1 (Station LALT501)</td><td>30223</td><td>SCIBI</td><td>2003, 04</td><td>2/2 scores were below 13</td></tr>
<tr><td>82895</td><td rowspan="2">Bioassessment Monitoring Report in LA County, 2006-2008</td><td>SCIBI</td><td>2008</td><td>1/1 score was below 40</td></tr>
<tr><td>New Listing</td><td>Arroyo Seco Reach (Station 7)</td><td>82896</td><td>SCIBI</td><td>2006, 07, 08</td><td>3/3 scores were below 40</td></tr>
</table>
[a] Per Staff Conclusions, SCIBI scores were binned as very good (80-56), good (41-55), fair (27-40), poor (14-26) and very poor (0-13) habitat conditions; sites with scores below 26 are considered to have impaired conditions.

Impairment of the reaches was not demonstrated using an appropriate metric for benthic community condition.

SCIBI-based datasets should not be considered for listing decisions. Section 3.9 of the Listing Policy states:

“A water segment shall be placed on the section 303(d) list if the water segment exhibits significant degradation in biological populations and/or communities as compared to reference site(s) and is associated with water or sediment concentrations of pollutants including, but not limited to chemical
</td><td>
section of Compton Creek. Additional assessments were added for this listing cycle also in the unlined section of Compton Creek. Arroyo Seco Reach 2 is not fully lined; three out of three IBI scores from 2006, 2007 and 2008 exceeded the standard.

The Benthic Macroinvertebrate data included in the CalWQA database for LA River Reach 4 should be associated with Reach 5. Additionally, this section is not fully-lined. Los Angeles Water Board staff’s intention will be to correct the reach in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.

There are sufficient data in the waterbody segments listed to be representative of the water body segment in accordance with the Listing Policy Section 6.1.5.2 and 6.1.5.3. When single stations were re-sampled, they were sampled on different years.

See response to comments 26.4, 26.13 and 26.14 for a discussion of low elevation segments and the benthic community scores.
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	concentrations, temperature, dissolved oxygen, and trash." [Emphasis added.] While it is commonly assumed that the SCIBI inherently accounted for reference conditions, the reference conditions used to develop the SCIBI were not representative of the low-elevation/low-gradient streams commonly found in the alluvial plains of the Los Angeles Region. It was developed using data from 275 sites, ranging from Monterey County to the Mexican border, but not a single reference location represented low-elevation and low-gradient streams. The reaches listed in the table above are extremely low gradient, low-elevation water bodies, and thus the SCIBI does not adequately define relevant reference conditions. Furthermore, the reference conditions used in the SCIBI represent a less restrictive definition of the reference condition than that which was deemed adequate as part of the State's Reference Condition Management Program[15]. The lead scientist for development of the SCIBI, Dr. Peter Ode, has acknowledged the limitations on application of the SCIBI. In a recently published paper regarding a study examining the SCIBI relative to other benthic macroinvertebrate bioassessments, he concluded that the SCIBI did not adequately address reference conditions in low-elevation sites, stating that the SCIBI was "not completely effective at controlling for an elevation gradient." Dr. Ode was also the coauthor of a March 2009 report on recommendations for development and maintenance of a network of reference sites to support biological assessment of California's wadeable streams. This report describes recommendations made by a technical panel of experts on bioassessment, including experts from the California Department of Fish and Wildlife, Southern California Coastal Water Research Project (SCCWRP), US EPA Region 9, and various universities. The technical panel laid out a number of steps that would be necessary to develop a network of adequate reference sites for implementation of criteria for bioassessments. They note that adequate reference sites have not been identified in southern California, stating, "human-dominated landscapes can be so pervasive in locations such as urban southern California and the agriculturally dominated Central Valley that no		

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	undisturbed reference sites may currently exist in these regions. A statewide framework for consistent selection of reference sites must account for this complexity." In 2010, as part of its project to develop a statewide Biointegrity Policy, the State Board abandoned use of the SCIBI and other regional IBIs, and funded development of the statewide CSCI (Mazor et al., 2016). The CSCI addressed at least some of the problems with the SCIBI through its use of a modeled reference condition as opposed to a regional reference pool. Starting in late 2016, the State Board began funding the development of a "companion" Algal Stream Condition Index (ASCI). The State Board is developing expectations for benthic community condition using both the CSCI and the ASCI which will be incorporated in a statewide Biointegrity Assessment Implementation Plan. The Staff Conclusions associated with the new listings in the preceding table do not acknowledge that the data used to support the new listings were SCIBI scores. Further, the Staff Conclusions for all of the new listings imply that Regional Board staff based the listing decision on CSCI scores. The source of the BMI data for each of the new listings, and the new LOE for Compton Creek, ("Bioassessment Monitoring Report in Los Angeles County, 2006-2008") were appendices (Appendix H) of the Los Angeles County Stormwater Monitoring Reports for 2006, 2007, and 2008. *In these reports, BMI data were scored using the SCIBI (Ode et al. 2005), not the CSCI*. In two cases (Ballona Creek and Arroyo Seco Reach 2), the Staff Conclusions explicitly, but erroneously, state that the underlying BMI data were CSCI scores. In the other cases, the ambiguous acronym "IBI" is used where scores are cited, and then the narrative ends with a passage implying that the "IBI" scores were CSCI scores. The misleading information in the Staff Conclusion for each new listing recommendation is provided below. • Ballona Creek: "Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing Benthic Community Effects on the CWA section 303(d) List.		

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	"**3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**, indicating poor water quality and that pollutant concentration and toxic effects are impacting aquatic life in this waterbody segment" ... "**The CSCI** is available statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity." (Regional Board Staff Conclusion for Decision ID 65656, emphasis added) • Dominguez Channel (lined portion above Vermont Ave.): "Three of the three samples collected had IBI scores below 40 there are several other pollutants in this water body that are listed for impairment including ammonia, copper, diazinon, nitrogen, toxicity, and zinc." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66165, emphasis added) • Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.): "Four of the four samples collected had IBI scores below 40." ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66299, emphasis added) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam): "Both of the two samples collected had IBI scores below 40.... Two of the two samples collected had IBI scores below 40. ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and		

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	provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 66232, emphasis added) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): "3 of 3 samples exceeded the GUIDELINE... **3 of 3 samples were below the California Stream Condition Index (CSCI) score of 0.79**. ... "**The CSCI** is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. **The CSCI** will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs)." (Regional Board Staff Conclusion for Decision ID 65548, emphasis added) ***There is no established water quality criteria.*** Regional Board staff utilized a SCIBI score of 40 as a listing threshold. However, this value is not an established water quality criteria, nor does it represent the type of threshold the State Board intends to use to identify community condition or levels of impairment in its Biointegrity Assessment Implementation Plan. A SCIBI score of 39 was originally promulgated by the authors of the SCIBI (Ode et al. 2005) as an "impairment threshold" because it was equal to an arbitrary statistical criterion (two standard deviations below the mean reference site score). Although it was not used for the listings in the table above, Regional Board staff have also used a CSCI score of 0.79 as a listing threshold for other reaches (see also the statement regarding this threshold in the Staff Conclusions excerpt for Ballona Creek above). However, a CSCI threshold of 0.79 is also based on an arbitrary statistical criterion (10th percentile of the reference calibration site scores; Mazor et al. 2016), and is not an adopted water quality criteria. The State Board is not pursuing use of arbitrary statistical cutoffs, such as reference population percentiles, to identify benthic community impairment going forward. As outlined in the November 2016 Work Plan, the State Board is using a		

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	Biological Condition Gradient Expert Synthesis approach to relate ranges of biological condition scores to community condition. Using this approach, a team of experts uses taxonomic metrics to assign degrees of biological condition to test sites while being blind to the degree of anthropogenic stressors present at the sites. In addition, the analysis is blind to the relationship between site scores and statistical distributions of overall datasets or reference datasets. **Listings for concrete-lined channels using currently available metrics are inappropriate.** Application of the SCIBI to concrete-lined channels is especially inappropriate given the lack of a reference population for low-gradient streams in coastal southern California, in general, much less for modified channels, in specific. Section 6.1.5.8 of the listing policy states: *"When evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall evaluate bioassessment data from other sites, and compare to reference condition. Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment."* EPA's causal assessment manual cites physical habitat as a leading cause of impairment in streams on 303(d) lists and recommends that, in all cases where physical habitat is evaluated, stream size and channel dimensions, channel gradient, channel substrate size and type, habitat complexity and cover, vegetation cover and structure, and channel-riparian interactions should all be considered before making a decision.[19] Physical habitat conditions are not referenced in the Lines of Evidence for the benthic community effects listings in the preceding table, although physical habitat data collection is a standard part of bioassessment monitoring and reporting. Ultimately, benthic community impairments in concrete-lined channels should be evaluated for potential listing in Category 4c of the 305(b) integrated		

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	report, instead of on the 303(d) list of segments requiring a TMDL. The USEPA Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (IRG) states: *"Circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization."* As part of its statewide Biostimulatory-Biointegrity Project, in recognition that it may not be appropriate or productive to apply a single set of benthic community condition expectations to streams in pristine and developed landscapes, the State Board is currently employing SCCWRP and CDFW to developing expectations for benthic community condition for developed landscapes using the CSCI and the Algal Stream Condition Index (ASCI).[20] The probability that concrete-lined channels in highly urbanized settings will be candidates for alternative benthic community endpoints is illustrated by language from the Work Plan: *"**In some streams, direct channel modifications (e.g., bank armoring) may also limit opportunities to sustain high-quality ecological conditions for aquatic life**. In these highly developed settings, the large number of linked stressors may prevent a stream from supporting its beneficial uses or attaining high scores on indices of biological condition. **Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards**. In these circumstances, the range of CSCI and/or ASCI scores may be constrained, but targeted restoration could improve conditions. Key technical questions underpinning the range of options and prioritization of management actions for wadeable streams along the continuum from undeveloped to highly developed landscapes found within California are: For which streams is biological integrity constrained by development in the catchment? How can they be identified and mapped? What are the ranges of biological conditions these developed landscapes can support?" (Mazor et al. 2017; emphasis added)*		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Triggering TMDL development for benthic community effects in concrete-lined channels using unofficial impairment thresholds derived from statistical distributions of IBIs from unarmored reference reaches is unwarranted. **Insufficient data are available to meet the listing requirements** Notwithstanding the previous issues, several of the listings rely on a single site for bioassessment data, which is inconsistent with the Listing Policy. Per section 3.9 (Degradation of Biological Populations and Communities) of the Listing Policy, “The analysis should rely on measurements from at least two stations.” Only one site is referenced in the Fact Sheets for the following listing decisions: • Ballona Creek • Dominguez Channel (lined portion above Vermont Ave) • Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) [Also, note that the data associated with Los Angeles River Reach 4 was actually collected in Los Angeles River Reach 5.] • Arroyo Seco Reach 1 (LA River to West Holly Ave.) • Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam) • Compton Creek Because data were only collected at one site within these waterbodies, the requirements of the Listing Policy are not met. ***Summary*** As described in detail above, the approach utilized to establish benthic community effects impairments are not demonstrated using an appropriate metric for benthic community condition. The listings rely on an unestablished water quality criteria based on metrics that are not appropriate for concrete-lined channels. Lastly, in all but one listing, there are not sufficient data to meet the listing requirements per the Listing Policy as the data were only collected at a single site within a waterbody. ***Requested Action: Remove the following Decision IDs from the 303(d) list:*** • ***Ballona Creek: Decision ID 65656***		

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	• ***Dominguez Channel (lined portion above Vermont Ave): Decision ID 66165*** • ***LA River Reach 3 (Figueroa St. to Riverside Dr.): Decision ID 66229*** • ***LA River Reach 4 (Sepulveda Dr. to Sepulveda Dam): Decision ID 66232*** • ***Arroyo Seco Reach 1 (LA River to West Holly Ave.): Decision ID 44553*** • ***Arroyo Seco Reach 2 (West Holly Ave to Devils Gate Dam): Decision ID 65548*** • ***Compton Creek: Decision ID 44498***		
11.25	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) / Temperature, water The temperature listing for Los Angeles River Reach 3 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed for Los Angeles River Reach 3 is WARM. Only the COLD beneficial use uses the rainbow trout growth range as a listing criteria. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. Notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses, the manner in which the evaluation guideline is applied is also inappropriate. Line of Evidence (LOE) 85933 references Moyle 1976 as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures." As such, while temperatures above 21°C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C	A review of the Los Angeles River Reach 3 temperature decision is in process at this time.	The temperature data for the Los Angeles River Reach 3 has been re-evaluated and compared to the Basin Plan standard of not to exceed 80° and the decision has been revised to "do not list."

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	which indicates that the evaluation guideline of 21°C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline as used in the proposed listing. When utilizing 23°C, only 40 of the 542 samples exceed the guideline, which does not meet the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants (a minimum of 90 exceedances would be required). As such, even if the Los Angeles River Reach 3 was designated with a COLD beneficial use, applying the appropriate "not-to-exceed" guideline of 23°C results in a finding of nonimpairment for temperature in Los Angeles River Reach 3. Lastly, notwithstanding that the evaluation guideline of 13-21°C is inappropriate for Los Angeles River Reach 3 given the water body's beneficial uses and that 23°C is the more appropriate "not-to-exceed" guideline, when the average water temperature across Los Angeles River Reach 3 was above 21°C (69.8°F), with only one exception out of 33, the air temperature was also above 21°C (69.8°F). As such, ambient air temperature above 21°C is most likely cause of exceedances of the 21°C evaluation guideline. ***Requested Action: Revise Decision ID 64386 for the temperature water listing for Los Angeles River Reach 3 to Do Not List on 303(d) list and remove from Category 5 (Appendix B) because the beneficial use protected by the evaluation guideline is not an existing or potential beneficial use within Los Angeles River Reach 3; the number of measured exceedances does not meet the minimum number of measured exceedances needed to place a water segment on the Section 303(d) list for conventional or other pollutants if an appropriate evaluation guideline is applied; and ambient air temperature is the most likely cause of exceedances of the evaluation guideline.***		
11.26	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River	Los Angeles River Reach 3 includes three LOEs	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Reach 5 (within Sepulveda Basin), Bull Creek, Wildlife Lake, and Balboa Lake / Ammonia The Fact Sheet for Decision ID 32974 corresponds to the ammonia listing for Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (85894, 86019, and 2507). LOE 2507 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 85894 and 86019 each state that all of the exceedances in each dataset occurred prior to and in 2007. The City found that the last exceedance was July 2007, which is to be expected given that 2007 was the year that the nitrification/denitrification (NDN) treatment process as completed at both the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) and Donald C. Tillman Water Reclamation Plant (DCTWRP). Both the LAGWRP and DCTWRP discharges travel through Los Angeles River Reach 3, and since the NDN processes to remove ammonia were completed in July 2007, no exceedances in this waterbody have been observed. The Fact Sheet for Decision ID 32567 corresponds to the ammonia listing for Los Angeles River Reach 5 (within Sepulveda Basin) and states that two lines of evidence are available in the administrative record to assess the pollutant, although there are three lines of evidence present (86205, 86204, and 2520). LOE 2520 is a placeholder to support a 303(d) listing decision made prior to 2006. LOEs 86205 and 86204 each state that all of the exceedances in each dataset occurred prior to March and August 2007, respectively. The DCTWRP discharge flows through part of Reach 5 and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60597 corresponds to the ammonia listing for Bull Creek and states that two lines of evidence are available in the administrative record to assess the pollutant (83158 and 83154). LOE 83154 presents one data point collected in May 2008 that does not show an exceedance. LOE 83158 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Bull Creek and the NDN processes to remove ammonia	(85894, 86019, and 2507); 85894 and 86019 were grouped to make the assessment that there were 33 exceedances out of 111 samples total. Los Angeles River Reach 3 and Los Angeles River Reach 5 are being addressed by the Los Angeles River Nutrient TMDL. Bull Creek, Wildlife Lake, and Balboa Lake have been updated in the CalWQA database to reflect that they are being addressed by the Los Angeles River Nutrient TMDL. Los Angeles River Reach 4 is meeting the criteria based on the available data. Data collected after the NDN processes were put in place may show that the water quality in these reaches has improved; this update to the 303(d) list is only considering data submitted by August 30, 2010. For a discussion of readily available data see response to comment 32.3. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.	

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	were completed in 2007. The Fact Sheet for Decision ID 66374 corresponds to the ammonia listing for Wildlife Lake and states that one line of evidence is available in the administrative record to assess the pollutant (90174). LOE 90174 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Wildlife Lake and the NDN processes to remove ammonia were completed in 2007. The Fact Sheet for Decision ID 60378 corresponds to the ammonia listing for Balboa Lake and states that one line of evidence is available in the administrative record to assess the pollutant (82930). LOE 82930 states that all of the exceedances occurred prior to August 2007. The DCTWRP discharge flows through Balboa Lake and the NDN processes to remove ammonia were completed in 2007. Furthermore, the Fact Sheet for Decision ID 32913 corresponds to the ammonia listing for Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) and includes the decision to Delist from 303(d) list (being addressed by USEPA approved TMDL) based on the following Regional Board Staff Decision Recommendation: “RWQCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not being exceeded.” This decision is based on two LOEs (2513 and 86136). LOE 2513 states “A TMDL and implementation plan have been approved for this water segment-pollutant combination. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004.” LOE 86136 finds that 0 of 152 samples exceeded the site-specific basin plan objective for total ammonia as nitrogen and only includes samples collected from 2008 to 2010 (which is after the date when the WRPs added the NDN treatment process and is inconsistent with the dates used in the assessments conducted for Los Angeles River Reaches 3 and 5, Bull Creek, and Wildlife Lake).		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Through the installation and implementation of NDN treatment facilities and process optimization by the City of Los Angeles (and City of Burbank), which has spent approximately $75 million to construct advanced treatment facilities to address ammonia, and approximately $6 million per year to operate those facilities, the quality of the water in the Los Angeles River watershed has been demonstrated to be fully attaining the applicable water quality objectives for ammonia. The message from the City and the Regional Board should be that the cooperative process worked, and that the applicable water quality standards are now being attained. Instead, the 303(d) list does not reflect the water quality improvement. Given that the addition of the NDN treatment process to the WRPs has eliminated exceedances, the timeframe used to evaluate impairments due to ammonia should be made consistent with the timeframe used in Los Angeles River Reach 4 which would result in the same listing decision for each water body (i.e., Delist from 303(d) list [being addressed by USEPA approved TMDL]). ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 3 Decision ID 32947*** - ***Los Angeles River Reach 5 Decision ID 32567*** - ***Bull Creek Decision ID 60597*** - ***Wildlife Lake Decision ID 66374*** - ***Balboa Lake Decision ID 60378*** -		
11.27	Los Angeles River Reach 1 (Estuary to Carson Street) and Los Angeles River Reach 2 (Carson to Figueroa Street) / Ammonia The Fact Sheet for Decision ID 32973 corresponds to the ammonia listing for Los	Each of those LOEs are “placeholder” LOEs to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Angeles River Reach 1 (Estuary to Carson Street) and is based on one LOE (2319), which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. The Fact Sheet for Decision ID 32911 corresponds to the ammonia listing for Los Angeles River Reach 2 (Carson to Figueroa Street) and is based on one LOE (2465) which does not contain any data. As such, the decision previously approved by the State Water Resources Control Board and the USEPA has not changed. In light of the information presented in the previous comment, it can be expected that conditions in Los Angeles River Reaches 1 and 2 since NDN was fully implemented (mid-2007) are consistent with what has been observed in Los Angeles River Reaches 3, 4, and 5 (i.e., no exceedances). A review of the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) do not show any exceedances. ***Requested Action: Revise the following Decision IDs to a finding of nonimpairment and remove listings for ammonia from Category 5 (Appendix B) because the data used to conclude that the applicable water quality standards for the pollutant were exceeded are no longer representative of ammonia concentrations observed within the water bodies due to the installation and operation of NDN:*** - ***Los Angeles River Reach 1 Decision ID 32973*** - ***Los Angeles River Reach 2 Decision ID 3291*** -	There is no additional data in the CalWQA database that would support delisting. Los Angeles Water Board staff encourages the commenter to enter into CEDEN the ammonia data analyzed as part of the Upper Los Angeles River (ULAR) Enhanced Watershed Management Program (EWMP) development prior to the next Listing Cycle that includes the Los Angeles Region.	
11.28	Tujunga Wash (LA River to Hansen Dam) / Ammonia The Fact Sheet for Decision ID 32873 corresponds to the ammonia listing for Tujunga Wash (LA River to Hansen Dam) and is based on one LOE (2554) which does not contain any data. Rather, the Fact Sheet states that “One line of evidence	This LOEs is a “placeholder” LOE to show a finding of impairment made prior to 2006. The CalWQA database does not include data from decisions made prior to 2006.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	is available in the administrative record to assess this pollutant. A TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. The Los Angeles River Nitrogen TMDL was approved by RWQCB on August 19, 2003 and subsequently approved by USEPA on March 18, 2004. This listing will substitute for the previous listings for foam, floc, scum, and taste and odor." As there are no data to support the listing, the ammonia listing for Tujunga Wash should be removed. Also, substituting the listing for foam, scum, and taste and odor is not necessary because the Regional Board removed those listings from the section 303(d) list because they are not pollutants or toxicity. ***Requested Action: Revise Decision ID 32873 for the ammonia listing for Tujunga Wash to Delist from 303(d) list and remove from Category 5 (Appendix B).***	There is no additional data in the CalWQA database that would support delisting. The listings for foam, scum, and taste and odor were removed even though they showed impairment of beneficial uses because the listing for ammonia could "substitute" or stand in for those non-pollutant impairments and the Los Angeles River Nitrogen TMDL addresses those impairments.	
11.29	Bull Creek, Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.), Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam), Los Angeles River Reach 5 (within Sepulveda Basin), Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin), and Los Angeles/Long Beach Outer Harbor (inside breakwater) / Toxicity The Fact Sheets for the following Decision IDs relate to toxicity in the water column: - Decision ID 39159 Bull Creek - Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) - Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) - Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin)	Decision ID 39159 Bull Creek is DO NOT LIST for toxicity because Bull Creek is meeting the criteria based on the available data. Bull Creek, the waterbody, is on the list under 4a due to the indicator bacteria listing, which is being addressed by a TMDL. Decision ID 64389 Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.) is a decision to LIST for toxicity with 29 out of 75 samples exceeding. Decision ID 64465 Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam) is a decision to LIST for toxicity with 21 out of 48 samples exceeding.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	- Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin) - Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater) The City has several concerns with the proposed listings: 1. Section 6.1.5.3 of the Listing Policy states that "Samples used in the assessment must be temporally independent." However, data collected on the same day within the same waterbody are considered as independent samples without consideration of the fact they represent the same condition. These samples should be evaluated as representative of a single day. 2. In developing the number of samples analyzed and exceeded, the Regional Board appears to count a sample collected as one sample, but count acute and chronic results separately. In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic end points there is only one sample that is identified as not exceeded. One sample should result in only one nonexceedance or one exceedance. 3. For Decision IDs associated with the Los Angeles River watershed, data are included that do not represent current conditions. As described previously, the LAGWRP and DCTWRP upgraded their treatment processes to remove ammonia. Since the NDN processes to remove ammonia were completed, no exceedances for ammonia have been observed since August 2007. All toxicity data prior to August 2007 should be removed from the analysis. 4. A number of the results are based on testing with *Ceriodaphnia dubia* (*C. dubia*). As discussed in the Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document (SCCWRP Technical Report 956 December 2016), the report states (page 18) that during the	Decision ID 64489 Los Angeles River Reach 5 (within Sepulveda Basin) is a decision to LIST for toxicity with 21 out of 53 samples exceeding. Decision ID 64536 Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin) is a decision to LIST for toxicity with 13 out of 19 samples exceeding. Decision ID 33930 Los Angeles/Long Beach Outer Harbor (inside breakwater) is a decision to LIST for toxicity with two LOEs, 9 out of 37 and 32 out of 112 samples exceeding. 1. It is in accordance with the Listing Policy to collect samples on the same day if the samples are from different locations although the Listing Policy does require consideration if the samples represent an unusual condition (see Listing Policy 6.1.5.3 "*If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set*.") These samples were collected over several years. 2. The commenter states: *In certain situations the result is two exceedances for the same sample. However, the Regional Board does not consider it conversely when there are no exceedances of acute or chronic end points there is only one*	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	intercalibration study, multiple laboratories observed *C. dubia* toxicity in laboratory dilution water (which should be non-toxic). Additionally, the report (page 16) found testing variability observed during the intercalibration study for *C. dubia* which had a response that ranged from 16 to 27% effect, and a standard deviation of 19 to 27% effect. The report further indicated that this large variability is not uncharacteristic of the variability observed by others. 5. Toxicity testing results were developed with a statistical approach that is no longer utilized in the NPDES monitoring programs. The LAGWRP, DCTWRP, HWRP and TIWRP NPDES permits require that toxicity endpoints be calculated using the Test of Significant Toxicity (TST) statistical approach. Future data will not be comparable to the listing data. As such, data used for listings should be assessed in a manner consistent with current regulations prior to making a determination of impairment. Given the issues associated with the data analysis and testing methods used as well as the implications of the listings, the City believes that additional efforts are needed to validate and assess whether or not an impairment exists. The City welcomes the opportunity to discuss an approach to properly evaluate toxicity in the affected waterbodies. ***Requested Action: Revise Decision IDs 39159, 64389, 64465, 64489, 64536, and 33930 for toxicity listings from Category 5 to Category 3.***	*sample that is identified as not exceeded.* Los Angeles Water Board staff do not find where this happened. 3. See response to comment 32.6, and for a discussion of readily available data see response to comment 32.3. 4. See response to comment 17.3 5. Future data using the different method will be considered in separate LOEs. Water Board staff are open to discussions on approaches to properly evaluate toxicity in the affected waterbodies in order to ensure the most appropriate data is entered into CEDEN prior to the next Listing Cycle that includes the Los Angeles Region.	
12.	City of Manhattan Beach, March 30, 2017		
12.1	The City of Manhattan Beach is gratified that its beaches meet the criteria for delisting for indicator bacteria. However, the staff report states that even though the delisting is being proposed, "it is important to note that the Santa Monica Bay Bacteria TMDL remains in effect for those beaches even if the delistings are fully approved." Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to *Category 4a - TMDL has been developed*	The beach meets the requirements for delisting per the Listing Policy. No provision of the Listing Policy allows for decisions to “list” or to “do not delist” based on funding considerations. However, as noted, the TMDL and the requirements of the TMDL contained in the Los Angeles County MS4	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame. The City is concerned that delisting during all weather conditions may adversely affect our ability to compete for grant funding for multi-benefit regional and green street projects identified in the Beach Cities EWMP to address the Santa Monica Bay Beaches Bacteria TMDL (SMBBB TMDL) during wet weather within the high priority 28th Street Storm Drain System. Since the SMBBB TMDL targets are set differently for wet and dry weather, it would seem logical for the Regional Board to distinguish these conditions in the 303d listing and we ask that the Board revise the proposed delisting Manhattan Beach for indicator bacteria to be specific to dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the beach at the SMB 5-2 28th Street monitoring location remain on the list in Category 4a for wet weather conditions. This will enable the City to be more competitive when applying for grant funding to complete its implementation of the wet weather SMBBB TMDL. The Regional Board Notice of Extension of Comment Deadline notes that Regional Board staff are aware that "in several instances, Appendix A, the Proposed Updates to the 303(d) List has not fully captured all of the new listing and delisting decisions that are detailed in Appendix G, the Fact Sheets due to system and clerical errors". This has made review of the proposed listing changes quite challenging but we have done our best given the limited time available. The City of Manhattan Beach respectfully provides the attached comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report.	Permit remain in effect. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.2	City of Manhattan Beach Comments on Proposed Revisions to 303(d) List **Water Body/Pollutant: Manhattan Beach/Indicator Bacteria** **Comment**: The staff report states that even though Manhattan Beach is being proposed for delisting for indicator bacteria, the Santa Monica Bay Bacteria	See response to comment 12.1.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	TMDL remains in effect. Likewise, Appendix A indicated that the beach will be removed entirely from listing rather than changing the status to Category 4a (A TMDL has been developed and the approved implementation plan is expected to result in full attainment of the water quality standard within a specified time frame.) The City is concerned that delisting may adversely impact our ability to compete for grant funding for multi-benefit regional and green street projects to address the Santa Monica Bay Beaches Bacteria TMDL during wet weather. **Recommendation**: Consider delisting of Manhattan Beach for indicator bacteria only during dry weather since final compliance is now in effect and the TMDL objectives are being met for dry weather at all three sites, and that the SMB 5-2 28th Street beach remain on the list in Category 4a Street beach remain on the list in Category 4a Manhattan Beach for wet weather indicator bacteria should be considered once the final wet weather SMBBB TMDL compliance deadline has passed.		
12.3	**Santa Monica Bay Offshore - Nearshore/Arsenic and Mercury** **Comment**: Santa Monica Bay Offshore-Nearshore areas are being proposed for listing for Arsenic and Mercury based on sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit. Samples were collected during August 2006, October and November 2007, and August through September of 2007. This data predates the last listing cycle and no data collected within the past decade is presented to support the listing. The SWRCB Listing Policy Section 1.1.2.1 states that "data and information previously submitted to the Regional Water Boards, such as Discharge Monitoring Reports, need not be solicited if the data and information remain available to the Regional Boards." **Recommendation**: Before making such important new listings Regional Board staff should review all readily available data including data collected within the	See response to comment 32.3 for a discussion of readily available data. See also response to comments 11.21 and 11.22.	See response to comment 11.21.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	past decade from the Hyperion Wastewater Treatment Plant NPDES Permit.		
12.4	**Santa Monica Bay Offshore - Nearshore/ Sediment Toxicity** **Comment**: On March 26, 2012 USEPA issued a final TMDL for Santa Monica Bay DDT and PCBs which found that "Our evaluation of the data showed only 3 out of 116 samples exhibited toxicity. Following the California listing policy, Santa Monica Bay is meeting the toxicity objective and there is sufficient evidence to delist sediment toxicity. We therefore make a finding that there is no significant toxicity in Santa Monica Bay and recommend that Santa Monica Bay not be identified as impaired by toxicity in the California's next 303(d) list." Contrary to this recommendation the Regional Board has not proposed delisting sediment in Santa Monica Bay for toxicity. **Recommendation**: Appendix G Decision ID 34120 should be revised to delist Santa Monica Bay for sediment toxicity based on the review and recommendation by USEPA in developing the Santa Monica Bay DDT and PCBs TMDL. Appendix A should be revised to place a "Y" in the New Delistings column and the "Y" eliminated from the Pollutant Name Change column since there does not appear to be any name change being proposed.	The 303(d) list and the factsheet has been updated to “DELIST.”	
12.5	**Santa Monica Bay Offshore - Nearshore/ DDT and PCBs** **Comment**: The listing for Santa Monica Bay Offshore- Nearshore/DDT and PCBs is included in Attachment B Category 5 (a water segment where standards are not met and a TMDL is required but not yet completed) however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in Attachment A summary under "other revisions". **Recommendation**: The listings for DDT and PCBs should be moved to Category	The 303(d) list has been updated to show the listing is “being addressed by a TMDL.”	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	4a in Attachment C.		
12.6	**Santa Monica Bay Offshore - Nearshore/ Chlordane** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 37492 recommending delisting Santa Monica Bay Offshore-Nearshore waters for chlordane is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for Chlordane.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.	
12.7	**Santa Monica Bay Offshore - Nearshore/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: The revised Appendix G Fact Sheet associated with Decision ID 32656 recommending delisting Santa Monica Bay Offshore-Nearshore waters for PAHs is not reflected in the Appendix A summary of recommended changes. **Recommendation**: Revise Attachment A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore line for PAHs.	Los Angles Water Board staff has found several inconsistencies with Appendix A as released for public comment. Appendix G is correct and Appendix A has been revised.	
12.8	**Dominguez Channel (lined portion above Vermont)/Benthic Community Effects** **Comment**: Appendix G Decision ID 66165 is proposing to list the Dominguez Channel concrete-lined section above Vermont Avenue due to degradation of biological populations and communities (Benthic Community Effects) as evidenced by IBI scores below 40, however use of IBI scoring methodologies does not provide a reference that takes into account that concrete lined channels do not typically provide benthic habitat that will support biological populations and communities. The listing policy states that to make this determination the water body must "exhibit significant degradation in biological populations and/or	See response to comment 11.19 and 11.24 for Benthic Macroinvertebrate listings.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	communities as compared to reference sites" .... "This condition requires diminished numbers of species or individuals of a single species or other metrics when compared to reference sites." Additionally the listing policy states that "The analysis should rely on measurements from at least two stations." Whereas the data presented to support Decision ID 66165 came from a single station. **Recommendation**: Do not list Dominguez Channel lined portion above Vermont for Benthic Community Effects because the analysis is not supported by data consistent with the SWRCB listing policy.		
12.9	**Dominguez Channel (lined portion above Vermont)/Lead** **Comment**: The quality of the data set used to support the original listing does not meet the data quality standards of the SWRCB's listing policy. The listing policy states that "when the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis." This listing was based on a data set more than a decade old with no actual detections of lead but where exceedances were presumed to have potentially occurred because the quantitation limit of 5 ug/L was not in all instances sufficiently low to determine compliance with the CTR dissolved lead criterion for continuous concentration in water (where the CTR value ranged from 0.23 to 7.27 ug/L, depending on the associated hardness of the water sample). The data set reviewed was for samples collected between January 2002 and April 2007 at the LACFCD Mass Emission Station S28 where Artesia Boulevard crosses Dominguez Channel and between 2000 and 2001 at S23 near LAX. Lead was not apparently detected in any of the samples above the quantitation limits, rather the identified exceedances of the lead standard were nondetections where the positive quantification limits 5 ug/L were too high to determine compliance with the standard when hardness caused depression of the standard below 5 ug/L. No measured exceedances of the standard were observed in the data set which is more than a decade old and for	A review of the Dominguez Channel (lined portion above Vermont) lead decision is in process at this time.	The lead decision will be reassessed during the State Board public comment period.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	which more recent data sets exist. **Recommendation**: Decision Recommendation ID 37347 should be revised to state that the water body should be delisted due to inadequate data and because the data reviewed did not demonstrate that applicable water quality standards are being exceeded. Alternatively, Regional Board staff could review the more recent readily available data collected at these same Mass Emission stations as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 and the listing decision revised based on data of quality consistent with the SWRCB's listing policy.		
12.10	**Dominguez Channel (lined portion above Vermont)/ Copper and Zinc** **Comment**: Are listed in Appendix B as Category 5 needing a TMDL, when the Dominguez Channel Toxics TMDL is in affect and is addressing these pollutants. **Recommendation**: Recategorize Copper and Zinc as Category 4a being addressed by a TMDL and move to Appendix C.	The 303(d) list has been updated to show that copper and zinc are "being addressed by a TMDL."	
12.11	**Dominguez Channel (lined portion above Vermont)/ Diazinon** **Comment**: We are supportive of the proposed delisting for Diazinon. **Recommendation**: Consider eliminating the statement in Attachment A under Other Revisions which states "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL" since this pollutant is being proposed for delisting.	Appendix A wording is automatically generated by the CalWQA database. We are exploring ways to better display this data.	
12.12	**Dominguez Channel (lined portion above Vermont)/ Nitrogen, ammonia (Total Ammonia)**	See response to comment 32.3 for a discussion of readily available data.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Comment: The Appendix G Fact Sheet Decision ID 35134 continues to support a listing for ammonia. This listing does not appear to be based on all readily available data since Los Angeles County Mass Emissions Station Data on the Dominguez Channel is not included in the data set. Monitoring data from 55 samples collected between November 2006 and July 2013 at LACFCD mass emission station S28 located where the Dominguez Channel crosses Artesia Boulevard in the City of Torrance, show that all 55 samples met the freshwater Basin Plan objective for ammonia. An additional 24 samples collected at LACFCD mass emission station TS19 between November 2008 and April 2011 also met the freshwater Basin Plan objective in every instance. These data were readily available to Regional Board staff since they were reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001. **Recommendation**: Delist Dominguez Channel lined portion above Vermont for ammonia and include readily available data reported as part of the LA County MS4 NPDES Permit monitoring program Cl 6948 NPDES No. CAS004001 into Decision ID 35134 to support this delisting.		
12.13	**Dominguez Channel (lined portion above Vermont)/ Aldrin** **Comment**: Appendix G Fact Sheet Decision ID 34620 for Aldrin recommends delisting due to flaws in the original listing. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Aldrin.	Aldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.14	**Dominguez Channel (lined portion above Vermont)/ ChemA**	ChemA was delisted in 2010. Appendix A includes proposed changes to the 303(d) list	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Comment: Appendix G Fact Sheet Decision ID 34426 for ChemA recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for ChemA.	including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.15	**Dominguez Channel (lined portion above Vermont)/ Chlordane** **Comment**: Appendix G Fact Sheet Decision ID 34427 for Chlordane recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chlordane.	Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.16	**Dominguez Channel (lined portion above Vermont)/ Chromium** **Comment**: Appendix G Fact Sheet Decision ID 34430 for Chromium recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Chromium and remove the "Y" from the Pollutant Name Change column.	Chromium was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.17	**Dominguez Channel (lined portion above Vermont)/ DDT** **Comment**: Appendix G Fact Sheet Decision ID 36720 for DDT recommends delisting due to flaws in the original listing because the data used for the original	DDT was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for DDT.	status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.18	**Dominguez Channel (lined portion above Vermont)/ Dieldrin** Comment: Appendix G Fact Sheet Decision ID 42330 for Dieldrin recommends delisting due to flaws in the original listing because the data used for the original listing was from fish tissue collected in the soft-bottom estuary below Vermont and was incorrectly applied to the lined portion of Dominguez Channel above Vermont. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for Dieldrin and remove the "Y" from the Pollutant Name Change column.	Dieldrin was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.19	**Dominguez Channel (lined portion above Vermont)/ Polycyclic Aromatic Hydrocarbons (PAHs)** **Comment**: Appendix G Fact Sheet Decision ID 34431 for PAHs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PAHs.	PAHs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
12.20	**Dominguez Channel (lined portion above Vermont)/ Polychlorinated Biphenyls (PCBs)**	PCBs was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Comment: Appendix G Fact Sheet Decision ID 34429 for PCBs recommends delisting due to flaws in the original listing because the data used for the original listing was not from this water body. **Recommendation**: Attachment A should be updated for Dominguez Channel lined portion above Vermont Avenue to include a "Y" in New Delistings column for PCBs.	listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
13.	City of Palos Verdes Estates, March 30, 2017		
13.1	Please see the City of Palos Verdes Estates' specific comments on the proposed revisions to the 2016 Section 303(d) and 305(b) Integrated Report, included herewith as Attachment A. Appendix A – City of Palos Verdes Estates Comments on Proposed Revisions to 303(d) List **Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Arsenic)** **Comment**: Decision No. 67208 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of arsenic. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67208 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to	See response to comment 2.13.	See response to comment 11.21.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.		
13.2	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Mercury)** **Comment**: Decision No. 67209(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes that the Santa Monica Bay Offshore/Nearshore areas be placed on the section 303(d) list because sampling conducted for the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES Permit in areas of Santa Monica Bay north of Redondo Beach Pier influenced by the Hyperion WWTP outfall revealed the presence of mercury. These samples were collected during August 2006, October and November 2007, and August through September of 2007 from nearfield and from Zones 4 & 5. **Recommendation**: While the Santa Monica Bay Offshore/Nearshore areas include the waters of the Palos Verdes Peninsula, this listing should be defined in geographic scope to exclude the Offshore/Nearshore waters of the Palos Verdes Peninsula. The data supporting Decision No. 67209 is not spatially representative of the Palos Verdes Peninsula waters; therefore this listing should be revised to clearly exclude areas of Santa Monica Bay south of Redondo Beach Pier from the listing.	See response to comment 2.14.	See response to comment 2.14.
13.3	**Water Body/Pollutant: Malaga Cove Beach/Indicator Bacteria** **Comment**: Decision No. 32565 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) proposes delisting Malaga Cove Beach from the section 303(d) list for indicator bacteria due to the fact that applicable water quality standards for this pollutant are not being exceeded. The City agrees with the Regional Board Staff Decision Recommendation in Decision No. 32565. However, while Decision No. 32565 has been modified since the last listing cycle in order to make the recommendation to delist, it continues to appear in the list of "original fact sheets" in Appendix G of the February 2017 integrated staff report for the Los Angeles region. Additionally, it is unclear why there is a "Y" in the Pollutant Name Change column in Appendix A since the original fact	The CalWQA database has been corrected to show the decision as "revised" and not to show that the name has been revised.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	sheet relating to Decision No. 32565 shows the pollutant name as “indicator bacteria”. **Recommendation**: Modify the Revision Status entry in Fact Sheet 32565 from “original” to “revised” and move the fact sheet into the revised fact sheet group.		
13.4	**Water Body/Pollutant: Lunada Bay Beach (Indicator Bacteria and Beach Closures)** **Comment**: The fact sheet for Decision No. 34394 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends that the original “beach closures” listing for Lunada Bay Beach should be revised to an “indicator bacteria” listing. No data is available to support a listing at this location as this is not an accessible beach but is in fact a rocky cove with steep bluff faces that cannot be safely accessed for monitoring. The original listing was for beach closures and Decision ID 34394 changed the pollutant name to indicator bacteria without any providing indicator bacteria data for evidence. **Recommendation**: Like the rest of the shoreline areas on the Palos Verdes Peninsula, Lunada Bay should be delisted for indicator bacteria and beach closures due to faulty listing by revising the recommendation in the Fact Sheet for Decision No. 34394 and place a “Y” in the New Delistings column of Appendix A to the February 2017 integrated staff report for the Los Angeles region. Also please eliminate the word “beach” from the waterbody because this is not an accessible beach, but rather a rocky cove with a steep bluff face that is not readily accessible to the public.	All indicator bacteria-related listings in the State of California’s 303(d) list including “beach closures,” “coliform,” “pathogens,” have or will be revised to “indicator bacteria” for statewide consistency. Lunada Bay Beach was listed in 1996 and data from prior to 2006 are not included in the CalWQA database and staff have no information that the original listing was faulty.	
13.5	**Water Body/Pollutant: Flat Rock Point Beach Area (Indicator Bacteria and Beach Closures)** **Comment**: Flat Rock Point forms the northern point of Bluff Cove and is part of the same “beach” as Bluff Cove. The fact sheet for Decision ID No. 34628 (located in Appendix G to the February integrated staff report for the Los Angeles Region) is proposing to revise the listing for Flat Rock Point from “beach closures” to “indicator bacteria” however no data to support the listing is provided. Since there is no separate monitoring data set for Flat Rock Point and Flat Rock	All indicator bacteria-related listings in the State of California’s 303(d) list including “beach closures,” “coliform,” “pathogens,” have or will be revised to “indicator bacteria” for statewide consistency. Flat Rock Point Beach was listed in 1996 and data from prior to 2006 are not included in the	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Point is contiguous with Bluff Cove, Decision ID 32848 and supporting lines of evidence for Bluff Cove should also be applied to Flat Rock Point. **Recommendation**: Flat Rock Point Beach Area should be included with Bluff Cove Beach in the fact sheet for Decision ID No. 32848 and delisted along with Bluff Cove Beach. Also please eliminate the word "beach" from the waterbody because this is not an accessible beach, but rather a rocky point that is not safely accessible for monitoring.	CalWQA database and staff have no information that the original listing was faulty. The requested change to combine Flat Rock Point with the adjacent Bluff Cove requires a change to the CalWQA underlying map, which is maintained by State Board. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for these reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or prior to the next Listing Cycle that includes the Los Angeles Region.	
13.6	**Water Body/Pollutant: Malaga Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Malaga Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay. **Recommendation**: Change "source unknown" to "source – Palos Verdes Shelf Superfund Site" for both DDT and PCBs.	The sources for DDT and PCBs have been changed to "See TMDL documentation." The Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.	
13.7	**Water Body/Pollutant: Bluff Cove Beach (DDT and PCBs)** **Comment**: Appendix C to the February 2017 integrated staff report for the Los Angeles region states that Bluff Cove Beach is included on the 303d list for DDT and PCBs with "Source Unknown". The source of the DDT and PCB listings are known to be associated with the Palos Verdes Shelf Superfund Site because this source is well documented in the USEPA TMDL for these pollutants in Santa Monica Bay.	The sources for DDT and PCBs have been changed to "See TMDL documentation." The Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs was established by EPA in March 2012 and, as noted by the commenter, the TMDL has a complete discussion of sources.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Recommendation: Change “source unknown” to “source – Palos Verdes Shelf Superfund Site Palos Verdes Shelf Superfund Site” for DDT and PCBs.		
13.8	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (DDT and PCBs)** **Comment**: Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes DDT and PCBs in the listing for Santa Monica Bay Offshore/Nearshore (a water segment where standards are not met and a TMDL is required but not yet completed); however this listing is being addressed by the USEPA developed and approved TMDL. This change is explained in the “other revisions” summary in Appendix A to the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: The listings for DDT and PCBs should be moved to Category 4a in Appendix C since there is a USEPA approved TMDL in effect addressing the listings.	The Santa Monica Bay Offshore/Nearshore listing for DDT and PCBs have been revised to show “being addressed by a TMDL.”	
13.9	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore (Chlordane)** **Comment**: Decision No. 37492(located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for chlordane; this revision is not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a “Y” in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for Chlordane.	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a “Y” or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
13.10	**Water Body/Pollutant: Santa Monica Bay Offshore/Nearshore(Polycyclic Aromatic Hydrocarbons (PAHs))** **Comment**: Decision No. 32656 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) has been revised to recommend delisting Santa Monica Bay Offshore/Nearshore waters for PAHs; this revision is	Santa Monica Bay Offshore/Nearshore Chlordane was delisted in 2010. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	not reflected in the summary of recommended changes in Appendix A of the February 2017 integrated staff report for the Los Angeles region. **Recommendation**: Revise Appendix A to place a "Y" in the New Delisting column for Santa Monica Bay Offshore/Nearshore row for PAHs.	"Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
13.11	**Water Body/Pollutant: Wilmington Drain (Lead)** **Comment**: Decision No. 35085 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) recommends delisting the Wilmington Drain for lead based on the weight of evidence. The City agrees with this recommendation due to the fact that LOE No. 90133 describes data collected in Compton Creek, which is unrelated to the Wilmington Drain. **Recommendation**: Remove LOE No. 90133 from the Fact Sheet for Decision No. 35085, and revise the supporting evidence statement to the Regional Board Staff Conclusion to state that: "0 of 33 samples exceeded the CRITERIA."	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.	The data from Compton Creek has been removed from the Wilmington Drain assessments. LOE 90133 has been retired and Decision 35085 has been revised to "delist." Compton Creek remains listed for lead.
13.12	**Water Body/Pollutant: Wilmington Drain/Copper** **Comment**: Decision ID 44676 (located in Appendix G of the February 2017 integrated staff report for the Los Angeles region) for copper in Wilmington Drain includes a data set that should not have been included: LOE ID 90473 describes data collected in Compton Creek which is unrelated to Wilmington Drain. Removal of this data set from Decision ID 44676 would still leave LOE ID 90131 which is described as 33 samples, only two (2) of which exceeded the criteria for copper. This revised data set now meets the SWRCB Delisting criteria because the number of exceedances is 2 or less in a data set size of 28-36 samples. **Recommendation**: Remove LOE No. 90473 from the Fact Sheet for Decision ID 44676 and revise the supporting evidence statement "2 of 33 samples exceeded the CRITERIA." Also revise the recommendation to Delist from 303(d) List.	Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and make the appropriate listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval or prior to the next Listing Cycle that includes the Los Angeles Region.	See response to comment 11.3.
13.13	**Water Body/Pollutant: Machado Lake (Algae, Ammonia, ChemA, Eutrophic, Odor, Trash)**	Machado Lake listings for Algae, Ammonia Eutrophic, Odor, and Trash were assessed as	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Comment: Category 5 of Appendix B to the February 2017 integrated staff report for the Los Angeles region includes listings for algae, ammonia, ChemA, eutrophic, odor and trash for Machado Lake (a water segment where standards are not met and a TMDL is required but not yet completed); however all of these pollutant listings are being addressed by USEPA-approved TMDLs. **Recommendation**: These listings should be moved to Category 4a in Appendix C to the February 2017 integrated staff report for the Los Angeles region. Additionally, Appendix A should include language under the column for "Other Revisions" for each of these pollutants explaining that: "TMDL status changed from TMDL still required to Being Addressed by Completed TMDL."	"being addressed by a TMDL" in 2010. The Machado Lake listings for**,** ChemA, Chlordane, DDT, Dieldrin, and PCBs were assessed as "being addressed by a TMDL" in this listing cycle. Appendix A includes proposed changes to the 303(d) list including new listings, delistings, name changes and TMDL status changes. Each of these is marked with a "Y" or an explanation. Appendix A also includes waterbody pollutant combinations which were previously listed or delisted. We are exploring ways to better display this data.	
14.	City of Pomona , March 30, 2017		
14.1	**Summary** The 2016 303(d) revisions for the several reaches (water quality segments) of the San Gabriel River propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals and Selenium for the San Gabriel River and Impaired Tributaries (San Gabriel Metals TMDL) adopted by USEPA Region IX (USEPA) and the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with its waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs). The City is appreciative of the several metals pollutants that Regional Board is	Comments on the San Gabriel Metals and Selenium TMDL and the LA County MS4 Permit are outside the scope of this action. See response to comments 14.2 as well as 9.2 – 9.7 for detailed responses regarding individual listing decisions raised by the commenter.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	proposing to de-list and not to list. A total of 22 metals are reported for all San Gabriel River water quality segments. 19 (84.3%) of them fall under the "de-list" and "do not list" categories. This result should be sufficient to void the San Gabriel River Metals TMDL. 3 additional metals (15.7%) should be de-listed, which would raise the total to 22 (100%), for reasons more particularly described below. The data here strongly demonstrates that that the San Gabriel Metals TMDL should be removed from the Los Angeles Basin Plan.		
14.2	**I. San Gabriel River: Estuary** As the table below illustrates, copper for the estuary is listed on the 2010 303(d) list but was not carried over to the 2016 303(d) list. It must be assumed that the Regional Board did not intend to place copper on this list. If this is an oversight on the part of the Regional Board there is, nevertheless, ample justification for not listing copper for the estuary. As is the case with most metals and toxics referenced in TMDLs and in the MS4 Permit, the Regional Board did not comply with the federal California Toxic Rule (CTR) to the following extent: 1. The Regional Board did not calculate the numeric limitation for lead properly. CTR establishes water quality standards (including TMDLs), based only on ambient (dry) weather sampling and analysis. However, the Regional Board calculated a wet weather numeric limitation for lead based on stormwater sampled from receiving waters. Further, CTR requires a "real time" hardness parameter (using calcium carbonate) as an adjustment factor in establishing water quality standards for metals and toxics. The Regional Board apparently used a default hardness factor of 100 mg/l. CTR states clearly that the 100 mg/l for hardness is only intended be an example in calculating CTR water quality standards. It is important that the actual hardness value be applied (which must be sampled and analyzed as the same toxics and metals are sampled). Too low of a hardness value	See response to comment 9.1 for the history of copper on the 303(d) list in the San Gabriel River Estuary as well as for a discussion of the CTR and the use of “real time” hardness in calculating limitations. Comments on the San Gabriel River Metals and Selenium TMDL and the provisions of the LA County MS4 Permit are outside the scope of this proposed action. See response to comment 3.3 for the use of listing decisions made prior to the adoption of the Listing Policy. Los Angeles Water Board staff encourages the commenter to enter all the relevant data into CEDEN in preparation for the next listing cycle that includes the Los Angeles Region.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	will set a lower numeric limit. The higher the limit is, the less difficult it is to meet it. 2. Regional Board also did not follow the Water Quality Control Policy for California's Clean Water Act Section 303{d) List (Listing Policy). The Listing Policy requires a binomial distribution based on a null hypothesis) to determine if the number of the samples that resulted in exceedances (of CTR) are statistically sufficient to warrant placement on lead on the 303(d) list. There is no evidence that this task was completed. It is possible that it was not completed because the Listing Policy was not adopted until 2004. The copper was added to the 303(d) list in 1998 and carried-over to the 2000 303(d) list. Based on the San Gabriel River Metals TMDL, it appears that the copper data was based on water quality samples conducted in 1998. 3. The Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Copper, after properly adjusted for hardness, resulted in 3.23 micrograms per liter (ug/1). The limit is 9.4 ug/1. In other words, no exceedance was detected. Table I. San Gabriel River: Estuary **[See the posted letter for Table I]** Placing copper on the 2016 303(d) list "do not list" category should effectively eliminate the need for impacted MS4 Permittees to comply with the estuary's copper limitation of 3. 7 ug/1 (see Table I(a) below). Table I(a) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(a)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead, selenium, and zinc for the estuary; (2) grant the City's request to de-list copper for the estuary; and (3) use the de-list and do not list justification for this		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
14.3	**II. San Gabriel River: Estuary to Firestone** Metals for San Gabriel River from the Estuary to Reach 1 were not placed on the 2010 303(d) List and not placed on the "do not list" category of the 2016 303(d) List. It is unclear, however, why the MS4 Permit requires compliance with the copper limitation of 18 ug/1 (shown above in Table 1 (a), despite the fact that copper was not listed on the 2010 303(d) list in the first place. Table II. San Gabriel River: Estuary to Reach 1 **[See the posted letter for Table II]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, selenium, and zinc for Reach 1; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	See response to comment 9.2.	
14.4	**III. San Gabriel River: Reach 2 (Firestone to Whitter Narrows Dam)** As shown on Table III below, the 2016 303(d) list rolls-over lead from the 2010 303(d) list. Lead, however, should be de-listed for the following reasons: 1. Lead is a legacy pollutant (lead content in fuels have been significantly reduced). 2. The 303(d) lists for 1998 and 2000 placed lead on the "list" category, but failed to comply with the California Toxic Rule (CTR) as explained above. 3. The Regional Board did not follow the State's 303(d) Listing Policy. More	See response to comment 9.3.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	specifically, according to the San Gabriel River Metals TMDL (Table 2-7), Reach 2 was sampled during dry weather (ambient) for dissolved lead by the Los Angeles County Department of Public Works (LACDPW), in accordance with CTR using the correct hardness adjustment. The 10 samples taken resulted in no exceedances. If this result were applied to the 303(d) Listing Policy, it would not be sufficient to place lead on the 303(d) List. For a sample size between 2 and 24, 2 exceedances are required for 303(d) list placement. 4. Regional Board's Surface Water Ambient Monitoring Program (SWAMP) performed water quality samples for metals in the estuary in June of 2005. Lead, after properly adjusted for hardness, resulted in 0.81 micrograms per liter (ug/1). The limit is 3.8 ug/1. In other words, no exceedance was detected. Table III. San Gabriel River: Reach 2 (Firestone to Whittier Narrows Dam) **[See the posted letter for Table III]** **Recommendation to Regional Board**: (1) do not approve staff's recommendation not to de-list lead; and (2) use the do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
14.5	**IV. San Gabriel River: Reach 3 (Whittier Narrows Dam to Ramona)** As shown on Table IV below, San Gabriel River Reach 3 was not placed on the 2010 303(d) list and, therefore, it is easy to see why it is placed on the 2016 303(d) "do not list" category. What is difficult to understand is why the Los Angeles MS4 Permit requires compliance with copper, lead, and zinc. The answer lies on MS4 Permit *Attachment P: TMDLs in San Gabriel River Watershed Management Area*. It states: *Permittees shall comply with grouped wet WLAs ... expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2 and Coyote Creek* (see Table I(b) below). In other words, even though San Gabriel River Reach 3 is not on the 2010 303(d) list for metals,	See response to comment 9.4.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	the MS4 Permit requires compliance with them nevertheless. It does this by applying TMDL numeric targets for copper, lead, and zinc because: (1) San Gabriel River Reach 2 lists a lead TMDL number target of 81 /34 ug/1; and (2) Coyote Creek lists copper target of 24.71 ug/1 and zinc at 144.57 ug/1. The rationale for applying downstream numeric targets for copper, lead, and zinc is at best murky. How can metals as pollutants associated with downstream reaches be applied to upstream Reach 3 of the San Gabriel River? Pollutants cannot travel upstream against gravity. Table IV. San Gabriel River: Reach 3 (Whittier Narrows to Ramona) **[See the posted letter for Table IV]** Table I(b) from Attachment P of the Los Angeles MS4 Permit **[See the posted letter for Table I(b)]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list copper, lead, and zinc; and (2) use the de-list for these metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
14.6	**V. San Gabriel River: Coyote Creek** The 2016 303(d) List correctly de-lists lead and zinc but does not de-list copper. Copper should be de-listed for the following reasons: 1. The San Gabriel River Metals TMDL contains ambient sample data for Coyote Creek correctly applying CTR. Under Table 2-7, 8 samples are listed with 0 exceedances. If this result were applied to the 303(d) listing policy, it would not qualify for 303(d) placement. A sample size between 2 and 24 would require exceedances equal to and greater than 2. 2. Wet weather water quality data was used to justify placing copper on the	See response to comment 9.5.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	303(d) list. Listing support information cites that CTR relative to copper was applied to wet weather. As mentioned above, wet weather and CTR requirements are mutually exclusive. Wet weather limitations for San Gabriel River and other receiving water bodies in Los Angeles County are intended to be applied - incorrectly -- to MS4s and other NPDES permittees. Table V. Coyote Creek**[See the posted letter for Table V]** **Recommendation to Regional Board**: (1) approve staff's recommendation not to list lead and zinc; (2) approve the City's request to de-list copper; and (3) use the de-list and do not list justification for this and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.		
14.7	**VI. San Jose Creek Reach 1 (SG Confluence to Temple St.)** Regional Board staff recommends that: (1) selenium be de-listed; and (2) copper, lead, and zinc not be listed (see Table VI below). Table VI: San Jose Creek Reach 1 **[See the posted letter for Table VI]** **Recommendation to Regional Board**: (1) approve staff's recommendation to de-list selenium and not list copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.	See response to comment 9.6.	
14.8	VII. South San Jose Creek (Los Angeles County) This is Reach is a new listing under the 2016 303(d) List.	See response to comment 9.7.	

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td>
<table>
<tr><th colspan="2">2010 303 (d) List</th><th colspan="5">2016 303 (d) List</th><th>MS4 Permit Requirement</th></tr>
<tr><td>Pollutant</td><td>List</td><td>List</td><td>De-List</td><td>Don't List</td><td>Don't De-list</td><td>Should De-List</td><td>Yes/No</td></tr>
<tr><td>Copper</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Lead</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Selenium</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
<tr><td>Zinc</td><td>-</td><td></td><td></td><td>x</td><td></td><td></td><td>Yes</td></tr>
</table>

Recommendation to Regional Board: (1) approve staff's recommendation not list to selenium copper, lead, and zinc; and (2) use the de-list and do not list justification for these and other metals to remove the San Gabriel River Metals TMDL from the Los Angeles Basin Plan.</td><td></td><td></td></tr>
<tr><td>15.</td><td colspan="2">City of San Fernando, March 30, 2017</td><td></td></tr>
<tr><td>15.1</td><td>**I. Summary**

The 2016 303(d) revisions for the several reaches (water quality segments) of the Los Angeles River and tributaries propose to de-list, do not de-list, and do not list metals-related pollutants including copper, lead, selenium and zinc. These pollutants are the subject of the Total Maximum Daily Loads for Metals for the Los Angeles River (LAR-MTMDL) adopted by Regional Board in 2007. This TMDL has been incorporated into the current Los Angeles County MS4 Permit MS4 Permit (MS4 Permit). The MS4 Permit enables compliance with TMDL waste load allocations (WLAs) -- also referred to as numeric targets. The numeric targets are translated into water quality based effluent limitations (WQBELs) which are applied to MS4 outfall discharges and to receiving waters as limitations. To comply with both, the MS4 Permit coercively encourages compliance through Watershed Management Programs (E/WMPs).

Although many metals have either been placed on the "de-list" or "do not list" categories for Los Angeles River water quality segments, many also have been placed on the "list" and do not de-list categories. These listings should be voided because:</td><td>See response to comment 3.1, 3.2 and 3.3.</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	1. although the LAR-MTMDL claims to have developed water quality standards (includes TMDLs) in accordance with the federal California Toxic Rule (CTR) adopted in 2000, it actually has not; and 2. the LAR-MTMDL is based on water quality samples that were conducted before the Water Quality Control Policy for California's Clean Water Act Section 303(d) List (Listing Policy), which was adopted in 2004.		
15.2	• **California Toxic Rule** CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants*. USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater	See response to comment 3.2.	See response to comment 3.2.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	(wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater management program. Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of toxics more accurate. Generally, the higher the hardness value the higher the toxic pollutant expressed as a numeric limit. The LAR-MTMDL calculates CTR for metals/toxics using a hardness value of 100 milligrams per liter (mg/l). It contends that this is the hardness value required by CTR. This is false. CTR requires actual hardness to be determined by water quality sampling and analysis at the same time a toxic pollutant is sampled. The Regional Board's SWAMP abides by this requirement. Therefore, the LAR-MTMDL establishes limitations for metals and toxics that are more stringent than necessary. This provides another reason for voiding the LAR-MTMDL and revising it with a recalculated limitation for each metal by using an actual hardness value based on future ambient water quality sampling and analysis.		
15.3	• **California 303(d) Listing Policy (Listing Policy)** The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that the metals placed on previous 303(d) lists did not conform to the Listing Policy. In fact, the LAR-MTMDL is based on water quality data that was developed prior to the adoption of the Listing Policy in 2004. According to the LAR-MTMDL, the metals numeric targets were based on data that was limited to 2002. Based on this	See response to comment 3.3.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	fact alone the LAR-MTMDL should be voided.		
15.4	II. Los Angeles River Reach/Tributary Specific Comments Presented below are specific justifications for removing metals that fall under either the "list" or "do not list" categories because they do not conform to CTR or the Listing Policy. Almost all of them fall into these categories. **1. Los Angeles River Reach 4** Copper and lead are placed on the "do not de-list" category. Selenium and zinc are placed on the "do not list." As noted on the table below there are no listing issues here. Table I. LAR Reach 4 **[See the posted letter for Table I]**	For comments related to the CTR, see response to comment 3.2, for those pertaining to the Listing Policy see response to comment 3.3. For Los Angeles River Reach 4, comment noted. Copper and lead, in fact, are on the on the "de-list" category.	
15.5	**2. Los Angeles River Reach 5** Selenium and zinc are recommended for placement on the "do not list" category. Copper and lead, on the other hand, are recommended for placement on the "list" category. However, they should not. The justification reported on the fact sheet for both copper and lead is that *0 of the 12 samples and exceeded the criteria*. This must be in error. How can zero or "none" of the 12 samples have exceeded the criteria? Based on this information, copper and lead should be on the do not list category. Table II. LAR Reach 5 **[See the posted letter for Table II]**	The copper "DO NOT DELIST" decision was based on LOE 2527, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86184 (0 out of 12 sediment samples exceeding) is insufficient to make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. The lead "DO NOT DELIST" decision was based on LOE 2528, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. The additional LOE 86197 (0 out of 12 sediment samples exceeding) is insufficient to	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		make a decision of "DELIST." Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist.	
15.6	**3. Tujunga Wash (Los Angeles River to Hansen Dam)** The Tujunga Wash is only listed (in the "do not list" category) for copper, carried-over from the previous 303(d) list (2010). According to the 303(d) list fact sheet, no samples were taken to justify placement (viz., 0 of the 12 samples exceeded the criteria). Based on this information copper should be de-listed. Table III. Tujunga Wash **[See the posted letter for Table III]**	The copper "LIST" decision is a "carryover" decision (no new data was assessed) and was based on LOE 2558, which is a 'placeholder' LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision.	
16.	City of Ventura, March 30, 2017		
16.1	The City has several concerns regarding the Regional Board's proposed 303(d) list and feels that it requires significant review and modifications before adoption. The City requests that the issues identified in this letter be addressed and the revised, proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed by the affected parties. The requested modifications fall into two general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds being applied for the beneficial use and/or incorrect interpretation of the data (e.g., lack of temporal representation). 2. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include challenges in identifying the data sets and analysis methods used, inconsistencies between the Category 5 list (Appendix B) and the	It is the intent of Los Angeles Water Board staff to work to resolve issues identified by commenters, as appropriate, as the State Water Board staff prepares to bring the 2016 Integrated Report to the State Water Board for its consideration later this year. See response to comment 16.2-16.20 for specific responses.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide the detailed list of requested changes to the proposed 303(d) list and the rationale for the requests. In summary, the City requests that all waterbody pollutant combinations in Table 1 below not be listed on the 303(d) list and the errors and inconsistencies identified in the other letters cited above be addressed.		
16.2	l. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody pollutant combinations, the City has identified several waterbodies that should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table. Table 1. Waterbody-pollutant combinations that should not be listed **Waterbody Segment: Santa Clara River Estuary** **Pollutant**: pH **Justification**: "No demonstration high pH is a result of waste discharge. A listing is not warranted in light of reference conditions for pH within estuaries.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88249 was developed using 493 samples collected at dozens of sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See, also, response to comment 32.5.	
16.3	**Waterbody Segment: Santa Clara River Estuary** **Pollutant**: Ammonia **Justification**: Appropriate data not considered and current data does not meet	LOE 88237 shows 4 of the 42 samples exceeded the one-hour average contraction of un-ionized ammonia. Even though 18 of the 42 samples were	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Listing Policy criteria.	reported as non-detects, there is enough evidence that supports a listing decision. See, also, response to comment 32.4.	
16.4	**Waterbody Segment: Santa Clara River Estuary** **Pollutant**: Nitrogen, Nitrate **Justification**: Appropriate data not considered and current data does not meet Listing Policy criteria.	The “Nitrogen, Nitrate” “LIST” decision is a “carryover” decision (no new data was assessed) and was based on LOE 7819, which is a ‘placeholder’ LOE to support a 303(d) listing decision made prior to 2006. Section 4.1 of the Listing Policy requires a minimum of 28 samples (and fewer exceedances than listed in Table 4.1) to delist. There is no additional information to support a delisting decision. See, also, response to comment 23.6.	
16.5	**Waterbody Segment: Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** **Pollutant**: pH **Justification**: No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. LOE88328 was developed using 60 samples collected at three sampling stations over a time period of a decade. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
16.6	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Arsenic **Justification**: Data does not include proper temporal representation.	Fish were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected is spatially independent, it is still appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static and move throughout a waterbody, accumulating pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. However, a review of the decision to list arsenic is in process at this time in order to re-examine the assumption of the ratio of organic to inorganic arsenic and the applicable evaluation guideline. See, also, response to comment 11.21.	The listing has been corrected to the shellfish guideline (0.0052 ppm instead of 0.0034 ppm for finfish) and the applicable reference added. The guideline, 0.0052 ppm, is the screening guidelines from "Guidance for Assessing Chemical Contaminant Data for Use In Fish Advisories Volume 1: Fish Sampling and Analysis," 2000, (CalWQA ref 3756) and assumes an average body weight of 70 kg and a consumption rate of 21 g/day for a 30 year exposure over a 70-year lifetime. The assessment used an assumption that 10% of the arsenic would be inorganic. We note that even if a 0.05% inorganic to total ratio was used in the assessment, the number of exceedances would be 2 out of 2 and sufficient to list.
16.7	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Cadmium **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
16.8	**Waterbody Segment: Ventura Harbor: Ventura Keys Bridge)** **Pollutant**: Chlordane **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.	
16.9	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: DDT **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.	
16.10	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Dieldrin **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.	
16.11	**Waterbody Segment: S Ventura Harbor: Ventura Keys** **Pollutant**: PCBs (Polychlorinated biphenyls) **Justification**: Data does not include proper temporal representation.	See response to comment 16.6.	
16.12	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Benthic Community Effects **Justification**: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. See, also, response to comment 16.17.	
16.13	**Waterbody Segment: Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** **Pollutant**: Temperature, water **Justification**: Analysis does not demonstrate temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.	
16.14	**Waterbody Segment: Ventura Harbor: Ventura Keys** **Pollutant**: Indicator Bacteria **Justification**: Data from mouth of Arundell Barranca used in listing assessment.	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.	The data has been reassessed not including the data from Arundell Barranca; the recommended decision remains "list." The data has been added into the decision for Arundell Barranca and the decision remains "list."
16.15	***1. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan).[3] The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheets and according to the Basin Plan, "*The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5* ***as a result of waste discharges***."[4] However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if no such evidence exists, the Regional Board should remove this proposed listing.[5] **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River**	See response to comment 16.2 and 16.5. Also see response to comment 32.5.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Reach 1 as these high pH values are not the· result of waste discharge.		
16.16	***2. Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5 .3 of the Listing Policy states that: *"Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision."* Many of the pollutants listed in Table 1 included data collected from a single sampling date, which violates the Listing Policy. For instance, all of the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day - February 28, 2007. These pollutants should not be listed because there is no temporal resolution provided. **Requested Action:** **Remove all listings shown in Table 1 that were based on a single sample collection date.**	See response to comment 16.6-16.11.	
16.17	***3. Benthic Community Effects listing is based on flawed analyses and should be removed.*** The benthic community effects listing is based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	where the threshold used to distinguish an impaired reach was identified as a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value in the originating study. The State has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets for numerous other benthic community effects listings (e.g., Decision ID 66264)v, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the fi1ture for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).*" Despite this, the newly listed benthic community effects for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) utilizes the IBI to assess the waterbody. Therefore, the City requests that this flawed listing be removed until the waterbody can be assessed with a more representative metric such as the CSCI. In addition to use of an arbitrary metric, the proposed listing for benthic community effects for the Ventura River Reach 1 and 2 lacks proper spatial representation since only two samples were collected from the same sample site ("Station O Main Street Bridge, Mainstem Ventura River" according to the Fact Sheets). In addition, temperature is used as a line of evidence to support the benthic community effects listing, however, the temperature listing for this same waterbody segment is also flawed and should be removed as discussed in the comment below. **Requested Action:** **Remove the benthic community effects listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) due to use of an outdated metric, lack of spatial resolution, and lack of supporting evidence from the temperature listing.**	condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected is temporally independent, it is still appropriate to assess the data as individual samples even though they were collected at the same site. See, also, response to comment 16.13 for temperature.	
16.18	***4. Correct the proposed temperature listings which are based on incorrect criteria.***	See response to comment 16.13.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The temperature listing for Ventura River Reach 1 and 2 (Estuary to Weldon Canyon) uses an evaluation guideline of 13-21 °C as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as COLD is, "*For waters designated COLD, water temperature shall not be altered by more than 5°F above the natural temperature.*" The fact sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the way the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 2002.[7] Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer, although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures."[8] As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C, which indicates that the evaluation guideline of 21 °C is more appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing. Using the threshold of 23°C, only 2 samples would exceed the threshold in Ventura River Reach 1 and 2, which would not be enough to meet the listing threshold. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 based on**		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	lack of exceedances.		
16.19	***5. Data from Arundell Barranca mouth is inappropriate to assess Ventura Harbor.*** Based on a review of the data provided in the spreadsheet entitled: Peninsula Beach, Ventura Harbor-Keys, and Arundell Barranca Data, site K5 appears to have been included in the analysis of the Ventura Harbor: Ventura Keys assessment. Site K5 is located in the mouth of the Arundell Barranca and is not within Ventura Harbor. A review of the data shows that the indicator bacteria concentrations at this site are much more similar to Arundell Barranca and not representative of the data for the rest of Ventura Harbor. In 2009, as part of the review of the proposed Harbor Cove TMDL, the City conducted an analysis of indicator bacteria data from Ventura Harbor using what appears to be the same dataset as used in the Regional Board's assessment. While the dataset appears to be the same, the number of samples and exceedances did not match completely (e.g., 103 exceedances of the enterococcus geomean with 510 samples in the City's analysis as compared to 104 exceedances and 537 samples in the Regional Board's analysis). The City could not easily determine what the differences in the calculations were and requests that the Regional Board review the exceedance calculations to ensure that all geomeans were calculated using a minimum of 5 samples and that duplicate samples in the dataset were correctly handled in accordance with the Listing Policy. Regardless of the potential differences in the calculations, the clear majority of the exceedances are from site K5 (64 of the 103 exceedances in the City's analysis). If site KS is removed from the Ventura Harbor analysis (and added to the Arundell Barranca analysis so it is in the correct waterbody), based on the City's calculations, insufficient samples exist to list Ventura Harbor: Ventura Keys for fecal coliform or enterococcus. A summary of the City's analysis is shown in	It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve this mapping issue and reassess the LOEs and decisions, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.	See response to comment 16.14.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Table 2. Table 2. Summary of City's Analysis Ventura Harbor Indicator Bacteria **[See the posted letter for Table 2]** **Requested Action:** **Revise the calculations for Ventura Harbor: Ventura Keys by removing site K-5 which is not located in the Harbor. Revise any Lines of Evidence that no longer support a listing for indicator bacteria and remove the listing if appropriate.**		
16.20	**II. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations are new listings. Additionally, in many cases, data and Quality Assurance Project Plan (QAPP) references in the fact sheets are inconsistent with the data provided for review and it is not always clear what data were used in the analysis presented in the fact sheets. Examples of these inconsistencies and errors are detailed in the Calleguas Creek Watershed Stakeholders, VCAILG, and County of Ventura comment letter. The City requests that the Regional Board do a thorough review of all appendices to ensure that the proposed 303(d) list is internally consistent, the correct data were used for the assessment, and the errors identified in the other comment letters are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**	See response to comment 7.98 and 7.99.	
17.	County of Los Angeles (LAC) and Los Angeles County Flood Control District (LACFCD) , March 30, 2017		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
17.1	**I. Waterbodies With Water Quality Attainment Should Be Delisted As Requested By The Los Angeles County Flood Control District During The 2010 Data Solicitation Period And Pursuant to the 303d Listing Policy** In August 2010 in response to the State Water Resources Control Board's (State Water Board's) data solicitation for the 2012 Integrated Report for Clean Water Act Sections 303(d) and 305(b), the Los Angeles County Flood Control District (LACFCD) submitted all the data and information that it collected since the State's previous data solicitation in 2007. As part of the 2010 data submission, the LACFCD conducted a detailed analysis of the new data and found 15 listed waterbody-pollutant combinations that had attained their water quality standards and met the delisting criteria set forth in Section 4 of the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (303(d) Listing Policy). To this end, LACFCD provided a detailed analysis of this data and identified those waterbodies that should be delisted pursuant to the *State's 303(d) Listing Policy*. Those waterbody-pollutant combinations are listed below.	The post-2007 data and analysis submitted by the LACFCD by the August 2010 deadline was not entered into the CalWQA database for use in the Integrated Report. Los Angeles Water Board staff will enter the data, as appropriate, into the CalWQA database and make the listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.	Staff has analyzed the post-2007 data and analysis submitted by the LACFCD by the August 2010 deadline, in addition to other data generated by the County. Six new lines of evidence (LOEs) were generated and three existing lines of evidence were revised to incorporate the newer data and analysis. Six different decisions were revised based on these new LOEs with five of those decisions being revised to a recommendation of delist. Due to resource constraints coupled with challenges identifying QA/QC documents which were not included in data submittals, staff did not address the other eight water body pollutant combinations for the lakes listed in comment 17.1. However, Regional Board staff and State Board staff are committed to considering and addressing those water body pollutant combinations during the next solicitation period. The recommended decision for Coyote Creek/Diazinon has been revised from "do not delist" to "delist." The recommended decision for Los Angeles River Reach 1/Diazinon has been revised from "list" (a continuation of a previous decision to list with no new data) to "delist." The recommended decision for Santa Clara Reach 6/Diazinon has been revised from "do not delist" to "delist."

<table>
<tr><th>No.</th><th>Comment</th><th>Response</th><th>Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)</th></tr>
<tr><td></td><td>
<table>
<tr><th>WATERBODY</th><th>POLLUTANT</th><th>Addressed in Current Proposed Revisions?</th></tr>
<tr><td>Coyote Creek</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Dominguez Channel (lined portion)</td><td>Diazinon</td><td>Yes</td></tr>
<tr><td>Legg Lake</td><td>Ammonia
Copper
Lead</td><td>No</td></tr>
<tr><td>Los Angeles River Reach 1</td><td>Diazinon</td><td>No</td></tr>
<tr><td>Peck Road Park Lake</td><td>Lead
Dissolved Oxygen</td><td>No</td></tr>
<tr><td>Santa Clara River Reach 6</td><td>Chlorphyrifos
Diazinon
Copper
Iron</td><td>No</td></tr>
<tr><td>Santa Fe Dam Park Lake</td><td>Copper
Lead
pH</td><td>No</td></tr>
</table>

As set forth in the above table, none of the identified waterbody-pollutant combinations are currently proposed for delisting as part of the 2016 303(d) list, except for the Dominguez Channel Diazinon, despite meeting the delisting criteria under the State's Listing Policy. Based on a review of the fact sheets for these waterbodies in Appendix G, it appears that the post-2007 data and analysis submitted by the LACFCD was not taken into consideration by the Los Angeles Regional Water Quality Control Board (Regional Board).

The County and the LACFCD request that the Regional Board consider the data set forth in the LACFCD's 2010 submission. Attached is a copy of the LACFCD comment letter and technical report from the 2010 data solicitation for your review and consideration. The County and the LACFCD further request that the Regional Board delist these waterbodies as requested.
</td><td></td><td>The recommended decision for Santa Clara Reach 6/Chlorpyrifos has not been revised. There was additional data assessed but the assessment found that that the method detection limit from the samples is greater than numeric translator recommended in the evaluation guideline (J-Flagged).

The recommended decision for Santa Clara Reach 6/Iron has been revised from “do not delist” to “delist.”

The recommended decision for Santa Clara Reach 6/ copper has been revised from “do not delist” to “delist.”</td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
17.2	**II. The Regional Board Should Wait For The Completion Of The State's Biointegrity Policy Development Before Listing Waterbodies For Benthic Community Effects** Currently, there is no officially established California water quality objective or guideline for listing waterbodies for benthic community effects. As such, the State Water Board is currently developing statewide biological objectives to assist in addressing this gap. The 2010 State Water Board's initial notice letter[1] for development of these biological objectives states the following: *"State and Regional Water Board plans and policies do not contain numeric objectives or guidance for using biological data in regulatory decision-making. Therefore, biological objectives are needed to provide the narrative or numeric benchmarks that describe conditions necessary to protect aquatic life beneficial uses. The initial effort will focus on wadeable perennial streams and rivers."* Similarly, the CEQA public scoping document[2] released in 2012 for this project states the following: *"Benchmarks for identifying biological impairments and interpreting narrative water quality objectives are not formally adopted in Water Board plans or policies and, therefore, not readily used as enforceable requirements …" [Page 6 of the scoping document] "The State Water Board will develop [biological objectives and] program of implementation that describes how biological objectives will be incorporated into permits and other regulatory actions, such as assessing attainment of aquatic life beneficial uses for 303(d) listing." [Page 8 of the scoping document]* Thus, there is no established objective in California for assessing biological data,	There are established California water quality guidelines for listing waterbodies for benthic community effects, the SCIBI and the CSCI, which are both appropriate for 303(d) listing. These evaluation guidelines meet the requirements in Section 6.1.3 of the Listing Policy and both are in use throughout the State. Use of the guidelines is not premature; per the Listing Policy, the guidelines are "scientifically based and peer reviewed" and have been used in previous Integrated Reports. With respect to the use of IBI and CSCI for 303(d) listing, see response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition and response to comment 26.5 for a discussion of the established water quality criteria. At this time, the CSCI and IBI are the best measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the State Board continues the development of the science and policy, new methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. As with any water quality objective, new science or policy may make necessary revisions to the 303(d) list, but this possibility is not a justification to delay making 303(d) listing decisions when appropriate guidelines are available.	

<table>
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<tr><td></td><td>such as benthic macroinvertebrate data, for regulatory decision-making. This includes 303(d) listings.

The State Water Board is currently making progress on compiling available information and conducting necessary scientific studies to develop applicable objectives and implementation policy (also known as Biointegrity Policy). The State Water Board has hired the Southern California Coastal Water Research Project (SCCWRP) and the California Department of Fish and Wildlife to develop technical information to aid development of the policy. To ensure that a range of public interests are represented during the development process, the State Water Board has reached out to interested stakeholders. The County and LACFCD is actively participating in these meetings.

Although the State Water Board is currently developing biological objectives for benthic communities, the Regional Board has listed multiple waterbodies for benthic community impairment prior to the development of those objectives and its implementation guideline. The following table summarizes the waterbodies being proposed for benthic community listings by the Regional Board in the County.

<table><tr><th>WATERSHED</th><th>WATERBODY SEGMENT</th><th>CONCRETE CHANNEL?</th></tr><tr><td>Ballona Creek</td><td>Ballona Creek</td><td>Yes</td></tr><tr><td>Dominguez Channel</td><td>Dominguez Channel</td><td>Yes</td></tr><tr><td rowspan="4">Los Angeles River</td><td>Alhambra Wash</td><td>Yes</td></tr><tr><td>Arroyo Seco Reach 3</td><td>No</td></tr><tr><td>Los Angeles River Reach 3</td><td>Yes</td></tr><tr><td>Los Angeles River Reach 4</td><td>Yes</td></tr><tr><td>Malibu Creek</td><td>Medea Creek Reach 1</td><td>No</td></tr></table></td><td>Benthic Community Listings for waterbodies that are lined entirely with concrete have been reassigned to Category 3 (insufficient information to assess beneficial use support but some uses may be threatened) until such time as benthic community condition scores have been more specifically calibrated for concrete-lined channels. See response to comment 11.24, for more detail.</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	(see nested table and text below)		

	Triunfo Creek Reach 1	No
San Gabriel River	San Gabriel River – East Fork	No
Santa Clara River	Santa Clara River Reach 5	No

Adopting these benthic community impairment listings without first awaiting the State Water Board's development of water quality objectives and implementation guidance is premature. First, in assessing biological data and justifying the proposed listings, the Regional Board used the Index of Biological Integrity (IBI) and the California Stream Condition Index (CSCI). The benchmarks/thresholds used are 40 for IBI and 0.79 for CSCI. While IBI and CSCI are available tools for evaluating the relative biological condition of perennial wadeable streams, the associated benchmarks/thresholds used by Regional Board staff for justifying the listings have not been officially adopted by the State Water Board or the Regional Board for purposes of determining 303(d) listings. Thus, to ensure statewide consistency, the appropriate benchmarks should be set by the Biointegrity Policy being developed by the State Water Board.

Second, the CSCI was developed to replace the IBI and is expected to be used in the Biointegrity Policy. Thus, the IBI and its associated benchmark should not be used for assessing stream conditions for purposes of regulatory decisions, such as 303(d) listing.

Third, many of the listings set forth in the table above are for concrete/modified channels, which are being treated the same as natural channels. This is inconsistent with the approach that the State Water Board has been taking in developing the Biointegrity Policy, which provides that in highly altered conditions, the standard should be based on "best attainable conditions". In this regard, the State Water Board's 2012 CEQA Scoping document[3] for biological objectives states the following:

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	“One of the difficulties of defining reference conditions in California is that many waterbodies in the State have been severely altered from their natural condition. Some of these alterations are not a result of the controllable environmental factors…. In highly altered systems where biological conditions are limited by uncontrollable factors, the focus is on expectations for the ‘best attainable’ conditions.” Concrete/engineered flood control channels in urban environments are among the systems that the State Water Board considers highly altered. For those systems, the State's goal is to establish standards that are reasonably expected to be attainable, which is different than standards for natural channels. The State Water Board is using a gradient approach where the biological expectations for altered stream channels are based on the level of alteration. Since altered stream channels have limited habitat, it is improbable to expect a thriving benthic community in these channels the same way as in natural stream channels. This conclusion is well demonstrated in the stream survey report published in 2016 by the Southern California Stormwater Monitoring Coalition (SMC) – the *2015 Report on the SMC Regional Stream Survey4, with Special Study on Engineered Channels.* For the reasons described above, the Regional Board should not list waterbodies, and particularly those with concrete or engineered channels, for benthic impairments until the State Biointegrity Policy is developed and adopted. However, if the Regional Board lists any waterbody for benthic impairment, then the listings should be listed under Category 4c, and not under Category 5, since it is uncertain that these impairments are caused by pollutants.		
17.3	**III. Toxicity Listings Are Based On Unreliable Data and Should Be Removed** Ten County waterbodies are newly listed for toxicity, nine of which are streams or rivers, and one is an estuary. The majority of toxicity data used in the listings are from water toxicity tests conducted using the *Ceriodaphnia dubia* or other species.	All the toxicity data assessed met the required quality assurance. The SMC Toxicity Testing Laboratory Guidance study, 2016, conducted a laboratory	

<table>
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<tr><td></td><td>
<table>
<tr><th>WATERSHED</th><th>WATERBODY SEGMENT</th><th>TEST SPECIES</th></tr>
<tr><td rowspan="4">Los Angeles River</td><td>Bull Creek</td><td rowspan="3">C. dubia, Fathead</td></tr>
<tr><td>LA River Reach 4</td></tr>
<tr><td>LA River Reach 5</td></tr>
<tr><td>LA River Reach 6</td><td>C. dubia, Fathead, Hyalella</td></tr>
<tr><td rowspan="3">San Gabriel River</td><td>SG River Estuary</td><td>Topsmelt, Fathead</td></tr>
<tr><td>SG River Reach 3</td><td rowspan="2">C. dubia, Fathead</td></tr>
<tr><td>San Jose Creek Reach 2</td></tr>
<tr><td></td><td>South San Jose Creek</td><td></td></tr>
<tr><td rowspan="2">Santa Clara River</td><td>Piru Creek</td><td>C. dubia</td></tr>
<tr><td>SC River Reach 5</td><td>C. dubia</td></tr>
</table>

These toxicity tests, however, have recently been found to be unreliable by a laboratory intercalibration study conducted by SMC[5]. The study utilized 10 laboratories in Southern California that are certified by the State of California for toxicity testing. (Almost all toxicity tests in Southern California are conducted by these laboratories.) Although standard methods and protocols were followed by all the laboratories, the test results for the same sample varied significantly between laboratories.

The below chart summarizes the results of the study. Each symbol in the chart represents the result from a single laboratory. **[See the posted letter for chart]**

As can be seen from the chart, there is high variability in the toxicity results between different laboratories for all the test species despite the fact that analytical procedures were performed on identical samples. For example, the results for *Ceriodaphnia survival* vary between 0 percent and 100 percent for the same</td>
<td>intercalibration study focusing on four species *C. dubia*, *Hyalella*, *Strongylocentrus* and *Mytilus*. Fathead and topsmelt were not a part of the study. The study did not conclude or recommend that previously analyzed data should be disregarded. The study authors recommended all four species for future use as part of the Stormwater Monitoring Coalition monitoring programs. The authors also provided specific guidance for stormwater testing for potential variability-inducing steps including hardness of dilution water, feeding, sample handling and water renewals, and aging of organisms. The authors further concluded:
"Based on the scoring system developed for this study, the participating laboratories were comparable for most of the test endpoints (Table 10). Virtually all laboratories were able to meet test acceptability requirements, including internal positive and negative controls. Most laboratories tended to produce internally consistent results when given blind duplicate samples. Finally, most laboratories produced data consistent with non - toxic samples when exposed to laboratory dilution water."
<table>
<tr><th>WATERBODY SEGMENT</th><th>Source of data</th><th>Number of exceedances/ number of samples</th></tr>
</table>
</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	sample depending on the laboratory used. Also, a sample of lab dilution water, which is expected to be non-toxic was found to be toxic by many labs. Such high magnitudes of inconsistency and incomparability between the labs makes the existing toxicity data invalid or not useful. It is thus very probable that the proposed 303(d) listings for toxicity are the result of false positive toxicity tests, resulting in unimpaired waterbodies being wrongly listed for toxicity. It is incumbent upon the State to ensure that the laboratories it certifies produce consistent and accurate toxicity test results. The uncertainties and variability reflected in testing results between laboratories, as shown in the SMC study, can have a profound effect on the regulatory actions placed on a waterbody. For these reasons the proposed water toxicity listings are not supported by reliable data. The County and the LACFCD therefore request that all toxicity listing based off of water toxicity testing be removed from the list. We also request that the State continue to re-evaluate its laboratory certification protocols and address the problems identified by SMC.	Bull Creek / Tillman WRP, NPDES permit CA0056227. / 12 / 29 LA River Reach 4 / Tillman WRP, NPDES permit CA0056227. / 21 / 48 LA River Reach 5 / Tillman WRP, NPDES permit CA0056227 / 21 / 53 LA River Reach 6 / Tillman WRP, NPDES permit CA0056227 / 13 / 19 SG River Estuary / Los Angeles Sanitation District NPDES permits / 14 / 113 SG River Reach 3 / Los Angeles Sanitation District NPDES permits / 13 / 75 San Jose Creek Reach 2 / Los Angeles Sanitation District NPDES permits / 8 / 24 South San Jose Creek / Los Angeles Sanitation District NPDES permits / 5 / 18 Piru Creek / Stormwater Monitoring Council, recorded in SWAMP / 2 / 3	

<table>
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<tr><td></td><td></td><td><table><tr><td></td><td>database</td><td></td></tr><tr><td>SC River Reach 5</td><td>Stormwater Monitoring Council, recorded in SWAMP database</td><td>2 / 2</td></tr></table></td><td></td></tr>
<tr><td>17.4</td><td>IV. The Proposed Temperature Listings Are Based On An Inapplicable Standard And Therefore Should Be Removed

The following four waterbodies in the County are proposed listings for temperature-related impairment: Los Angeles River Reach 3, San Gabriel River Reaches 1 and 2, and Santa Clara River Reach 6. These listings should not be adopted for the following reasons:

First, natural temperatures for waterbodies in the Los Angeles Region are not known. Chapter 3 of the Los Angeles Region Basin Plan states the following for temperature:

"For waters designated WARM, water temperature shall not be altered by more than 5°F above the natural temperature. At no time shall these WARM-designated waters be raised above 80°F as a result of waste discharges."

"For waters designated as COLD, water temperature shall not be altered by more than 5°F above the natural temperature."

The current Basin Plan does not have an established "natural temperature" baseline for waterbodies, nor does it have guidance for estimating natural temperatures. This precludes the use of alteration of natural temperature as a basis</td><td>The 303(d) list appropriately identifies the temperature impairments. Analysis of sources and causes are not completed as part of the Integrated Report or 303(d) listing process.

The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have different objectives for different seasons.

The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority Project. Los Angles Water Board staff may consider the development of numeric temperature objectives for various waterbody classes and aquatic life beneficial uses in the future.

Temperature is also discussed in response to comment 11.18.</td><td>For Los Angeles River Reach 3 and temperature, see response to comment 11.25.</td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	for assessing waterbodies in the region. The Regional Board therefore appears to have used the 80°F objective as the basis for the proposed temperature listings. This standard, however, is not appropriate for two reasons: (1) Under the Basin Plan, the 80°F threshold is to be used only when there is evidence that the temperature rise was "as a result of waste discharges." The Regional Board did not provide evidence that any of the temperatures above 80°F were caused by waste discharges. (2) The 80°F threshold was applied to all waterbodies without considering the physical attributes or the historical ambient air temperatures of the waterbodies, which are uncontrollable. In the Los Angeles Region, ambient air temperatures can vary drastically, which would easily alter or raise the temperature above 80°F, especially in concrete channels during warmer months. Concrete channels are very susceptible to fluctuations in temperature due the material's ability to absorb heat. Even if the water is at a reasonable temperature when it enters a concrete channel, the water temperature may naturally rise as it travels through the channel, and not as the result of waste discharges. Second, Basin Plans of other Southern California Regions, which have similar habitats as in the Los Angeles Region, do not use 80°F as a water quality objective for WARM-designated waters. For example, the Santa Ana Region Basin Plan[6] uses 90˚F during warmer months of the year (June through October) and 78˚F during the rest of the year. The San Diego Region does not have any temperature water quality objectives for WARM-designated waters. Therefore, the use of 80˚F for purposes of assessing temperature-related impairments and listing waterbodies is unreasonable and unsupported, especially in concrete channels during dry seasons. The Regional Board should not list waterbodies for temperature until applicable standards are established for the Region.		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
17.5	**V. Alondra Park Lake Is Not A Water of the United States And Therefore Should Be Removed From The Proposed 303(d) List** Alondra Park Lake is a man-made lake that was created in the late 1940s as part of County's plan to establish Alondra Park. The lake does not receive any runoff discharge from areas outside of the park and is not connected to the Dominguez Channel or any other surface waterbody. The lake's source of water is entirely groundwater that is pumped from the West Coast Groundwater Basin. This water is used to irrigate the park and the nearby golf course. In addition, Alondra Lake is not identified in the Basin Plan and, thus, does not have any beneficial use designation assigned to it. This confirms that the lake is not a receiving waterbody. The Section 303(d) list applies only to waters of the United States. Alondra Park Lake is a man-made enclosed lake not connected to any other waterbody. Any listings associated with Alondra Park Lake should therefore be removed from the proposed 2016 303(d) list.	Alondra Park Lake is an approximately 7.3 acre lake. Waterbodies not explicitly identified in the Basin Plan Chapter 2 may still be subject to the “tributary rule.” The Los Angeles Basin Plan, Chapter 2, states: *Under federal law, all surface waters must have water quality standards designated in the Basin Plans. Most of the inland surface waters in the Region have beneficial uses specifically designated for them. Those waters not specifically listed (generally smaller tributaries) are designated with the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary. This is commonly referred to as the "tributary rule."* Alondra Park Lake overflows to the Dominguez Channel in large storm events. Therefore, a hydrologic connection exists between Alondra Park Lake and the Dominguez Channel, a water of the United States. In addition, because such intermittent flow is capable of moving pollutants from the Alondra Park Lake to Dominguez Channel, a significant nexus exists between Alondra Park Lake and the Dominguez Channel. The Dominguez Channel travels through a number of municipalities in Los Angeles County before emptying into the Los Angeles Harbor. In addition, fishing takes place at Alondra Lake.	

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		The California Department of Fish and Wildlife plants trout at the Lake. Tissue mercury data from fish from Alondra Lake are part of the Statewide dataset used in the OEHHA statewide advisory, *Statewide Health Advisory and Guidelines for Eating Fish from California's Lakes and Reservoirs*, *July 2013*. The identification of fish exceeding the OEHHA fish contaminant goals is important for the protection of human health and it is appropriate to identify the impairment on the 303(d) list.	
17.6	**VI. Data Being Used For Legacy Pollutant Listings Do Not Satisfy The Temporal Representativeness Requirements of The State's Listing Policy** The data being used to support proposed listings of waterbody-pollutant combinations for legacy pollutants does not satisfy the temporal requirements of the State's 303(d) Listing Policy as described below. Thus, these proposed listings should be removed. Section 6.1.5.3 of the State's 303(d) Listing Policy states: *"Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision. Samples should be available from two or more seasons or from two or more events . . ."* Section 6.1.5.6 of the Listing Policy states:	The data used to support the listings identified by the commenter were collected on a single day but from two species per waterbody. Multiple composites from each unique species were averaged, but it would be inappropriate to average composites from different species. Composites of different species will have different age profiles and different species occupy different trophic levels and will accumulate pollutants at different rates. These samples are independent and cannot be combined and considered as a single data point. Most of the averaged composite samples supporting theses listings represent 10 individual fish. In addition, fish are not static; they move throughout a lake or stream and accumulate pollutants in tissue over time. Therefore, the data	

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"To be considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value."

Section 3.1 of the Listing Policy requires a minimum of two exceedances to place a waterbody on the 303(d) list for toxic pollutants.

The data used to support some of the new listings was collected only on a single day. Therefore, pursuant to Sections 6.1.5.3 and 6.1.5.6 of the Listing Policy, these samples are not temporally independent and should be combined and considered as a single data point. Moreover, under Section 3.1 of the Listing Policy, a minimum of two exceedances are needed to place a waterbody on a 303(d) list. Thus, the following listings do not meet these Listing Policy guidelines:

<table>
<tr><th>WATERSHED</th><th>WATERBODY SEGMENT</th><th>POLLUTANT(S)</th></tr>
<tr><td>Dominguez Channel</td><td>Alondra Park Lake</td><td>PCBs</td></tr>
<tr><td>Malibu Creek</td><td>Malibou Lake</td><td>Dieldrin</td></tr>
<tr><td rowspan="2">Los Angeles River</td><td>Echo Park Lake</td><td>Chlordane, Dieldrin</td></tr>
<tr><td>Lincoln Park Lake</td><td>PCBs</td></tr>
<tr><td rowspan="2">San Gabriel River</td><td>Legg Lakes</td><td>DDT, PCBs</td></tr>
<tr><td>Santa Fe Dam Park Lake</td><td>PCBs</td></tr>
<tr><td rowspan="4">Santa Clara River</td><td>Castaic Lagoon</td><td>PCBs</td></tr>
<tr><td>Castaic Lake</td><td>PCBs</td></tr>
<tr><td>Elderberry Forebay</td><td>Dieldrin, PCBs</td></tr>
<tr><td>Pyramid Lake</td><td>Chlordane, DDT, Dieldrin, PCBs</td></tr>
</table>

</td><td>

are, by their nature, spatially and temporally independent even though they were collected at the same site on the same day.

<table>
<tr><th>WATER BODY SEGMENT</th><th>POLLUTANT</th><th>Number of fish in composites</th></tr>
<tr><td>Alondra Park Lake</td><td>PCBs</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr>
<tr><td>Malibou Lake</td><td>Dieldrin</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr>
<tr><td>Echo Park Lake</td><td>Chlordane, Dieldrin</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species.</td></tr>
<tr><td>Lincoln Park Lake</td><td>PCBs</td><td>Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species</td></tr>
</table>

</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The County and the LACFCD request that these listings be removed until more samples are collected to satisfy the temporal representativeness of data of the State's Listing Policy.	Legg Lakes — DDT, PCBs — Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species. Santa Fe Dam Park Lake — PCBs — Composites were largemouth bass (2 composites - 5 fish per composite) and common carp (2 composites - 5 fish per composite). Composites were averaged by species. Castaic Lagoon — PCBs — Composites were largemouth bass (2 composites - 5 fish per composite), rainbow trout (1 composite - 5 fish per composite) and redear sunfish (2 composites - 5 fish per composite). Composites were averaged by species. Castaic Lake — PCBs — Composites were largemouth bass (1 composite - 5 fish per composite) and common carp (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites. Composites were averaged by species. Elderberry Forebay — Dieldrin, PCBs — Composites were largemouth bass (2 composites - 5 fish per composite) and channel catfish (2 composites - 5 fish per	

<table>
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<tr><td></td><td></td><td><table><tr><td></td><td></td><td>composite). Composites were averaged by species.</td></tr><tr><td>Pyramid Lake</td><td>Chlordane, DDT,
Dieldrin, PCBs</td><td>Chlordane and DDT - Composites were largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites.
Dieldrin- A composite was generated from largemouth bass (5 fish per composite) for 2 locations. A composite was generated from brown bullhead (5 fish per composite) for 1 location.
PCBs - Composites were generated from largemouth bass (1 composite - 5 fish per composite) and brown bullhead (1 composite - 5 fish per composite) for 2 locations for a total of 4 composites.</td></tr></table></td><td></td></tr>
<tr><td>17.7</td><td>VII. Legacy Pollutants (PCBs, DDT, Dieldrin, Chlordane) Should be Listed As a Category 4b, Not as Category 5

Many of the pollutants that are being considered for incorporation into the 303(d) list are legacy pollutants that have been banned by the U.S. Environmental Protection Agency (EPA) decades ago and are no longer manufactured or used in</td><td>The definition of 4b is “Evidence shows at least one use is not supported, but a TMDL is not needed as an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame.”</td><td></td></tr>
</table>

<table>
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the United States. These pollutants include PCBs, DDT, Dieldrin, and Chlordane. PCBs were banned in 1979, DDT in 1980, Dieldrin in 1987, and Chlordane in 1988.
The newly proposed listing includes several waterbodies in the County that are listed for impairments associated with these pollutants:
<table>
<tr><th>WATERSHED</th><th>WATERBODY SEGMENT</th><th>POLLUTANT(S)</th></tr>
<tr><td>Dominguez Channel</td><td>Alondra Park Lake</td><td>PCBs</td></tr>
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<tr><td>Castaic Lake</td><td>PCBs</td></tr>
<tr><td>Elderberry Forebay</td><td>Dieldrin, PCBs</td></tr>
<tr><td>Pyramid Lake</td><td>Chlordane, DDT, Dieldrin, PCBs</td></tr>
</table>
The complete ban on these pollutants three decades ago, which is the strongest regulatory action an agency can take, has effectively addressed the true sources of these pollutants in the environment. Since these chemicals are no longer manufactured or used, the regulatory program already in place by the U.S. EPA is reasonably expected to result in the attainment of the water quality standard for these pollutants over time.
As indicated in comment VI, waterbodies that contain legacy pollutants should not be listed because the data used for their listing does not satisfy the Listing Policy.
</td><td>
A ban, in and of itself, is not a regulatory program and no time frame has been specified by any authority for waterbodies impaired by DDT, PCBs, Chlordane, or Dieldrin to attain the water quality standard under the ban, therefore the appropriate category for these waterbodies is 4a or 5.
Several TMDLs address these legacy pollutants; these TMDLs have timeframes for attainment of the standard and identify potential implementation actions such as non-structural and structural BMPs, and/or diversion and treatment to reduce sediment transport from the watershed to the waterbody. Implementation may, in some cases, require the removal of ‘hotspots’ of high sediment contamination. When an approved TMDL is in place the waterbody may be placed in category 4a (or may remain in category 5 if there are additional pollutants that are not yet addressed by a TMDL or other regulatory program).
The Echo Park Lake waterbody pollutant combinations are already addressed by a TMDL, the Los Angeles Area Lakes Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs TMDL.
Other TMDL for legacy pollutants include: Dominguez Channel and the Greater Los Angeles
</td><td></td></tr>
</table>

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	However, if the Regional Board does list these waterbodies, we request that they be listed as Category 4b, not Category 5, because a regulatory program is already in place to address them.	and Long Beach Harbor Waters Toxics TMDL; Colorado Lagoon Organochlorine Pesticides, PCBs, sediment toxicity, PAHs and metals TMDL; McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL; Ballona Creek Estuary Toxic Pollutants TMDL (including Chlordane, DDT and PCBs); Machado Lake Pesticides and PCBs TMDL; Marina del Rey Harbor Toxics TMDL (including Chlordane and PCBs); and Calleguas Creek OC Pesticides and PCBs TMDL.	
17.8	**VIII. The State Should Rely On The Most Updated Guideline to List Waterbodies Based On Fish Tissue Contamination** In assessing waterbodies for fish tissue contamination, the Regional Board used the following two guidelines: a. The 2008 Office of Environmental Health Hazard Assessment (OEHHA) fish contaminant goal, and b. The 1972 National Academy of Sciences (NAS) guidelines. The OEHHA guideline, developed in 2008 is not only up-to-date but also specific to California and, thus, reasonable to use for this particular assessment. On the other hand, the NAS guideline is half a century old and out of date. In the absence of an up-to-date NAS guideline, the assessment should be based exclusively on the OEHHA standard's line of evidence. Based on the OEHHA guideline, the following waterbodies meet water quality standards and, therefore, should be removed from the proposed listing:	The use of both guidelines is appropriate, each supports a different beneficial use. Two or three lines of evidence were developed for the evaluation of the data for each of these waterbody pollutant pairs. One or two LOEs were developed for each of these waterbody pollutant pairs in support of an aquatic life beneficial use (WARM, COLD or both), which compared the data to the NAS evaluation guideline developed to protect aquatic life from the accumulation of toxic substances. In only one case this guideline was exceeded. One LOE was developed for each of these waterbody pollutant pairs in support of the fishing beneficial use, COMM, which compared the data to the OEHHA guideline developed to protect human health from consumption of toxic	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Castaic Lagoon for PCBs • Elderberry Forebay for Dieldrin • Pyramid Lake for Chlordane, DDT, Dieldrin, PCBs • Alondra Park Lake for PCBs Echo Park Lake for Chlordane and Dieldrin • Legg Lakes for DDT and PCBs.	substances. For all of these waterbody pollutant pairs, this guideline was exceeded frequently enough to place the waterbody pollutant pair on the 303(d) list.	
17.9	**IX. ADDITIONAL COMMENTS** **A. Wilmington Drain-Copper should be delisted** Per Appendix G fact sheets, two lines of evidences (LOE) were used to support the listing for copper in Wilmington Drain. However, the information used for the second LOE is data collected in Compton Creek, which is a different waterbody. This data should not be used to evaluate Wilmington Drain. Removal of this LOE would lead to only 2 exceedances out of 33 data points. This would satisfy the delisting criteria of the State's Listing Policy. Therefore, copper should be delisted for Wilmington Drain.	Los Angeles Water Board staff will correct the LOEs and the decision, as appropriate, as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval.	See response to comment 11.3.
17.10	**B. The listings in Appendix A should be corrected to reflect the listing and delisting decisions in Appendix G** As already acknowledged in the February 24 Regional Board notice letter, Appendix A does not accurately capture all the listing and delisting decisions detailed in the fact sheets in Appendix G. For example, for Ballona Creek, Chlordane, DDT, Dieldrin, and PCBs were delisted during the previous listing cycle. However, these listings continue to be identified in Appendix A as part of the 2016 303(d) list. This is true for many of the waterbodies summarized in Appendix A. This error should be corrected to avoid any confusion and misinterpretation of the information by the general public.	Los Angeles Water Board staff is aware of the inconsistencies and Appendix A has been revised.	
17.11	**C. Waterbodies that are on the 303(d) list and being addressed by a USEPA approved TMDL should be moved to Category 4a from Category 5**	Each of these waterbody pollutant pairs are included in the 303(d) list as "being addressed by	

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	Many of 303(d)-listed waterbodies from the previous listing cycle now have TMDLs. This requires a change in their status from Category 5 (TMDL required list) to Category 4a (being addressed by US EPA approved TMDL). Some of these status changes are not reflected in the revised list and need correction. Similarly, some of the newly proposed listings are already being addressed by an existing TMDL for that watershed. In those cases, it is appropriate to put them also under Category 4a as opposed to Category 5. Examples, include: • LA River Reach 3 and Rio Hondo Reach 2 for Indicator Bacteria, which are being addressed by the Los Angeles River Watershed Bacteria TMDL • LA River Reach 6 for Copper and Compton Creek for Zinc, which are being addressed by the Los Angeles River Metals TMDL.	USEPA approved TMDL." However, each of these waterbodies remains on the list in Category 5 because there are other pollutants impairing those waterbodies that have yet to be addressed by a TMDL or other regulatory program. For example, Rio Hondo Reach 2 has a TMDL for indicator bacteria (the Los Angeles River Watershed Bacteria TMDL); however, Rio Hondo Reach 2 also is listed for dissolved oxygen and toxicity, which are not being addressed by a TMDL. Therefore, the water body, as a whole, is in Category 5. Nonetheless, in the Appendix for Category 5, waterbody pollutant combinations for which a TMDL is complete are shown as 5B and waterbody pollutant combinations for which there is no TMDL are shown as 5A.	
18.	County of Ventura Public Works Agency, March 30, 2017		
18.1	The County has a number of concerns regarding the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waterbodies and believes that it requires significant review and modification before adoption. The County requests that the issues identified in this letter be addressed and the proposed 303(d) list be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) list to be fully vetted and reviewed.	See response to comment 32.1 for additional discussion of additional comment periods.	
18.2	Requested modifications fall into three broad categories:	See response to comment 18.3-18.61 for specific responses.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	1. New Category 5 listings should not be listed due to incorrect thresholds applied to the beneficial use, incorrect sample locations, and incorrect interpretation of the data (e.g., mismatched units or lack of temporal representation). 2. Delistings requested previously by the County that have not been incorporated. 3. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the proposed updates to the 303(d) list (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives <WQOs), and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide a detailed summary of requested changes to the 303(d) list and the rationale for the requested actions. In summary, the County requests that all waterbody pollutant combinations in Table 1 not be listed on the 303(d) list, nitrogen compounds in Santa Clara River Reach 3 be delisted, and the errors and inconsistencies identified in the CCW TMDL Stakeholders Letter be addressed.		
18.3	**I. REQUESTED MODIFICATIONS TO THE LISTING STATUS** Based on a review of the proposed Category 5 waterbody segment-pollutant combinations, the County has identified a number of waterbodies that should be either delisted based on available data or for which proposed new listings should not be listed based on errors in the data evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested changes. A detailed discussion of each of the justifications follows the table. **Table 1. Waterbody-pollutant combinations that should not be listed**	See response to comment 7.5.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Waterbody Segment: **Boulder Creek (Ventura County)** Pollutant: Chlordane Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment (WARM).		
18.4	**Boulder Creek (Ventura County)** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.6.	
18.5	**Boulder Creek (Ventura County)** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.7.	
18.6	**Boulder Creek (Ventura County)** Pollutant: Toxicity Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 7.8.	
18.7	Waterbody Segment: **Ellsworth Barranca** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • J-flagged data incorrectly used in assessment.	See response to comment 7.43.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
18.8	Waterbody Segment: **Javon Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.	
18.9	Waterbody Segment: **Javon Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected is spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	

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18.10	Waterbody Segment: **Los Sauces Creek** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Fish were collected from two sites on a single day. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same date. As the data support a listing decision, the waterbody pollutant combination should be listed until more data supporting a delisting decision become available. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	
18.11	Waterbody Segment: **Madranio Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Data does not include proper temporal representation. • Benthic Community Effects listing is based on flawed analyses.	Listings based on both the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.	

Revised Response to Comments on the Draft 2016 303(d) List
Comment Deadline: March 30, 2017

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
18.12	Waterbody Segment: **Madranio Canyon** Pollutant: Copper Justification: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.	
18.13	Waterbody Segment: **Madranio Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.	
18.14	Waterbody Segment: **Medea Creek Reach 1 (Lake to Confl. with Lindero)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	See response to comments 26.4 and 26.15.	
18.15	Waterbody Segment: **Padre Juan Canyon** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Benthic Community Effects data do not support listing. • Data does not include proper temporal representation.	See response to comments 26.4 and 26.15. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.	
18.16	Waterbody Segment: **Padre Juan Canyon** Pollutant: Selenium Justification for Not Listing: • Data does not include proper temporal representation.	Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day.	
18.17	Waterbody Segment: **Port Hueneme Harbor (Back Basins)**	Because the data collected are spatially	An additional reference has been linked to the

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	decision. The guideline, 0.0052 ppm, is the screening guideline from “Guidance for Assessing Chemical Contaminant Data for Use In Fish Advisories Volume 1: Fish Sampling and Analysis,” 2000, (CalWQA ref 3756) and assumes an average body weight of 70 kg and a consumption rate of 21 g/day for a 30 year exposure over a 70-year lifetime.
18.18	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	
18.19	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: Dieldrin Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	
18.20	Waterbody Segment: **Port Hueneme Harbor (Back Basins)** Pollutant: PAHs (Polycyclic Aromatic Hydrocarbons) Justification for Not Listing: • Data does not include proper temporal representation.	Samples were collected from three sub-locations from two sites. The three samples per site were averaged prior to assessment. Because the data collected are spatially independent, it is appropriate to assess the data as individual samples even though they were collected on the same day. In addition, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent.	
18.21	Water Segment: **Santa Clara River Estuary** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	See response to comments 16.2 and 32.5.	
18.22	Water Segment: **Santa Clara River Reach 1 (Estuary to Hwy 101 Bridge)** Pollutant: pH Justification for Not Listing: • No demonstration high pH is a result of waste discharge.	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Reach 1 including “waste discharge” from	

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		sources such as wastewater treatment plants and the MS4. Exceedances in pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. See, also, response to comment 16.5.	
18.23	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlordane Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.72.	
18.24	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Chlorpyrifos Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.73.	
18.25	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cyfluthrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.74.	
18.26	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Cypermethrin Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.75.	

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18.27	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDD Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.76.	
18.28	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDE Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.77.	
18.29	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: DDT Justification for Not Listing: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.78.	
18.30	Water Segment: **Santa Clara River Reach 3 (Freeman Diversion to A Street)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.79.	
18.31	Waterbody Segment: **Tapo Canyon** Pollutant: DDD	See response to comment 7.81.	

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	Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDD listing. This LOE should be removed since there is a separate LOE specifically for toxicity.		
18.32	Waterbody Segment: **Tapo Canyon** Pollutant: DDE Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody. • Includes LOE for toxicity to support the DDE listing. This LOE should be removed since there is a separate LOE specifically for toxicity.	See response to comment 7.82.	
18.33	Waterbody Segment: **Tapo Canyon** Pollutant: Nitrogen, Nitrate Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.83.	
18.34	Waterbody Segment: **Tapo Canyon** Pollutant: Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.84.	
18.35	Waterbody Segment: **Triunfo Canyon Creek Reach 1** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	Two LOEs with five bioassessment scores supported a listing decision. Though IBI scores will be replaced by CSCI in the future for water quality assessment purposes, it remains appropriate to use data on IBI scores for listing	

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		purposes. The waterbody pollutant combination should be listed until more data supporting a delisting decision become available or information suggests the environmental conditions have changed. See response to comments 26.4 and 26.15.	
18.36	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Arsenic Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6	
18.37	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Cadmium Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6	
18.38	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Chlordane Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6	
18.39	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: DDT Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6	
18.40	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: Dieldrin Justification for Not Listing:	See response to comment 16.6	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data does not include proper temporal representation.		
18.41	Waterbody Segment: **Ventura Harbor: Ventura Keys** Pollutant: PCBs (Polychlorinated biphenyls) Justification for Not Listing: • Data does not include proper temporal representation.	See response to comment 16.6	
18.42	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.	
18.43	Waterbody Segment: **Ventura River Reach 1 and 2 (Estuary to Weldon Canyon)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	See response to comment 16.13.	
18.44	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses.	See response to comment 16.12.	
18.45	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Mercury Justification for Not Listing: • Data and objectives have different units (ng/L vs. µg/L); data do not	See response to comment 7.87.	

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	exceed objectives.		
18.46	Waterbody Segment: **Ventura River Reach 3 (Weldon Canyon to Confl. w/Coyote Cr)** Pollutant: Toxicity Justification for Not Listing: • Toxicity data from prior to pesticide use restrictions used for listings. More recent data does not show toxicity.	Of the 43 samples evaluated, eight samples were in exceedance, which supported a listing decision. The waterbody pollutant combination should be listed until more data supporting a delisting decision become available. Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.	
18.47	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Benthic Community Effects Justification for Not Listing: • Benthic Community Effects listing is based on flawed analyses. • Data does not include proper temporal representation.	See response to comment 26.4 for a discussion of the appropriate metrics for benthic community condition. See response to comment 26.5 for a discussion of the established water quality criteria. Because the data collected are temporally independent, it is appropriate to assess the data as individual samples even though they were collected at the same site.	
18.48	Waterbody Segment: **Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd)** Pollutant: Temperature, water Justification for Not Listing: • Analysis does not demonstrate water temperature is above natural temperature.	The designated beneficial use supports cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. As stated by Moyle, 1976, the optimum range for Rainbow Trout's growth and completion of most life stages is 13-21 degrees	

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		Celsius. Therefore, it is appropriate to use this information as Evaluation Guideline, which does not conflict with the water quality objective for Cold Freshwater Habitat.	
18.49	Waterbody Segment: **Wheeler Canyon/Todd Barranca** Pollutant: Benthic Specific Conductivity Justification for Not Listing: • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.87.	
18.50	***Listing data lacks proper temporal representation.*** There are many instances where the data to support the listed pollutant lacks proper temporal representation. Section 6.1.5.3 of the State Water Resources Control Board (SWRCB) Listing Policy1 states that: "*Samples should be representative of the critical timing that the pollutant is expected to impact the water body. Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing decision.*" Many of the pollutants listed in **Table 1** included data collected from a single sampling date. This violates the Listing Policy. For instance, all the newly proposed pollutants for the Ventura Harbor: Ventura Keys (i.e., arsenic, cadmium, chlordane, DDT, dieldrin, and PCBs) were collected on a single day- February 28, 2007. Because there is no temporal resolution provided for these pollutants they should not be listed. **Requested Action:**	See response to comment 18.3-18.49 for specific responses.	For arsenic, see response to comment 16.6.

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Remove all listings shown in Table 1 that were based on a single sample collection date.		
18.51	***1. Benthic Community Effects Listing are based on flawed analyses and should be removed.*** The benthic community effects listings are based on a metric which has since been deemed arbitrary and inappropriate. The Index of Biotic Integrity (IBI) stream assessment was a commonly used metric to determine benthic community effects. The threshold used to distinguish an impaired reach was a value of 39 and below. However, this threshold value was arbitrarily assigned as a statistical cut-off value. The state has since endorsed the use of the California Stream Condition Index (CSCI), as stated in the Appendix G Fact Sheets, "*The CSCI is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. The CSCI will be used in the future for water quality assessment purposes statewide over the regional indices of biologic integrity (IBIs).”* Despite this, all of the newly listed benthic community effects in Table 1 utilize the IBI to assess the waterbodies. Therefore, the County is requesting that these flawed listings be removed until the waterbodies can be assessed with a more representative metric such as the CSCI. In addition, a number of water segments are listed as an exceedance for benthic community effects citing a low CSCI score, however, the original data shows only IBI scores. The Water Board should clearly note whether a CSCI or IBI assessment was performed. For instance, the Fact Sheets show that Padre Juan Canyon has 2/2 samples which exceed for benthic community effects using a CSCI score of 0.35 and 0.52 which is below the 0. 79 CSCI threshold. However, the raw data shows that an IBI was performed resulting in scores of 40 and 39, which would only represent one exceedance which would not support listing the water body. The Water Board should clearly state where the CSCI scores are that they are referring to. This issue applies to all new benthic community effects listings. More detailed information can be provided upon request.	See response to comment 18.8, 18.11, 18.14, 18.15, 18.35, 18.42, 18.44, and 18.47	

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	In addition, many of the benthic community effects listings rely on a single day of sampling which does not provide proper temporal representation as discussed in the previous comment. **Requested Action:** **• Update the Appendix G Fact Sheets to clearly state that an IBI metric was used not the CSCI for all pollutants noted in Table 1.** **• Remove all listings shown in Table 1 for benthic community effect that use the IBI listing.**		
18.52	***2. There is no demonstration that high pH is a result of waste discharge.*** The waterbodies listed for high pH do not appropriately demonstrate that the high pH was a result of waste discharge as required in the Basin Plan. The Santa Clara River Estuary and Santa Clara River Reach 1 are both listed for high pH. As stated in the Fact Sheet and according to the Los Angeles Region Basin Plan "*The pH of inland surface waters shall not be depressed below 6. 5 or raised above 8. 5* ***as a result of waste discharges***" [emphasis added]. However, it was not demonstrated for either of these waterbodies that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Los Angeles Water Board should either provide evidence that the elevated pH was a result of waste discharge and detail that in the Fact Sheets, or, if no such evidence exists, the Los Angeles Water Board should remove these proposed listings. **Requested Action:** **Remove the pH listings for Santa Clara River Estuary and Santa Clara River Reach 1 as there is no data provided in the Fact Sheet that demonstrate that these high pH values are the result of waste discharge.**	See response to comment 16.15.	

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18.53	***3. Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using WQOs for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U. S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated: *"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("*') in conjunction with the*	See response to comment 7.89, 18.3, 18.4, 18.5, 18.7, 18.27, 18.28, 18.31, 18.32, 18.33, 18.34, and 18.49.	

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	implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an (') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*') in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S. C. § 1313(c)(3)."*[3] In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that WQOs applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable WQOs in waterbodies designated with an asterisk("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1 : *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty. "* Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), WQOs specific to the MUN beneficial use are not		

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	applicable. As such, water quality data collected in these receiving waters should not be compared to WQOs applicable to the MUN beneficial use. **Requested Action:** **Revise all the new listings in the Fact Sheets to ensure none are based on municipal drinking water objectives when the MUN beneficial use does not apply.**		
18.54	***4. Agricultural Drain and MS4 outfall monitoring data incorrectly used as basis for listing decisions.*** There are some instances where listing decisions are based on data from the Agricultural VCAILG Monitoring Program which include monitoring data from agricultural drains. Santa Clara River Reach 3 (Freeman Diversion to A Street) listings (i.e., chlordane, chlorpyrifos, cyfluthrin, cypermethrin, ODD, ODE, and DDT) were based on multiple lines of evidence, but were primarily listed based on exceedances at VCAILG sample site "S03D_Bards" which is an agricultural drain that drains to Santa Clara River Reach 3. This site was selected to be representative of agricultural discharges to Reach 3 and it is not representative of receiving water conditions. Therefore, any data collected from "S03D_Bard" and other agricultural drain sites cannot be used to list the downstream reach. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In some cases, other lines of evidence cite location "Santa Clara River at Freeman Diversion at 11th Street Drain (tributary to Santa Clara River) at sample location Santa Paula-1" ("Santa Paula-1"). This location is an MS4 outfall location that is designed to characterize urban discharges from City of Santa Paula and is not located in the Santa Clara River's receiving waters. As a result, the data from "Santa Paula-1" location should not be used for listing receiving waters. However, it should be noted that the data linked to the Fact Sheet did not include any data	See response to comments 7.72 and 7.88.	

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	from "Santa Paula-1" so it is unclear what data were evaluated for these listings. Unless receiving water data contain exceedances, none of the constituents for Santa Clara River Reach 3 should be listed. **Requested Action:** **Remove all listings shown in Table 1 that were based on Agricultural and MS4 discharge monitoring data not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain or MS4 outfall monitoring rather than receiving water monitoring.**		
18.55	***5. Remove toxicity Lines of Evidence (LOE) from pollutant Fact Sheets when a LOE specifically for toxicity already exists.*** Numerous pollutants listed for Tapo Canyon (chlordane, DDD, and DDE) include a toxicity LOE to support the pollutant listing, when a toxicity LOE already exists for the waterbody. These pollutant-specific toxicity LOEs include no scientific evidence that the specific pollutant was the cause of observed toxicity and so should be removed from the Fact Sheet. **Requested Action:** **Remove the Lines of Evidence for toxicity for Tapo Canyon in Table because no evidence was provided that these constituents were the cause of toxicity.**	See response to comment 18.31 and 18.32.	
18.56	***6. Reassess mercury listings using correct objective and correct units.*** The data used to assess mercury for Santa Clara River Reach 3 and Ventura River Reach 3 are in ng/L (nanograms per liter) and the objective is µg/L (micrograms per liter). The data need to be converted into the same units as the objective before an exceedance can be determined. The County expects that after this calculation has been performed the waterbodies will no longer meet the listing guidelines. Additionally, although a California Toxics Rule objective exists for mercury, an USEPA nationally recommended criteria was used for the assessment. An	See response to comment 7.90.	

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	explanation for the use of a recommended criteria when an established WQO exists should be provided. **Requested Action:** **Repeat the mercury analysis after correcting the unit error and clarify the objective used.**		
18.57	***7. Correct the proposed temperature listings which are based on incorrect criteria.*** The temperature listing for Ventura River Reaches 1 and 2 (Estuary to Weldon Canyon) and Ventura River Reach 4 (Coyote Creek to Camino Cielo Rd) uses an evaluation guideline of 13-21 degrees Celsius (°C) as the optimum growth range for rainbow trout. However, the applicable Basin Plan objective for waterbodies designated as *COLD* is "For waters designated as COLD, water temperature shall not be altered by more than 5 degrees F above the natural temperature." The Fact Sheets provide no discussion of natural temperatures or a demonstration that the temperature was raised above natural temperatures in order to exceed the objectives. Notwithstanding that a deviation from natural temperatures has not been demonstrated, the manner in which the evaluation guideline is applied is also inappropriate. Moyle 1976 is referenced as the source of the evaluation guideline. Moyle 1976 was revised and expanded by Moyle 20024. Moyle 2002 states: "Rainbows are found where daytime temperatures range from nearly 0°C in winter to 26-27°C in summer", although extremely low (<4°C) or extremely high (>23°C) temperatures can be lethal if the fish have not previously been gradually acclimated. Even when acclimation temperatures are high, temperatures of 24-27°C are invariably lethal to trout, except for very short exposures (25, 26). " As such, while temperatures above 21 °C may not be optimal according to Moyle 1976, Moyle 2002 clearly states that lethal temperatures are those greater than 23°C which indicates that the evaluation guideline of 21 °C is more	See response to comment 18.43 and 18.48.	

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	appropriately applied as a chronic guideline (necessitating the establishment of an averaging period) and 23°C is the more appropriate "not-to-exceed" guideline if used for listing. Using the threshold of 23°C, no samples would exceed the threshold in Ventura River Reach 4 and only 2 samples would exceed the threshold in Ventura River Reaches 1 and 2. Neither of these number of exceedances would meet the listing thresholds. **Requested Action:** **Remove the temperature listing for Ventura River Reach 1 and 2 as well as Ventura River Reach 4.**		
18.58	***8. The toxicity listing for Ventura River Reach 3 (Weldon Canyon to Confl. With Coyote Cr) relies on outdated data*** Based on a review of the available data, all the observed toxic samples occurred prior to 2009. Of the 8 exceedances, 3 occurred in 2000/2001 and the rest were in 2006, 2007 and 2008. In the 2006-2008 time period, toxicity was commonly observed due to chlorpyrifos and diazinon which were subsequently restricted. Toxicity in many watersheds has been significantly reduced as a result of these use modifications. The available data shows that no samples exceeded after 2008, indicating that those pesticides or another cause that is no longer present, were the cause of the toxicity. Because of the transient nature of toxicity and the potential that the causes of the toxicity are no longer present, exceedances from prior to the pesticide use bans should not be used as the basis for a listing. The more recent samples since the pesticide use restrictions should be used as a basis for evaluation. **Requested Action:** **Do not list Ventura River Reach 3 for toxicity based on exceedances from**	See response to comment 18.46.	

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	outdated data.		
18.59	***9. Ensure no J-flagged data were used in the assessment.*** The listing policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states: *"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit. "* All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) list. Specific instances are included in Table 1, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings. For example, the line of evidence for the Boulder Creek chlordane listing erroneously states that three out of five samples exceed the objectives. . A review of the data shows that only 1 out of 5 samples exceed indicated criteria. The remaining 4 results were (1) not detected and (2) "estimated" (J-flagged) by the laboratory because results were below the reporting limit. Because only 1 sample showed an exceedance, this listing should be removed as it does not meet the binomial test limits set forth in the Listing Policy. A similar situation also occurred in the Ellsworth Barranca DOE listing. Both the Boulder Creek and Ellsworth Barranca listings should be removed based on the incorrect assignment of the beneficial use MUN (as discussed earlier) in addition to the use of J-flagged data.	See response to comment 7.5.	

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	Requested Action: **• Review all Fact Sheets and Lines of Evidence for the use of J-flagged data and remove any instances where J-flagged data were used.** **• Delist chlordane for Boulder Creek and DDE for Ellsworth Barranca as well as any other pollutants that lack the minimum number of exceedances required to justify a listing.**		
18.60	**II. REQUESTED DELISTINGS** In June 2015, the County and the Cities of Fillmore and Santa Paula submitted a letter with data and analysis that supported delisting of the Santa Clara River for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded with plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report. The letter is provided as an attachment to this letter. The County requests that the delistings provided in the attached letter be included in the 303(d) list scheduled for adoption on May 4, 2017. **Requested Action:** **Delist Ammonia in Santa Clara River Reach 3.**	As stated in the November 10, 2016 letter, the Regional Board staff recommended delisting of Santa Clara River Reach 3 Ammonia from the 2016 California Integrated Report. Decision 32846 was revised to “Delist from 303(d) list (being addressed by USEPA approved TMDL)”.	
18.61	**III. CORRECT OTHER ERRORS AND INCONSISTENCIES IN APPENDICES AND FACT SHEETS** Appendix A, Appendix B, Appendix C, and Appendix G have many inconsistencies which make the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. As a result, there is concern that not all changes to the 303(d) list that may be considered for adoption were identified in the review. The lack of clarity comes from the following inconsistencies:	See response to comment 7.98 and 7.99.	

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	• Not all new listings are summarized in Appendix A. • Appendix B was found to be missing some new and old listings based on a comparison to Appendix G. • Appendix G has fact sheets for some listings noted as new in Appendix A or B identified as old fact sheets from the last listing cycle (e. g. benthic community listings in Javon Canyon). This indicates they were old listings, but a comparison to the 2010 303(d) list identified that they were in fact new listings and the fact sheets were incorrect or located in the wrong location. Additionally, in many cases, data and Quality Assurance Project Plan references in the Fact Sheets are inconsistent with the data provided for review. Examples of these inconsistencies and errors were detailed in the CCW TMDL Stakeholders' comment letter. The County asks that the Los Angeles Water Board do a thorough review of all appendices to ensure that the Proposed 303(d) List is internally consistent, the correct data were used for the assessment, and the other errors identified in the CCW TMDL Stakeholders' comment letter are addressed. **Requested Action:** **Correct the numerous errors and inconsistencies in the report and ensure that all the proposed 303(d) list appendices are internally consistent.**		
19.	County of Ventura and the Cities of Fillmore and Santa Paula, March 30, 2017		
19.1	The proposed updates to the 303(d) list did not include delisting of the Santa Clara River Reach 3 for ammonia as recommended by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) in the letter dated November 10, 2016 provided as an attachment to this letter. In June 2015, the County and the Cities submitted a letter with data and analysis that supported delisting of the Santa Clara River Reach 3 for ammonia. In the November 10, 2016 letter, Los Angeles Water Board staff responded:	See response to comment 18.60.	

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	"Based on the findings described above, the requirements for delisting have been met. Therefore, Los Angeles Water Board staff plans to recommend delisting of ammonia from Santa Clara River Reach 3 in the 2016 California Integrated Report." (page 2 of the attached November 10, 2016 letter). The County and the Cities request that the ammonia delistings be included in the 303(d) list scheduled for adoption on May 4, 2017. Requested Action: Delist Ammonia in Santa Clara River Reach 3.		
20.	California Department of Water Resources (DWR), March 30, 2017		
20.1	The updates to the 303(d) list propose to add the following pollutants to the following State Water Project (SWP) affiliated locations: • Dieldrin, chlordane, DDT, and polychlorinated biphenyls (PCB) to Pyramid Lake • PCBs to Castaic Lake and Castaic Lagoon, and • Dieldrin and PCBs to Elderberry Forebay. DWR has the following comments: 1) The proposed pollutant listings lack a clear rationale that supports the recommended listings. A clear rationale, such as recommended food (i.e. fish) exposure levels (Food and Drug Administration for example), Fish Contaminant Goal (FCG), or Advisory Tissue Levels (ATL) for each pollutant should be provided so a clear comparison can be made. Some of the levels for these contaminants are above the FCG, they have not reached the ATL, and in fact, the report labels these contaminants as very low, as compared to the other higher priority contaminants. Absent such comparison, it is difficult to assess the appropriateness for such listings.	The Basin Plans contains narrative objectives for toxics pollutants that bioaccumulate within the biotic and result in adverse impacts to aquatic life or human health. Section 6.1.3 of the Listing Policy states that evaluation guidelines shall be used to interpret those objectives. Each LOE identifies the water quality objective/criterion and the evaluation guideline that was used in the assessment. Depending on the beneficial use being assessed, these evaluation guidelines are the National Academy of Science (NAS) guidelines for protection of aquatic life from bioaccumulation and Fish Contaminant Goals (FCGs). The policy allows for the use of evaluation guidelines published by the Office of Environmental Health Hazard Assessment	

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		(OEHHA) for the purposes of protection of human health from fish consumption. Water Board staff chose to use the FCGs values because they were the most protective values for fish consumption. There is no need to list a comparison of all three values rather than just selecting the most appropriate, protective, value. Furthermore, OEHHA screening values have been used as numeric targets in TMDLs within the Los Angeles region.	
20.2	2) The PCB data in Table 11 (Summary Report) for Elderberry Forebay does not seem to match that of the proposed listing status. Elderberry Forebay is absent from this Table.	Staff assumes the commenter is referring to Staff Report Appendix A: Summary of Regional Board Recommended Changes to the 2012 303(d) List. Elderberry Forebay dieldrin and PCBs are appropriately listed as new listings, which also matches the listing in Appendix B (Category 5).	
20.3	3) Insufficient details are provided for dieldrin, chlordane and DDT. A more comprehensive effort that specifically focuses on these contaminants should be conducted before they are proposed for Pyramid Lake additions to the 303(d) list.	"LIST" is the appropriate recommendation for dieldrin, chlordane and DDT. Listed waterbodies are evaluated and listing decisions are made based on Section 3 of Listing Policy. Based on readily available data and Section 3.5 and Table 3.1 of the Listing Policy and there are sufficient samples to list based on the binomial distribution. Greater detail regarding those listings is provided in Decision 62840, 62841, and 65950 in Appendix G. Also see response to comment 32.3 regarding	

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		readily available data.	
20.4	4) Further analysis, including statistical analysis, should be conducted to support this proposed listing. Given the proposed listing recommendations are based on sample analytical data, a statistical analysis to show that sufficient sample size has been obtained for each lake should be provided. Additional considerations for analysis should also include: • Increasing sampling locations. Were the samples obtained truly representative of the entirety of the lakes, especially those that are the subject of this letter? • Do the composite samples truly represent averages of the fish caught, or are they additive? Can composites identify anomalies? Can a lake-wide composite be skewed, as a result of one very high data point? • One-time study involving one year seems insufficient. Studies with longer duration are more appropriate to accurately determine the pollutant levels.	While the Listing Policy requires that samples be spatially and temporally independent, fish are not static; they move throughout a waterbody and accumulate pollutants in tissue over time. Therefore, the data are, by their nature, spatially and temporally independent. At the time a TMDL is developed, or other regulatory program is developed, a more refined geographic scope can be identified considering collection sites and fish movement. See response to comment 32.3 regarding readily available data.	
21.	Earth Law Center (ELC) , March 30, 2017		
21.1	**<u>1. Full Compliance with Clean Water Act Sections 305(b) and 303(d) Requires Identification of All Hydrologically Impaired Waterways</u>** *a. CWA Section 303(d)* Clean Water Act (CWA) Section 303(d)(1)(A) requires California to "identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters." This must be a robust listing, with sufficient details about the waterways (including flow) to allow the state to "establish a priority ranking" for the waterways, also required by Section 303(d)(1)(A). In other words, California's 303(d) list must provide a comprehensive list of all impairments. The state's Listing Policy provides some mixed direction, stating on the one hand that 303(d)	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with State Board's response to *American Rivers*. The State Water Board response is provided below:	In regards to the Ventura River Reaches 3 and 4 pumping and water diversion listings, the recommended decisions have been modified to "delist." While the Ventura River Algae, Eutrophic Conditions and Nutrients TMDL will address water quality impacts, pumping and water diversion are not pollutants and, therefore, are no appropriately placed on the 303(d) list.

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	list only covers impairments by "pollutants" (rather than also by "pollution," such as flow),[2] but on the other hand stating that Regional Water Board Fact Sheets supporting Section 303(d) listings "shall contain...Pollutant or *type of pollution* that appears to be responsible for standards exceedance."[3] The latter path is the appropriate course. No objection, further, can be made to including flow-impaired waterways on the Section 303(d) list on the basis that the state is not required to prepare TMDLs to address "pollution." First, Section 303(d)(1)(A) makes no mention of limiting the 303(d) list to those waterways requiring Total Maximum Daily Loads (TMDLs). In fact, no mention of TMDLs is made until Section 303(d)(1)(C), which sets requirements on how to manage impaired waterways. Moreover, the state itself does not take this position for waterways impaired by pollutants. Instead, the state lists in Category 5 (what it deems its Section 303(d) list) pollutant-impaired waterways that do, and do not, require TMDLs by state evaluation.[4] Accordingly, the state must include hydrologically impaired waterways, including those impaired by altered flow, on its 303(d) list. This is the path the Los Angeles RWQCB correctly took in listing the Ventura River (Reaches 3 & 4) for "pumping" and "water diversion" impairments. However, rather than continuing to follow the clear intent of CWA Section 303(d), the Los Angeles RWQCB instead proposes to delist the Ventura River (Reach 3) for "pumping,"[5] despite this listing having been properly included on the 303(d) list since 1998. The primary reason given is that "[t]he listing is for a non-pollutant and therefore should be delisted."[6] However, as established above, the CWA requires the listing of both pollutants and pollution on the 303(d) list, regardless of whether a TMDL is required. Therefore, we ask that the Ventura River (Reach 3) remain on the 303(d) list.	*Sufficient flow is necessary to protect water quality and beneficial uses of water. "Pollution," such as lack of adequate flow, may cause impairments to water quality standards. Specifically, reduced flows can cause or contribute to impaired water quality conditions, such as elevated water temperatures, increased pollutant concentrations, degraded recreational opportunities, and reduced habitat area and/or volumes.* *State law recognizes the connection between flow and water quality. The Legislature specifically identified its intention to "combine the water rights and water pollution and water quality functions of state government to provide for consideration of water pollution and water quality, and availability of unappropriated water whenever applications for appropriation of water are granted or waste discharge requirements or water quality objectives are established" when it created the State Water Resources Control Board. (Wat. Code, § 174.)* *The State Water Board has broad authority to consider water quality and pollution when it makes water allocation determinations. (Wat. Code, §1258.) The State Water Board has significant experience both setting and implementing flow criteria through water right actions, including its Bay-Delta Program and its*	

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		Policy for Maintaining Instream Flows in Northern California Coastal Streams. The State Water Board also has experience setting flow requirements as part of its responsibility to certify that the operation of hydropower facilities subject to Federal Power Act licensing meet water quality standards. Those actions are always controversial and frequently involve differences of opinion among scientists, who testify under oath, as to appropriate flow criteria in those proceedings. The State Water Board has previously recognized that its major rivers are over-allocated and adversely impacted by flow alterations (see for instance Strategic Plan Update 2008-2012, State Water Resources Control Board, September 2, 2008, p.10). However, the extent of the impact on instream beneficial uses of a stream depends on the unique circumstances of each situation and requires knowledge of other factors impacting the physical and biological integrity of the watercourse, including physical impediments to fish passage and sediment recruitment (dams and culverts, in addition to natural impediments such as waterfalls and landslides), the source of the water accreting to the stream (is it cool groundwater or is it warm runoff from open lands), the location and physical effect of diversions relative to habitat, and other factors that affect pollution.	

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		Pursuant to the above-cited state law, the State Water Board is expressly required to consider water quality and pollution when making water rights determinations. The converse is not true, however, with regard to the federal law directly applicable to developing the Integrated Report. The federal statutory directives pursuant to CWA 303(d) and 305(b) require states to report on the water quality necessary to provide for fish, wildlife, and recreational opportunities and other beneficial uses. In fulfilling its reporting obligations pursuant to CWA 303(d) and 305(b), the federal statutes do not expressly require the states to consider flow, pollution, or allocation of water rights, when reporting on standards attainment. Clean Water Act (CWA) section 305(b), combined with the section 303(d) reporting requirements, comprises the California Integrated Report (Integrated Report). Those reporting requirements establish a process for states to use to develop information on the quality of their state's waters. *CWA section 305(b) is the principle [sic] means by which U.S. EPA and the public assess whether waters meet water quality standards. The report is used by U.S. EPA to inform Congress on the quality of navigable waters and their tributaries nationwide.* *CWA section 305b requires states to report on:*	

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		"[A] description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be required to take into account seasonal, tidal, and other variations, correlated with the quality of water […]."[A]n analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water." *"[A]n analysis of the extent to which the elimination of the discharge of pollutants and a level of water quality which provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreations activities in and on the water, have been or will be achieved by the requirements of this chapter, together with recommendations as to additional action necessary to achieve such objectives and for what waters such additional action is necessary."* *(CWA § 305(b)(1)(A)-(C); see id. at § 305(b)(1)(D) & (E) (describing economic and*	

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		environmental reporting requirements).) U.S. EPA describes the section 305(b) reporting goals at: http://water.epa.gov/type/watersheds/monitoring/upload/2003_07_24_monitoring_305bguide_v1ch1.pdf , *and provides 2006 Integrated Report Guidance here:* *http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2006IRG_index.cfm.* *As provided in the above U.S. EPA reference material, the primary purpose of the 305(b) and 303(d) reporting requirements is to determine the extent waters are attaining standards, identify waters that are impaired and need to be added to the 303(d) list and placed in Category 5 for the development of a total maximum daily load (TMDL), and identify waters that can be removed from the list when standards are attained.* *The guidance U.S. EPA developed for states to implement the Integrated Report consistently provides that segments should be placed in Category 4c when "the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution" such as lack of adequate flow. (See Guidance for 2006 Assessment, Listing and Reporting Requirements*	

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		Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005). *In making decisions concerning standards assessment, it is imperative that the State Water Board undertakes a structured framework regarding its assessment and listing methodology and also provides information on the content of such methodologies.* *It may be appropriate to assess flow alteration pursuant to section 305(b) to the extent it could be used to support water quality decision-making. However, without a defined methodology for assessing non-pollutant related pollution, Water Board staff does not have a consistent and transparent approach to analyzing the extent to which flow-related alterations cause or impact water quality standards. The decisions made by the State and Regional Water Boards must be based on a methodology that provides all stakeholders with the opportunity to understand exactly how assessment decisions are made. The State Water Board's listing determinations must be supported by documentation that explains the analytical approaches used to infer true segment conditions. (See U.S. EPA's 2006 Guidance for Assessment and Listing, p. 29 (explaining what constitutes an assessment methodology and U.S. EPA's review of a state's methodology for consistency with the CWA and a state's water*	

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		quality standards).) In addition to recognizing U.S. EPA's recommendation that segments be placed in Category 4c when the cause is solely due to pollution, and given the uncertainties associated with determining appropriate flow criteria to be used as a threshold for determining impairment, the State Water Board does not believe that placing segments in Category 4c of the Integrated Report results is warranted. Neither is such a reporting format an appropriate use of its limited resources, particularly considering the State Water Board's broad authority to address flow issues through its other legal authorities, which unlike information provided in the Integrated Report, have the potential to result in flow improvements through voluntary or regulatory action. However, in this 303(d) list, the Los Angeles Water Board has assigned the Ventura watershed pumping and water diversions to "being addressed by a TMDL" (Category 4a). In EPA's approval letter for the Ventura River Algae, Eutrophic Conditions and Nutrients TMDL, EPA stated "Based on EPA's approval of the State' s TMDLs addressing the algae, eutrophic conditions and nutrient impairments, together with other available information regarding Reaches 3 and 4 of the Ventura River, EPA has determined that it is unnecessary at this time to establish separate actions for the pumping and water diversion in	

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		Reaches 3 and 4 of the Ventura River." Decision ID 33817 Ventura Reach 3, water diversion Decision ID 44534 Ventura Reach 4, water diversion Decision ID 34271 Ventura River Reach 3, pumping Decision ID 44793 Ventura Reach 4, pumping	
21.2	*b. CWA Section 305(b)* The state must also include hydrologically impaired waters in its broader, CWA Section 305(b) report. Section 305(b) requires states to submit biennial reports[7] that "shall" describe the "water quality of all navigable waters," including an analysis of the extent to which the waters protect fish and wildlife, for compilation and submission to Congress.[8] Federal regulations describe this requirement and its purpose, stating that **the Section 305(b) report "serves as the primary assessment of State water quality" and the basis of states' water quality management plan elements, which "help direct all subsequent control activities."**[9] States must use the Section 305(b) report to develop their annual work program under Sections 106 and 205(j).[10] California's Integrated Report accordingly must include an adequate Section 305(b) report if the state is to develop meaningful water quality plans that appropriately direct staff and resources to the most important control activities. The Section 305(b) report must particularly include information regarding waterway flows to ensure that the fundamental purpose of Section 305(b) in guiding workplanning is met. The provision of information regarding waterway flow is also called for by CWA Section 101, which sets **the national objective of restoring and maintaining the "chemical, *physical*, and biological integrity of**	The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board staff concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *It is State Water Board staff's interpretation that waterbodies currently listed for pollutant based impairments should not be included for pollution based impairments as well. The pollution based impairments should be addressed via the TMDL or other regulatory process. If all pollutant based impairments are eventually addressed and the*	

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	the Nation's waters." (Emphasis added.) The U.S. Supreme Court itself explicitly affirmed the importance of addressing physical elements of waterway health such as flow, stating **that the distinction between water quality and quantity under the CWA is "artificial."**[11] The Staff Report runs afoul of the CWA by ignoring Category 4C entirely for inclusion in either its 303(d) list or its 305(b) report, reporting that *zero* water bodies in the Los Angeles Region are impaired due to altered hydrology under Category 4C.[12] As with other regional water boards, the Los Angeles RWQCB appears to rely on the Listing Policy for this decision, which states that the 303(d) list only includes those water segments that require the development of a TMDL.[13] Here, again, the Staff Report assumes an illegally narrow definition of its requirements under the CWA. The Integrated Report is supposed to include *both* a robust and legally adequate 303(d) list *as well as* a robust and legally adequate 305(b) report. These requirements are combined; they are not the same (*see also* sec. 8). If the State Water Board and Regional Water Boards take the position that pollution-impaired waterways (including flow-impaired waters) cannot be included in the Section 303(d) list, then the Listing Policy – which by definition applies *only* to the Section 303(d) list – is irrelevant. It cannot be used as an excuse to ignore flow impairments entirely. The state in that case must then turn to its requirements under Section 305(b), which broadly require it to report on water quality, including as impacted by altered flow. Indeed, the Staff Report recognizes that it must consider flow-impaired waterways in its assessment, describing Category 4C as being applicable if "[t]he non-attainment of any applicable water quality standard for the waterbody is the result of pollution and is not caused by a pollutant."[14] No legitimate reason is given for failing to comply with this requirement, however. A legally adequate Section 305(b) report must include waterways impaired by pollution, including hydrologically impaired waterways, whether or not the waterways are also impaired by a pollutant. This information is also critical for the state to set	*pollution impairments still exist, then placement into Category 4c could be appropriate.* In addition, the State Water Board states: *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address nonpollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes into account the flow impairments as a causative factor.* While these listings are not strictly flow-related, in this 303(d) list, the Los Angeles Water Board has assigned the Malibu Creek and the Matilija Creek fish barriers listing to Category 4c. However, the Los Angeles Water Board recognizes that the issue of Statewide consistency may become more important as the State Water Board approves the Los Angeles Region 303(d) list combined with lists for other Regions. See: Decision ID 34814 Malibu Creek fish barriers Decision ID 35724 Matilija Creek reach 1 Fish Barriers Decision ID 34162 Matilija Creek reach 2 Fish Barriers Decision ID 34241 Matilija Creek reservoir Fish Barriers	

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	waterway protection priorities properly. Proper identification of hydrologically impaired waterways is also important if the state is to fully comply not only with Section 305(b), but with CWA Section 303(d) as well. This section not only calls for identification of impaired and threatened waterways, but also requires the state to prepare a "*priority ranking*" of such waters, "taking into account the severity of the pollution" and waterway uses.[15] Flow and other hydrologic alteration data and information are critical to proper prioritization of impaired waters for further staff and resource attention. Specifically in regards to the Ventura River (Reach 3), in addition to misguidedly delisting this water segment from the 303(d) list for its impairment due to "pumping," the Los Angeles RWQCB staff also fails to reclassify this water segment under Category 4C, finding that "[t]here is no established method for determining impairment due to pollution like pumping so a Category 4C finding is also inappropriate."[16] Once again, this response is misguided, as the state must at minimum include hydrologically impaired waters in its broader, CWA Section 305(b) report, as described above, whether or not there are flow standards or a formal methodology to do so. See Sec. 6, below. Finally, we reiterate that because Section 303(d)(1)(A) broadly requires identification of impairments *regardless* of whether TMDLs are needed, the state's Section 303(d) list should include a robust Category 4C set of listings. State law cannot weaken the requirements of the CWA by artificially limiting the scope of this list.	 Also, see response to comment 21.1.	
21.3	**<u>2. U.S. EPA Guidance and Reports, and the State Water Board Itself, Have Called for Identification of Hydrologically Impaired Waterways in Category 4C of the Integrated Report</u>** U.S. EPA issued formal Integrated Report Guidance (i.e., for the combined	There is not clear evidence supporting the fact that beneficial uses are impaired solely due to the lack of or excess of perennial or ephemeral flows.	

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	Sections 303(d) and 305(b) reports) to states and territories in August 2015; in it, EPA specifically addresses the topic of hydrological impairment.[17] The U.S. EPA Guidance clearly states that: If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life[18] use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C.[19] The Guidance specifically references hydrologic alteration as an example of a Category 4C listing.[20] It further references EPA Guidance going back at least to 2006, which similarly said that flow-impaired waters should be identified in the Integrated Report under Category 4C (the 2010 CCKA et al. Letter references this 2006 Guidance in support of flow listings; see attachment 3). U.S. EPA and USGS reinforced this mandate in a joint report in February 2016 on flow, stating in part that "EPA recommends reporting impairments due to hydrologic alteration in Category 4c, which are those impairments due to pollution not requiring a TMDL."[21] Even more specifically, U.S. EPA Region 9 has directly told the State Water Board that the Board is "well aware of [EPA's] interest toward listing selected streams for 'flow impairments' (at least under 305(b)) where lines of evidence are strong."[22] Further, the State Water Board Executive Director himself decided that the state should identify flow-impaired waters in its Integrated Reports, stating that California "would now list for flow alterations" and that "[l]istings would be made under category 4C for impaired [sic] by pollution not a pollutant, and be based on staff's professional judgment as well as the evidence submitted by the data."[23] Again, no reason is given in the Staff Report for ignoring the clear flow	The State Water Board has already address similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The State Water Board and North Coast Regional Water Board (North Coast Water Board) staff could not clearly determine if the beneficial uses of a water quality segment were impaired solely due to stream flow or lack thereof. In many water segments, flow is seasonal resulting in dry periods during the summer months. If interpretive guidance or a clear methodology was developed to examine flow and other forms on non-pollutant related pollution, Water Board staff would have a transparent and consistent way to characterize beneficial use impairments caused by such pollution.* Also see response to comment to comment 21.1 and 21.2.	

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	impairments throughout the region in light of the CWA, guidance, and state direction.		
21.4	**<u>3. The San Diego RWQCB Has Adopted Numerous Listings for Hydrologic Impairment for Its Current Integrated Report</u>** The SD RWQCB recently adopted an Integrated Report and Staff Report[24] that **identified 30 waterway segments for listing in Category 4C, either with a Category 5 pollutant listing or alone**.[25] Consistent with U.S. EPA Guidance, the SD RWQCB recognized that identifying all pollutant and pollution impairments provides a far more accurate picture of the challenges before the state than ignoring key impairments. For example, the Staff Report found that "over 96 percent of streams that exhibited biological degradation had both an associated pollutant(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration (hydromodification, Table 3)." If the Regional Board had ignored such pollution impairments, then virtually all of the impaired streams in the San Diego Region would have been under-assessed, likely resulting in misallocation of limited resources and attention. ELC commented to the San Diego Board in support of these listings; these comments are attached.[26]	As the commenter states and the San Diego Regional Board mentioned in their staff report, "*…streams that exhibited biological degradation had both an **associated pollutant**(s) and supporting information showing pollution from in-stream habitat/hydrologic alteration and/or watershed hydrologic alteration …*"	
21.5	**4. <u>California Has Identified Hydrologically Impaired Waterways in the Past</u>** In California, "pumping" and "water diversion" are currently listed as causes of impairment for Ventura River Reaches 3 and 4, in the Los Angeles Region. Additionally, Ballona Creek Wetlands is currently listed as impaired by "Hydromodification," among other impairments. All three water body segments are currently listed for these specific flow-related impairments in Category 5.[27] California's history of identifying flow-related impairments under Section 303(d) should be considered precedential. And as explained herein and by Santa Barbara Channelkeeper in its comment letter, there is no basis for delisting Reach 3 of the	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles Water Board concurs with the State Water Board's response to *American Rivers*.	

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	Ventura River.	The State Water Board response is provided below: *The Staff Report (at p. 9-10) states that the Water Boards have not considered the direct assessment of flow data since the adoption of the Listing Policy in 2004. The Staff Report acknowledges, however, that there were 4 listings on the existing 303(d) List related to flow-related alterations in the Ballona Creek and Ventura River watersheds (Region 4) but that those decisions were made prior to the adoption of the Listing Policy.* *The Listing Policy provides listing factors based solely on pollutant impairments. As a result, any section 303(d) listings related to flow alterations are contrary to the Listing Policy and U.S. EPA guidance and would be appropriate for reconsideration. Because the 4 segments were included on the 303(d) list due to pollution-related impairments, and not a pollutant, the Staff Report explains that the 4 listings for flow will likely be proposed for delisting in the next listing cycle.* *However, it is important to note that the 4 segments were also listed on the 303(d) List for pollutant impairments for which TMDLs have been developed: Ventura River Reaches 3 and 4 – are identified as impaired due to pumping and water Diversion. The Regional Water Board and*	

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		U.S. EPA have found that those flow related impairments were addressed via the Ventura River Algae TMDL. Regarding the listings for Ballona Creek Wetlands, identified as impaired due to hydromodification and reduced tidal flushing, the Regional Water Board and U.S. EPA have found that the Ballona Creek Sediment and Exotic Vegetation TMDL are addressing the stressors involved with the hydromodification and reduced tidal flushing. *U.S. EPA tried to implement a flow TMDL for the Ventura River listings and abandoned the effort because it lacked authority to address non-pollutant impairments. Consequently, a Nutrient TMDL has been implemented that takes into account the flow impairments as a causative factor.* However, as noted in response to comment 21.1, the Los Angeles Water Board has assigned the Ventura River watershed pumping and water diversions to "being addressed by a TMDL" (Category 4a).	
21.6	**<u>5. Numerous Other States Have Identified Hydrologically Impaired Waterways in Categories 4C and 5</u>** Many states around the country have followed U.S. EPA Guidance and the CWA by properly identifying flow-impaired waterways in their Integrated Reports.	See response to comment 21.1 and 21.2.	

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	These include, but are not limited to, Western states such as Idaho, Montana, Wyoming, Washington and New Mexico.[28] One listing methodology that may be of particular interest to the Los Angeles is that used by Ohio, which identifies waters impaired by flow alteration by linking biological community degradation with upstream dams. Notably, a number of these states regularly include flow-impaired waterways on their 303(d) list as well as their 305(b) Report. ELC has collected a significant amount of information on other states' hydrologic impairment listings and processes (and provided this to the State Water Board); this can be made readily available to the Los Angeles Board if desired.		
21.7	**<u>6. Flow Standards Are Not Required to Identify Hydrologically Impaired Waterways in Category 4C</u>** Most, if not all, of the states that identify hydrologic (including flow) impairments make those listing decisions based on best professional judgment and the information before them. Flow standards are not required to be developed first. Even the State Water Board has stated that flow listings could be done "based on staff's professional judgment as well as the evidence submitted by the data," and that they "would likely be mostly narrative...unless there are specific numeric targets for flow in place."[29] In other words, the state itself has recognized that flow criteria are not necessary for flow impairment listings. ELC has compiled significant information collected on various states' hydrologic impairment listing strategies and would be pleased to provide this additional information if desired. U.S. EPA addresses the process of identifying hydrologically impaired waters in its 2015 EPA Listing Guidance, stating that: If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C. Examples of	See response to comment 21.1 to 21.4.	

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	hydrologic alteration include: a perennial water is dry; no longer has flow; has low flow; has stand-alone pools; has extreme high flows; or has other significant alteration of the frequency, magnitude, duration or rate-of-change of natural flows in a water; or a water is characterized by entrenchment, bank destabilization, or channelization. Where circumstances such as unnatural low flow, no flow or stand-alone pools prevent sampling, it may be appropriate to place that water in Category 4C for impairment due to pollution not caused by a pollutant. In order to simplify and clarify the identification of waters impaired by pollution not caused by a pollutant, States may create further subcategories to distinguish such waters.[30] Note that this description of the process for identifying flow impairments does not require adoption of flow standards as a prerequisite for listing. The SD RWQCB Staff Report also addressed this topic in their just-approved Staff Report and Integrated Report, similarly stating that: where a water segment exhibited significant degradation in biological populations and/or communities as compared to reference site(s) the San Diego Water Board assessed the segment for inclusion in Category 4c using data and information as prescribed in USEPA's 2015 Guidance...Where in-stream data was lacking, stream segments were evaluated using desktop aerial reconnaissance for potential in-stream habitat and hydrologic alteration associated with channel modifications, stream diversion or augmentation, and to evaluate the level of associated development and use of best management practices to mitigate hydromodification.[31]		
21.8	**<u>7. Sound Public Policy Dictates that Flow-Impaired Waterways Must Be Identified</u>**	The Los Angeles Water Board agrees with the value of identifying waterbodies that are impacted	

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	States, including California, have identified and are identifying flow-impaired waterways in their Integrated Reports not only because the Clean Water Act calls for it and U.S. EPA Guidance reinforces it. They also do so because it makes smart policy sense. Why would a state limit the amount of information it releases, information that could help it make better decisions about how to prioritize its resources? If the main problem with a waterway is not temperature or dissolved oxygen but flow, for example, then that information should be available so the best permitting and resource allocation decisions can be made to protect affected waterways. Identification of flow-impaired waterways is also important because those listings help the public exercise their own responsibility to help improve waterway health. U.S. EPA agreed in its Guidance, stating that "a variety of watershed restoration tools and approaches to address the source(s) of the impairment" exist even in the absence of TMDLs, increasing the importance of full and complete identification for impaired waterways.[32] Hydrologic impairment listings also can and should be used in CEQA analyses of proposed projects that could further impact the flow of identified waterways, thus preventing additional damage to already-impacted waterways and fish. ELC has prepared and submitted extensive comments to the state on the numerous policy benefits of properly identifying flow-impaired waterways.[33]	by pollution, including flow alteration, that are not otherwise impaired by other pollutants. Given the complex characteristics of climate and hydrology in the Los Angeles region, determining natural baseline flow conditions that are necessary to support aquatic habitat based on comparable reference conditions that resemble the conditions within our region and finding a defensible methodology for applying that information to determine impairment is a challenging endeavor that may be pursued in subsequent assessments.	
21.9	**<u>8. Water Bodies Can and Should Be Placed in All Relevant Categories of Identification</u>** The Staff Report states that "[t]o meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody segment into one of five non-overlapping categories based on the overall beneficial use support of the water segment…."[34] This statement appears to	The State Water Board has already addressed similar comments regarding flow-related impairments in their response to comments for their Proposed Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) Portion of the 2012 California Integrated Report, posted March 3, 2015. The Los Angeles	

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	limit the RWQCB to placing water bodies in only one category, an interpretation presumably reflected in the recommendation to include zero listings in Category 4C. This approach is simply incorrect. U.S. EPA has been quite clear that water bodies can be placed into multiple categories, and in fact should be in order to provide the best available information to U.S. EPA and Congress. As explained by the SD RWQCB in its Staff Report: It is important to note that USEPA recommended in its 2015 guidance that "States assign all of their surface water segments to ***one or more of five reporting categories***"....[35] U.S. EPA reiterated this point in its joint report with USGS, stating that "EPA's guidance has noted that **assessment categories *are not mutually exclusive*, and waters may be placed in more than one category (for example, categories 4C and 5)**."36 Accordingly, flow impairments should be reflected in Category 4C whether or not there is a pollutant present, the approach taken recently by the SD RWQCB. Otherwise, the state is conflating the Section 303(d) and 305(b) reports rather than combining them, ignoring its Section 305(b) responsibilities in the process.[37] Because the state must comply with both Sections 305(b) and 303(d), it must provide information relevant to all categories applicable to a single water body.[38] The Integrated Report does not meet these mandates.	Water Board concurs with the State Water Board's response to *American Rivers*. The State Water Board response is provided below: *The State Water Board has not indicated that it is bound to U.S. EPA's guidance. Additionally, the State Water Board disagrees with the commenter's interpretation of U.S. EPA's Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act, which is excerpted in the Staff Report at page 10.* *U.S. EPA's guidance at section V.G.3 (pg. 56) states:* *Segments should be placed in Category 4c when the [S]tates demonstrate[] that the failure to meet an applicable water quality standard is **not caused by a pollutant**, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is 'the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water' (section 502(19)). In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In*	

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		other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard and to support water quality management actions necessary to address the cause(s) of the impairment. Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired ***solely*** *due to lack of adequate flow or to stream channelization.* *(Page 56, emphasis added.) In California waterbody-pollutant combinations are assessed consistent with the Water Quality Control Policy for developing the California's Clean Water Act Section 303(d) List (Listing Policy) to determine the overall use support rating. That overall use support rating is used by the California Water Quality Assessment Database (CalWQA) to determine the overall Integrated Report Category for the waterbody as a whole.* *The State Water Board interprets the U.S.EPA guidance to indicate that a waterbody should not be placed into Category 4c if there is a pollutant based impairment identified to be impairing water quality that requires a TMDL. The waters for which flow information has been submitted for*	

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		inclusion into Category 4c are all identified in the Integrated Report as impaired due to pollutants under Category 5, 4a, or 4b. Waterbodies impaired by pollutants, such as temperature, and also by flow modifications will be addressed by TMDLs for the pollutant. To the extent that the pollutant is affected by flow, the Regional Water Boards will work with the State Water Board through its Division of Water Rights to determine the extent to which a water right action can improve the pollution impairment and the appropriate implementation action. *Additionally, U.S. EPA submitted a comment letter regarding the State Water Board's consideration of the CWA 303(d) List stating:* *"EPA commends the Regional Board and State Board staff for the transparency of the process with respect to data used in the assessment and the applicable standards." U.S. EPA also explained that the purpose behind its substantive listing recommendations to the State Water Board was designed to ensure that U.S. EPA's approval of the CWA 303(d) list could occur without U.S. EPA making changes subsequent to the State Water Board's approval. Notably, while U.S. EPA noted disagreement with certain listings or delistings proposed in the Staff Report, U.S. EPA stated no disagreement with the Staff Report's assessment of flow related data and information.*	

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		U.S. EPA has final review and approval authority of California's CWA 303(d) List before it becomes effective. Also see response to comment 21.1 and 21.4.	
21.10	<u>**9. Readily Available Data Exist and Have Been Provided in Support of the Listing of Waterways as Hydrologically Impaired**</u> As evident based on substantial, readily available information, the lines of evidence for hydrologic impairment are strong for numerous Los Angeles Region waterway segments, including but not limited to Reach 3 of the Ventura River (specifically for "pumping," as currently listed) as well as the Santa Clara River (particularly Reaches 1 and 2).[39] Federal regulations state that states must evaluate "all existing and readily available information" in developing their 303(d) lists and prioritizations.[40] The SWRCB's Executive Director reinforced the breadth of this requirement in a memorandum on the scope of listing regulations at 40 CFR § 130.7(b)(5).41 This information must include flow, a position recently reinforced by U.S. EPA, who stated that the integrated reporting format is key to "acknowledge the important role of flow in contributing to water-body impairments."[42] <u>Data Supporting Listing of the Ventura River (Reaches 3 and 4)</u> Excessive pumping contributes to the severe dewatering of the Ventura River (Reach 3), imperiling endangered steelhead trout and other aquatic species. Therefore, the Los Angeles RWQCB must not delist this waterway for "pumping" as is currently proposed. As support, ELC incorporates by reference those comments prepared by Santa Barbara Channelkeeper on the Los Angeles Region's 2012 Integrated Report[43] and	Also see response to comment 21.1, 21.2, and 32.3 regarding readily available data.	

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	2016 Integrated Report,[44] both of which summarize the extensive body of evidence establishing the link between pumping on Reach 3 (as well as Reach 4) of the Ventura River and resulting negative biological impacts, including to steelhead trout. ELC also incorporates by reference numerous additional documents that highlight the negative effects of excessive pumping on Reach 3 (as well as Reach 4) of the Ventura River, including from U.S. EPA Region 9 (finding in its Draft TMDL for Reaches 3 and 4 of the Ventura River that "low flows due to pumping and diversion activities likely exacerbate the flow and water quality conditions in Reaches 3 and 4"),[45] the National Marine Fisheries Service (NMFS) (finding in a 2007 Draft Biological Opinion that "[w]ater withdrawals from surface diversions and subsurface pumping have affected the timing and magnitude of the Ventura River flows ... and has decreased the quantity and quality of critical habitat for steelhead")[46], and the Los Padres National Forest Ojai Ranger District (describing the historic impacts low flows have upon steelhead trout populations in the Ventura River watershed in a report on steelhead restoration).[47] Together, this data demonstrates that pumping impairs beneficial uses in Reach 3 of the Ventura River, particularly those beneficial uses related to aquatic life and habitat. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. Reach 3 of the Ventura River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival.		

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	Based on the readily available data and information, the evidence is sufficient to support the continued listing of Reach 3 of the Ventura River on the 303(d) list due to "pumping." Thus, the proposed delisting of the "pumping" impairment on Reach 3 must not proceed. The Los Angeles RWQCB staff has not provided sufficient information to justify this delisting, nor have they addressed the above evidence that clearly validates the "pumping" listing as it originally occurred. Similarly, this evidence supports the continued listing (as currently proposed) of Reach 3 as impaired due to "water diversion," and of Reach 4 as impaired due to both "water diversion" and "pumping." **<u>Data Supporting Listing of the Santa Clara River</u>** Since at least 2013, ELC and partners have submitted detailed information establishing a clear impairment due to altered flows on the Santa Clara River (in particular Reaches 1 and 2, located downstream of the Vern Freeman Diversion Dam). In May 2013, we submitted a "shortlist" of ten California waterways being drained dry for inclusion on the 303(d) list, along with supporting evidence (see Attachment 2). The Santa Clara River was one of those waterways. As described in the submitted evidence: > The Santa Clara River is Southern California's last major free flowing waterway and is home to 17 species listed as threatened or endangered under the state and federal Endangered Species Acts. At River mile 10.5, United Water Conservation District (United) diverts almost all of the River's flows outside of large storm events. United, USGS, and local agency data show that water diverted at the Vern Freeman Diversion Dam for agricultural usage, groundwater recharge, and other uses, deprive migrating steelhead of sufficient flows and juvenile steelhead of healthy estuary rearing grounds.48 In addition to impacting beneficial uses associated with the provision of adequate steelhead habitat, surface water withdrawals also destroy downstream native riparian and endangered bird		

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	habitat, degrade the ecological integrity of the River's estuary, and impair a plethora of cultural and recreational beneficial uses downstream.[49] Additional readily available information further supports the imperative to list the Santa Clara River as impaired due to altered flows. This includes documents published by NMFS (describing in a Final Biological Opinion the negative biological impacts of the Vern Freeman Diversion Dam, which can deplete the Santa Clara River of all its flows and jeopardizes the existence of endangered Southern California steelhead trout),[50] the Santa Clara River Trustee Council and The Nature Conservancy (describing Santa Clara River flow reductions caused by water diversions and groundwater pumping and the resulting impact on steelhead trout),[51] the Los Angeles RWQCB (describing the historic decline of steelhead trout in the Santa Clara River, as well as flow impacts from water diversions and hydromodification in its "State of the Watershed" report),[52] and others. Together, this data demonstrates that reduced flows impair beneficial uses in the Santa Clara River, particularly those beneficial uses related to aquatic life and habitat. This is most clearly true in Reaches 1 and 2 of the Santa Clara River, where over-diversion and other flow impacts (due in large part to the Vern Freeman Diversion Dam) can cause the waterway to go completely dry. In accordance with Section 3.11 of the Listing Policy, when information indicates non-attainment of standards by a water body, the appropriate methodology for evaluation is weight of evidence to determine listing under Section 303(d). This recommendation is consistent as well with Section 3.9 of the Listing Policy, which supports listing if the water body exhibits degradation in biological populations and pollutants sufficient to impair, or threaten impairment of, beneficial uses. The Santa Clara River has exhibited degradation in populations of fish (including steelhead trout) that rely upon adequate flows for survival. Based		

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	on the readily available data and information, the evidence is sufficient to support the listing of the Santa Clara River (particularly Reaches 1 and 2) on the 303(d) list for impairment caused by altered flow. This evidence also supports including Santa Clara River on the 305(b) report.		
21.11	In sum, we once again urge the Los Angles RWQCB to follow the lead of the SD RWQCB, as well as U.S. EPA and numerous other states, in identifying flow- and otherwise hydrologically-impaired waters in the region's Integrated Report. To do so, the staff report must be revised to support the continued listing of Reach 3 of the Ventura River as impaired due to pumping (as done in previous years), as well as by listing the Santa Clara River (particularly Reaches 1 and 2) as impaired due to altered flows.	See response to comment 21.1, 21.2, and 21.4.	
22.	Heal the Bay (HtB) , March 30, 2017		
22.1	**Data/Information Collection and Timing Delay** In late 2014, Heal the Bay commented on the State Water Resources Control Board's (State Board's) *Proposed Amendment to the Water Quality Control Policy for Developing the Clean Water Act Section 303(d) List*. While we appreciated the chance to comment and the State Board's explanations in their Response to Comments, there are a few concerns that we continue to have regarding the new amendment and its effect on the Revised List. First, we understand that California is an expansive state and that the State Board's resources are limited in comparison. In this sense we understand but are disappointed that California must implement the "Rotating Basin Approach," when coming into compliance with requests for biennial updates for the federal Clean Water Act's Section 303(d). This will effectively reduce regional updates on impaired waters from every two to every six years. Compounded on this is the surprising discovery that the State Board is discussing	The State Water Board established what the commenter calls the "Rotating Basin Approach" in consideration of the large size of the State, the extensive amount of data to evaluate, and the increasing complexity of data analysis. Simply not delisting any waterbody ignores those areas where water quality may have improved albeit only as demonstrated with pre-2010 data. The Los Angeles Water Board anticipates that there may be waterbodies that are listed one listing cycle and delisted the next, perhaps to be re-listed in a later cycle. The Integrated Report and the 303(d) list should remain the State's best assessment based on water quality data evaluated, even as we recognize the limitations to the 303(d) list.	

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	either listing or delisting bodies of water in Region 4 with information and data collected prior to *August 30, 2010* – almost seven years ago. This would be on par with a college admissions officer selecting a prospective student for a university based on their academic performance in 5th Grade. It would have seemed wiser to have at least updated and appended further data and information and possibly re-solicited water quality data from regional stakeholders during the years long interim with respect to whether water bodies are placed on or removed from the Revised List. Considering this discrepancy in timing from data submittal to listing and delisting proposals, we ask that the State Board and Environmental Protection Agency (EPA) not delist any bodies of water that are currently on the *2010 Integrated Report* until more current data is received. This will eliminate the possibility of delisting a water body that is currently impaired, as there is no way to know the condition of the waters in question using data solely from 2010 or before. To err on the side of caution when dealing with our state waters will be in the best interest of our water quality standards and beneficial uses. This seems like a reasonable, precautionary request and is supported by the State Board during the adoption of the policy. Taken from the State Board Hearing Transcript from Sept. 30, 2004, Board Member Nancy H. Sutley states, “If it’s on the list . . . then you have to have some information that says that they [fish] are not dying now and the waterbody is not currently impaired . . ..” Though Board Member Sutley is referring to listings that were made by mistake, the principle behind it should still hold true. The intent was to say that information and data on waters should currently show that water quality standards are met and that the body of water is not currently impaired before being removed from the list. Board Member Sutley goes further to suggest that boards should affirm a lack of current impairment before delisting bodies of water by stating she was “Okay with not adding [additional] language [to the Listing Policy] as long as we’re all in agreement and that’s the direction of the	In addition, beginning with the 2018 303(d) list, all data to be evaluated by the Water Boards for the Integrated Report and 303(d) list must be submitted to the California Environmental Data Exchange Database (CEDEN). See, also, response to comment 32.3.	

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	regional boards that you have to look at the current conditions as well [before de-listing].” This very point is represented in the State Board’s *Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List* (State Listing Policy)(Adopted Sept. 30, 2004 and Amended February 3, 2015) in Section 4.11, which states, “When making a delisting decision based on the situation-specific weight of evidence, the Regional Water Board must justify its recommendation by [Bullet 1] Providing any data or information including current conditions supporting the decision.” We argue that there is no way to demonstrate current conditions with information and data that is aged seven years or more. Because of this it seems in line with State Listing Policy that no waterbodies be delisted for the current 303(d) List. During the next listing/delisting cycle, which will be in 2022, staff will be able to make a more accurate judgement on impairment simply because their information will be more up to date.		
22.2	**It is Misleading to Entitle this Current Edition the “2016” 303(d) List** It seems off-track and misleading to title this 303(d) list the *2016 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters* (Integrated Report) when it only contains information from 2010. Since the State Water Board’s original 2010 solicitation for data was intended for the 2012 list we think it would be much more constructive and accurate to have the current list in question labeled exactly as such and be called the *2012 Los Angeles Region Clean Water Act Section 303(d) List of Impaired Waters.* If any individual was filing their income taxes using tax information from a certain year, it would remain labeled as the tax return from the original time period, regardless of how long of an extension the individual received. Considering compliance with state and federal law, we could find no mention within the Federal Clean Water Act or the State Listing Policy of how the Integrated Report	The Los Angeles Water Board is complying with the naming convention as established by the State Water Board. The naming convention facilitates accounting of which Regions have updated listing decisions for that listing year. Also see response to comment 32.3.	

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	should be named, only how often it should submitted. Since the EPA is well aware of the new "rotating basin approach," and due to the fact that California has successfully amended its own State Listing Policy, we believe there to be no compliance issues for the more accurate renaming. In addition, it was made clear in the Integrated Report's "Staff Report" (February 2017) that the 303(d) List for Regions from Group 2 (Regions 3, 5, and 9), which was intended to be passed in 2014, has yet to be approved by the State Board or the EPA. If the State Board were to rename the 2014 Integrated Report the 2012 Integrated Report as well because it has yet to be approved, this would make clear to everyone exactly where the listing's value lies—by titling both lists from Basin Group 2 and 3, the revised 2012 Integrated Report. This would file nicely with California's Basin Group 1 (Regions 1, 6, and 7), which would identically be called the 2012 Integrated Report. This is also consistent with the original notice and request for data, titled "Notice of Public Solicitation of Water Quality Data and Information for 2012 California Integrated Report—Surface Water Quality Assessment and List of Impaired Waters." Further advantages of this titling would be that future inspection researchers unfamiliar with past reports would know that the listings would correspond much closer to the data from 2010. Looking towards the future, this more accurate labeling will help in clarifying reporting methods. It signifies when agencies made a clean break from when small windows of data were analyzed in favor of the current California Environmental Data Exchange Network (CEDEN) system, which uses a constant, up-to-date stream of information and allows for a more thorough and accurate 303(d) list for Region 4 in 2022. This would also make it crystal clear when the State of California "changed over" to the new "Rotating Basin Approach" in regards to fulfilling their obligations to Section 305(b) of the Clean Water Act.		
22.3	**The Optimistic Possibilities of CEDEN in 303(d) Listings**	The Los Angeles Water Board agrees and will	

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	As mentioned above, the State Board does have an opportunity going forward with CEDEN concerning water bodies in California. We are heartened to see that despite the fact that Region 4's 303(d) list will not be updated until 2022, that the list will be based on information up until 2021. This reduced lag time will only work to benefit the waters and beneficial uses of California's bodies of water. Further, as the State Board mentions in its *Comment Summary and Responses for the Proposed Amendment to the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* from January 26, 2015, "Requiring the use of CEDEN will ensure the data used for the 303(d) listing process is of a high quality and includes the necessary information for efficient assessments." It is true that the use of this database is likely to streamline the process for the staff of the Regional Boards, the State Board, the EPA, and any agency that wants to submit pertinent data. Heal the Bay noticed that the State Board scheduled CEDEN workshops in 2015 to "facilitate greater understanding of the needs of CEDEN users, develop tools to enhance the utility of CEDEN, and provide training on using the CEDEN system." We ask that the State Board provide more workshops now and in the coming years in anticipation of the current and future use of CEDEN by Region 4 Stakeholders. The people and water environment of California only stand to gain from thorough instruction given to invested stakeholders and the data they will provide.	work with State Board to provide workshops or other CEDEN training materials for Los Angeles Region stakeholders.	
22.4	**Concerns with Individual Category 4a Delistings from the 303(d) List** *Delisting Hermosa Beach and Manhattan Beach for Indicator Bacteria* Beyond our concerns mentioned above with any impaired water delistings from the prior 2010 303(d) List, Heal the Bay feels strongly that both Hermosa and Manhattan Beach should remain on the 303(d) List and maintain their current	The delistings of Hermosa Beach and Manhattan Beach for Indicator Bacteria are in compliance with the Listing Policy. Although these beaches are being recommended for delisting, they are still subject to the Santa Monica Bay Beaches Bacteria TMDLs and 303(d)	

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	TMDL for Indicator Bacteria. Looking at our past Beach Report Card data, even data solely from the supposed window ending on August 30, 2010 and before, we find it puzzling that either beach would be in consideration for delisting. In 2010 itself, our Hermosa Beach site by Herondo Street outfall was noted for single sample exceedances for *Enterococcus* for 17.6% of samples taken. Averaging exceedances from 2008 to present 2016, the Herondo storm drain outfall has shown *Enterococcus* exceedances 12% of the time. Concerning Manhattan Beach, their 28th Street outfall has shown *Enterococcus* exceedances 10% of the time since 2008. Both of these beaches are popular swimming and recreation areas and eliminating the TMDL would create the potential for impacts on human health and aquatic life. We would highly recommend waiting to remove both beaches from the 303(d) list until data from the past decade can be assessed. Like we discussed above, where uncertainty exists with regards to delisting bodies of water, decisions should be made in favor of protecting water quality, human health and the environment.	listing decisions do not change or eliminate effective TMDLs. The TMDL allocations that have been assigned to those beaches still apply and are incorporated into various NPDES permits/waste discharge requirements. In fact, both beaches are classified as 'anti-degradation' beaches, which are subject to more stringent requirements compared to the reference beach. Also see response to comment 32.3 regarding readily available data.	
23.	Los Angeles Department of Water and Power (LADWP) , March 30, 2017		
23.1	LADWP's detailed comments can be found below. **1.** Elderberry Forebay should not be listed for dieldrin or PCBs**.** LADWP's largest hydroelectric facility is the Castaic Power Plant, which is critical to the reliability of the electrical grid in the Los Angeles Basin. This facility along with the Elderberry Forebay was built in 1960 as part of a Federal Energy Regulatory Commission (FERC) project with the Department of Water Resources, and is operated under a FERC license. The Elderberry Forebay was built strictly for the operation of the plant as a storage component for the water that passes through the plant to generate electricity. This hydroelectric plant is known as a pass-through facility. Water from Pyramid Lake flows down a gradient through the Los Angeles Tunnel and seven penstocks to turn seven turbines in order to produce electricity. The water enters Elderberry Forebay after the turbines	Elderberry Forebay is surface waterbody which is identified in Table 1 of Chapter 2 in the Los Angeles Region Basin Plan as having the beneficial uses of MUN, IND, PROC, AGR, GWR, FRSH, POW, WARM, COLD, WILD, RARE, and SPWN. Restricted access does not preclude a waterbody from possessing beneficial uses. For the 303(d) list, readily available water quality data are assessed for all beneficial uses that may be impaired by excess amounts of pollutants.	

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	where it is then either discharged to Castaic Lake or pumped back to Pyramid Lake. LADWP has noted that the LARWQCB has proposed to add Elderberry Forebay to the revised 303(d) list for dieldrin and PCBs. However, activities at the plant do not use or add products that would contribute dieldrin or PCBs to its discharges into Elderberry. In fact, Elderberry Forebay is not open to the public and therefore does not have any beneficial uses beyond being an operating body of water for the hydro plant. Its only use is for the pushing of the turbine blades to generate electricity. In 2008 the United States Environmental Protection Agency (USEPA) released its final version of its "National Pollutant Discharge Elimination System (NPDES) Water Transfers Rule" (Water Transfer Rule) codifying (40 CFR 122.3(i)) that water transfers are excluded from the regulation of the Clean Water Act (CWA). The 40 CFR 122.3 (i) expressly states "Water transfers mean an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. USEPA's legal interpretation of the CWA concluded that Congress did not intend to subject water transfers where there is "no addition" of pollutants to the NPDES permit process because the pollutants were already in the waters being transferred and are not added. This ruling was put in place precisely for hydroelectric plants like the Castaic Power Plant that are considered pass-through facilities. Since this body of water is isolated from all public recreation and access and the water that passes through the Castaic Power Plant is used only to generate electricity, it seems inappropriate to include the Elderberry Forebay in the new 303(d) listing. With respect to Dieldrin, as stated in LADWP's Castaic Dieldrin Source Control Study sent to the LARWQCB in May 2010, LADWP contends that since the Castaic Power Plant has never used nor ever had a use for dieldrin, it cannot be the source of dieldrin in Elderberry Forebay. The source study points out that many of the tributaries that flow into the State Water Project, specifically those in the San Joaquin Valley, are agricultural areas where for years traditional pesticides	No source analysis has been conducted and the 303(d) list identifies the source as “unknown.” Source analysis, linkage, and allocations are typically determined during TMDL development or during the development of another regulatory program. See response to comment 32.3 regarding readily available data.	

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	(including dieldrin) have been used. Dieldrin was also an ingredient in several types of vector control measures used to mitigate vectors residing subsurface. These components, termed "legacy pesticides," primarily reside in the sediment/soil and are believed to be periodically liberated into the surrounding waterways. *Catskill Mountains Chapter of Trout Unlimited, Inc. v. EPA (Catskill III*) (2nd Cir. 2017), states that a water being transferred through a hydroelectric plant is not a discharge of a pollutant. In addition, as has been mentioned earlier, the Elderberry Forebay is only used for the operations of the plant, and therefore discharges from the Forebay would not be considered a discharge of a pollutant. Additionally, LADWP ceased the use of PCBs in the electrical equipment at Castaic Power Plant in the 1980s, and thus the hydroelectric plant is not a source. Furthermore, the NPDES Annual Monitoring Reports for Castaic Power Plant have shown "non- detect" for all PCB sampling over the last 20 years. Since the Elderberry Forebay is used and was built solely for the operation of the Castaic Power Plant hydroelectric facility, and since it is a pass-through that transfers water without any addition of pollutants, it would seem appropriate to remove the Elderberry Forebay from this 303(d) list. Therefore, LADWP respectfully requests that the Elderberry Forebay be removed from the current 303(d) list.		
23.2	2. The 303(d) listing recommendations should be updated to include current data and information. The LARWQCB Staff Report supporting the current listing recommendations notes that "Due to the volume of data received during the 2010 data solicitation period, the State Water Board determined that no additional data would be solicited or analyzed until all the 2010 data are assessed.[...] Los Angeles Water Board staff estimates that the 2022 303(d) list will include data submitted through 2021." (Staff Report at p. 6)	See response to comment 32.3 regarding readily available data. Per the Listing Policy, waterbody-pollutant combinations are included on the 303(d) list with as few as two samples.	

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	LADWP is concerned that many of the data upon which proposed listings are based are more than ten (10) years old. However, some of the proposed listings are based on only two or three data points. Although LADWP understands and recognizes the resource limitations faced by the LARWQCB, we respectfully suggest that basing listings on datasets that do not include the most recent information, particularly when only a couple of samples are available to describe conditions in the region's water bodies, does not seem to be effective. Such limited data cannot be considered to describe current conditions appropriately.		
23.3	3. The proposed listings for "benthic community effects" are premature at this time, particularly for proposed listings in modified channels. LADWP notes that several of the proposed listings for "benthic community effects" are based upon limited data (2 or 3 samples) that were collected nine or more years ago, and that some of the proposed listings are based upon "index of biotic integrity" (IBI) scores. More importantly, many of the water bodies proposed for listing for benthic community effects are engineered or modified channels, and it is not scientifically or technically appropriate to expect that modified channels will achieve the CSCI or IBI scores that are observed in reference channels. The proposed listings do not consistently or clearly establish a link between the biological condition and the pollutant(s) that may be responsible for the biological condition; in fact, it is not clear that the pollutant measurements (available only for some proposed listings) were collected at the same time as the biological data. Finally, some of the samples upon which the proposed listings are based were collected downstream of and shortly after major wildfires; these data are likely representative of temporary disturbed conditions and may not be representative of typical conditions. State Water Board staff are currently working on developing a statewide policy or plan for biological integrity. This process has moved away from using the 181 and	See response to comment 11.19 and 11.24 regarding Benthic Macroinvertebrate listings.	

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	is now developing metrics for the California Stream Condition Index (CSCI) and an Algae Stream Condition Index (ASCI). This process has not reached consensus on how engineered or modified channels should be assessed, or what appropriate expectations for these channels should be. In fact, the State Water Board is currently convening a Science Advisory Panel to address this issue and many others, and the State Water Board's "Wadeable Stream Biostimulatory and Biointegrity Science Plan," dated February 2017, acknowledges that "Developed landscapes are associated with an increase of many stressors in streams, such as elevated contaminant and nutrient concentrations, altered flow regimes , sedimentation, and habitat degradation. Often, these stressors are difficult to mitigate or remove under the traditional mechanisms available to the Water Boards. In these circumstances, the range of CSCI or ASCI scores may be constrained in channels in developed landscapes." Because the State's policy is in development, no longer uses the IBI, has not clearly established a link between the presence of pollutant(s) and the biological condition, and has not produced direction regarding how benthic integrity should be assessed in modified streams, LADWP respectfully suggests that it is premature to list the region's water bodies for "benthic community effects". LADWP therefore requests that the LARWQCB decline to list the region's water bodies for benthic community effects at this time.		
24.	Lower Los Angeles River (LLAR) Watershed Committee, March 30, 2017		
24.1	The LLAR Watershed Committee requests the Regional Board suspend the recommendation on Iron because of the following: • Reliance on data gathered during 2006-2010 is not appropriate when more recent data collected as part of the extensive monitor programs of the CIMPs is now available. • Dissolved concentrations of iron do not exceed the narrative objectives.	Under the Listing Policy, waterbodies are included on the 303(d) list where standards or guidelines are exceeded. The Los Angeles Region Basin Plan contains a narrative objective for "…chemical constituents in amounts that adversely affect any designated beneficial use…," which may be used in assessments by relying upon numerical guidelines.	The iron decision will be reassessed during the State Board public comment period.

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		However, review of the decision for Coyote Creek iron is in process at this time. Also see response to comment 32.3 regarding readily available data.	
25.	Lower San Gabriel River (LSGR) Watershed Committee , March 30, 2017		
25.1	The LSGR Watershed Committee recognizes the recommendation regarding Temperature in Reach 1 and Reach 2 of the San Gabriel River and requests that the Regional Board take into consideration the characterization the of these Reaches of the San Gabriel River in its determination of temperature as a pollutant. As described as a Water Quality Objective: *"the natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses."* Beginning upstream, Reach 2 is a 7-mile stretch from the outlet of the Whittier Narrows Dam and ends where the Sab Gabriel River crosses Firestone Blvd. Reach 2 is confined by engineered levees and rip-rap. The river remains a soft-bottom channel and during dry-weather has no measurable flow reaching Reach 1 due to having the most productive spreading grounds in Los Angeles County. Reach 1 is a 10-mile stretch beginning at Firestone Blvd in Downey and extends to the confluence of the San Gabriel River with Coyote Creek. It is a heavily urbanized reach with a concrete bottom. Two significant POTWs discharge into this Reach. During dry weather, these POTWs discharge vastly more water than enters the river channel though the combined MS4 outfalls. The volume of the	See response to comment 17.4.	

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	POTW discharge will quickly render any potentially elevated temperature from discharges of MS4 outfalls as negligible. The Committee believes that a Water Quality Objective for Temperature in these Reaches is not applicable.		
25.2	In regards to Iron and Malathion in Coyote Creek; the LSGR Watershed Committee requests the Regional Board suspend the recommendation of Iron and Malathion due to monitoring data inconsistent with recent water body improvements. The LSGR Watershed has made a considerable effort in developing and implementing its Coordinated Integrated Monitoring Program (CIMP) and suggest monitoring data should reflect more recent and current outfall conditions and that any conclusions should be drawn from a more current and comprehensive data set. The LSGR believes this request is justified when considering that Iron and Malathion are derived from nationally Recommended Water Quality Standards and not based on an established EPA TMDL or conditions characteristic of Southern California waters.	See response to comment 24.1 and 32.3.	
26.	Sanitation Districts of Los Angeles County (Sanitation Districts) , March 30, 2017		
26.1	The Sanitation Districts have concerns on some aspects of the Draft List, particularly where the listing thresholds used in the Staff Report appear to differ from receiving water quality objectives contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) or other regulatory programs. Additionally, there appear to be data errors that impact some listing decisions. General comments relating to these concerns are provided below and detailed specific comments for each listing are provided in Attachment 1 and appendices to this letter.	See responses to comments 26.2 – 26.19.	
26.2	***1. Data Were Incorrectly Attributed to Some Reaches*** The Draft List contains a number of newly proposed listings based, in part, on data	Los Angeles Water Board and State Water Board staff are aware of these areas where the reach mapping that underlies the CalWQA database	

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	collected from incorrect reaches. Specific listings where this appears to have occurred include the benthic community and toxicity listings for Santa Clara River Reach 5; the temperature listing for Santa Clara River Reach 6; the toxicity, DO, and iron listings for Rio Hondo Reach 2; and the toxicity listing for San Jose Creek Reach 2.	(which maps the 303(d) list) and the Los Angeles Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region. For additional specific responses, see response to comment 26.10 and 26.19.	
26.3	***2. Not All of the Data Submitted for Listing Consideration Were Used in Making the Listing Decision*** The Draft List contains a number of newly proposed listings where only a subset of the data submitted for listing consideration were evaluated; these data are included in the data files appended to the Staff Report but were not used in the listing analysis. Specific listings where this appears to have occurred include the toxicity listing for Santa Clara River Reach 5 and the temperature listing for Santa Clara River Reach 6.	See response to comment 26.12 for the Santa Clara River Reach 5 toxicity listing and response to comment 26.19 for the Santa Clara River Reach 6 temperature listing.	
26.4	***3. The Draft List Includes Inappropriate Impairment Listings for "Benthic-Macroinvertebrate Bioassessments"*** The Draft February 2017 version of the 2016 303(d) List contains a number of newly proposed listings for "Benthic-Macroinvertebrate Bioassessments." The proposed listings are based on application of the Southern California Coastal Index of Biological Integrity (SCIBI) and, in some cases, the California Stream Condition Index (CSCI). These include listings for Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1. The Sanitation Districts	Listings based on the SCIBI and CSCI scores are consistent with State policy and have been assessed relative to appropriate reference sites. Both the IBI and the CSCI assess benthic community relative to reference sites. The SCIBI was developed using data from 275 sites, ranging from Monterey County to the Mexican border. Eighty-eight sites were used as reference sites	

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	believe these proposed listings should be removed, for the reasons listed below. Listings Based on the SCIBI and CSCI Are Inconsistent With State Policy. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) indicates that water bodies should only be listed for degradation of biological populations if they have significant degradation **relative to reference sites** [emphasis added]. Although the scientists that developed the SCIBI attempted to incorporate reference conditions into the index itself, the reference conditions used to develop the index did not include any low elevation, low gradient locations in Los Angeles County similar to the Los Angeles River and the Santa Clara River reaches of concern. Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Section 6.1.5.8 of the Listing Policy also states that when "evaluating biological data and information, RWQCBs shall evaluate all readily available data and information and shall…**evaluate physical habitat data** and other water quality data, when available, to support conclusions about the status of the water segment." [Emphasis added.] All of the reaches mentioned in this comment letter represent reaches that have undergone various levels of physical habitat modifications and there is no indication that an evaluation of the physical habitat was conducted. It is well recognized by the scientific community that a single standard or threshold is not applicable to all waterbodies of the State due to unmanageable non-pollutant physical habitat alterations that would preclude many streams from ever having biological assemblages similar to reference. The threshold used as the listing criterion for these reaches is therefore likely inappropriate for these modified waterbodies.	based on land use and local conditions. The CSCI employs a modeled reference condition as opposed to the regional reference pool used by the SCIBI. The proposed listings evaluate the physical habitat data in the determination of the reference and each listing decision includes associated water quality impairments. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use IBI and CSCI in 303(d) listing decisions. As the science progresses, improved methods may supplant older methods and the 303(d) list will be updated, as appropriate, as that occurs. The discussion of the strengths and weaknesses of scoring methods and additional areas needing additional research, are appreciated, but are not a justification to delay making 303(d) listing decisions. The use of the SCIBI and CSCI for 303(d) listing was done in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy with biological data and impairment related to associated pollutants and/or pollution. Santa Clara River Reach 5, Los Angeles River Reach 3, and Medea Creek Reach 1 are discussed	

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		in more detail in response to comments 26.13, 26.14 and 26.15.	
26.5	Appropriate Thresholds for Interpretation of the CSCI Have Not Yet Been Determined. The State Board has not yet developed any recommended thresholds for the CSCI. The proposed threshold of 0.79 used in the Draft List is the 10th percentile of the reference pool and was used as an arbitrary point of reference for a regional monitoring program with no regulatory vetting. Use of this threshold for impairment listings would result in 10% of the unimpaired reference streams being erroneously listed as impaired. Additionally, it is well recognized by the scientific community that a single standard or threshold will not be applicable to all waterbodies of the State since unmanageable non-pollutant features such as habitat condition/modifications are likely to preclude many streams from ever having biological assemblages similar to reference. The Sanitation Districts believe that it is inappropriate to make impairment decisions using the SCIBI and premature to rely on the improved, but still limited CSCI for making impairment decisions, particularly in reaches where surrounding development and instream physical habitat limitations are recognized. Therefore, the Sanitation Districts respectfully recommend that the Regional Board delay making decisions regarding benthic macroinvertebrate community impairments in this listing cycle, and instead continue to work with stakeholders, scientists, and the State Board that are currently engaged in efforts to address these and other issues as part of the Biointegrity/Bio-stimulatory Policy.	Selection of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. The selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be “reference” due to localized impacts not discernable on a desktop basis or by field crews when sampling. For example, known upstream illegal marijuana grow operations could remove a site from reference status due to impacts on water quality. However, accurately identifying active grow sites in the tributary watershed by desktop is largely infeasible. With the CSCI, any given test site gets matched to a subset of reference sites from the statewide pool that are most similar in terms of elevation, watershed size, annual precipitation, geology, etc., and those most-similar reference sites may come from other regions. The benthic macroinvertebrates that were observed in the most-similar group of reference sites are then used to predict what should be observed at the test site if it were in reference condition. Because the statewide reference pool adequately represents important environmental gradients, and because predictive modeling matches test sites to their	

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		most environmentally similar reference sites, the CSCI is appropriate for use.	
26.6	***4. The Draft List Includes Inappropriate Impairment Listings for Temperature*** The Draft List contains a number of newly proposed listings for temperature. The Sanitation Districts believe the proposed temperature listings for San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 should be removed because the impairment listings are inconsistent with the Basin Plan water quality objective for temperature, which states, "at no time shall these WARM-designated waters be raised above 80˚F **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80˚F standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80˚F are not caused by wastes discharged but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change. Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. Additionally, the Sanitation Districts believe that the proposed temperature listing for Santa Clara River Reach 6 is inappropriate. Measurements for this listing were taken immediately downstream of the Saugus Water Reclamation Plant (WRP), where tertiary treated effluent is discharged along one bank of the Santa Clara River bed. The flow remains isolated from the main channel of the Santa Clara River and percolates rapidly into the soil; groundwater resurfaces downstream near Reach 5 of the Santa Clara River. The predominant natural condition of this stretch of river is dry and would not be expected to support aquatic life without the Saugus WRP discharge; therefore, application of the 80˚F water quality objective is unnecessary and inappropriate. The only reasonable alternative for meeting the	The 303(d) list appropriately identifies temperature impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to San Gabriel River Reach 2, San Jose Creek Reach 1, and San Gabriel River Reach 1 including "waste discharge" from sources such as wastewater treatment plants and the MS4. Exceedances in temperature may be caused in part by ambient temperatures or exacerbated by the lack of tree cover in some reaches; exceedances may also be caused in part by waste discharge. The relative contribution of the causes of temperature exceedances is largely speculative, at this time. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. The 2014-2016 Triennial Review includes a review of temperature as a Basin Planning Priority	

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	water quality objective would be to eliminate the discharge flows; however, the California Department of Fish and Wildlife would likely prohibit that option, due to the effluent's contribution to the groundwater and subsequent downstream flows. Upon resurfacing near Reach 5, the water temperature averages 69˚F, demonstrating that elevated temperatures in this isolated discharge area are not detrimental to beneficial uses in reaches where water occurs naturally in the river. Finally, elevated ambient temperatures regularly exceed 90˚F during the summer months, and heavily influence both the Saugus WRP discharge and the immediate downstream receiving water location. As indicated for the other temperature listings, the water quality objective for temperature in the Los Angeles Region Basin Plan clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. However, the Draft List does not contain any analysis to distinguish the relative contributions by the temperatures of the ambient air and wastes discharged on the receiving water.	Project. Los Angles Water Board staff may consider the development of more specific numeric temperature objectives for various waterbody classes and aquatic life beneficial uses in the future. See also responses to comments 26.16, 26.17, 26.18 and 26.19.	
26.7	***5. Thresholds Used For Toxicity Impairment Listings Are Inconsistent With Basin Plan Objectives*** The Draft List contains a number of newly proposed listings for toxicity that include San Gabriel River Estuary, San Gabriel River Reach 3, Rio Hondo Reach 2, and Santa Clara River Reach 5. These listings should be removed for the reasons below. <u>The Acute Toxicity Impairment Criterion is Inconsistent With the Basin Plan Water Quality Objective for Acute Toxicity</u> The Staff Report fact sheets for the specific listings mentioned above state that "<100% survival (acute) was considered an exceedance." However, the Basin Plan states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other	The acute toxicity and chronic toxicity data was included in the original data submission to State Board by the August 30, 2010 deadline. However, the necessary control data were not included. Los Angeles Water Board staff agrees that the existing evaluation guideline, *"Toxicity data was not reported with a control, therefore anything reported as <100 (chronic) or <100% survival (acute) was considered an exceedance"* for LOE 87842, LOE87970, LOE88019, and LOE87452 is not appropriate. For acute toxicity, the Los Angeles Water Board agrees that the use of the specific numeric target included in the Los Angeles Regional Basin Plan	Several recommended toxicity listing decisions have been revised. For San Gabriel River Estuary, revision to "do not list," see response to comment 26.8. For San Gabriel River Reach 3, revision to "delist," see response to comment 26.9. For Rio Hondo Reach 2, revision to no toxicity assessment, see response to comment 26.11. For Santa Clara River Reach 5, revision to "do not list," see response to comment 26.12.

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	protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. <u>The Chronic Toxicity Impairment Criterion is Inconsistent With Water Quality Objective Interpretations Provided in NPDES Permits</u> The Staff Report fact sheets for the specific listings mentioned above indicate that a single NOEC result of less than 100% receiving water represents an exceedance of the water quality objective. Although the Basin Plan provides no numeric chronic toxicity objectives, recently adopted Los Angeles Region NPDES permits do provide very specific direction on interpretation of the narrative water quality objectives for chronic toxicity. In a number of these permits, a footnote associated with the Receiving Water Monitoring Requirements Table of the Monitoring and Reporting Program states; "The **median monthly summary result is a threshold value** for a determination of meeting the narrative receiving water objective and shall be reported as 'Pass' or 'Fail'."[2] [Emphasis added.] In addition to aligning with the NPDES permit language, use of a monthly median will also address concerns regarding false positive error rates. The USEPA has determined that the expected false positive error rate for chronic toxicity testing using the NOEC is 5%. With this error rate, on average, one in 20 individual chronic toxicity tests will be erroneously identified as "toxic" using the NOEC, and there is a nearly 34% probability that 2 or more individual chronic toxicity test exceedances would be observed within a set of 24 discrete measurements in a completely non-toxic stream reach. When there are two or more exceedances out of 24 measurements, the Listing Policy specifies that a reach be listed as impaired. Therefore, using single chronic toxicity exceedances as the 303(d) criterion would eventually result in more and more non-toxic stream reaches being erroneously listed over time. However, using a monthly median chronic toxicity exceedance threshold would reduce the likelihood of inappropriate reach listings due to false	is appropriate. More specifically, "*there shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.*" For chronic toxicity, as stated in the Basin Plan, "*there shall be no chronic toxicity in ambient waters outside mixing zones. To determine compliance with this objective, critical life stage tests for at least three species with approved testing protocols shall be used to screen for the most sensitive species. The test species used for screening shall include a vertebrate, an invertebrate, and an aquatic plant. The most sensitive species shall then be used for routine monitoring. Typical endpoints for chronic toxicity tests include hatchability, gross morphological abnormalities, survival, growth, and reproduction.*" However, there is no specific numeric target for chronic toxicity in the Basin Plan. In light of this, it may also be that the use of the monthly median of chronic toxicity to assess the chronic toxicity is appropriate since this method is used in recently adopted Los Angeles Region NPDES permits.	

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	positive chronic toxicity results to less than 1 %.	As data was reassessed per the discussion above, the decision recommendations have been changed to “do not list” due to insufficient information (poor QAQC).	
26.8	***6. Specific Comments on Individual Reach/pollutant Listing Decisions*** In addition to these general comments, the Sanitation Districts have comments on some specific listing decisions. As stated above, detailed comments are provided in the appendices to this letter. Because the implications of erroneous listings are substantial, the Sanitation Districts urge the Regional Board to consider this information in making the appropriate changes to the Draft List. **Fact Sheet #1** **Water Body: San Gabriel River Estuary** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for toxicity be made to the 303(d) list for the San Gabriel River Estuary, based on one line of evidence: 14 of 113 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. Using	LOE 87842 and Decision 66269 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to “Do Not List” due to insufficient information as the control data was not submitted. The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.	Per the discussion in response to comment 26.7, the recommended decision for San Gabriel River Estuary is “do not list” and San Gabriel River Reach 3 is “delist.”

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	the temporal range indicated (June 2006 through May 2010), only six of 120 samples failed the thresholds specified in the fact sheet. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 11 or more exceedances are observed when 120 samples are available. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin Plan objective. Applying a 90% threshold, none of the 120 samples would have exceeded the water quality objective. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data appended to Appendix G of the Staff Report, including those that fell outside the indicated temporal range, contain a total 151 discrete toxicity tests. Sixteen failed the <100% acute survival threshold. Using a conservative 90% acute survival threshold, there are no toxicity exceedances, and the number of measured exceedances is insufficient to place this water segment on the section 303(d) list. • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.*		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.9	**Fact Sheet #2** **Water Body: San Gabriel River Reach 3** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 3 of the San Gabriel River, based on one line of evidence using two datasets: 2 of 38 samples exceeded the objective in a dataset related to a previously conducted TMDL study and 13 of 75 samples exceeded the objective in a second dataset comprised of routine receiving water tests conducted as part of an NPDES permit. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. No data related to the TMDL study were provided; therefore, the number of tests and exceedances	LOE 87970 and Decision 32521 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to "Do Not List" due to insufficient information as the control data was not submitted. The review of the decision for San Gabriel River Reach 3 toxicity is in process at this time.	Per the discussion in response to comment 26.7, the recommended decision for San Gabriel River Reach 3 is "delist." (Because San Gabriel River Reach 3 was delisted in a previous 303(d) listing cycle, even though new data was assessed, the CalWQA database regards the decision to not list as a continued decision to "delist.")

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	reported (2 of 38) could not be independently verified and were assumed to be accurate. For the dates indicated (June 2006 through May 2010), 13 exceedances were associated with only 66 samples. Combining the two datasets resulted seven acute and eight chronic toxicity exceedances out of 104 samples. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no acute toxicity samples in the dataset exceeded the water quality objective and 8 of 104 total samples exceeded the objective. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 104 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The Staff Report considered each chronic toxicity test result as an independent data point, even when multiple bioassays were conducted within a single month. However, the San Jose Creek (SJCWRP) and Whittier Narrows Water Reclamation Plant (WNWRP) permits state that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 6 toxicity exceedances out of a total of 96 tests. According to Table 3.1 of the		

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	California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 9 or more exceedances are observed when 96 samples are available. Therefore, this reach fails to meet the listing criteria for toxicity. • The full set of data (sets 1 and 2) appended to Appendix G of the Staff Report for all dates, including those outside the indicated temporal range, contain a total of 119 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 6 chronic exceedances out of 110 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. • *Use of a <100% Survival Effect Water Quality Objective Threshold Is Inappropriate and Unsupported for Acute Toxicity Testing.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.10	**Fact Sheet #3** **Water Body: San Jose Creek Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)**	Los Angeles Water Board and State Water Board staff are aware of several areas where the reach mapping that underlies the CalWQA database (which maps the 303(d) list) and the Los Angeles	The data has been moved from San Jose Creek Reach 2 to San Jose Creek Reach 1. The San Jose Creek Reach 2 toxicity decision has been retired. The San Jose Creek Reach 1 recommended

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	Comment & Recommendation: Apply Data to Reach 1 The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the San Jose Creek, based on one line of evidence: 8 of 24 samples exceeded the objective. The Sanitation Districts believe this proposed listing is inappropriate and should be moved to Reach 1. All cited toxicity data is from receiving water station RC (N 34° 01' 8.6" W 117° 50' 27.7") for the Pomona Water Reclamation Plant, which is located in Reach 1 of San Jose Creek (Figure 1). This reach is already listed for toxicity under section 303(d). *Figure 1. Station Pom-RC (Blue Symbol) and San Jose Creek Reach 1 (Aqua Line)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	Basin Plan do not agree. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.	decision has been changed from "list" (a carryover decision, as there was no new data to assess) to "do not delist."
26.11	**Fact Sheet #4** **Water Body: Rio Hondo Reach 2** **Pollutant: Toxicity** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 2 of the Rio Hondo, based on one line of evidence: 5 of 31 samples exceeded the objective. The Districts believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow.	LOE 87452 and Decision 66146 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. The listing decision will be changed to "Do Not List" due to insufficient information as the control data was not submitted. The review of the decision for Rio Hondo Reach 2 toxicity is in process at this time.	The toxicity data has been moved to Rio Hondo Reach 3 and the toxicity decision for Rio Hondo Reach 2 has been retired. The toxicity data in Rio Hondo Reach 3 was assessed as "insufficient information" and the recommended decision is "do not list."

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. All cited toxicity data are from receiving water station RD1 for the Whittier Narrows Water Reclamation Plant (WNWRP). This sampling location (N 34° 02' 26.5" W 118° 04' 27") is in Reach 3 of the Rio Hondo, not Reach 2 (Figure 1). • Using the data for the temporal range indicated (June 2006 through May 2010), 7 of 33 samples failed the thresholds specified in the fact sheet. • Although the Staff Report fact sheet states that "<100% survival (acute) was considered an exceedance," the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments; even a threshold of less than 90% survival would still be more conservative than Basin plan objective. Applying a 90% threshold, no samples exceeded the acute toxicity water quality objective. • The Staff Report considered each chronic toxicity test result as independent data, even when multiple bioassays were conducted within a single month. However, the WNWRP permit states that the water quality objective for chronic toxicity is based on a monthly median; therefore, all tests within a single month should be considered part of a monthly median, rather than independent tests. Based on appropriate application of the monthly median as the chronic water quality objective (and a 90% acute toxicity threshold), there were 2 toxicity exceedances out of 31 tests. According to Table 3.1 of the California Clean Water Act 303(d) Listing Policy (Listing Policy), an impairment listing is appropriate if 3 or more exceedances are observed when 31 samples are		

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	available. Therefore, Reach 2 of the Rio Hondo fails to meet the listing criteria for toxicity. • The full set of data appended to Attachment G of the Staff Report, including those that fell outside the indicated temporal range, contains a total 38 discrete toxicity tests. Using a conservative 90% acute survival threshold and appropriate monthly median chronic threshold, there are no acute exceedances and 2 chronic exceedances out of 36 results. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Monitoring Station WN-RD1 (Blue Symbol) and Rio Hondo Reach 3 (Aqua Line)* • *Use of a <100% Survival Water Quality Objective Threshold Is Inappropriate and Unsupported.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Basin Plan and Other Documentation from the Regional Board.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with Criteria Used for Other Acute Toxicity Listings.* • *Use of a <100% Survival Water Quality Objective Threshold Is Inconsistent with the Results of Statistical Testing.* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.12	**Fact Sheet #5** **Water Body: Santa Clara River Reach 5** **Pollutant: Toxicity**	Los Angeles Water Board staff will work with the State Board staff to address the issues related to the spatial representation of samples.	LOE 88730 and Decision 67031 have been changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Listing: List on 303(d) List (TMDL Required List) **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for toxicity be made to the 303(d) list for Reach 5 of the Santa Clara River, based on one line of evidence: 2 of 2 samples exceeded the objective. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved, for the reasons listed below; supporting evidence is provided in the sections that follow. • Inappropriate data were utilized. Toxicity results were reported for sites SCR 1272 and SCR 14156. However, SCR 14156 is in Reach 6 of the Santa Clara River and should not be included in an evaluation of Reach 5 (Figure 1). • Incomplete data were utilized. The "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County 2005-2010" dataset should be included in this analysis as it was provided in response to the call for data, readily available, and used in other current listing recommendations. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report. • The Los Angeles Region Basin Plan states, "the acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board." Therefore, a single-test threshold of less than 70% survival should be used to determine impairments. Applying this threshold (or even a more conservative 90% threshold) to the appropriate and complete dataset that	Los Angeles Water Board staff will also work with the State Board staff to address the missing data from the development of LOE 88730. LOE 88730 and Decision 67031 will be changed to reflect the changes in the evaluation guidelines discussed in response to comment 26.7. It is the intention of the Los Angeles Water Board staff to work with State Board staff to resolve mapping issues and reassess the LOEs and decisions for those reaches, as appropriate, prior to the State Board approval of the 2016 303(d) list, or at the next Listing Cycle that includes the Los Angeles Region.	and the recommended decision for toxicity for Santa Clara River Reach 5 has been changed from "list" to "do not list." Data from site SCR 14156 and additional data was added to Santa Clara River Reach 6 and the recommended decision for Santa Clara River Reach 6/toxicity remains "do not delist."

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	excludes site SCR 14156 and includes Sanitation Districts data, there were five chronic toxicity exceedances out of 90 valid toxicity tests. This total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. *Figure 1. Santa Clara River Reach 5 and RWB4 Stormwater Monitoring Council CY2008 CY2009 Sampling Locations* • *The Los Angeles Region Basin Plan Establishes Acute Toxicity Thresholds* • *The Water Quality Objective/Threshold for Chronic Toxicity Should Be a Monthly Median.* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.13	**Fact Sheet #6** **Water Body: Santa Clara River Reach 5** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is currently proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 5 of the Santa Clara River, based on two lines of evidence: Southern Coastal California Index of Biotic integrity (SCIBI) and California Stream Condition Index (CSCI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • The SCIBI-based analysis has been demonstrated to be inadequate for use in	For additional discussion on the use of IBI and/or CSCI in listing decisions see response to comment 26.4. At this time, the CSCI (and IBI where CSCI is not available) is the best measure of biologic integrity in California streams and it is appropriate to use both IBI and CSCI scores in 303(d) listing decisions. The State Water Board has not ‘rejected’ the use of the SCIBI. The State is transitioning into using the CSCI because it is applicable statewide, accounts for a much wider range of natural variability, and provides equivalent scoring thresholds in all regions of the state. While, eventually, the State may assess waterbodies only by CSCI scores, it will take time	The data from site SCR 14156 has been moved to Santa Clara River Reach 6. The decision for Santa Clara River Reach 5/Benthic Community Effects remains “list.” The decision for Santa Clara River Reach 6/Benthic Community Effects was “do not list” and has been revised to “list.”

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	low gradient/low elevation watersheds similar to the reaches in the upper Santa Clara River. For this and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool. • Although the CSCI at least partially addresses some of the problems with the SCIBI by employing a modeled reference condition as opposed to the regional reference pool used by the SCIBI, the lack of any reference sites in large watersheds, low gradient, and low elevation systems still limits the identification of appropriate thresholds using the CSCI. Specifically, several Santa Clara River sites have been shown to fall outside the experience of the CSCI model. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • The CSCI analysis for this listing used data from both Reach 5 and Reach 6 of the Santa Clara River. The CSCI analysis of the data collected from the Reach 5 location actually met the 0.79 threshold proposed by the Regional Board. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.	to replace IBI scores with CSCI scores and this does not in any way mean that IBI scores (and assessments using them) are no longer valid. The commenter has provided several documents that review and discuss the development of, and challenges with, aquatic life bio-criteria including IBI, CSCI and TALU (tiered aquatic life criteria). However, it appears that the principal evidence for the commenter's "inadequate for low elevation/lack of an appropriate reference site" argument is the CSCI Reference Density Cloud from a presentation of the California Bioassessment Workshop from 2012. The text accompanying the Reference Density Cloud in the presentation states, "*Could be used to establish exceptions for truly unique environmental settings.*" Nonetheless, it does not appear that any "truly unique environmental settings" have been established or are recognized by the State Bioassessment workgroup or other authority. The development of alternative thresholds via State Water Board efforts does not have a firm schedule to provide more useful guidance in the near future. It is appropriate to make listing decisions based on the best available data and science at this time. For the CSCI, the 10th percentile of reference pool is an appropriate evaluation guideline. Selection	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• The proposed listing fails to associate the alleged impairment with other pollutants, namely toxicity and iron, which were listed as co-occurring. • *SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.* • *CSCI Improves on the SCIBI But Some Limitations Remain* • *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *CSCI Data from Within Reach 5 of the Santa Clara River Show No Impairment* *Figure 1. CSCI Reference Density Cloud (Santa Clara River Sites Within Green Circle).* *Figure 2. Santa Clara River Reach 5 and Monitoring Stations Used in Listing* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*	of the 10th percentile of the reference distribution to indicate impairment was done by Mazor et al. (2016) and was independently peer-reviewed. As previously noted, the selection and identification of reference is done at the desktop scale, and likely includes some sites that may not be "reference" due to localized impacts not discernable on a desktop basis or by field crews when sampling. The data considered in the LOE and for the listing decision for Reach 5 included IBI assessments from station Old Rd. on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding). The CSCI assessment was from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of one exceeding). The two sampling sites have now been "dis-aggregated" such that now, the data considered in the LOE and decision for Reach 5 includes IBI assessments from the Old Rd. station, on the west side of I-5 (three of three exceeding), and the site NR1 located 300 ft. upstream of the Los Angeles/Ventura County Line (one of two exceeding) and the CSCI assessments from the Santa Clara River Site 1272 and Santa Clara River Site 14156 (one out of two exceeding).	

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		Staff will review the inclusion of the second site (identified as SCR 14156) with State Water Board to determine whether it should be in Reach 5 or Reach 6, as part of resolving our mapping issues, see comment 26.2 The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. In addition, a Causal Assessment (Causal Assessment Evaluation and Guidance for California, K. Schiff, D. Gillett, A. Rehn and M. Paul, Southern California Coastal Water Research Project Technical Report 750, April 2015) concluded that elevated conductivity was the likely cause of biological conditions at the site and not the physical features of habitat simplification or river discontinuity. The proposed listing is associated with the documented impairments of other pollutants, including iron, toxicity and zinc. Furthermore, the Causal Assessment demonstrated that the impairment is associated with chloride. In summary, at this time, we know that the reach is impaired and that it is appropriate to list it per the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
		(impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).	
26.14	**Fact Sheet #7** **Water Body: Los Angeles River Reach 3** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 3 of the Los Angeles River, based on a weight of evidence approach using Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • The SCIBI-based analysis has been demonstrated to be inadequate for use in low gradient/low elevation watersheds similar to Los Angeles River Reach 3. For this, and other reasons, the State Water Resources Control Board (State Board) has rejected use of the SCIBI in favor of the technically superior CSCI scoring tool. No CSCI results have been used for this listing, but a more detailed assessment of the CSCI can be found in Fact Sheet #6. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions.	For the "inadequate for low elevation/lack of an appropriate reference site" argument, see response to comment 26.13. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. At this time, we know that the reach is impaired and that it is appropriate to list it per the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• *SCIBI Is an Inadequate Metric for Assessing Low Gradient, Low Elevation Streams.* • *CSCI Improves on the SCIBI But Some Limitations Remain* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.15	**Fact Sheet #8** **Water Body: Medea Creek Reach 1** **Pollutant: Benthic Community Effects** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Water Quality Objectives Being Achieved** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for benthic community effects be made to the 303(d) list for Reach 1 of the Medea Creek, based on a weight of evidence approach using California Stream Condition Index (CSCI) and Southern Coastal California Index of Biotic integrity (SCIBI) scores. The Districts believe this proposed listing is inappropriate and recommend not listing for the reasons listed below; supporting evidence is provided in the sections that follow. • Appropriate water quality thresholds for the CSCI have not been established. Although examples of approaches for developing CSCI thresholds have been published (e.g., by the Southern California Coastal Water Research Project), it is well recognized by the scientific community that a single standard should not be applicable to all water bodies because unmanageable nonpollutant features such as habitat condition are likely to preclude many streams from ever having biological assemblages similar to reference. The State Board is currently	Appropriate water quality standards have been established, see response to comment 26.4. The proposed listing evaluates the physical habitat data; physical habitat data is incorporated into the determination of reference sites. The impairments of both trash and selenium are associated with the benthic community effects listing. The Medea Creek Reach 1 decision is supported by exceedances of both IBI and CSCI scores and is in accordance with Section 3.9 and 6.1.5.8 of the Listing Policy. We anticipate further scientific work will be accomplished in upcoming years, which may make revisions and clarifications to the listing possible, including listing under 4c (impairment due to pollution, e.g. channelization) instead of 4b (impairment due to pollutants e.g. zinc, chloride, etc.).	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	investing considerable resources to develop thresholds and should be allowed to complete the process before determination of impairment and listings. • Physical habitat was not assessed, as required by the State Board Water Quality Control Board Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). Historically unmanaged or unmanageable stressors (e.g. channel/habitat modifications) are well documented as precluding sites from achieving reference conditions. • The proposed listing fails to associate the alleged impairment with other pollutants, namely trash and selenium, which were listed as co-occurring. • *Appropriate Water Quality Standards (i.e. Biocriteria) Have Not Been Established* • *The Proposed Listing Fails to Evaluate Physical Habitat Data* *Figure 1. Medea Creek Channel Modifications* • *The Proposed Listing Fails to Associate the Alleged Impairment with Other Pollutants* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.16	**Fact Sheet #9** **Water Body: San Jose Creek Reach 1** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region	The water quality standard has been exceeded in 42 of 301 samples; even with the commenter's purported corrections to the database, 46 out of 339 or 32 out of 339 samples exceeded, in both cases, the data still exceed the allowable number of exceedances per the Listing Policy.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	(Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of San Jose Creek. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 42 of 301 samples from Pom-RD, Pom-RC, SJC-C1, and SJC-C2 exceeded the objective from July 2005 to November 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Appendix A of this letter contains the full set of data applicable to this listing from Appendix G of the Regional Board Draft Staff Report.	Temperature, in some cases, may be because of pollution, e.g. habitat alteration, but may also be caused by discharges of waste, i.e. pollutants; therefore Category 5 is the appropriate category. Temperature is conventional pollutant with an objective defined in the Los Angeles Basin Plan, "*At no time shall these WARM designated waters be raised above 80 degrees F…*" See also response to comment 17.4 for additional discussion of temperature as a pollutant.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Based on a review of the dataset utilized for the listing evaluation, the Sanitation Districts identified 339 discrete temperature measurements, not 301. The dataset contains 368 results (Appendix 1); however, 29 samples were duplicates. Of the 339 unique temperature measurements, 46 exhibited a temperature that exceeded 80 ºF, not 42. However, 14 of the 46 temperature exceedances were demonstrably caused by conduction and radiation (details below), not waste discharges. Conduction and radiative heating likely also caused the remaining 32 exceedances out of 339 measurements; this total does not meet the minimum number of measured exceedances needed to place a water segment on the section 303(d) list. ***Pom-RC and Pom-RD Excursions Above 80 ºF Are Demonstrably Not a Result of Waste Discharges*** Tertiary treated water from the Pomona Water Reclamation Plant is discharged to the south fork of San Jose Creek and flows into Reach 1. Receiving water stations Pom-RC, Pom-RD, and SJC-C1 are located approximately 3, 12, and 12.5 miles from the upstream border of Reach 1, respectively. Reach 1 is fully lined in concrete from the upstream border to just upstream of SJC-C1 (Figure 1). As observed by Sanitation Districts staff and corroborated by EPA staff, groundwater exudes from relief structures distributed throughout the concrete-lined bottom, even in mid-summer (August) after several years of drought (Figure 2).[1] In the absence of discharge from the Pomona Water Reclamation Plant or other observed discharges, flows in SJC between Pom-RC and Pom-RD increase by 200% to greater than 400% (Figure 3) due to the release of this groundwater, which has a localized average temperature of approximately 67 ºF.[2] As this groundwater-dominated flow travels downstream, the temperature naturally rises (Figure 4) due to heat conduction through the warm concrete lining and solar radiation exposure in the unshaded channel (Figure 5 shows ambient air temperature as a proxy for solar radiation[3]). When the concrete		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	channel ends upstream of SJC-C1, the water leaves the heat source (concrete channel) and mixes with additional groundwater, resulting in consistently cooler temperatures. The observed spatial and temporal temperature profile, coupled with no identifiable waste discharges and substantial groundwater contributions, clearly demonstrates that the temperature excursions in Reach 1 of San Jose Creek are not a result of waste discharges. *Figure 2. Manhole Exuding Groundwater into San Jose Creek* *Figure 3. Measured Flow at Pom-RC and Pom-RD in the Absence of Discharge from Pomona WRP* *Figure 4. Monthly Average Water Temperatures Between July 2005 and November 2010 in the Absence of Discharge from the Pomona WRP* *Figure 5. 30-Year Normal Monthly Maximum Air Temperature at Pom-RD3* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.17	**Fact Sheet #10** **Water Body: San Gabriel River Reach 1** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 1 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated***	The water quality standard has been exceeded in 93 of 234 samples; even with the commenter's purported corrections to the database, 117 of 288 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy. Exceedance do happen more frequently in the summer months when air temperatures, radiative heating and the temperature of waste discharges are greater. However, the Los Angeles Water Board does not have alternative maximum temperature objectives for the different seasons.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 93 of 234 samples from LC-R4, R3-1, and R3-1b exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the Sanitation Districts identified 288 discrete temperature measurements, 117 of which exhibited a temperature that exceeded 80ºF. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed.	See, also, response to comment 17.4.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	San Gabriel River Reach 1 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating Tertiary treated water from the San Jose Creek and Los Coyotes Water Reclamation Plants (WRPs) is discharged to the main stem of the San Gabriel River. Reach 1 is a fully lined concrete channel from approximately 0.25 miles downstream of the San Jose Creek WRP discharge point 001 to the San Gabriel River estuary. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 1. This is supported by a significant correlation between ambient air temperature and receiving water temperature (R2 = 0.61) and the fact that 90% of excursions above 80ºF in the receiving water environment occurred during summer months, between June and September. The weight of evidence supports the contention that receiving water temperatures above 80ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.18	**Fact Sheet #11** **Water Body: San Gabriel River Reach 2** **Pollutant: Temperature, Water** **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List – Meets Water Quality Objective** The California Regional Water Quality Control Board, Los Angeles Region	The water quality standard has been exceeded in 81 of 224 samples; even given the commenter's purported corrections to the database, 81 of 232 samples exceeded, which still exceeds the allowable number of exceedances per the Listing Policy.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	(Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 2 of the San Gabriel River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing due to water quality objectives being achieved. ***Failure to Meet Water Quality Objectives Has Not Been Demonstrated*** The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This water quality objective clearly distinguishes between exceedance of the 80ºF standard caused by "waste discharges" and those associated with other causes. Evidence indicates that summertime excursions greater than the 80 ºF are not caused by waste discharges but are likely due to elevated ambient air temperature, conductive and radiative heating associated with hardened landscapes, a lack of riparian cover, and increased ambient temperatures related to climate change (details below). Additionally, the Draft List does not contain any analysis or evidence indicating that the elevated temperatures occurred as result of wastes discharged. The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 81 of 224 samples from SJC-R2 and SJC-R12 exceeded the objective from July 2005 to November 2009 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Based on a review of the entire dataset utilized for the listing evaluation,[1] the	See, also, response to comment 17.4.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Sanitation Districts identified 81 excursions above 80 ºF out of 232 discrete temperature measurements, not 224. However, these temperature exceedances were not as a result of waste discharges, but were directly associated with high elevated ambient air temperatures as well as conduction and radiation (details below). Therefore, under the definition in the Basin Plan, no exceedances of the water quality objective were observed. ***San Gabriel River Reach 2 Excursions Above 80 ºF Are a Result of Radiative and Conductive Heating*** Tertiary treated water from the San Jose Creek Water Reclamation Plant (WRP) is discharged to the main stem of the San Gabriel River. The uppermost ¼ mile of Reach 2 is a fully lined concrete channel, containing the R2 receiving water station. Data from this station represents 215 of 232 data points. As explained in Fact Sheet #9, elevated temperatures in Reach 1 of San Jose Creek occurred even in the absence of observable waste discharges and were caused by conductive heating through the concrete lining and solar radiation exposure. Although a comprehensive assessment of flows, in the absence of WRP discharge, cannot be conducted along the San Gabriel River, the same conditions associated with the radiative and conductive heating exist in San Gabriel River Reach 2. This is supported the fact that 99% of excursions above 80 ºF in the receiving water environment occurred during summer months, between June and October. The weight of evidence supports the contention that receiving water temperatures above 80 ºF were a result of ambient and environmental conditions (i.e., summer weather and a concrete channel) and not waste discharges. *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
26.19	**Fact Sheet #12** **Water Body: Santa Clara River Reach 6**	Staff will review the inclusion of the site identified as SCR-14 with State Water Board staff to	Staff will review the inclusion of the site identified as SCR-14 with State Water Board staff to

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	Pollutant: Temperature, Water **Listing: List on 303(d) List (TMDL Required List)** **Comment & Recommendation: Do Not List** The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is proposing that a new listing for impairment due to water temperature be made to the 303(d) list for Reach 6 of Santa Clara River. The Sanitation Districts of Los Angeles County (Sanitation Districts) believe this proposed listing is inappropriate and recommend not listing. ***Incorrect Datasets Were Used for Listing*** The Regional Board Fact Sheet states that a single line of evidence was used in the assessment of temperature. Specifically, 40 of 152 samples from Sa-RA, Sa-RB, and SCR-14 exceeded the objective from June 2005 to October 2010 using the "Data for Various Pollutants in Various Water Bodies in Sanitation Districts of Los Angeles County, 2005-2010" dataset. Temperature data from location SCR-14 (34.42833333N 118.5394444W) was evaluated as part of Reach 6 of the Santa Clara River. However, SCR-14 is located on Bouquet Canyon Creek, which is recognized as a distinct waterbody by the Region 4 Basin Plan. Figure 1 utilizes a reach delineation layer provided to the Sanitation Districts by Regional Board staff that clearly places SCR-14 in the Bouquet Canyon Creek Reach and not Reach 6. Therefore, temperature measurements from SCR-14 should not be included in the Reach 6 evaluation. *Figure 1. Stations Sa-RB (1), Sa-RA (2), SCR-14 (14), and Bouquet Canyon Creek (Aqua Line)* Locations Sa-RA and Sa-RB were correctly associated with Reach 6, but results were averaged in the listing evaluation based on the assessment that they were	determine whether it should be in Santa Clara Reach 6 or Bouquet Canyon Creek, as part of resolving our mapping issues; see also comment 26.2. With respect to the sites identified as SA-RA and SA-RB, only the temporally overlapping samples from these stations have been averaged such as during extreme rainfall events when the sites were hydrologically connected. The commenter does not adequately describe "upstream dewatering activities" for the Los Angeles Water Board staff to be able to discern the significance of these to the comment. The 80°F temperature objective protects the aquatic life beneficial use of WARM in surface waters regardless of the ultimate source of the water in that reach of the river. The Los Angeles Water Board does not have alternative objectives for effluent-dominated waters. See, also, response to comment 17.4.	determine whether it should be in Santa Clara Reach 6 or Bouquet Canyon Creek, during the State Board public comment period.

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	"not spatially independent." However, as highlighted in Figure 2, Sa-RA is located within the main channel of the Santa Clara River and is typically dry; all 25 temperature measurements at Sa-RA utilized in the Staff Report were associated with upstream dewatering activities or extreme storm events. Sa-RB is located in an isolated pool at the southern edge of the Reach 6 channel that receives recycled water discharges from the Saugus Water Reclamation Plant (WRP). Surface flows from this location travel less than a half-mile downstream in a disconnected side channel before percolating into the dry riverbed. Therefore, even though the two locations are relatively close to each other, Sa-RA is hydrologically isolated from Sa-RB except during extreme rainfall events. Consequently, the two locations would be expected to have very different temperature profiles and should therefore be considered spatially independent, with no averaging of results. *Figure 2. Satellite Imagery of Saugus WRP Ambient Monitoring Stations* ***The 80ºF Water Quality Temperature Objective Is Unnecessary and Inappropriate for Santa Clara River Reach 6*** The only dry weather surface flows within this stretch of Reach 6 are associated with recycled water discharges from the Saugus WRP, which percolate into the dry riverbed and eventually resurface downstream near the Reach 5 boundary. At the point of resurfacing, the water temperature averages 69ºF and this perennial surface flow supports a diverse aquatic life community in Reach 5.1 However, the predominant natural condition of Reach 6 is dry and would not be expected to support any aquatic life without the Saugus WRP discharge. In addition, the cool temperatures in the water that resurfaces near the Reach 5 boundary demonstrate that elevated temperatures in the isolated discharge area are not detrimental to beneficial uses. Therefore, application of the 80ºF water quality objective in Santa Clara Reach 6 is unnecessary and inappropriate, as the presence of water exceeding the 80ºF water quality objective would not result in any impairment to naturally occurring aquatic life.		

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	Mitigating the Elevated Temperature at Sa-RB Is Not Feasible The only reasonable alternative to address the temperature water quality objective below the Saugus WRP at location Sa-RB during dry weather would be to eliminate the discharge. However, it is highly unlikely that the California Department of Fish and Wildlife would support any discharge reductions or elimination, because this action would remove all dry weather surface flows in that stretch of Santa Clara Reach 6 and could potentially reduce the amount of resurfacing groundwater flows that actually support a diverse aquatic community in Santa Clara River Reach 5. ***An Evaluation of the Relative Contribution of Radiative and Convective Heating Was Not Conducted*** Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan) states that: "At no time shall these WARM-designated waters be raised above 80ºF **as a result of waste discharges**." [Emphasis added.] This objective clearly distinguishes between temperature exceedances caused by "waste discharges" and those associated with other causes. Both the Saugus WRP discharge and the immediate downstream receiving water location (Sa-RB) are heavily influenced by ambient air temperature. Figure 3 includes a plot of the 15-day average values of the maximum air temperature along with the individual water temperature measurements collected at the Sa-RB location. Nearly all of the 80ºF temperature exceedances were associated with the higher summer time air temperatures and the two have a statistically significant correlation (R2 = 0.76). Because exceedances of the Basin Plan temperature objective are limited to those "as a result of waste discharges," an evaluation of the contribution of ambient air		

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	temperature to the receiving water should have been conducted before identifying receiving water excursions above 80ºF as exceedances of the objective. *Figure 3. Sa-RB Temperature vs. Maximum Ambient Air Temperature (15-Day Average Value)* *[See Sanitation District of Los Angeles County letter dated March 30, 2017 for complete text, figures and appendices.]*		
27.	Santa Barbara Channelkeeper (SBC), March 30, 2017		
27.1	Please accept the following comments on the Los Angeles Regional Water Quality Control Board's (Regional Board's) 2016 Integrated Report, which are hereby submitted by Santa Barbara Channelkeeper. Santa Barbara Channelkeeper is a non-profit environmental organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement. We have been conducting water quality monitoring in watersheds from Gaviota to the Ventura River since 2001. We have engaged more than 1,200 volunteers in our monitoring efforts and represent over 750 members. Our comments address the following concerns: • Procedural issues related to data solicitation gaps • Category 4C and Hydrologically Impaired Waterways • Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment Generally, Channelkeeper supports the Regional Board's ongoing efforts to document water quality impairments on the 303(d) List. Specific concerns regarding the Draft 2016 Integrated Report are summarized below.	See response to comment 32.3.	

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	<u>Procedural Concerns Related to Data Solicitation Gaps</u> Channelkeeper is troubled that the Regional Board has fallen so far behind on data solicitations and review of 303(d) listings. 40 C.F.R. § 130.7(d)(1) mandates that: Each State shall submit biennially to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section. The 2016 Integrated Report is based on data submitted in 2010 and will not be finalized until the middle of 2017. Based on EPA Guidance, the 2016 Integrated Report was due in April 2016. Clearly, the Regional Board has failed to achieve pertinent milestones and mandates related to the biennial review process. The lack of any recent data solicitation is particularly troubling as a fully accurate and current depiction of water quality is not available for the 2016 Integrated Report. The Regional Board has a mandate to "assemble and evaluate all existing and readily available water quality-related data and information to develop the list."[2] Accordingly, the Regional Board should base 2016 Integrated Report decisions based on "all existing and readily available" data, which includes data collected since the 2010 data solicitation. Six years of additional data is available to the Board and should be appropriately utilized for the Region's listing, de-listing and planning purposes. Channelkeeper questions how such determinations can reasonably or legally be made without consideration of the last six years of existing and readily available data. It is additionally concerning that due to the State's new staged approach to 303(d) List review, further data solicitation will be delayed until the Los Angeles Regional Board's 2022 report, which will include data submitted through 2021. This means that the Regional Board will not have reviewed existing water quality		

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	data for our region for more than a decade. This is clearly unacceptable from a legal standpoint.		
27.2	**<u>Category 4C and Hydrologically Impaired Waterways</u>** Channelkeeper echoes and supports comments submitted to the Regional Board on March 30, 2017 by *Earth Law Center* regarding the necessity for evaluation and listing for hydrologically impaired waterways to fully comply with Clean Water Act Sections 305(b) and 303(d). Such evaluation and listing is clearly called for under the Clean Water Act, is supported by EPA Guidance, and paves the way for sound public policy and planning. Many other states around the country follow such Guidance to properly identify flow impaired waterways in their Integrated Reports. Recently, the San Diego Regional Water Quality Control Board notably identified 30 waterway segments for listing in Category 4C. Channelkeeper notes with concern that the Los Angeles Region has apparently forgone assessment of Category 4C impairments altogether in the Draft 2016 Integrated Report. We question the legality of such an oversight.	See response to comment 21.1, 21.2, 21.3, and 21.4.	
27.3	**<u>Inappropriate de-listing of the Ventura River Reach 3 Pumping Impairment</u>** The Los Angeles Regional Board currently proposes to delist Reach 3 of the Ventura River for "Pumping" impairment. Channelkeeper strongly opposes this delisting decision. On February 5, 2015 Channelkeeper submitted detailed comments (Attachment 1) and data to the State Water Resources Control Board regarding its stated intent to delist Reaches 3 and 4 of the Ventura River for pumping and diversion impairments. These comments were submitted in response to the State Water Board's Draft Staff Report for the 2012 Integrated Report dated December 31, 2014, which stated that the four listings on the existing 303(d) list due to flow related alterations in the Ballona Creek and Ventura River watersheds "will likely be proposed for delisting as part of the next Listing Cycle."	See response to comment 21.1, 21.2, 21.3, and 21.4.	

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	Channelkeeper's submittal outlined in detail why Reaches 3 and 4 of the Ventura River may not be delisted from the 303(d) list as impaired for flow by pumping and diversion. The existing listings for Reaches 3 and 4 of the Ventura River accurately reflect the current diminished flows and resulting impairments to designated beneficial uses in those Reaches. The listings are legally valid, and consistent with the State Water Board's Listing Policy. In contrast, delisting Reaches 3 and 4 from the 303(d) list as impaired for flows due to excessive pumping and diversion is inconsistent with the Listing Policy, the Clean Water Act, and facts on the ground. We refer the Los Angeles Regional Board to our February 5, 2015 letter as its legal and technical merits remain unchanged. Channelkeeper additionally submitted multiple years of continuous monitoring data (submitted electronically via file "*MasterData_2013-2014.xls*") along with our 2015 comment letter. These data were summarized in tables as well as within an example "Listing Line of Evidence" provided with our 2015 letter. Lacking any formal data solicitation by the Los Angeles Regional Board since 2010, these submittals represent existing and readily available water quality-related data and information, which should have been used to develop the Draft 2016 Integrated Report. Since the submittal of our 2015 comment letter, Channelkeeper has collected additional water quality data that supports the existing listings for pumping and diversions in Reaches 3 and 4. We are submitting an updated data file ("*MasterData_2013-2016*") electronically along with this comment letter. **<u>Conclusion</u>** When Reaches 3 and 4 of the Ventura River were identified as flow-impaired by pumping and diversions on California's 1998 303(d) list, the State Water Board took an important first step towards restoring the chemical, physical, and biological integrity of these waters. However, there is ongoing documentation that		

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	flow alterations from pumping and diversions continue to degrade Reaches 3 and 4 such that these waters cannot support their designated beneficial uses and water quality standards are not attained. Reaches 3 and 4 of the Ventura River are impaired for pumping and diversions based on the "Numeric Water Quality Objectives for Conventional or Other Pollutants in Water" listing factor, the "Situation-Specific Weight of Evidence" listing factor, as well as the "Degradation of Biological Populations and Communities" listing factor. Removing the pumping impairment listing for Reach 3 is not only illegal but will also impede existing and future efforts to remedy the ongoing flow impairments in the Ventura River. Channelkeeper strongly urges the Los Angeles Regional Board to comply with the Clean Water Act by continuing to identify Reach 3 on the 303(d) list as flow- impaired by pumping.		
28.	Sherwood Valley Homeowners Association, March 30, 2017		
28.1	We thank you for this opportunity to comment on the proposed changes to the 303(d) list prior to the upcoming public hearing on May 4, 2017. Representatives from the Lake Sherwood Joint Lake Advisory Committee plan to attend this meeting to discuss these important issues. We appreciate the proposed removal of the two pollutants, Ammonia and Organic Enrichment/Low Dissolved Oxygen. This is gratifying and recognizes the positive results produced by the time, effort and expense the Association has put forth over many years to mitigate these concerns. Respectfully, however, we are troubled to see that Algae and Eutrophic remain on the list. To help understand why these are still considered pollutants in Lake Sherwood, we reviewed the Los Angeles Water Board's website of the Draft 2016 303(d) List, and specifically Appendix G – Fact Sheets of the Draft. Here we see that the listing of Algae and Eutrophic are noted as "placeholders" to support decisions made prior to the 2006 Clean Water Act, and further that no evidentiary data	Lake Sherwood was as listed impaired for algae, ammonia, eutrophic conditions and organic enrichment/low dissolved oxygen in the 2010 Integrated Report. On the 2016 303(d) list, the Los Angeles Water Board has recommended delisting "organic enrichment/low dissolved oxygen" and ammonia, based on data showing there is not an impairment. "Placeholder" LOEs are those LOEs derived prior to the 2006; they are 'placeholder" in the sense that the raw data is not included in the CalWQA database. Per the Listing Policy, section 4.71.1, impairments are delisted when, based on all the readily	

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	samples were collected which could be used to assess these pollutants relative to the 2006 standards. Clearly there are zero measured exceedances of these standards at this point yet they remain on the list. It seems to us somewhat arbitrary to continue to consider these as "pollutants" in Lake Sherwood especially where there is a consistently good dissolved oxygen level, a continuous effort to remove excess plant growth via a special harvester with a full time crew, monthly monitoring of water chemistry, and special attention to and approved treatment of any algae that occurs as needed throughout the year. If sufficient justification does exist to continue to include these on the 303(d) list, we would appreciate having the reasons and rational detailed to us in writing so we may take any necessary actions to remove them in the future.	available data, there is sufficient evidence or data to justify a recommendation for delisting. The USEPA established a TMDL for the Malibu Creek watershed for nutrients to address these listings on March 21, 2003. The assessment of whether or not it is appropriate for the Lake to be removed from the 303(d) list for algae and eutrophic conditions must consider how those conditions interact with nitrogen and phosphorus levels, as discussed in the TMDL, and whether the TMDL targets are being met.	
29.	Stakeholders Implementing TMDLs in the Calleguas Creek Watershed, March 30, 2017		
29.1	The development and implementation of TMDLs is a significant investment of resources and it is critical that the 303(d) List be based on sound science and methodologies. The Stakeholders understand that the Los Angeles Regional Water Board (Water Board) is proposing over 200 new waterbody-pollutant segment combination 303(d) listings, of which 95 changes fall within the Calleguas Creek Watershed (CCW). The Stakeholders have developed and implemented six effective TMDLs in the CCW and thus have extensive experience in the area. The Stakeholders have serious concerns with the Region's Proposed 303(d) List and feel that it requires significant review and modification before adoption. The Stakeholders request that the issues identified in this letter be addressed and the proposed 303(d) List be released for another 60-day comment period prior to adoption. Several of the issues identified herein have resulted in the inability of the proposed 303(d) List to be fully vetted and reviewed by the Stakeholders. The requested modifications fall into four general categories: 1. New Category 5 listings that should not be listed due to incorrect thresholds	The Los Angeles Water Board recognizes the significant implications of the 303(d) list and TMDLs. The 303(d) list is based on sound science and the readily available data. However, as the Los Angeles Water Board determines its priorities for TMDL development or other regulatory programs, it will not depend exclusively on the 303(d) list or the data contained therein (currently through 2010 only). Los Angeles Water Board staff intends to make the necessary corrections in the CalWQA database and revise, as appropriate, listing/delisting decisions as the State Board staff prepare the Integrated Report and 303(d) list for State Board approval later this year or prior to the next Listing	

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	being applied for the beneficial use and incorrect interpretation of the data (e.g., mismatched units, incorrectly assigned sample locations) 2. Potential delistings that may exist if all watershed data were evaluated (e.g., TMDL monitoring program and all wastewater treatment plant NPDES monitoring). 3. New Category 5A listings that should be categorized as Category 5B because TMDLs already exist to address the pollutants. 4. Errors in the listing information that make it difficult to fully evaluate the listings. Examples include inconsistencies between the Category 5 list (Appendix B) and the Proposed updates to the 303(d) List (Appendix A), incorrect HUC/Calwater designations, incorrect beneficial uses listed for the applicable water quality objectives, and inconsistent use of thresholds for interpreting narrative objectives. The remaining sections of this letter provide the detailed list of requested changes to the 303(d) List and the rationale for the requests. In summary, the Stakeholders request that all waterbody-pollutant combinations in Table 1 not be listed on the 303(d) List, the waterbody-pollutant combinations in Table 3 be considered for delisting through analysis of all available watershed data, waterbody-pollutant combinations in Table 4 and Table 5 be designated as being addressed by a TMDL if they remain on the 303(d) List after the reassessment and the errors and inconsistencies identified in Comment IV be addressed for all waterbodies.	Cycle that includes the Los Angeles Region. See response to comment 29.2-29.67 for specific responses.	
29.2	1. REQUESTED MODIFICATIONS TO THE LISTING STATUS Based on a review of the proposed Category 5 waterbody-pollutant combinations, the Stakeholders have identified a number of waterbodies that we feel should either be delisted based on available data or proposed listings that should not be listed based on errors in the evaluation. The requested modifications are shown in Table 1, below, with a summary of the justifications for the requested change. A detailed discussion of each of the justifications follows the table.	Comment noted. See detailed responses below and response to comment 29.1.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
29.3	**Table 1. Waterbody-pollutant combinations that should not be listed** Waterbody segment: **Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.14	
29.4	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.15.	
29.5	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Dimethoate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.16.	
29.6	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing	See response to comment 7.17.	

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	decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.		
29.7	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.18.	
29.8	**Calleguas Creek Reach 2 (estuary to Potrero Rd)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.19.	
29.9	Waterbody segment: **Calleguas Creek Reach 3 (Potrero Road upstream to Conejo Creek confluence)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.20.	
29.10	Waterbody segment: **Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Ammonia Justification:	See response to comment 7.21.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data from agricultural drain rather than waterbody used as basis for listing decision. • TMDL data demonstrates delisting possible.		
29.11	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Bifenthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.22.	
29.12	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Chloride Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.23.	
29.13	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cyfluthrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.24.	
29.14	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.25.	
29.15	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Malathion Justification:	See response to comment 7.26.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data from agricultural drain rather than waterbody used as basis for listing decision.		
29.16	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Mercury Justification: • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.27.	
29.17	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.28.	
29.18	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Permethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • This pollutant is already covered by the Calleguas Toxicity TMDL.	See response to comment 7.29.	
29.19	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.30.	

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29.20	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.31.	
29.21	**Calleguas Creek Reach 4 (was Revolon Slough Main Branch)** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.32.	
29.22	Waterbody segment: **Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Chlorpyrifos Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.33.	
29.23	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Diazinon Justification: • Data does not appear to be from a station in Reach 12.	See response to comment 7.34.	
29.24	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Malathion Justification:	See response to comment 7.35.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	• Data does not appear to be from a station in Reach 12.		
29.25	**Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork)** Pollutant: Temperature, water Justification: • Inappropriately applied beneficial use criteria (see temperature comment below)	See response to comment 7.36.	
29.26	Waterbody segment: **Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.39.	
29.27	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.40.	
29.28	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.41.	
29.29	**Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2**	See response to comment 7.42.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Pollutant: Toxaphene Justification: • J-flagged data incorrectly used in assessment.		
29.30	Waterbody segment: **Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Nitrogen, Nitrate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.47.	
29.31	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Sulfate Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.49.	
29.32	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Specific Conductivity Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.50.	
29.33	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Total Dissolved Solids Justification: • Maintained as a brackish waterbody therefore criteria do not apply. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.51.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
29.34	**Rio De Santa Clara/Oxnard Drain No. 3** Pollutant: Toxicity Justification: • Insufficient exceedances to warrant listing.	See response to comment 7.52.	
29.35	Waterbody segment: **La Vista Drain (Ventura County)** Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • J-flagged data incorrectly used in assessment.	See response to comment 7.53.	
29.36	**La Vista Drain (Ventura County)** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.54.	
29.37	**La Vista Drain (Ventura County)** Pollutant: Copper Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.55.	
29.38	**La Vista Drain (Ventura County)** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not	See response to comment 7.56.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	applicable to waterbody.		
29.39	**La Vista Drain (Ventura County)** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.57.	
29.40	**La Vista Drain (Ventura County)** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.58.	
29.41	**La Vista Drain (Ventura County)** Pollutant: Indicator Bacteria Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.59.	
29.42	**La Vista Drain (Ventura County)** Pollutant: Mercury Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Data and objectives have different units (ng/L vs. µg/L); data do not exceed objectives.	See response to comment 7.60.	
29.43	Waterbody segment: **Santa Clara Drain**	See response to comment 7.61.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	Pollutant: Chlordane Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.		
29.44	**Santa Clara Drain** Pollutant: Chlorpyrifos Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.62.	
29.45	**Santa Clara Drain** Pollutant: Cypermethrin Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.63.	
29.46	**Santa Clara Drain** Pollutant: DDD Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates.	See response to comment 7.64.	
29.47	**Santa Clara Drain** Pollutant: DDE Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by	See response to comment 7.65.	

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
	chain link fencing and locked gates.		
29.48	**Santa Clara Drain** Pollutant: DDT Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using COMM criteria; public access is prohibited by chain link fencing and locked gates,	See response to comment 7.66.	
29.49	**Santa Clara Drain** Pollutant: Nitrogen, Nitrate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.67.	
29.50	**Santa Clara Drain** Pollutant: Specific Conductivity Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.68.	
29.51	**Santa Clara Drain** Pollutant: Sulfate Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.69.	

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29.52	**Santa Clara Drain** Pollutant: Total Dissolved Solids Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision. • Incorrectly listed using guideline for MUN beneficial use that is not applicable to waterbody.	See response to comment 7.70.	
29.53	**Santa Clara Drain** Pollutant: Toxaphene Justification: • Data from agricultural drain rather than waterbody used as basis for listing decision.	See response to comment 7.71.	
29.54	**1. Agricultural Drain monitoring data incorrectly used as basis for listing decisions.** There are multiple instances where VCAILG monitoring data from agricultural drains that discharge to waterbody reaches were used to list these waterbody reaches. The drains are not listed tributaries or waterbodies in the Basin Plan and are not located within the waterbody that is being listed. As a result, the data should not be used for the listing decisions for these waterbodies. Calleguas Creek Reach 2 and Reach 4 were listed using data from the VCAILG monitoring sites 02D_BROOM (Reach 2) and 04D_ETTG and 04D_LAS (Reach 4), which are the locations of agricultural drains which drain to Reach 2 and 4. Santa Clara River Reach 3 was listed using data from the VCAILG sampling location S03D_BARDS, which is located on an agricultural drain that ultimately discharges into Santa Clara River Reach 3. These agricultural monitoring sites were selected to be representative of agricultural discharges to Calleguas Creek Reaches 2 and 4 and Santa Clara River Reach 3, and are not representative of	See response to comment 7.88.	

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	receiving water conditions. Therefore, data collected from these sites cannot be used to list the downstream Calleguas Creek or Santa Clara River Reaches. All listings should be evaluated to ensure that the monitoring locations were in receiving waters rather than agricultural drains. In addition, La Vista Drain and Santa Clara Drain were listed as new waterbodies never before included in the previous 303(d) list, even though data has been collected on both agricultural drains by the MS4 program since the early 1990s. These waterbodies are not designated in the Basin Plan or listed as tributaries in the Basin plan appendices. The La Vista Drain is an agricultural drain designed to convey excess agricultural irrigation water from agricultural lands, and as such, it is predominantly an open ditch that flows alongside W. Los Angeles Avenue and then along Santa Clara Avenue where it becomes the Santa Clara Drain. Additionally, inclusion of the COMM beneficial use for the Santa Clara Drain is inappropriate, as public access is prohibited because of fencing and locked gates maintained by the Ventura County Watershed Protection District. It is inappropriate to apply the MAR and EST beneficial uses to the Santa Clara Drain because the drain is located upstream of Highway 101 and is not tidally influenced. The monitoring location on each drain was selected to represent agricultural discharges for the Agricultural Waiver and was not designed to characterize receiving waters. Because these are agricultural drains and not tributaries, they should be removed from the Draft Category 5 list. **Requested Action:** • **Remove all listings shown in Table 1 that were based on Ag monitoring data from agricultural drains not representative of the listed waterbody and evaluate remaining listings to ensure no other listings are based on agricultural drain monitoring rather than receiving water monitoring.** • **Remove the La Vista Drain and the Santa Clara Drain from the List as they are agricultural drains and not waterbodies that fall under the jurisdiction of the 303(d) List.**		

No.	Comment	Response	Additional / Revised Response (included where LOEs/Decisions were re-assessed and changes made after the Los Angeles Water Board workshop on May 4, 2017)
29.55	**2. *Remove any pollutant listing based on municipal drinking water objectives where the MUN beneficial use does not apply.*** Numerous listings were made using water quality objectives for the protection of the municipal drinking for waterbodies that do not have applicable municipal drinking water beneficial uses. Many of the waterbodies listed are brackish waterbodies for which no beneficial uses are designated or waterbodies designated for the municipal beneficial use with an asterisk (i.e., P*) in the Basin Plan. The asterisked MUN beneficial use should not be used to propose new 303(d) listings. Fact Sheets for previous 303(d) listing cycles have clearly noted that the asterisked MUN beneficial uses should not be used for 303(d) listing purposes. State Board Resolution No. 88-63 (Sources of Drinking Water) and Regional Board Resolution 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)), state that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by Regional Boards... [with certain exceptions which must be adopted by the Regional Board]." The Regional Board adopted a Water Quality Control Plan for the Los Angeles Region (Basin Plan) on June 4, 1994, that included provisions to implement State Water Board Resolution 88-63. On May 26, 2000, the USEPA approved the revised Basin Plan except for the implementation plan for potential MUN-designated water bodies. On August 22, 2000, the City of Los Angeles, City of Burbank, City of Simi Valley, and the County Sanitation Districts of Los Angeles County challenged USEPA's water quality standards action in the U.S. District Court. On December 18, 2001, the court issued an order remanding the matter to USEPA to take further action on the 1994 Basin Plan consistent with the court's decision. On February 15, 2002, USEPA revised its decision and approved the 1994 Basin Plan in whole. In its February 15, 2002 letter, USEPA stated:	See response to comment 7.89.	

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	"EPA bases its approval on the court's finding that the Regional Board's identification of waters with an asterisk ("'? in conjunction with the implementation language at page 2-4 of the 1994 Basin Plan, was intended "to only conditionally designate and not finally designate as MUN those water bodies identified by an ('*') for the MUN use in Table 2-1 of the Basin Plan, without further action." Court Order at p. 4. Thus, the waters identified with an ("*") in Table 2-1 do not have MUN as a designated use until such time as the State undertakes additional study and modifies its Basin Plan. Because this conditional use designation has no legal effect, it does not constitute a new water quality standard subject to EPA review under section 303(c)(3) of the Clean Water Act ("CWA"). 33 U.S.C. § 1313(c)(3)."*[1] In addition to the above decision, the Basin Plan states that until the additional study is undertaken and the Basin Plan is modified "no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations". The Regional Board has also determined that water quality objectives applicable to the MUN beneficial use will not be used to assess impairments under the 303(d) listing programs. For constituents that only have objectives that are applicable to the MUN beneficial use, the decision Fact Sheets for the 303(d) listing process state that there are no applicable water quality objectives in waterbodies designated with an asterisk ("*"). In the 2010 listing cycle, a number of 303(d) listings were actually removed based on this determination. Below is an example of the language from a listing decision for Los Angeles River Reach 1: *"The listing for aluminum in this water body was originally based on data assessed using the MCL for aluminum. Since MUN is a "potential" beneficial use, it is not appropriate to use the MCL to evaluate aluminum data from this reach. Thus, there is no aluminum objective for this reach and the original listing is faulty."*		

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	Based on this evidence, it is clear that for waterbodies with a MUN designation that includes an asterisk ("*"), water quality objectives specific to the MUN beneficial use are not applicable. As such, water quality data collected in these receiving waters should not be compared to water quality objectives applicable to the MUN beneficial use. The listings of total dissolved solids, sulfates, and conductivity are all based on secondary maximum contaminant levels applied to protect the MUN beneficial use. In addition, Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 and Rio De Santa Clara/Oxnard Drain No. 3 are maintained as fresh/brackish water via tide gates on both drains and do not have designated MUN beneficial uses. Therefore, the listing of TDS, sulfate, and specific conductivity is inappropriate as naturally occurring levels of these three constituents in groundwater entering both drains within the footprint of Naval Base Ventura County far exceed the secondary MCLs upon which these listings are based. USEPA validated this reasoning in its "TMDLs for Pesticides, PCBs and Sediment Toxicity for Oxnard Drain 3",[2] where the MUN beneficial use was not considered to be "relevant to the impairments" addressed by the TMDL and so was not included in the TMDL. Additionally, Calleguas Creek Reach 2 and Reach 4 are considered brackish waterbodies according to the California Toxics Rule thresholds and are designated with an asterisked MUN beneficial use. Due to the brackish nature of these waterbodies, other Basin Plan objectives for TDS and sulfate are not considered to be applicable to Reach 2 or Reach 4 below Laguna Road. For all of these reasons, these proposed listings summarized in **Table 1** should not be listed. The proposed Calleguas Creek Reach 2 dimethoate listing was based on three lines of evidence which the Fact Sheet states all show no exceedances (this appears to be a typo). However, it appears that the only line of evidence that shows an exceedance is based on the potential (P*) MUN, which as described above, cannot be used to justify a listing. Furthermore, the Fact Sheet cites a		

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	guideline from the California Department of Health Services Notification Levels (1 µg/L) which has not yet gone through the formal MCL regulatory process and it is not clear that this threshold would meet the Listing Policy requirements. **Requested Action:** • **Revise all of the new listings in the Fact Sheets to ensure that none are based on municipal drinking water objectives when the MUN beneficial use does not apply.** • **Remove the segment-pollutant combinations for total dissolved solids, specific conductivity, sulfates, nitrogen, nitrate, dimethoate, and other MUN-based pollutants listed in Table 1 above from the 303(d) List.**		
29.56	***3. Reassess mercury listings using correct objective and correct units*** The data used to assess mercury for Calleguas Creek Reach 3, Reach 4, and La Vista Drain are in ng/L and the objective is µg/L. The data have to be converted to the same units as the objective before an exceedance can be determined. The Stakeholders expect that after this calculation has been performed the waterbodies will no longer meet the listing guidelines for mercury. Additionally, although a California Toxics Rule objective exists for mercury, an EPA nationally recommended criterion was used for the assessment. An explanation for the use of a recommended criterion when an established water quality objective exists should be provided. **Requested Action:** • **Repeat the mercury analysis after correcting the units error.**	See response to comment 7.90.	
29.57	***4. Incorrect location and data were used for listings in Reach 12*** The name of the monitoring site presented in the Fact Sheet for the chlorpyrifos, diazinon and malathion listings in Calleguas Creek Reach 12 is unclear. The University site is in Reach 3, not 12 and T01 is an MS4 discharge characterization site, not a receiving water monitoring location. Therefore, T01 should not be used	See response to comment 7.92	

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	for a 303(d) listing decision and University data is not from Reach 12. A review of the datasets provided in the link on the Fact Sheet only show data from University (ME-CC) and the number of samples appears to match up with the sample numbers shown in the Fact Sheet. As a result, it appears that the chlorpyrifos, diazinon and malathion listings do not apply to Reach 12. In addition, the Stakeholders request that only data collected after the implementation of applicable pesticide use restrictions were in place for these pesticides be considered in the listing decisions. Data from the Calleguas Creek TMDL watershed monitoring program that were not used in the assessment (see Comment II) demonstrates a marked reduction in these pesticides in receiving water since the use restrictions were implemented (approximately 2009 to present), particularly for receiving waters downstream of urban areas (e.g., Reach 12). Given the changed condition resulting from the pesticide use restrictions, monitoring data collected prior to 2009 is not representative of waterbody conditions for these constituents. Therefore, these constituents should not be listed unless data collected after the use restrictions were implemented demonstrates a continued impairment. **Requested Action:** • **Remove listings for Reach 12 that are not based on receiving water data from that reach.** • **Remove listings for chlorpyrifos, diazinon, and malathion based on historic data that are not representative of conditions after implementation of pesticide use restrictions.**		
29.58	***5. Correct the proposed temperature listing for Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list) which is based on incorrect criteria.*** The temperature listing for Reach 12 uses an evaluation guideline of 13-21°C as the optimum growth range for rainbow trout. However, the beneficial use listed	A review of the Calleguas Creek Reach 12 decision for temperature is in process at this time.	The temperature data for Calleguas Creek Reach 12 has been re-evaluated and compared to a standard of not to exceed 80° and the decision has been revised to “do not list.”

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	for Reach 12 is WARM. The rainbow trout growth range threshold used for the listing is only applicable to the COLD beneficial use. This guideline should be removed and the number of exceedances recalculated based on the Basin Plan criteria for WARM. The basin plan criteria for WARM beneficial uses states the following: "For waters designated as WARM, water temperature shall not be altered more than 5 degrees F above the natural temperature. At no time shall these WARM designated waters be raised above 80 degrees F as a result of waste discharges." The Fact Sheet states that of 567 samples there were 3 instances of the downstream sample exceeding 80°F and in some cases a 30°F difference between upstream and downstream reaches. The Fact Sheet statement is unclear because Reach 12 is the upstream location and is not downstream of a waste discharge. Reach 12 drains a portion of the City of Thousand Oaks and open space areas and is located upstream of the Thousand Oaks Wastewater Treatment Plant. Therefore, it is unclear if the exceedances discussed in the Fact Sheet actually occur in Reach 12 and if exceedances do occur, whether they are a result of waste discharge or are a natural condition. The data provided for review was not compiled in a way that made it possible to easily review the assessment to determine if the exceedances were observed in Reach 12 (upstream) or Reach 10 (downstream). Regardless of the location of the samples, if there were 3 instances of temperature above 80°F and if they can be confirmed to be a result of waste discharge and not natural temperature conditions, according to the SWRCB 2015 303(d) Listing Policy three samples out of 567 would not meet the minimum number of measured exceedances needed to place a water segment on the 303(d) List (see Listing Policy table 3.2). According to the binomial test, with a sample size of 500+ there would need to be well over 20 exceedances in order to be added to the 303(d) List, however, the Fact Sheet mentions only three exceedances of the Basin Plan criteria. According to the SWRCB's own guidance, this proposed listing should be removed.		

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	Requested Action: • **Do not use the 13-21°C rainbow trout evaluation guideline which only applies to COLD beneficial use segments.** • **Remove the temperature listing for Reach 12 as it does not meet the minimum listing requirements based on the binomial test described above and ensure that the analysis is applied to the correct reach.**		
29.59	***6. Ensure no J-flagged data were used in the assessment.*** The Listing Policy specifically prohibits the use of J-flagged ("estimated") data that fall below the quantitation limit but above the water quality standard. Section 6.1.5.5 of the Listing Policy specifically states: *"When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis. The quantitation limit includes the minimum level, practical quantitation level, or reporting limit."* All listings based on the use of J-flagged data should, therefore, be removed from the draft 303(d) List. Specific instances are included in **Table 1** and further explained in **Table 2** below, but this list is by no means inclusive; this significant error will have to be addressed by a thorough review of all listing data to confirm that no J-flagged data were used to justify listings. Table 2. Incorrect use of J-flagged data [See the posted letter for Table 2] **Requested Action:** • **Review all Fact Sheets and LOEs for the use of J-flagged data and remove any instances where J-flagged data were used.** • **Delist toxaphene for Duck Pond Agricultural Drains/Mugu**	See response to comment 7.93.	

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	Drain/Oxnard Drain No. 2, chlordane for La Vista Drain, and any other pollutants listed in Tables 1 and 2 that lack the minimum number of exceedances required to justify a listing.		
29.60	***7.*** **Remove listings where a waterbody assessment does not meet listing thresholds based on data provided.** Finally, the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 does not meet the minimum requirements to be listed according to the Listing Policy (pg. 9). According to the Listing Policy, a waterbody can be listed only when the number of exceedances meets the binomial test; in the case of this waterbody, four samples were collected and only one sample showed an exceedance. However, two exceedances would be required for the waterbody to be added to the 303(d) List. Therefore, toxicity was incorrectly listed for this waterbody and should be removed entirely from the 303(d) List. **Requested Action:** **Remove the toxicity listing for Rio De Santa Clara/Oxnard Drain No. 3 based on meeting listing threshold requirements in the Listing Policy.**	See response to comment 7.52.	
29.61	**II. REQUESTED REASSESSMENTS USING COMPLETE DATA SET** The assessments for the Calleguas Creek watershed do not appear to include any of the submitted Calleguas Creek Watershed TMDL monitoring data, monitoring data from the Camarillo Sanitary District, or monitoring data from the Simi Valley Wastewater Treatment Plant. All of this monitoring data has been provided to the Regional Board in annual monitoring reports and all data were collected using approved QAPPs. As a result, there is no reason why this data should not be included in the 303(d) listing process. In 2013, the Stakeholders did an assessment of the watershed using all watershed	See response to comment 32.3.	

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	data through 2012 and found that multiple waterbody-pollutant combinations could potentially be delisted as shown in Table 3. A summary of the assessment is included as an attachment to this letter and the datasets used in the analysis as well as all of the TMDL annual monitoring reports are available upon request. **[See the posted letter for Table 3]** While we recognize that this assessment uses two additional years of data than the current 303(d) listing analysis, a number of these waterbodies had many more samples than were necessary for delisting. As a result, we feel if all the watershed data were used in the assessment, a number of these waterbodies (particularly for metals) would be delisted. We also feel this assessment would demonstrate that several of the proposed listings, particularly for diazinon and chlorpyrifos and a number of organochlorine pesticides, are not warranted. A large number of new proposed listings are being added that are already covered by a TMDL. While the list acknowledges that a TMDL does not need to be developed by categorizing these new listings in Category 5B, in several cases, the watershed now has sufficient data to delist, whereas the listing is an artifact of old data being used to make the listing decision. These listings should not be added to the current list only to be removed during the next listing cycle as an artifact of the timing of the listing assessments. **Requested Action:** **Reassess all Calleguas Creek waterbodies using all available data.**		
29.62	**III. REQUESTED CATEGORY ASSIGNMENT CHANGES** ***8. Correct pollutants listed as Category 5A which should be 5B based on coverage by an existing TMDL.*** There are a number of proposed new listings for pollutants that are already covered by an existing TMDL and are incorrectly categorized as 5A. While the	See response to comment 7.96.	

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	Stakeholders maintain that all of these listings should be removed entirely because of the issues detailed in Comment I, if they are not removed they should, at a minimum, be changed from 5A to 5B, as applicable. A nutrient TMDL addressing nitrogen has been in effect since 2003, including for Reach 9A where a new 5A listing for nitrite is proposed. In 2006, the Toxicity and OC Pesticide and PCBs TMDLs for the Calleguas Creek watershed were established to address chlordane, chlorpyrifos, DDT, DOE, ODD, dieldrin, PCBs, sediment toxicity, and toxaphene. The La Vista Drain and Santa Clara Drain ultimately flow into Calleguas Creek Reach 4 (was Revolon Slough Main Branch), which is already addressed by an OC Pesticides and PCBs TMDL, the Toxicity TMDL, the Salts TMDL, and the Metals TMDL and therefore all of these proposed listings should be Category 5B. Furthermore, two other segments were listed for Chlorpyrifos - Honda Barranca and Duck Pond Agricultural Drains - but were correctly listed as Category 5B, citing the 2006 Toxicity TMDL. The Stakeholders request that any listings in **Table 4** and **Table 5** that are maintained after addressing the issues in Comment I should also be corrected to be designated as Category 5B. **[See the posted letter for Table 4]** In addition, we feel that the Toxicity TMDL should cover all new listings in the watershed for pyrethroids and organophosphate pesticides (e.g., malathion) if they are not removed as requested in the first comment. The Toxicity TMDL includes a trigger for additional investigation if ongoing toxicity is identified in the watershed. The toxicity trigger has resulted in the identification of pyrethroids as a potential cause of toxicity and the Stakeholders have already begun actions to address these pesticides in addition to the organophosphate pesticides included in the TMDL. The structure of the TMDL is designed to proactively prevent toxicity and therefore it is not necessary to develop another TMDL for these constituents. There are already sufficient controls in place through the agricultural waiver and MS4 permit. As a result, if the waterbodies are placed on the 303(d) List as new		

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	listings, we request that the waterbodies in Table 5 be changed from 5A to 5B. **[See the posted letter for Table 5]** **Requested Action:** • **Change all pollutant-waterbody segment combinations in Table 4 and Table 5 from SA to 5B or 4A based on coverage by an existing USEPA approved TMDL.**		
29.63	**IV. ADDRESS ALL OTHER INCONSISTENCIES AND ERRORS IN LIST** In reviewing the list the Stakeholders identified a large number of inconsistencies and issues in the list that should all be addressed prior to adoption. The summary below provides examples of issues identified and is not a comprehensive list as in many cases the information provided made it challenging to provide comprehensive comments. **9.** ***Correct Appendix G Fact Sheets.*** The Appendix G Fact Sheets often include incorrect information and discussion. While most of the identified issues do not appear to impact the listing decisions, they make the review of information difficult. Examples of errors found include: • Incorrect beneficial uses assigned to a waterbody. For example, MUN beneficial uses assigned to a tidally-influenced waterbody (e.g., Duck Ponds Agricultural Drain). • Incorrect TMDLs assigned to a pollutant. For example, for chlordane in Calleguas Creek Reach 2, the applicable TMDL is listed as the Calleguas Creek Metals TMDL. It should be the Organochlorine Pesticides, PCBs, and Siltation TMDL. • Incorrect QAPPs identified. For example, the VCAILG QAPP is often referenced for the Ventura County MS4 monitoring data set. • Incorrect number of samples evaluated and incorrect number of criteria exceedances. For example, the number of samples evaluated for	See response to comment 7.98.	

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	toxaphene on the Rio de Santa Clara/Oxnard Drain No. 3 is identified as 2 samples, whereas data files obtained from the Regional Board website contain 5 samples for the date range indicated in Fact Sheets, including 3 samples with results of "ND". Stating that a pollutant actually exceeds criteria in only 40% of samples, versus 100% exceedances as presented in Fact Sheets, provides a more accurate picture of the degree of impairment for that pollutant in a waterbody. The inclusion of J-flagged data when enumerating exceedances (e.g., for chlordane in the same waterbodies) further exacerbates these numbering inaccuracies. **Requested Action:** **Correct the Appendix G Fact Sheets for errors such as incorrectly assigned beneficial uses, existing TMDLs, QAPPs, and number of samples/number of exceedances.**		
29.64	**10.** ***Correct the Appendices and Fact Sheet Categories*.** Appendix A, Appendix B, Appendix C, and Appendix G are inconsistent which makes the analysis of new additions very difficult since it is unclear which segment-pollutant combinations actually are new listings. Following are examples of a number of identified issues that need to be corrected to allow the Stakeholders to fully vet and understand the proposed listings. A number of proposed "name changes" in Appendix A are not shown in Appendix B and there are not associated Fact Sheets describing the name change (e.g., Reach 4 listings for chlorpyrifos and total DDT). This makes it very challenging to assess the validity or basis for the name change. In other instances, listed name changes are found in Appendix B or C but not supported by an explanation for the name change in Appendix G. The Fact Sheets for the following name changes should provide justification or explanation for the name change as many appear to be switching tissue or sediment listings to water listings. If this is, in fact, the change being made, the justification for the water listing needs to be provided in	See response to comment 7.99.	

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	the Fact Sheet. It is not appropriate to modify the medium that is the basis for the listing as a name change. **[See the posted letter for Table 6]** There are a number of inconsistencies where Appendix A does not include all of the new 2014 listings found in Appendix B. Below are a few examples of such inconsistencies. **[See the posted letter for Table 7]** There are also a number of instances where existing waterbody-pollutant listings from the 2010 303(d) List were not stated as delisted in Appendix A and do not appear in Appendix B, C, or G under the waterbodies to delist. The Stakeholders would like clarification if these listings are in fact being delisted as some align with the assessment shown in Table 3. **[See the posted letter for Table 8]** **Requested Action:** **Correct the numerous inconsistencies described above in Table 6, Table 7, and Table 8 and ensure that all of the proposed 303(d) List appendices are internally consistent.**		
29.65	**11**. ***Correct the waterbody assigned Hydrologic Unit (HUCs) and Ca/water numbers to reflect those listed in the Basin Plan.*** There are multiple instances of what appear to be incorrectly Hydrologic Unit numbers (HUCs) and Calwater numbers assigned to the various waterways. For instance, a comparison of the 8 digit HUCs listed in Appendix B of the 303(d) List to the 12 digit HUCs listed in Appendix I of the Basin Plan indicate a number of inconsistencies such that waterbodies present in the Santa Clara River Watershed (e.g., Santa Clara River Reach 1, 2, and 3) are listed with a Calleguas watershed HUC (18070103) while	See response to comment 7.100.	

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	the same reaches are listed as 18070102 in the Basin Plan. This makes identifying the location of unknown waterbodies not previously listed or described in the Basin Plan to assess if they are receiving waters that should be assessed especially difficult. A full review of the 303(d) List HUCs should be completed to correct all errors. **Requested Action:** **Perform a full review of HUCs and Calwater numbers listed in Appendix B through F and correct any inconsistencies with the Basin Plan.**		
29.66	**12**. ***Correct or clarify inconsistencies in the staff report*.** There is inconsistent discussion in the staff report about some proposed listings that should be clarified to avoid confusion about the listings. For instance, on page 10 of the Staff Report there is a discussion about existing TMDLs covering newly proposed pollutants " For example, the proposed new listings for DOE and DOD in Calleguas Creek Reach 3 ... are being addressed by the Calleguas Creek Organochlorine Pesticides, PCBs and Siltation TMDL ... and would then be in Category 4A." However , we could find no listings of ODE and ODD for Reach 3 in any Appendix of the report including Appendix C - Category 4A Waterbody Segments. Furthermore, the Fact Sheets in Appendix G state that ODE and DOD should not be listed for Reach 3. We ask the RWQCB to either clarify or remove the above referenced statement and clarify any other inconsistencies between the staff report and the list. **Requested Action:** **Correct or remove language cited on page 10 of the staff report regarding DOE and ODD listing of Calleguas Creek Reach 3 and clarify any other identified inconsistencies within the staff report.**	See response to comment 7.101.	
29.67	**13**. ***Ensure that all thresholds being used for assessment are consistent and valid under the Listing Policy*.** In many cases, the same pollutant is assessed using different thresholds without any explanation for the basis of the threshold.	See response to comment 7.102.	

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	Additionally, in several cases, an LC50 or threshold for individual species were used for the assessment, which is inconsistent with the Listing Policy which states that it must be demonstrated that an evaluation guideline is "applicable to the beneficial use, protective of the beneficial use, scientifically-based and peer reviewed, and well described". Because it has not been demonstrated that the individual species response to these pollutants is applicable and protective of the beneficial use these guidelines should not be used to make a listing. The Stakeholders ask that the Board review all assessments for consistency, especially for the pesticides (bifenthrin, cyfluthrin, cypermethrin, malathion, permethrin) as well as applicability to the beneficial use as described in the Listing Policy. **[See the posted letter for Table 9]** The 303(d) List includes new listings for bifenthrin, cyfluthrin, cypermethrin, malathion, and permethrin in CCW. Currently, no water quality objectives have been promulgated by USEPA or the State of California for these pollutants and so the criteria listed are from a variety of studies. Some issues with these criteria include the following (this list is by no means inclusive; a thorough review of all listings for these pollutants should be undertaken): • The criterion used for listing bifenthrin on Duck Pond Agricultural Drains/Mugu Drain/Oxnard Drain No 2 is 0.00397 µg/L based on the CDFG criteria. The selective use of a saltwater genus mean acute value is inappropriate when the CDFG study clearly states in the "Conclusions and Recommendations" section that "insufficient freshwater and saltwater acute toxicity data were available to calculate CMC values for bifenthrin." The same use of a criterion unsupported by the study author(s) applies to cypermethrin on the Santa Clara Drain. • Use of LC50 for listing of cyfluthrin for CCW Reach 4 is inappropriate. LC50s do not meet the standard set forth in the Listing Policy as stated on page 20 *"the evaluation guideline ... identifies a range above which impacts occur and below which no or few impacts are predicted."* By		

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	definition, an LC50 is simply the concentration at which half of the population of the tested species has died. The LC50 should not be used as the evaluation guideline. • The criterion used for listing permethrin for Calleguas Creek Reach 4 is 0.0002µg/L based on the UC Davis[12] criteria. However, upon reviewing the UC Davis source the listed chronic standard for permethrin is 2 ng/L (page 92) which is 0.002µg/L, not 0.0002µg/L as listed in the 303(d) List. • In many instances the incorrect evaluation guideline and guideline reference are used. For example, the evaluation guideline (i.e., criterion) provided for cyfluthrin (a pyrethroid) in LOEs 84065, 83200, and 88712 is for the chlorinated herbicide 2,4,5-TP. The stated criterion (29 mg/L) was not found in the cited guideline reference. Many additional instances were noted in LOEs for phorate, dimethoate, disulfoton, endosulfan sulfate, and many other LOEs. Because the numeric guidelines (and reference documents from which these are obtained) form the basis for any listing, it is critical that these be carefully reviewed and verified prior to issuing the final Fact Sheets and 303(d) List. **Requested Action:** • **Review the guidelines used for interpreting narrative objectives and ensure that they are consistently applied and use correct unit conversions.** • **Remove all guidelines that do not comply with the stated Listing Policy as described above.** **[See the posted letter for Attachment A]**		
30.	TECS Environmental Compliance Services, March 30, 2017		
30.1	TECS Environmental is pleased to comment on the Regional Board's proposed 2016 303(d) list revisions.	See response to comment 3.4.	

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	Because there are almost 900 listing revisions for water quality segments in the Los Angeles County Basin, it would be impossible to address each one. Therefore, I will restrict my comments to general issues. To begin with, I am sure that a number of MS4 Permittees and industrial dischargers will be pleased to know that many of the pollutants proposed on the 303(d), which are current TMDLs or are scheduled to become ones, have been placed on the "de-list" or placed on the "do not list" category. Most conspicuous are metals for Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River. Although the 2010 303(d) list did not list any of these reaches for metals-related impairment, they were nevertheless required to comply with metals TMDLs (Los Angeles River Metals TMDL for Reach 2 of the Rio Hondo and the San Gabriel River Metals TMDL for Reach 3 of the San Gabriel River). The 2016 303(d) list proposes to rectify this mistake by placing both of these reaches under the "do not list" category for copper, lead, selenium and zinc, which form the basis for both of the TMDLs. However, the proposed 2016 303(d) list did not place any of the Arroyo Seco reaches on the "do not list." Like Reach 2 of the Rio Hondo and Reach 3 of the San Gabriel River, Arroyo Seco Reaches 1 and 2 were not on 2010 303(d) list, nor were they on the 2012 303(d) list, which did not make it to Los Angeles Basin Plan as an amendment. Nevertheless, the Los Angeles MS4 Permit subjects MS4 Permittees by extending the Los Angeles River Metals TMDL to Arroyo Seco reaches. The 2016 303(d) list should place these reaches on the "do not list" category for metals. Recommendation: place Arroyo Seco Reaches 1 and 2 on the "do not list" for any metal.		
30.2	**I. CTR and 303(d) Listing Policy** Nevertheless, additional pollutants should be considered for exclusion because they were not established in accordance with the California Toxics Rule (CTR) adopted	See response to comments 3.2.	

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	in 2000; and/or did comply with the Wa*ter Quality Control Policy for California's Clean Water Act Section 303(d) List* (Listing Policy), which was adopted in 2004. • *California Toxic Rule* CTR was adopted to provide a mathematical method for establishing ambient (dry weather) water quality standards for toxics necessary to protect beneficial uses of receiving waters. The LAR-MTMDL, however, along with other TMDLs, does not comply with CTR in two significant respects. First, the TMDL calculates numeric water quality standards/TMDLs for both wet weather and ambient receiving water conditions instead of only on ambient. The LAR-TMDL misinterprets CTR by claiming EPA did not differentiate between wet and dry weather conditions when establishing metals and toxics limitations. There is nothing in CTR that supports that view. CTR makes it clear that its purpose is to establish ambient water quality standards: *This final rule establishes ambient water quality for priority toxic pollutants.* USEPA defines ambient as: *Natural concentration of water quality constituents prior to mixing of either point or nonpoint source load of contaminants. Reference ambient concentration is used to indicate the concentration of a chemical that will not cause adverse impact to human health.* In other words, ambient is the normal reference condition of a receiving water. This is also the clear understanding of the Regional Board's Surface Water Ambient Monitoring Program (SWAMP). MS4 and other point source stormwater (wet weather) outfall discharges, using sampling and analysis results, are measured against the ambient target for a pollutant established by CTR. For example, suppose a copper limitation is set at 37 micrograms per liter for a given water body. This limit is required to protect fish. Persistent exceedances of the limit based on outfall monitoring would necessitate a revision to the MS4 Permittee's stormwater		

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	management program.		
30.3	Second, CTR requires a hardness parameter (calcium carbonate) to make chemical water quality analysis of metals and toxics more accurate. Generally, the higher the hardness value the higher the toxic/metal pollutant expressed as a numeric limit. And, the higher the limit there less difficult it is to meet. The metals and toxics TMDLs rely on differing hardness values. For the Dominguez Channel/Harbor Toxics TMDL an average hardness value of 50 mg/l is used. For Ballona Creek hardiness values for setting the wet weather TMDLs metals are varied, based on an average or median hardness that ranged from 77 mg/l to 108 mg/l. For dry weather, a median hardness value of 300 mg/l was applied. As mentioned, CTR is expressed exclusively as ambient and not wet weather standards. Thus the77 mg/l to 108 mg/l hardness values relative to wet weather are meaningless. For dry weather, a median value of 300 mg/l was used. For the Los Angeles River Metals TMDL variable hardness values were also used for wet and dry weather. The same is true to the San Gabriel River Metals TMDL. In any case, CTR requires actual hardness value to be determined at the time samples of metals/toxic pollutants are taken. Thus, in the final analysis, each of the metals/toxics pollutants that was placed on the "list" or "do not de-list" category should be placed on the "de-list" or "do not list" category because they were not established in ambient terms only and failed to use an actual hardness value.	Comments on TMDLs are outside the scope of this proposed action.	
30.4	• 303(d) Listing Policy The Listing Policy was adopted to provide a statistical method to determine how many water quality samples that exceed a water quality standard are required to place a pollutant on the 303(d) list. That method is a binomial distribution based on the rejection of a null hypothesis measured against sample sizes (see attachment #1). A review of the 2016 303(d) list fact sheets reveals that many of	See response to comment 3.3.	

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	the metals and toxics placed on previous 303(d) lists did not conform to the Listing Policy. Those that do not should be placed on the "de-list" or "do not list" category.		
31.	Ventura Countywide Stormwater Quality Management Program, March 30, 2017		
31.1	On behalf of the Ventura Countywide Stormwater Quality Management Program (Program), which includes the Watershed Protection District, the County of Ventura and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, we thank you for the opportunity to provide input on the proposed revisions to the Clean Water Act Section 303(d) list of impaired waterbodies in the Los Angeles Region [hereinafter referred to as 303(d) list] which was distributed for public review on February 8, 2017. The Program has many concerns with the draft 2016 Los Angeles Water Board's proposed revisions to the 303(d) list of impaired waters. Several errors and inconsistencies hampered our ability to fully vet and review the proposed 303(d) list. It is our opinion that significant review and modifications must be made before adoption and additional public review after modifications will be necessary. Requested Action: After full consideration of all comments, revise draft 303(D) list, and allow for another 60-day comment period prior to adoption. It is critical that the Los Angeles Water Board's proposed revisions to the 303(d) list follow the State Water Resources Control Board (SWRCB) Listing Policy and be based on sound science and methodologies. The development and implementation of Total Maximum Daily Loads (TMDLs) is already a significant investment of resources, and the 303(d) list will drive pollutant waterbody prioritization under the potential Watershed Management Plan option in our next NPDES MS4 Permit.	See response to comment 32.1 and 7.2.	

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31.2	Data from a single point in time, or which is not representative of the receiving water, should be excluded from this effort as should data with results reported below reporting limits (J-flagged). It appears the Program's outfall data was erroneously included for the Santa Clara River. This sampling location represents the runoff discharging from an MS4, not the receiving water quality, and is mostly from infrequent and short-term rain events. Of special concern is where the beneficial use MUN is driving 303(d) listings even though it should not be applied because it is identified as P* and is a conditionally applicable beneficial use. **Requested Action:** **Strictly comply with the State Water Resources Control Board (SWRCB) Listing Policy on identifying beneficial uses, impairments due to natural sources, and the appropriate data to support a listing.**	It is in accordance with the Listing Policy to use samples collected on the same day to assess waterbody condition if the samples are from different locations. The Listing Policy does provide for consideration of circumstances in which the samples represent an unusual condition (see Listing Policy, Section 6.1.5.3, *If the majority of the samples were collected on a single day or during a short-term natural event (e.g. a storm, flood, or wildfire), the data should not be used as the primary data set.)* LOEs and decisions which included "J-flagged" data are being reassessed, as identified. Decisions based on protection of a P*MUN beneficial use are being reassessed, as identified.	
31.3	The Program supports the comments from the County of Ventura where a more detailed description of the issues identified here is discussed. The Program also supports the comments from the Calleguas Creek Watershed Stakeholders, as well as the Ventura County Irrigated Lands Group (VCAILG) who will be submitting separate comment letters regarding the proposed listing changes in the Calleguas Creek Watershed and VCAILG- affected waterbody segments. Significant resources are expended when a pollutant is included on the 303(d) list. Errors in this process, and the challenges of delisting a pollutant, divert our limited funding and staff time away from improving water quality. We greatly appreciate your attention to these requests and look forward to a 303(d) list that appropriately identifies the water quality issues within Ventura County.	Comment noted.	

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32.	Ventura Water Department of the City of San Buenaventura, March 30, 2017		
32.1	The specific focus of this comment letter by Ventura Water is on the Santa Clara River Estuary (SCRE) proposed listings. New constituents on the list for the SCRE include ammonia and pH. Constituents that are proposed to remain on the list of particular note include nitrate and toxicity. Ventura Water specifically requests the Los Angeles Regional Water Quality Control Board (Regional Board): • Reconsider proposed ammonia listing by recalculating the exceedances and using more recent data sets currently available to the Regional Board. • Reconsider the proposed pH listing based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries. • Delist nitrate based on a recalculation using appropriate data and correct use of averaging periods for the data. • Reevaluate toxicity listing once the data is appropriately aggregated and averaged. • Reevaluate ChemA, Toxaphene, and Indicator Bacteria listings once more recent data is taken into consideration. • Address the issues identified in this letter and release a revised, proposed 303(d) list for another 60-day comment period prior to adoption.	See response to comments, below, for specific responses: 32.4 for ammonia, 32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria The public has had a 50-day comment period prior to the Los Angeles Water Board meeting. In addition, the State Water Board will provide an additional 30-day comment period so that the public may comment on the Los Angeles Region 303(d) list (in combination with five other Regional 303(d) lists) prior to bringing the list to the State Water Board for approval. Lastly, commenters will have an opportunity to comment to USEPA Region 9 regarding the California 303(d) List portion of the Integrated Report prior to final approval by USEPA.	
32.2	**Relevant Background Information.** It is important to our overall comments on the 303(d) list to understand the context of the Santa Clara River and SCRE. Like many southern California rivers, the Santa Clara River has very minimal flows in the dry months leading to stagnant conditions in the SCRE that encourage algae growth and variations in both dissolved oxygen (DO) and pH due to the algae	Comment noted.	

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	respiration cycles, as is the case to some extent even in more natural estuaries where conditions have not been modified. The river ends in the SCRE, which experiences both open and closed mouth periods due to beach berm formation and periodic, typically wet weather breaches. The SCRE is wind-mixed and mostly uniform in water quality, especially during closed mouth conditions. The Ventura Water Reclamation Facility (VWRF) discharges approximately 8 million gallons per day (mgd) of disinfected, tertiary effluent first to wildlife/water quality ponds, and then to the SCRE. During dry weather, the tertiary treated flows can be the dominate supply of water to the SCRE to support wildlife species that utilize it. Species that utilize the SCRE include the following state and federally listed species: steelhead trout, tidewater goby, snowy plover, and California least tern. Ventura Water has spent many years studying the SCRE both independently, and pursuant to requirements of its NPDES permits. Ventura Water has invested more than $21,000,000 dollars in treatment process upgrades of the Ventura Water Reclamation Facility (VWRF) to improve the quality of the tertiary treated flows discharged to the SCRE. Ventura Water also currently recycles approximately 1 mgd for urban irrigation. Ventura Water is also currently working on implementing a potable reuse program that would divert up to 100% of its discharges to water reclamation uses, and identifying how much effluent can be diverted from the SCRE while still protecting its ecology and ecology-related beneficial uses and without "taking" (as that term is defined under the state and federal Endangered Species Acts, as applicable) any of the listed species that use or occupy the SCRE.		
32.3	**General Comments.** Of particular concern to Ventura Water with regard to the proposed 303(d) list is that much of the data used to determine water quality impairment for the SCRE is older data that is not representative of current conditions. The Staff report states, "Data used as part of the 2016 Integrated Report were received through August 30, 2010." The report then goes on to later say, "All readily available data and information in the administrative record was	The Los Angeles Water Board staff has developed the Integrated Report consistent with project plans and timelines established by the State Water Resources Control Board. Staff is working closely with the State Water Board to ensure that the remaining steps in the process for State Water	

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	considered in the development of the 2016 Integrated Report." These statements are at odds with each other as by choosing to only rely on data collected through 2010; quite clearly the 303(d) list was not developed with all readily available data as required by the Listing Policy. Significant plant improvements have be implemented since 2010. VWRF monitoring data since the plant upgrades are readily available and should be included within the 303(d) list determination analyses. The SCRE has also been heavily regulated by the VWRF's NPDES permits. Many of those permit requirements have become more stringent since 2010, with the application of technology based limitations. By Ventura Water's estimation, many of constituents on the proposed 303(d) list are not appropriate given recent water quality data. Lastly, based on current data and the State Water Resources Control Board's "Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List" ("Listing Policy") requirements to aggregate the data by appropriate reach or area and to use appropriate averaging periods, Ventura Water disagrees with some of the constituent listings and requests recalculation of exceedances. This letter addresses the proposed 303(d) listings and presents current data for each proposed SCRE impairment listing.	Board approval go smoothly and meet the State Water Board's schedule. Los Angeles Water Board staff considered all readily available data and information in the administrative record in the development of the 2016 California Integrated Report. The State Water Board defined readily available data as those data submitted during the 2010 public data solicitation period, which began on January 14, 2010 and concluded on August 30, 2010. The State Water Board issued a memo dated November 12, 2013, which explains the strategy of handling the data assessment for the 2014 Integrated Report as follows: Due to the volume of data received during the 2010 data solicitation period, the State Water Board will not solicit additional data until all of the current data is assessed and migrated to the California Water Quality Assessment Database (CalWQA) for Regional Water Board listing and delisting recommendations. Consequently, at the direction of the State Water Board and consistent with the other Regional Water Boards, Los Angeles Water Board staff did not include data after the 2010 solicitation period in the development of the 2016 Integrated Report for the Los Angeles Region.	

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		Further, the State Water Board adopted Resolution No. 2015-0005, to amend the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) on February 3, 2015. The revisions to the Listing Policy were available for public comment prior to the public hearing to adopt those changes. Finding number eight in the Resolution states the following: State Water Board staff anticipates that next notice of solicitation will be sent out to solicit data and information for the 2018 Integrated Report (the CWA section 303(d) and 305(b) reporting requirements). For the upcoming 2012, 2014 and 2016 Integrated Reports, the data and information submitted in response to the 2010 notice of solicitation shall be assessed and considered. Notwithstanding the above information, Los Angeles Water Board staff appreciates the concern that data must be is as up-to-date as possible and reviewed frequently in order to implement our various programs. Staff reviews all types of water quality data on an ongoing, real-time basis separately from the Integrated Report process to develop TMDLs or other regulatory programs. Staff strives to increase its use and application of current data, and improving in this manner is one of our highest priorities.	

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		Staff encourages commenter to submit data to CEDEN in preparation for the next listing cycle.	
32.4	**Ammonia Comments** The new ammonia listing cites that it is based on 4 exceedances out of 42 samples based on un-ionized ammonia concentrations using data collected from 1997 to 2010. While this meets the technical, formulaic requirements for number of exceedances set forth in the Listing Policy Table 3.1 for placing a waterbody on the 303(d) list, the methods and data used to calculate the exceedances are not clear. To calculate the concentration of un-ionized ammonia, total ammonia must be converted to un-ionized ammonia using site specific pH and temperature conditions within the SCRE at the time of the ammonia sampling. No conversion calculations for total ammonia were provided in the data set provided in the fact sheet; therefore, it is difficult to determine which pH and temperature data were used to correlate to corresponding total ammonia data. An accurate analysis should ideally connect pH, temperature, and ammonia data with a reasonable averaging criteria or statistical determination if multiple data points were used. Ventura Water requests recalculation of the exceedances based on current total ammonia data as well as proper calculations of un-ionized ammonia that take into account temperature and pH conditions that occurred, or should have been expected during the total ammonia sampling events. More specifically, closer inspection of the 1997 through 2010 data set used to determine the 4 exceedances indicates that the pH data used to calculate un-ionized ammonia was potentially data retrieved from a continuous monitoring, multiparameter Sondes (2009-2010) deployed for the City's Phase 1 Estuary Study (Stillwater Sciences 2011), among other data. The only total ammonia data collected as part of the Phase 1 study were collected on 6 days in 2009 and 2010. Corresponding pH and temperature were collected along with these samples.	The data used to determine the listing can be found from a link on the factsheet “Decision ID 66589 Santa Clara River Estuary” for ammonia. The data is linked as <u>Data for Various Pollutants from the city of Ventura, 1997-2010.</u> Commenter does not explain why grab data would not reliable for purposes of determining the one-hour maximum values for temperature and pH. See response to comment 32.3 for a discussion of the “readily available” data considered for this Integrated Report and 303(d) list.	

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	However, Ventura Water is concerned that these data do not represent the SCRE as a whole, specifically after the improvements to the VWRF (after November 2011). Moreover, only total ammonia is shown in that data set, and the data set does not include the calculation of un-ionized ammonia. Monthly grab sample temperature and pH data for the receiving water exists for some of the monitoring years cited (1997 - 2010), but grab data is not reliable for purposes of determining the one-hour maximum values for temperature and pH. In light of the aforementioned issues with the methods that appear to have been used to calculate unionized ammonia using a 1997 to 2010 data set, Ventura Water requests the Regional Board provide the calculation for the un-ionized ammonia, and update the calculation as appropriate to include more recent and more valid total ammonia, pH, and temperature assumptions from other data sets readily available to the Regional Board. Based on Ventura Water's more recent monitoring results, all of which constitute data readily available to the Regional Board, it does not appear that the SCRE un-ionized ammonia water quality objective is likely to have been exceeded a sufficient number of times to warrant a listing. Ventura Water requests the Regional Board utilize the data submitted to it by Ventura Water more recently than 2010 to assure that the evaluation of receiving water conditions in the SCRE is reasonably representative of current conditions. The Regional Board imposed stringent ammonia limits and a time schedule to attain those limits on VWRF discharges of tertiary treated flows in both its 2008 and 2013 NP DES permits. To comply with these limits and to better control nitrates, Ventura Water invested more than $21 million in a VWRF plant improvement project to implement nutrient removal in its biological processes. This treatment upgrade project undertaken to meet the stringent NPDES permit ammonia effluent limits came online in November 2011. Since then, VWRF NPDES permit effluent limits for ammonia, including its water quality based effluent limits, have only been exceeded once, indicating that ammonia conditions		

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	in the SCRE have changed since November 2011, and the data relied upon in developing the proposed 303(d) list is not representative of conditions within the SCRE. The receiving water standards for the SCRE (used to establish the NPDES effluent limitation) are set based on un-ionized ammonia for saltwater criteria. The limits used to determine the 303(d) listing are the same criteria that are used to calculate limits in the NPDES permit (1999 Update of Ambient Water Quality Criteria for Ammonia): • One Hour Concentration = 0.233 mg/I unionized ammonia, based on fish spawning, and • 4 day average of 0.035 mg/L of unionized ammonia The total ammonia NPDES effluent limit calculated to meet this water quality objective is total ammonia of 1.07 mg/l average monthly and 1.17 mg/l max daily in the summer. Limits in the winter months are slightly higher. The limits were determined in accordance with EPA standards by considering the 50th and 90th percentile pH and temperature for considering chronic and acute toxicity. As shown in Figure 1 below, the total effluent ammonia from 2012 to 2016 only exceeded 1 mg/l once out of 59 samples, thus not exceeding the Listing Policy's binomial distribution null hypothesis Table 3.1 criteria for listing a constituent on the 303(d) list (i.e., would need at least 5 exceedances). Similarly, the receiving water samples from 2012 to 2016 only exceeded 1 mg/l total ammonia twice out of 60 samples, so also not meeting the Table 3.1 criteria for listing a constituent on the 303(d) list. *Figure 1 Historical Effluent and Receiving Water Ammonia Monitoring* **[See the comment letter for Figure 1]**		

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	The effluent compliance point for all constituents except for flow in the 2013 NPDES permit for the VWRF is station MOOl, which is located at the Effluent Transfer Station (ETS) right before discharge into the wildlife ponds. Station MOOlA is located downstream of the wildlife ponds. It is only used for compliance with flow, but ammonia levels have been monitored there, starting in December 2013. Total ammonia actually drops from the compliance point to MOOlA as water passes through the wildlife ponds, likely due to a combination of volatilization and vegetative uptake. Therefore, the ammonia concentrations in the discharges into the SCRE are well below the permit standards that were set up to meet the ammonia receiving water quality objectives for saltwater, which are more stringent than freshwater standards. The comparison of ETS versus MOOlA data is shown in Figure 2. *Figure 2 Historical Effluent Ammonia Before and After Wildlife Ponds* **[See the comment letter for Figure 2]** **In light of the treatment plant upgrades implemented to reduce ammonia, and the fact that more recent data indicates only 1 exceedance in 59 samples, Ventura Water requests recalculation of the exceedances for ammonia and reconsideration of the listing decision based on the more recent data set currently available to the Regional Board.**		
32.5	pH Comments It is important to understand that many estuaries exhibit wide daily variations in pH mediated by algae as the result of daily photosynthesis and nighttime respiration (Park et al 1958). Beyond potential connections between algal productivity with the multiple nutrient sources to the SCRE (e.g., VWRF, agricultural runoff, groundwater, riverine, VWRF, ocean exchanges), algal growth and pH variations in the SCRE are exacerbated by physical factors as well (e.g., shallow waters, lack of consistent riverine flows, intermittent breaching and limited tidal exchange with the ocean). Consideration of the estuarine conditions	The 303(d) list appropriately identifies the pH impairments. Analysis of sources and causes or identification of implementation measures to resolve or correct the impairment are not completed as part of the Integrated Report or 303(d) listing process. There are multiple sources of water to Santa Clara River Estuary including "waste discharge" from	

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	likely to induce large pH swings is supported by recent monitoring data fully available to the Regional Board that shows that the VWRF plant tertiary treated flows are always in compliance with pH effluent limits (shown as a black dot on Figure 3). However, despite the very steady and compliant pH values for the tertiary treated flows, the receiving water does experience wide swings in pH as shown in Figure 3 below even when data collected from 2012 through 2016 is analyzed. However, it is important to note that the receiving water pH data is collected by grab samples (via boat) in the SCRE, likely at similar times of day and therefore does not necessarily reflect actual conditions in the estuary over the course of the day or the month. The receiving water data collected could theoretically meet the Listing Policy formulaic criteria. However, the determination whether to list should not be considered in a vacuum, but rather must also take into account the "type of waterbody (Bay and Harbors, Coastal Shoreline, *Estuary*, Lake/reservoir ...)" being considered for impairment. One way to take into account the type of waterbody considered for a 303(d) listing is to consider "reference conditions" as defined in Section 7 of the Listing Policy to understand the characteristics of estuarine water bodies that are least impaired by human activities to determine attainable biological conditions for such waterbodies in southern California. As discussed earlier, studies of pH variation in estuaries reveals that wide swings in pH due to the presence of algae constitute reference conditions for typical estuaries. The proposed listing does not appropriately demonstrate that the high pH was a result of waste discharge as required in the Los Angeles Region Basin Plan (Basin Plan). As stated in the Fact Sheets and according to the Basin Plan, "The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges." However, it was not demonstrated for the SCRE that the elevated pH levels were a result of waste discharge as opposed to natural causes. Therefore, the Regional Board should either provide evidence that the	sources such as wastewater treatment plants and the MS4. Exceedances of pH may be caused in part by waste discharge. The relative contribution of the causes of pH exceedances is largely speculative, at this time. The way to "take into account" the type of waterbody, or reference conditions, or the interaction between pH and other factors such as algae, is during the development of a TMDL. See also, response to comment 16.2.	

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	elevated pH was a result of waste discharge and detail that in the Fact Sheets or, if not such evidence exists, the Regional Board should remove this proposed listing. **Ventura Water requests reconsideration of the proposed pH listing for the SCRE based on consideration of reference conditions data, which indicate that substantial fluctuations in estuarine pH values are typical, and consistent pH values that comply with water quality objectives are not biologically attainable within estuaries.** *Figure 3 pH at VWRF and Receiving Water Locations* **[See the comment letter for Figure 3]**		
32.6	**Nitrogen and Nitrate Comments** Nitrogen/nitrate (collectively "nitrate") was originally listed on the 303(d) list adopted in 2012. The nitrate listing is based on receiving water samples collected between 2002 and 2007. Given that Ventura Water implemented a nitrification and denitrification project in November 2011, nitrate data collected before 2011 is no longer representative of SCRE conditions, and is therefore not reliable for determining current SCRE exceedance estimates. In reviewing receiving water data collected monthly from 2012 through 2016 (60 sample dates}, which is submitted to the Regional Board as part of NPDES reporting and is therefore readily available data under the Listing Policy, there were only 5 days during which SCRE water quality exceeded the nitrate receiving water quality objective of 10 mg/I . Because the SCRE is wind-mixed and fairly uniform (Phase 1 Estuary Subwatershed Study, Stillwater 2011}, we would argue that on any given day, sampling at a given location is strongly influenced by conditions at other nearby locations. The Listing Policy states: "Based on these evaluations of the water body setting, the Regional Water Boards should aggregate the data by appropriate reach or area . ... To be	The data used to list the Santa Clara River Estuary for Nitrogen Nitrate was NPDES receiving water monitoring from the City of San Buenaventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list. The Listing Policy does allow for not using older data; Section 6.1.5.3 states, in part, "If the implementation of a management practice(s) has resulted in a change in the water body segment, only recently collected data {since the implementation of the	

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	considered temporally independent, samples collected during the averaging period shall be combined and considered one sampling event. ... If the averaging period is not stated for the standard, objective, criterion, or evaluation guideline, then the samples collected less than 7 days apart shall be averaged." As shown in Figure 4 below, exceedances in multiple locations occurring in the SCRE on the same sampling date should be considered a single event because the multiple sampling results are designed to provide a spatial representation of the estuary during any particular event of exceedance. According to the binomial distribution null hypothesis (Listing Policy Table 3.1), the listing requirement for 60 to 71 data points is 6 exceedances, which is more than the current 5 exceedances demonstrated by the more recent data set developed after Ventura Water's implementation of treatment plant and treatment process upgrades. Section 4 of the Listing Policy states that a water segment shall be removed from a 303(d) listing if the water meets the water quality standards. Using Policy Table 4.1, the null hypothesis indicates that for 60 to 71 data points, if there are 5 exceedances or less, then the water segment can be delisted. **Based on current data, the number of exceedances (S) meets the delisting criteria, and given that VWRF already has an NPDES permit limit for nitrate, Ventura Water requests recalculation of the exceedances based on current data and correct use of averaging periods for the data (data collected on the same day to be averaged}. Ventura Water requests that based on this recalculation, nitrate be removed from the 303(d) list for the SCRE.** *Figure 4 Receiving Water Nitrate Levels* **[See the comment letter for Figure 4]**	management measure(s)) should be considered…" In the next listing cycle, when Water Board staff is able to consider the more recent data, staff can consider the implementation of nitrification and denitrification in 2011 and the appropriateness of averaging the more recent data.	
32.7	**Toxicity Comments** The City monitors chronic toxicity using Selanstrum for both effluent and receiving water. Using readily available data collected by Ventura Water from	The data used to list the Santa Clara River Estuary for toxicity was NPDES receiving water monitoring from the City of San Buenaventura	

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	2012 - 2016 and submitted to the Regional Board, the VWRF tertiary treated flows consistently met toxicity criteria of 1 TUc for the 60 samples, as shown in Figure 5. However, receiving water monitoring data does not similarly show consistent and full attainment of toxicity criteria. The receiving water monitoring locations have a data set of 25 sample dates. **Using the argument presented above that the data should be aggregated and appropriate averaging should be used, Ventura Water requests that each sampling event (day) be considered separately and the data points be averaged.** To meet the Listing Policy Table 4.1 requirements for delisting, with 26 data points there would need to be 2 or fewer exceedances of toxicity objectives for the SCRE. Even considered as single events, there have been more than 2 exceedances of a 1 TUc, although those exceedances are unrelated to toxicity of tertiary treated flows, which did not show exceedances. Therefore, it does not appear that de listing the SCRE for toxicity would be appropriate at this time, even though toxicity exceedances are unrelated to VWRF tertiary treated flows. **However, Ventura Water requests this listing be reevaluated once the data is appropriately aggregated and averaged.** *Figure* 5 *Effluent and Receiving Water Toxicity* **[See the comment letter for Figure 5]**	Ventura, Water Reclamation Plant (NPDES No. CA0053651) collected from 2002 to 2007. The commenter has presented additional data collected from 2012 to 2016. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.	
32.8	**ChemA** ChemA is being included on the 303(d) list without any supporting data. The reasons for its listing are that the U.S. EPA approved a TMDL for the estuary in 2011. However, no data, historic or otherwise, were used to support the continued placement on this list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of ChemA on the 303(d) list.**	ChemA is a suite of bio-accumulating pesticides that includes aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorocyclohexane (HCH) (including lindane), endosulfan, and toxaphene. ChemA was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions prior to 2006 are not included in the	

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		CalWQA database and this is reflected on the factsheets. The 1998 303(d) listing (and subsequent listings) for Chem A were predominately based on fish tissue concentrations of toxaphene. Los Angeles Water Board developed a TMDL for toxaphene in fish tissue in the Santa Clara River Estuary in 2010, which was approved by EPA in 2011. Source analysis showed that the source of toxaphene was irrigated agriculture and the TMDL was adopted as a single regulatory action through the renewal of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands. The agricultural discharges regulated by the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands monitor for toxaphene and chlordane. During the next listing cycle, when Water Board staff is able to review this more recently collected monitoring data, staff may recommend revision of the 303(d) list including, potentially, a simplification of the list, by removing Chem A because the toxaphene and chlordane data more appropriately represent the impairment or non-impairment of the Estuary.	
32.9	**Toxaphene** Similar to ChemA, toxaphene was included on the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought	Similar to ChemA, toxaphene was placed on the 303(d) list for the Santa Clara River estuary in 1998. Data used for listing or delisting decisions	

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	forward to support the status on the list. Based on data collected semiannually by the VWRF, toxaphene has not even been detected in either the effluent or the receiving water in recent memory. **Ventura Water requests that recent readily available data be taken into consideration when assessing the placement of toxaphene on the 303(d) list.**	prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.	
32.10	**Indicator Bacteria** Similar to ChemA and toxaphene, indicator bacteria was included in the 303(d) list due to its TMDL status with the U.S. EPA, circa 2011. No new information or data was brought forward to support the status on the list. **Ventura Water requests that recent data be taken into consideration when assessing the placement of indicator bacteria on the 303(d) list.**	Indicator Bacteria was placed on the 303(d) list for the Santa Clara River estuary prior to 1998 (this impairment was originally called "coliform bacteria"). Data used for listing or delisting decisions prior to 2006 are not included in the CalWQA database and this is reflected on the factsheets. The Los Angeles Water Board developed a TMDL for indicator bacteria in 2010, which was approved by USEPA in 2012. Data more recent than 2010 will be considered in the next listing cycle for the Los Angeles Region. See response to comment 32.3 for a discussion of the "readily available" data considered for this Integrated Report and 303(d) list.	
32.11	Summary/Conclusion Ventura Water appreciates the opportunity to comment on the proposed 303(d) list. Based on the analysis presented above using more recently collected, readily available data that	Comments noted. See response to comment 32.4 for ammonia, 32.5 for pH, 32.6 for nitrate, 32.7 for toxicity, 32.8 for ChemA, 32.9 for toxaphene, and 32.10 for indicator bacteria.	

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	properly represents existing conditions in the SCRE (2012 - 2016), our findings include: • Appropriate ammonia data were not considered in the proposed listing and current data do not meet the Listing Policy criteria for 303(d) listing. • A listing for pH is not warranted in light of reference conditions for pH within estuaries, which indicates that steady state pH values in compliance with water quality objectives are not biologically attainable even in high functioning estuaries. • Nitrate should be delisted based on relevant Listing Policy criteria. • Toxicity is unrelated to VWRF discharges of tertiary treated water to the SCRE, and the listing should be reevaluated once the data is appropriately aggregated and averaged. • Chem A, Toxaphene, and Indicator Bacteria listings did not include recent data and should be reevaluated based on current data. It is important to note the City has been conducting studies on the SCRE since 2009 per the special studies requirements in the NPDES permits for the VWRF. These studies analyze the existing discharge impacts/benefits to aquatic habitat, and evaluate alternatives that include a reduction in discharge, improvement in discharge water quality, or a combination of both, for the purpose of improving aquatic habitat. These studies are site specific, taking into account the listed species using or occupying the SCRE, and the associated physical/chemical parameters that contribute to site specific aquatic habitat conditions. The results of the studies will be presented in the Phase 3 Estuary Studies Report (expected January 2018), and will provide a detailed understanding of the SCRE and information relevant to the 303(d) listing process.	See response to comment 32.3 for a discussion of the “readily available” data considered for this Integrated Report and 303(d) list.	