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ENHANCED WATERSHED MANAGEMENT PROGRAM WORK PLAN

for the Upper Los Angeles River Watershed



SUBMITTED BY:

Upper Los Angeles River
Watershed Management Group

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Acronyms and Abbreviations

µg/L	micrograms per liter
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
BMPs	Best Management Practices
BSI Study	Los Angeles River Bacteria Source Identification Study
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
CIMP	Coordinated Integrated Monitoring Program
CREST	Cleaner Rivers through Effective Stakeholder-led TMDLs
CTR	California Toxics Rule
CWA	Clean Water Act
DDTs	dichloro diphenyl trichloroethane
EWMP	Enhanced Watershed Management Program
EWRI	Environmental and Water Resources Institute
FHWA	Federal Highway Administration
GIS	geographic information system
Group	Upper Los Angeles River Watershed Management Group
HSPF	Hydrologic Simulation Program–FORTRAN

Acronyms and Abbreviations

IBD	International BMP Database
IPs	Implementation Plans
IRWMP	Integrated Regional Watershed Management Plan
LA	Los Angeles
LACDPW	Los Angeles County Department of Public Works
LACFCD	LACFCD
LADWP	Los Angeles Department of Water and Power
LARWMP	Los Angeles River Watershed Monitoring Program
LARWQCB	California Regional Water Quality Control Board, Los Angeles
LID	low impact development
LSPC	Loading Simulation Program C++
MCMs	minimum control measures
mg/L	milligrams per liter
ml	milliliters
MS4	Municipal Separate Storm Sewer System
NIMS	Nonlinearity-Interval Mapping Scheme
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OWTS	Onsite Wastewater Treatment System (septic system)
PCBs	polychlorinated biphenyls
PAHs	polynuclear aromatic hydrocarbons
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles County Regional Water Quality Control Board
RWLs	Receiving Water Limitations
SCCWRP	Southern California Coastal Water Research Project
SCSC	Southern California Stormwater Committee
State Board	State Water Resources Control Board
SUSTAIN	System for Urban Stormwater Treatment and Analysis INtegration
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TMDLIP	Total Maximum Daily Load Implementation Plan
TSS	total suspended solids
ULAR	Upper Los Angeles River
ULAR WMA	Upper Los Angeles River Water Management Area
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
WBPC	Water Body-Pollutant Combinations

Acronyms and Abbreviations

WDRs	Waste Discharge Requirements
WERF	Water Environment Research Federation
WLA(s)	wasteload allocation(s)
WMG	Watershed Management Groups
WMMS	Watershed Management Modeling System
WQ	Water Quality
WQBELs	Water-Quality Based Effluent Limitations
WQO	Water Quality Objective
WRP	Water Reclamation Plant

Executive Summary

This Municipal Separate Storm Sewer System (MS4) Permit for Los Angeles County provides an innovative approach to Permit compliance through development of Enhanced Watershed Management Plans (EWMPs). Through a collaborative approach, an EWMP for the Upper Los Angeles River Watershed Management Area (WMA) is being developed by the cities of Los Angeles (lead coordinating agency), Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South Pasadena, and Temple City, County of Los Angeles, and the Los Angeles County Flood Control District. In general, the EWMP for Upper LA River will touch on multiple elements of municipal stormwater programs and communities, and emphasize multi-benefit stormwater projects that also provide environmental, aesthetic, recreational, water supply and/or other community enhancements.

This document is a Work Plan for the ULAR EWMP, as required by the Permit. This Work Plan describes the work efforts and analyses that have been and will be conducted to develop an EWMP for the Upper LA River WMA that addresses the Permit requirements. The EWMP will be submitted by June 2015. The planning area for the Upper LA River EWMP is the largest of all the EWMPs being developed in the LA region, representing 479 square miles of watershed and over 55 miles of mainstem LA River from its headwaters to just above the estuary. The LA River watershed has been subject to numerous water quality planning and compliance efforts and the EWMP will leverage those efforts and identify additional projects to address water quality issues in the Upper LA River.

Major components of the ULAR EWMP are described in this Work Plan along with details on some of the processes that will be used to develop the EWMP. Much of the process supports the ultimate selection of water quality control measures (often referred to as best management practices [BMPs]) that will be included in the EWMP to address water quality issues in the Upper LA River. The major components of the EWMP include the following:

- **Stakeholder Outreach**: a critical component of EWMP development is stakeholder outreach, and a series of workshops are being held by the Upper LA River group to solicit input and ideas from other municipal agencies, environmental and community organizations, state and federal agencies.
- **Water Quality Priorities**: the first step in the EWMP process follows the steps of the Permit to determine the Water Quality Priorities for the Upper LA River. Over 170,000 data records were compiled and analyzed to determine three categories of Water Quality Priorities based on whether total maximum daily loads (TMDLs) have been developed for waterbody-pollutants and whether exceedances have occurred in the last 10 years and whether the MS4 is a likely source.
- **EWMP Control Measures**: this Work Plan establishes a terminology for describing BMPs that can be used to improve water quality, presents "Fact Sheets "for different types of BMPs to potentially be included in the EWMP, and a process for selecting regional BMPs that can capture the 85th percentile, 24-hour storm, which is an important compliance metric in the Permit.
- **Reasonable Assurance Analysis:** the approach for demonstrating that selected BMPs will address the Water Quality Priorities is described. The RAA will use the Watershed Management Modeling System to select among the many potential options for BMPs and quantitatively demonstrate that control measures will be effective.

This Work Plan charts the course forward for developing an EWMP for the Upper LA River that addresses Permit requirements while also providing multiple other benefits to communities. The EWMP offers an opportunity to develop a comprehensive stormwater management plan that optimizes the stormwater and financial resources under the stewardship of the ULAR WMG members. The ULAR WMG looks forward to engaging the Los Angeles Regional Water Quality Control Board and other interested parties on this Work Plan, as needed. The ULAR will follow up with interested parties, as needed, to discuss received comments and ideas.

Section 1
Introduction

The Enhanced Watershed Management Program (EWMP) for the Upper Los Angeles River Watershed Management Area (ULAR WMA) will describe the path Permittees in the watershed will utilize to complete the EWMP process of the 2012 Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; NPDES Permit No. CAS004001). This Work Plan describes the work efforts and analyses that have been and will be conducted to develop an EWMP that addresses the Permit requirements including a stakeholder coordination process. The MS4 Permittees previously completed a Notice of Intent (NOI) for the development of an EWMP and Coordinated Integrated Monitoring Program (CIMP) for the ULAR WMA (Appendix 1.A).

The MS4 Permittees in the ULAR WMA, collectively referred to as the ULAR Watershed Management Group (ULAR WMG), have elected to collaborate on preparing an EWMP to address the water quality priorities for the LA River and its tributaries. The EWMP offers an opportunity to develop a comprehensive stormwater management plan that optimizes the stormwater and financial resources under the stewardship of the ULAR WMG members. The EWMP will leverage previous planning efforts and identify additional projects that provide not only water quality improvement but also environmental, aesthetic, recreational, water supply and/or other community enhancements.

This Work Plan outlines a path to developing the ULAR EWMP, presented in the following five sections:

Section 1 – Introduction: Provides the geographical scope, regulatory basis, development process and goals of the ULAR EWMP.

Section 2 – Water Quality Priorities: Presents the water quality characterization for the watershed, identifies Water Body-Pollutant Combinations (WBPCs), and summarizes the Source Assessment conducted to date.

Section 3 – Watershed Control Measures: Presents descriptions of the suite of existing and potential structural and non-structural pollution control measures that constitute the "tool box" for addressing the water quality priorities identified in Section 2. Most significantly, the process for identifying Regional projects that constitute the defining characteristic of the EWMP is described.

Section 4 – Reasonable Assurance Analysis Approach: Provides a description of the modeling approach and RAA approach to demonstrate the projects identified in the EWMP will achieve the Permit requirements.

Section 5 – EWMP Development: Provides a description of the EWMP Work Plan framework, stakeholder engagement process and EWMP development schedule. It also includes a section on how the LARWCB and interested party comments on this Work Plan and the EWMP will be addressed.

1.1 Applicability of the EWMP

The EWMP will apply to areas covered by the MS4 Permit within the ULAR WMA, shown in **Figure 1-1**. The ULAR EWMP applies to the following MS4 Permittees, which comprise the ULAR WMG: the cities of Los Angeles (lead coordinating agency), Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South Pasadena, and Temple City, County of Los Angeles, and the Los Angeles County Flood Control District (LACFCD) (**Figure 1-1)**.

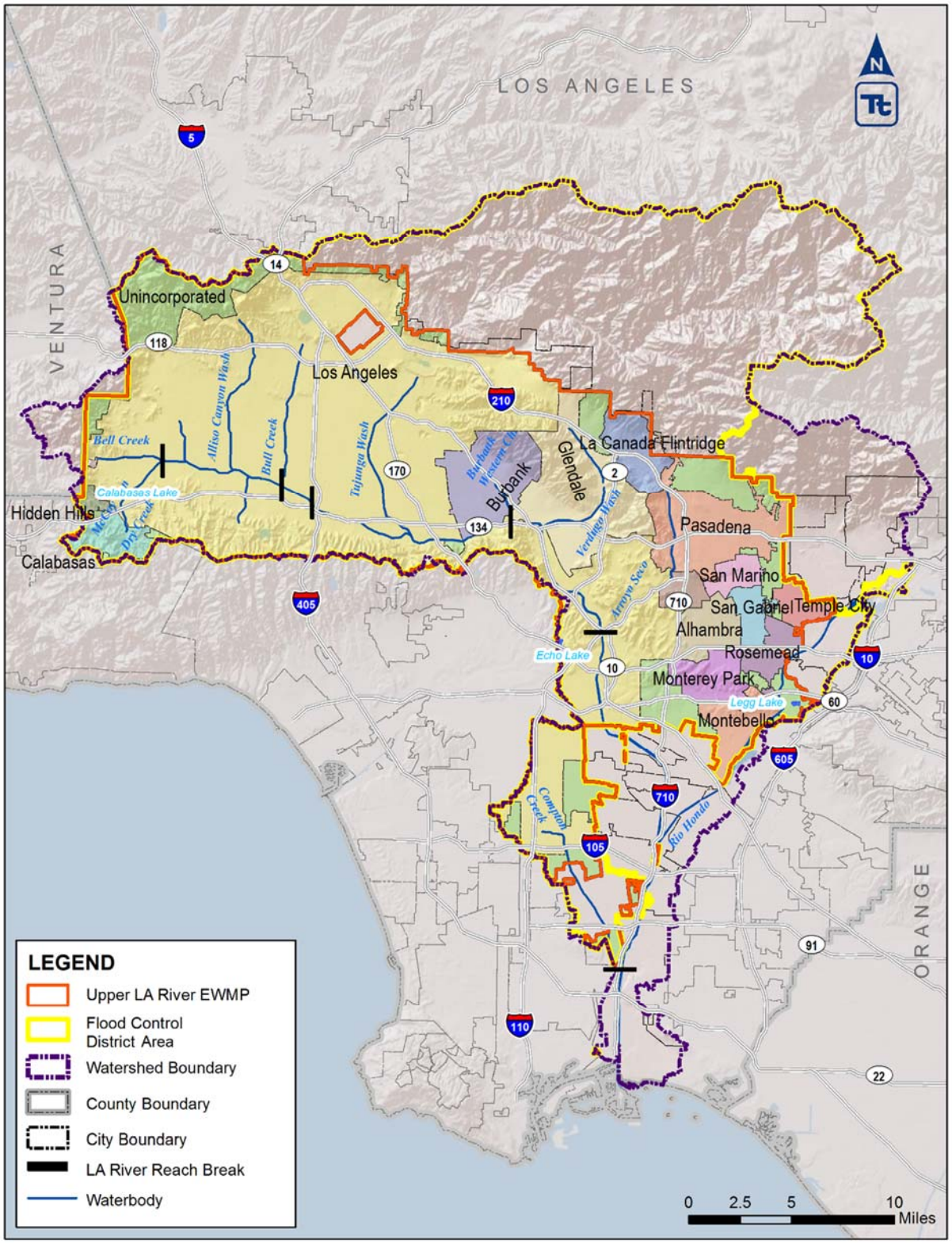


Figure 1-1. Upper Los Angeles River WMA Boundary and Jurisdictions

1.2 Geographical Scope and Characteristics

The area included in the ULAR EWMP is approximately 479 square miles and comprises the cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South Pasadena, and Temple City as well as the unincorporated areas of the County of Los Angeles. Additionally, the LACFCD owns and operates drainage infrastructure within incorporated and unincorporated areas in the watershed. See Appendix 1.B for background information on the LACFCD, including a map of its service area.

Figure 1-1 provides a map of the watershed boundaries and the delineations of the land areas of the MS4 permittees and other entities within the watershed.

The Los Angeles River is approximately 55 miles long, and five of six reaches lie within the ULAR WMA. The natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and flood control reservoirs. The Los Angeles River and many of its tributaries are lined with concrete for most or all of their length. Soft-bottomed segment of the Los Angeles River occur where groundwater upwelling prevents armoring of the river bottom.

The Los Angeles River is segmented into six reaches by the California Water Quality Control Plan, Los Angeles Region (Basin Plan) as follows: (listed from upstream to downstream; reach breaks are shown in **Figure 1-1**):

- Reach 6 begins at the headwaters of the Los Angeles River (the confluence of Arroyo Calabasas and Bell Creek) and extends to Balboa Boulevard.
- Reach 5 runs from Balboa Boulevard through the Sepulveda Basin.
- Reach 4 runs from Sepulveda Dam to Riverside Drive.
- Reach 3 runs from Riverside Drive to Figueroa Street.
- Reach 2 runs from Figueroa Street to Carson Street.
- Reach 1 runs from Carson Street to the estuary.

Major tributaries to ULAR WMA include Aliso Canyon Creek, Bell Creek, Bull Creek, Tujunga Wash, Burbank Western Channel, Arroyo Seco, Rio Hondo, and Compton Creek. The major water bodies in the ULAR WMA are summarized in **Table 1-1**. The ULAR WMA also includes Lake Calabasas, Echo Park Lake, and Legg Lake.

Table 1-1. Waterbodies Associated with the ULAR WMA EWMP

Mainstem	Associated Tributaries	Waters Immediately Downstream of EWMP Area
LA River Reach 6	Dry Canyon Creek McCoy Creek Bell Creek Aliso Canyon Wash	
LA River Reach 5	Bull Creek	
LA River Reach 4	Pacoima Wash Tujunga Wash	
LA River Reach 3	Burbank West Channel Verdugo Wash Arroyo Seco	
LA River Reach 2	Rio Hondo Reach 2 and 3	Rio Hondo Reach 1

Table 1-1. Waterbodies Associated with the ULAR WMA EWMP

Mainstem	Associated Tributaries	Waters Immediately Downstream of EWMP Area
	Compton Creek	LA River Reach 1
Lakes		
Echo Park Lake	Legg Lake	Lake Calabasas

Collectively, the MS4 permittees in the ULAR watershed have jurisdiction in over 57.43% of the total LA River watershed area. A breakdown of the areas associated with the participating MS4 permittees and other agencies is provided in **Table 1-2**. All drainage infrastructure operated and maintained by the LACFCD within the ULAR WMA will be covered under this EWMP. It should be noted that agencies participating in the ULAR WMA have no jurisdiction over the land owned by the State of California (i.e., California Department of Fish and Wildlife [CDFW], the State Lands Commission, and California Department of Transportation [Caltrans]) and the U.S. Government.

Table 1-2. ULAR EWMP Agencies and Land Areas

Agency	Land Area (Acres)	% of EWMP Area
City of Los Angeles	181,288.00	58.83
County of Los Angeles	41,048.07	13.32
LACFCD	NA	N/A
City of Alhambra	4,884.31	1.58
City of Burbank	11,095.20	3.60
City of Calabasas	4,005.68	1.30
City of Glendale	19,587.50	6.36
City of Hidden Hills	961.03	0.31
City of La Canada Flintridge	5,534.46	1.80
City of Montebello	5,356.38	1.74
City of Monterey Park	4,951.51	1.61
City of Pasadena	14,805.30	4.80
City of Rosemead	3,310.87	1.07
City of San Fernando	1,517.64	0.49
City of San Gabriel	2,644.87	0.86
City of San Marino	2,409.64	0.78
City of South Pasadena	2,186.20	0.71
City of Temple City	2,576.50	0.84
Area of EWMP Agencies	**308,163.16**	**100**

1.3 Regulatory Framework

While the EWMP will be a multi-faceted document/program that encourages multiple benefits, the EWMP is fundamentally a regulatory document. Elements of the regulatory framework, including applicable schedules for total maximum daily loads (TMDLs), are described in the following subsections.

1.3.1 MS4 Permit

The Los Angeles Regional Water Quality Control Board (LARWQCB) adopted Waste Discharge Requirements for MS4 discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4 (Order No. R4-2012-0175; NPDES Permit No. CAS004001) on November 8, 2012. The MS4 Permit, which became effective on December 28, 2012, applies to the LACFCD, County of Los Angeles and 84 incorporated cities within Los Angeles County, including cities in the ULAR watershed. The MS4 Permit replaces the 2001 MS4 permit.

The MS4 Permit contains effluent limitations, receiving water limitations (RWLs), minimum control measures (MCMs), and TMDL provisions, and outlines the process for developing watershed management programs, including the EWMP. The MS4 Permit incorporates the TMDL Wasteload Allocations (WLAs) applicable to dry and wet weather as water quality based effluent limits (WQBELs) and/or receiving water limitations. Section V.A of the Permit requires compliance with the WQBELs as outlined by the respective TMDLs.

1.3.2 Role of EWMP for Permit Implementation

The EWMP Work Plan will support the development of program elements that are applicable to MS4 Permit requirements for receiving water limitations (Section V.A of the Permit) and Total Maximum Daily Load (TMDL) provisions (Section VI.E) by setting a path for compliance. Also, the EWMP is applicable to Minimum Control Measures (Section VI.D), which may be modified to more effectively address the highest priority water quality conditions.

Collectively, the ULAR WMG has developed several Implementation Plans that include strategies for demonstrating compliance with the Los Angeles River Watershed Metals TMDLs. The Implementation Plans and strategies for compliance, which will largely be incorporated into the EWMP, are based on a multi-pollutant approach that maximizes the retention and use of urban runoff as a resource for groundwater recharge and irrigation.

The definition of an EWMP, provided in Permit Section VI.C.1.g., is as follows:

"EWMP is one that comprehensively evaluates opportunities, within the participating Permittees' collective jurisdictional area in a Watershed Management Area, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain (i) all non-storm water runoff and (ii) all storm water runoff from the 85th percentile, 24-hour storm event for the drainage areas tributary to the projects, while also achieving other benefits including flood control and water supply, among others. In drainage areas within the EWMP area where retention of the 85th percentile, 24-hour storm event is not feasible, the EWMP shall include a Reasonable Assurance Analysis (RAA) to demonstrate that applicable WQBELs and RWLs shall be achieved through implementation of other watershed control measures. An EWMP shall:

> i. Be consistent with the provisions in Part VI.C.1.a.-f and VI.C.5-C.8;
>
> ii. Incorporate applicable State agency input on priority setting and other key implementation issues;
>
> iii. Provide for meeting water quality standards and other CWA obligations by utilizing provisions in the CWA and its implementing regulations, policies and guidance;

iv. Include multi-benefit regional projects to ensure that MS4 discharges achieve compliance with all final WQBELs set forth in Part VI.E. and do not cause or contribute to exceedances of receiving water limitations in Part V.A. by retaining through infiltration or capture and reuse the storm water volume from the 85th percentile, 24-hour storm for the drainage areas tributary to the multi-benefit regional projects.;

v. In drainage areas where retention of the storm water volume from the 85th percentile, 24-hour event is not technically feasible, include other watershed control measures to ensure that MS4 discharges achieve compliance with all interim and final WQBELs set forth in Part VI.E. with compliance deadlines occurring after approval of a EWMP and to ensure that MS4 discharges do not cause or contribute to exceedances of receiving water imitations in Part V.A.;

vi. Maximize the effectiveness of funds through analysis of alternatives and the selection and sequencing of actions needed to address human health and water quality related challenges and non-compliance;

vii. Incorporate effective innovative technologies, approaches and practices, including green infrastructure;

viii. Ensure that existing requirements to comply with technology-based effluent limitations and core requirements (e.g., including elimination of non-storm water discharges of pollutants through the MS4, and controls to reduce the discharge of pollutants in storm water to the maximum extent practicable) are not delayed;

ix. Ensure that a financial strategy is in place."

The MS4 Permit also requires Permittees to implement MCMs to protect water quality in receiving waters (Part VI.D). Unlike previous Permits, the 2012 Permit allows for the modification of MCMs to more effectively address the highest priority water quality conditions. Permittees can evaluate current MCMs, identify potential modifications that will address water quality priorities, and provide justification for modification and/or elimination of any MCM that is determined to not be applicable to the Permittee (with the exception of MCMs in the Planning and Land Development Program, which may not be eliminated). Customization may include replacement of an MCM for a more effective measure, reduced implementation of an MCM, augmented implementation of the MCM, focusing the MCM on the water quality priority, or elimination of an MCM.

1.3.3 Applicable TMDLs and Implementation Schedules

The Federal Clean Water Act (CWA) requires States to develop water quality standards that identify beneficial uses and criteria to protect beneficial uses for each water body found within its region. Beneficial uses include swimming, fishing, drinking water, navigability, and wildlife habitats and reproduction. Section 303(d) of the CWA requires states to prepare a list of water bodies that do not meet water quality standards and establish for each of these water bodies load and waste load allocations (load refers to pollutants), that is, a TMDL that will ensure attainment of water quality standards. A TMDL represents an amount of pollution that can be released by anthropogenic and natural sources of a watershed into a specific water body without causing a decline in water quality and beneficial uses.

The LARWQCB carries out its CWA responsibilities through the state's Porter-Cologne Water Quality Control Act and establishes water quality objectives and TMDLs designed to protect beneficial uses

contained in the California Water Quality Control Plan, Los Angeles Region (Basin Plan). Unlike federal law, State law requires Regional Boards to include an implementation plan for TMDLs and these plans generally include compliance schedules.

A summary of the existing TMDLs for the ULAR is presented in the following tables:

- **Table 1-3** presents TMDLs developed for water bodies within the ULAR WMA and also TMDLs for downstream waterbodies. **Table 1-3** includes amendments to nutrients and metals TMDLs in the watershed.
- **Table 1-4** presents interim and final compliance schedules for the relevant TMDLs except for the dry weather LA River Bacteria TMDL, which are presented in **Table 1-5**.
- **Table 1-6** (mainstem and tributaries) and **Table 1-7** (lakes) show where the Permit assigns water quality-based effluent limits (WQBELs), receiving water limitations (RWLs), or wasteload allocations (WLAs) to Permittees within the ULAR WMA. The numeric WQBELs and RWLs as well as the WLAs for the U.S. Environmental Protection Agency (USEPA) TMDLs listed in **Table 1-6** and **Table 1-7** can be found in Attachments N and O of the Permit.

A summary of the WLAs contained within these TMDLs applicable to MS4 cities in the ULAR WMA is provided in **Appendix 1.B**. These WLAs provide the overall water quality targets to be achieved through implementation of the EWMP and will be reflected as Numeric Goals in the RAA modeling analysis.

The LARWQCB-adopted TMDLs presented in **Table 1-3** required responsible parties to submit a TMDL Implementation Plan (TMDLIP) to describe how they would achieve compliance with the WLAs. The cities of Los Angeles, Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South Pasadena, and Temple City, and Caltrans submitted TMDLIPs to address each of the impairments contained within these TMDLs. Additionally, the County of Los Angeles and LACFCD submitted an integrated TMDLIP to address the impairments. Once approved, the EWMP for the ULAR WMA will supersede individual TMDLIPs.

Table 1-3. TMDLs Applicable to the Upper Los Angeles River Watershed Management Area Group

TMDL	LARWQCB Resolution Number	Effective Date and/or EPA Approval Date
LA River Nitrogen Compounds and Related Effects	2003-009	03/23/2004
	2012-010	Not Yet Effective
Legg Lake Trash TMDL	2007-010	03/06/2008
LA River Trash	2007-012	09/23/2008
LA River Metals TMDL	2007-014	10/29/2008
	2010-003	11/03/2011
LA River Bacteria TMDL	2010-007	03/23/2012
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL	2011-008	03/23/2012
Los Angeles Area Lakes TMDLs for Lake Calabasas, Echo Park Lake, and Legg Lake	NA (USEPA TMDL)	03/26/2012

Table 1-4. Interim and Final TMDL Compliance Milestones Applicable to the ULAR WMA Group (Except for LAR Bacteria Dry Weather)

TMDL	Waterbodies[1]	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestones (Bolded numbers indicated milestone deadlines within the current Permit term) [1]									
					2012	2013	2014	2015	2016	2020	2024	2028	2032	2037
LAR Nutrients	All Waterbodies	Ammonia-N, Nitrate-N, Nitrite-N, Nitrate-N+Nitrite-N	Meet WQBELs	All	**Pre 2012**									
					Final									
LAR Trash	All Waterbodies	Trash	% Reduction	All	**9/30**	**9/30**	**9/30**	**9/30**	**9/30**					
					70%	**80%**	**90%**	**96.7%**	**100%**					
Legg Lake Trash	Legg Lake	Trash	% Reduction	All	**3/6**	**3/6**	**3/6**	**3/6**	**3/6**					
					20%	**40%**	**60%**	**80%**	**100%**					
LAR Metals[2]	Reach 1 through 6, CC, RH, AS, VW, BWC, TW, ACW, MC, DC, BeC and BuC	Copper, Lead, Zinc (only RH)	% of MS4 area Meets WQBELs	Dry	**1/11**					1/11	1/11			
					50%					75%	100%			
	All Waterbodies	Copper, Lead, Zinc, Cadmium	% of MS4 area Meets WQBELs	Wet	**1/11**						1/11	1/11		
					25%						50%	100%		
LA River Bacteria (Wet Weather)	All Waterbodies	*E. coli*	Meet WQBELs	Wet										3/23
														Final
Dominguez Channel and LA/LB Harbors Toxics	Estuary	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	Meet WQBELs	All	**3/23**								3/23	
					Interim								Final	
USEPA Lakes TMDLs	Lake Calabasas	Total-P, Total-N	Meet WLAs	All	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in an EWMP.									
	Legg Lake	Total-P, Total-N	Meet WLAs	All										
	Echo Park Lake	Total-P, Total-N, Trash Water and Sediment: PCBs, Chlordane, Dieldrin	Meet WLAs	All										

[1] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.
[2] CC (Compton Creek), RH (Rio Hondo), AS (Arroyo Seco), VW (Verdugo Wash), BWC (Burbank Western Channel), TW(Tujunga Wash), ACW (Aliso Canyon Wash), MC (McCoy Canyon Creek), DC (Dry Canyon Creek), BeC (Bell Creek), and BuC (Bull Creek)

Table 1-5. Dry Weather Compliance Milestones for the Los Angeles River Bacteria TMDL Applicable to ULAR WMA Group with and without the use of a Load Reduction Strategy (LRS)

Waterbodies		Compliance Dates and Compliance Milestones											
		2022	2023	2024	2025	2028	2029	2030	2031	2032	2035	2036	2037
Compton Creek	w/o LRS				3/23								
					Final								
	w LRS				3/23					3/23			
					Interim					Final			
Segment B	w/o LRS	3/23											
		Final											
	w LRS	3/23				3/23							
		Interim				Final							
Rio Hondo and Arroyo Seco	w/o LRS		3/23										
			Final										
	w LRS		3/23					3/23					
			Interim					Final					
Segment C	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Tujunga Wash, Burbank Western Channel, and Verdugo Wash	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Segment D	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Bull Creek	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23

Waterbodies		Compliance Dates and Compliance Milestones											
		2022	2023	2024	2025	2028	2029	2030	2031	2032	2035	2036	2037
								Interim					Final
Segment E	w/o LRS				3/23								
					Final								
	w LRS				3/23				3/23				
					Interim				Final				
Dry Canyon Creek, McCoy Creek, Bell Creek, and Aliso Canyon Wash	w/o LRS						3/23						
							Final						
	w LRS						3/23				3/23		
							Interim				Final		

Table 1-6. Applicability of WQBELs and RWLs Associated with TMDLs as Identified in the Permit

TMDL	Constituent	LA River Reaches 1 – 6	Compton Creek	Rio Hondo R1 – R3	Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash	Bell Creek	Bull Creek Aliso Canyon Wash McCoy Canyon Dry Canyon
LAR Trash	Trash	E	E	E	E	E	E	E	E	E
LAR Nutrients	Ammonia -N	E	E	E	E	E	E	E	E	E
	Nitrate – N	E	E	E	E	E	E	E	E	E
	Nitrite – N	E	E	E	E	E	E	E	E	E
	Nitrate as N + Nitrite as N	E	E	E	E	E	E	E	E	E
LAR Metals	Copper and Lead (dry and wet weather)	E	E	E[1]	E	E	E	E	E	--
	Zinc (dry weather)	--	--	E[1]	--	--	--	--	--	--
	Zinc (wet weather)	E	E	E	E	E	E	E	E	--
	Cadmium (wet weather)	E	E	E	E	E	E	E	E	--
DC and LA/LB Harbors Toxics	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	--	--	--	--	--	--	--	--	--
LAR Bacteria	E. coli	E/R	E/R	E/R	E/R	E/R	E/R	E/R	E/R	E/R

Note that unless explicitly stated as sediment, constituents are associated with the water column
E – Effluent limit established based on a TMDL.
R – Receiving water limit established based on a TMDL.
1 – The dry weather metals limits only apply to Rio Hondo Reach 1.

Table 1-7. Applicability of Water Quality Based Effluent Limitations and/or Wasteload Allocations Associated with TMDLs for Lakes as Identified in the Permit

TMDL	Constituents	Lake		
		Legg	Calabasas	Echo Park
Legg Lake Trash TMDL	Trash	E		
USEPA Lakes TMDLs	Total-P	WLA	WLA	WLA
	Total-N	WLA	WLA	WLA
	Trash			WLA
	PCBs (water and sediment)			WLA
	Chlordane (water and sediment)			WLA
	Dieldrin (water and sediment)			WLA

Note that unless explicitly stated as sediment, constituents are associated with the water column.
E – Effluent limit established based on a TMDL.
WLA – Wasteload Allocation assigned in a USEPA TMDL, but not included as effluent or receiving water limitations.

1.4 EWMP Development

This EWMP Work Plan describes the major components of the EWMP development process for ULAR WMG. The EWMP will be a product of a collaborative, coordinated planning process that addresses the water quality priorities of the ULAR while achieving additional community benefits through the water quality improvement projects that are identified in the EWMP.

1.4.1 Watershed Management Group and Stakeholder Process

In order to develop an EWMP that meets the goals and ULAR WMG and the requirements of the Permit, the ULAR WMG members have held monthly meetings since the project's inception and will continue throughout the EWMP development process.

More importantly, in order to bring together other interested parties within the watershed to provide input and insight into the approach and findings of the EWMP Work Plan, a series of workshops will be held. These workshops will solicit input and ideas from stakeholders, particularly with respect to identifying potential multi-benefit regional projects. The Stakeholder Process is further described in Section 5.

1.4.2 EWMP Development Process

The ULAR EWMP will be designed to meet the goals of the WMG members and will utilize a quantitative approach to selecting control measures that will address the Water Quality Priorities for the ULAR. Shown in **Figure 1-2** is a representation of the elements of the EWMP through seven "steps", as summarized below.

- The water quality priorities will be the primary "driver" of the EWMP (Step 1), as described in Section 2 of this Work Plan.
- Improvements to water quality will be achieved through implementation of control measures including structural and institutional best management practices (BMPs) (Step 2). This step reviews existing, planned and potential BMPs, with an emphasis on regional BMPs, as described in Section 3 of this Work Plan.
- Watershed and BMP models will be used to select combinations of BMPs and demonstrate their effectiveness for addressing Water Quality Priorities (Step 3), as described in Section 4 of this Work Plan.
- The selected BMPs compose the EWMP submitted to the LARWQCB for approval (Step 4). The EWMP development and submittal process is described in Section 5 of this Work Plan.
- During implementation of the EWMP (Step 5), monitoring data will be used to track changes in water quality (Step 6). Based on monitoring results and lessons learned during EWMP implementation, the EWMP will be adaptively managed including adjustments to the selected control measures (Step 7).

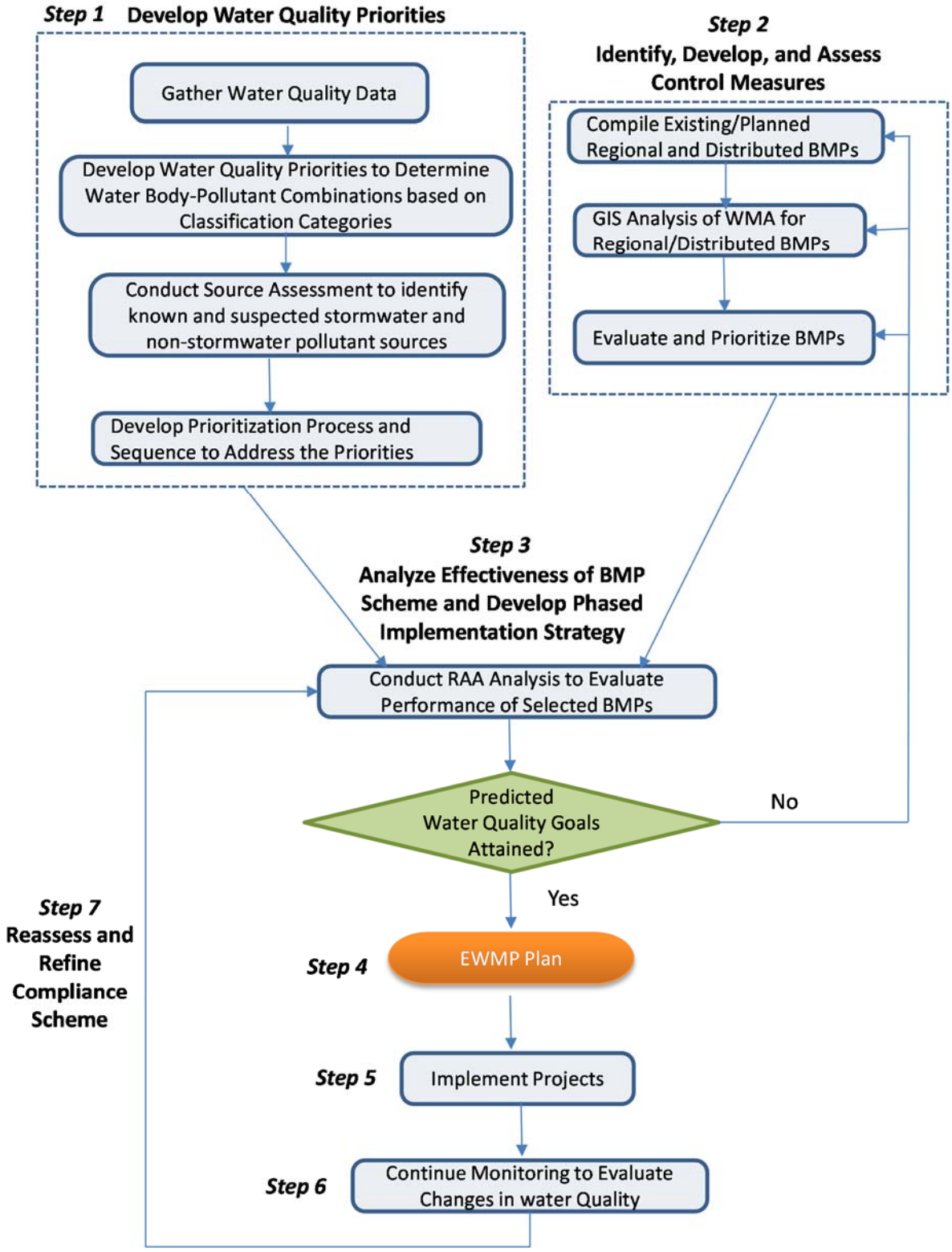


Figure 1-2. EWMP Development Process

Section 2
Water Quality Priorities

The identification of Water Quality Priorities is an important first step in the EWMP process. The Water Quality Priorities provide the basis for prioritizing implementation and monitoring activities within the EWMP and CIMP and selection and scheduling of BMPs during the RAA. The identification of Water Quality Priorities is required in Section VI.C.5.a of the Permit as part of the development of a EWMP. The Permit defines three categories of WBPCs to support the development of priorities, as shown in **Table 2-1**. The Permit establishes a four-step process that leads to prioritization and sequencing of the water quality issues within each watershed, ultimately leading to an organized list of Water Quality Priorities, as follows:

- **Step 1:** Water quality characterization (VI.C.5.a.i, pg. 58) based on available monitoring data, TMDLs, 303(d) lists, stormwater annual reports, etc.;
- **Step 2:** Water body-pollutant classification (VI.C.5.a.ii, pg. 59), to identify water body-pollutant combinations that fall into three Permit defined categories;
- **Step 3:** Source assessment (VI.C.5.a.iii, pg. 59) for the water body-pollutant combinations in the three categories; and
- **Step 4:** Prioritization of the water body-pollutant combinations (VI.C.5.a.iv, pg. 60).

Table 2-1. Water Body-Pollutant Classification Categories (Permit Section IV.C.5.a.ii)

Category	Water Body-Pollutant Combinations (WBPCs) Included
1 Highest Priority	WBPCs for which TMDL WQBELs and/or RWLs are established in Part VI.E and Attachment L and O of the MS4 Permit.
2 High Priority	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List and for which the MS4 discharges may be causing or contributing.
3 Medium Priority	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

2.1 Water Quality Characterization (Step 1)

The following presents a brief summary of the water quality characterization for the ULAR WMA. **Appendix 2.A.** provides a more detailed description of the results of the characterization. To conduct water quality characterization, data were obtained from numerous sources. A data request was submitted to the ULAR WMA to gather information necessary to meet the water quality characterization and source assessment requirements outlined in the Permit (see pages 58 and 59). The data requested to support the water quality characterization included:

- Monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring;
- Findings from the Permittees' Illicit Connections and Illicit Discharge Eliminations, Industrial/Commercial Facilities, Development Construction, and Public Agency Activities Programs;

- TMDL source investigations; and
- Any other pertinent data, information, or studies related to constituent sources and conditions that could contribute to identification of the highest Water Quality Priorities.

Monitoring data collected within the ULAR WMA were received from the following sources:

- Los Angeles County Department of Public Works (LACDPW)
- DC Tillman, Los Angeles/Glendale, and Burbank Water Reclamation Plants (WRPs)
- City of Los Angeles Status and Trends program
- LA River Metals TMDL Coordinated Monitoring Program
- City of Los Angeles Echo Park Monitoring Program
- Los Angeles River Watershed Monitoring Program (LARWMP)

Over 170,000 data records were compiled and reviewed as part of the data analysis, which likely represents the largest data compilation effort of all the EWMPs in the region. **Figure 2-1** presents the site locations for the monitoring data received and used for the water quality characterization process.

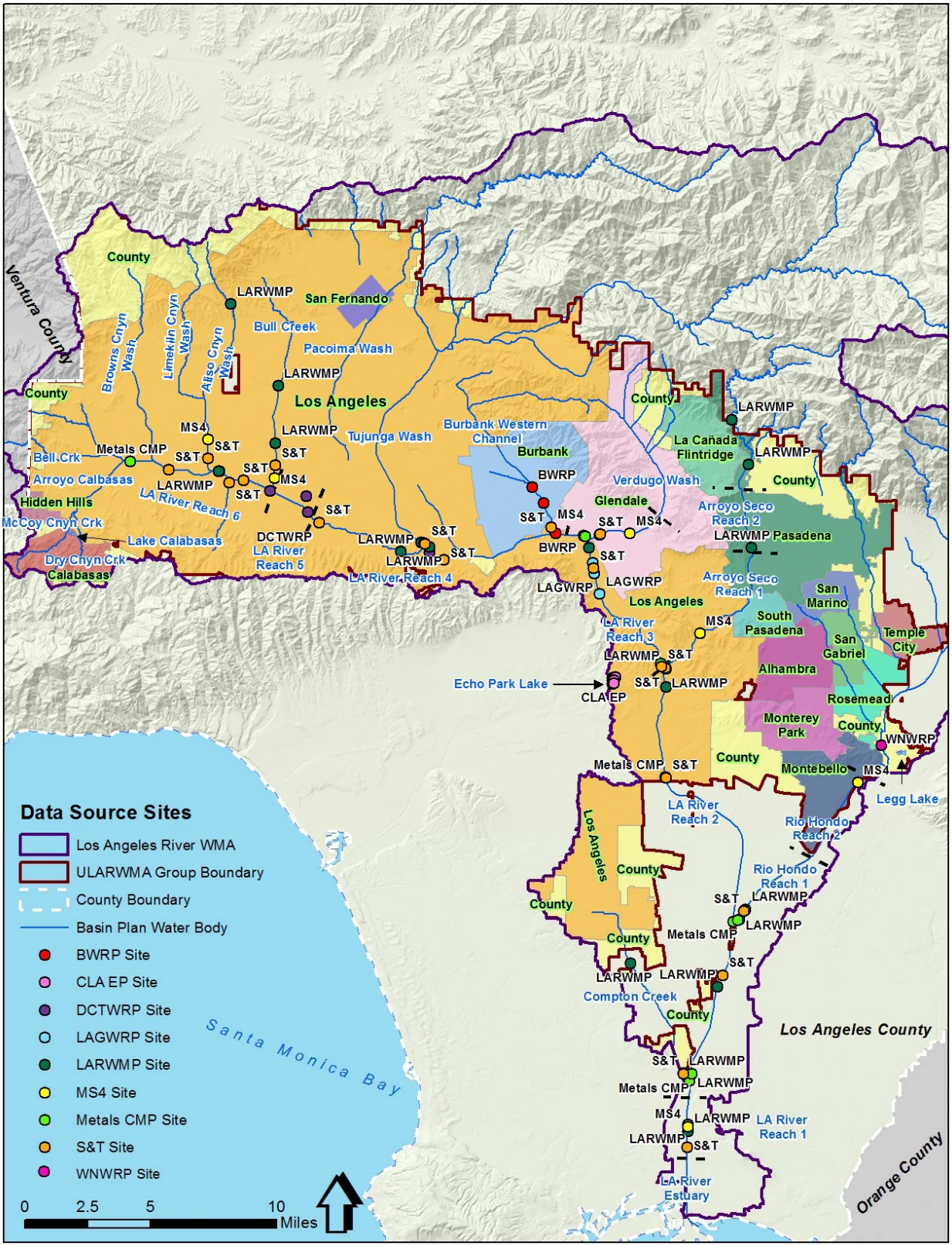


Figure 2-1. Monitoring Site Locations for Data Utilized in the Water Quality Priorities Process

2.1.1 Characterization of Receiving Water Quality

Per Part VI.C.5.a.i (page 58) of the Permit, each EWMP shall include an evaluation of existing water quality conditions, including characterization of receiving water quality. **Appendix 2.A** presents additional details on the data analysis approach and results.

Data were compiled to identify constituents exceeding applicable water quality objectives. Applicable water quality objectives were compiled from the California Toxics Rule (CTR), the Basin Plan, and relevant TMDLs. Applicable water quality objectives from the CTR and Basin Plan were selected based on the beneficial uses identified in the Basin Plan.

Generally, the water quality objectives utilized included those established for the protection of aquatic life, contact recreation and human health related to the consumption of organisms. Given the significant number of water quality constituents and corresponding water quality objectives the following steps were taken to identify WBPCs:

- The first step in the analysis was to develop a list of constituents that were sampled for but were never detected in any water body within the EWMP area and therefore would not fall into one of the three Permit categories (see Table 2-1). A list of these constituents is presented in **Appendix 2.A**.
- Next, constituents that were detected, but the sample results never exceeded a corresponding water quality objective and therefore would not fall into one of the three Permit categories were identified. A list of these constituents is presented in **Appendix 2.A**.
- All other constituents (*i.e.*, all constituents detected and with sample results that had at least one result greater than an applicable water quality objective) were subject to further analysis. Summary tables are presented in **Appendix 2.A**.

2.1.2 Characterization of Discharge Quality

Per Part VI.C.5.a.i (page 58) of the Permit, each EWMP shall include a characterization of stormwater and non-stormwater discharges from the MS4. A characterization was conducted on stormwater and non-stormwater discharges from the MS4 associated with constituents identified in a TMDL, a 303(d) listing, or through the receiving water data analysis described above. The following sources of discharge characterization data were reviewed and are summarized in **Appendix 2.B**:

- TMDL Staff Reports for TMDLs identified in **Table 1-5**.
- Los Angeles River Bacteria Source Identification Study (BSI Study) completed by the Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) group in 2008.
- Data collected as part of the 2007 Southern California Coastal Water Research Project (SCCWRP) Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."
- Land Use data collected as part of previous MS4 Permit monitoring and presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report."

2.2 Water Body Pollutant Classification (Step 2)

Based on available information and data analysis, WBPCs were classified in one of the three Permit categories, as described in **Table 2-1**. To further support development of the Work Plan and EWMP, the three Permit categories were further subdivided into *subcategories* (described in **Table 2-2**) and each WBPC was assigned to an appropriate subcategory. Additionally, pollutants were identified as belonging to a specific "class". As stated in the Permit (pg. 49, footnote 21), pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. The "classes" are preliminary and may be refined as part of EWMP development. The following classes were identified:

- Metals
- Trash
- Bacteria
- Sediment
- Historical Organics – inclusive of historical pesticides.
- Current Organics – inclusive of current use pesticides and other organics such as polynuclear aromatic hydrocarbons (PAHs).
- To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Table 2-3 and **Table 2-4** present the ULAR WMG WBPCs in Categories 1, 2 and 3 for the associated Los Angeles River and tributaries, respectively. **Table 2-5** presents a summary of the ULAR WMG WBPCs categories for Lake Calabasas, Legg Lake, and Echo Park Lake. The detailed *subcategories* for WBPCs (as described in **Table 2-2)** are presented in **Appendix 2.C**. Summary tables presenting the data analysis to support the placement of WBPCs into the various subcategories are presented in **Appendix 2.C**.

Table 2-2. Details for Water Body-Pollutant Classification Subcategories

Category	Water Body-Pollutant Combinations (WBPCs)	Description
1	Category 1A: WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years.	WBPCs with TMDLs with past due or current Permit term interim and/or final limits. These pollutants are the highest priority for the current Permit term.
	Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years.	The Permit does not require the prioritization of TMDL interim and/or final deadlines outside of the Permit term or USEPA TMDLs, which do not have implementation schedules. To ensure EWMPs consider long term planning requirements and utilize the available compliance mechanisms, these WBPCs should be considered during BMP planning and scheduling, and during CIMP development.
	Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board adopted Implementation Plan.	
	Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have had no exceedances in the past 5 years.	WBPCs where specific actions may end up not being identified because recent exceedances have not been observed and specific actions may not be necessary. The CIMP should address these WBPCs to support future re-prioritization.
2	Category 2A: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.	WBPCs with confirmed impairment or exceedances of RWLs. WBPCs in a similar class[1] as those with TMDLs are identified. WBPCs currently on the 303(d) List are differentiated from those that are not to support utilization of EWMP compliance mechanisms.
	Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (e.g., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment or exceedances is not resolved. Either routine monitoring or special studies identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but there have been no exceedances in the past 5 years.	WBPCs where specific actions for implementation may end up not being identified because recent exceedances have not been observed (and thus specific BMPs may not be necessary.) Pollutants that are in a similar class[1] as those with TMDLs are identified. Either routine monitoring or special studies identified in the CIMP should ensure these WBPCs are addressed to support re-prioritization in the future.
3	Category 3A: All other WBPCs that have exceeded in the past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.
	Category 3B: All other WBPCs that are not a "pollutant"[2] (e.g., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment or exceedances is not resolved. Either routine monitoring or special studies identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 3C: All other WBPCs that have exceeded in the past ten years, but not in past five years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.
	Category 3D: WBPCs identified by the ULAR WMG.	The ULAR WMG may identify other WBPCs for consideration in EWMP.

1. Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).
2. While pollutants may be contributing to the impairment, it currently is not possible to identify the specific pollutant/stressor.

Table 2-3. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories for Mainstem Reaches

Class[1]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
Category 1: WBPCs with past due or current Permit term TMDL deadlines (I = Interim and F = Final Limits)								
Metals	Wet Weather: Cadmium, Copper, Lead, Zinc	I	I	I	I	I	I	I
Metals	Dry Weather: Copper and Lead	I	I	I	I	I	I	I
HO/CO	Sediment: DDTs, PCBs, PAHs[2]	I						
Metals	Sediment: Copper, Lead, Zinc[2]	I						
Nutrients	Ammonia-N, Nitrate- N, Nitrite-N, Nitrate-N + Nitrite-N	F	F	F	F	F	F	F
Trash	Trash	I/F	I/F	I/F	I/F	I/F	I/F	I/F
Category 1: WBPCs with TMDL deadlines beyond the Permit term (I = Interim and F = Final Limits)								
Bacteria	*E. Coli* (wet and dry)	IF	IF	IF	IF	IF	IF	IF
Metals	Wet Weather: Cadmium, Copper, Lead, Zinc	F	F	F	F	F	F	F
Metals	Dry Weather: Copper and Lead	F	F	F	F	F	F	F
HO/CO	Sediment: DDTs, PCBs, PAHs[2]	F						
Metals	Sediment: Copper, Lead, Zinc[2]	F						
Category 2: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements								
CO	2,3,7,8-TCDD (Dioxin)			Dry				
CO	Bis(2-ethylhexyl)Phthalate	Dry						
CO	Chlorodibromomethane							
CO	Diazinon	Delist						
Metals	Mercury Total	Dry	Dry/Wet	Dry	Dry	Dry/Wet		Dry
Metals	Selenium Total						Dry	Dry
Metals	Thallium Total							Dry
Salts	Chloride						Dry	Dry
Salts	Sulfate						Dry	Dry
Salts	TDS						Dry	Dry
TBD	Benthic-Macroinvertebrates							
TBD	Chlorine (Total)							
TBD	Cyanide	303 Dry/Wet						
TBD	Oil		Delist				Delist	
TBD	pH	Dry	Dry					
Category 3: All other WBPCs with exceedances								
CO	2,3,7,8-TCDD (Dioxin)			Wet	Dry/Wet			Dry
CO	Benzo(a)Anthracene			Dry				
CO	Benzo(a)Pyrene							
CO	Benzo(b)Fluoranthene							
CO	beta-BHC							
CO	Bis(2-ethylhexyl)Phthalate	Wet		Dry	Dry		Dry	
CO	Chlorpyrifos							
CO	Chrysene			Dry		Dry		Dry
CO	Diazinon					Dry	Dry	
CO	Dibenzo(a,h)Anthracene			Dry	Dry		Dry	

Table 2-3. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories for Mainstem Reaches

Class[1]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
CO	Dichlorobromomethane			Wet				
CO	Indeno(1,2,3-cd)Pyrene			Dry	Dry		Dry	
HO	4,4-DDD						Dry	
HO	4,4-DDE						Dry	
HO	Heptachlor						Dry	
Metals	Cadmium Total							
Metals	Copper Dissolved							
Metals	Copper Total							
Metals	Lead Total							
Metals	Mercury Total	Wet		Wet	Wet		Dry	Wet
Metals	Nickel Total				Dry		Dry	
Metals	Selenium Total	Dry			Dry	Dry		
Metals	Thallium Total	Dry	Dry	Dry	Dry	Dry		
Metals	Zinc Dissolved	Dry						
Metals	Zinc Total	Dry		Dry		Dry		
Salts	Sulfate				Dry	Dry		
Salts	TDS					Dry		
TBD	Chlorine (Total)			Dry	Dry	Dry	Dry	Dry
TBD	Cyanide			Dry	Dry	Dry	Dry	Dry
TBD	Dissolved Oxygen	Wet		Dry		Dry	Dry	Dry
TBD	pH	Wet	Wet	Dry	Dry		Dry	

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).
2 – Pollutants associated with the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL were identified as applicable to Reach 1 of the LA River as the nearest downstream receiving water segment from the EWMP area.
Note that unless explicitly stated as sediment, constituents are associated with the water column.
I/F = Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.
NS = Not sampled
Dry/Wet = Weather condition was based on the designation provided by the sampling program. If no information was provided by the sampling program, flow records were reviewed and where flow was greater than 500 cubic feet per second (cfs) identified in the LA River Metals TMDL as a wet weather event, the sample was identified as a wet weather sample.
303 = WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.
Delist = WBPC on the 2010 303(d) List that meets the delisting requirements.
HO = Historical Organics – inclusive of historical pesticides.
CO = Current Organics – inclusive of current use pesticides and other organics such as PAHs.
TBD = To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Table 2-4. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories for Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash	Bull Creek	Caballero Creek	Aliso Canyon Wash	Bell Creek, McCoy and Dry Canyons
			1	2	3								
Category 1: WBPCs with past due or current Permit term TMDL deadlines													
Metals	Wet Weather: Cadmium, Copper, Lead, Zinc	I	I	I		I	I	I	I	I	I	I	I
Metals	Dry Weather: Copper, Lead, Zinc (zinc only applies to Rio Hondo R1)	I	I			I	I	I	I				
Nutrients	Ammonia-N, Nitrate- N, Nitrite-N, Nitrate-N + Nitrite-N	F	F	F		F	F	F	F	F	F	F	F
Trash	Trash	I/F	I/F	I/F		I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F
Category 1: WBPCs with TMDL deadlines beyond the Permit term													
Bacteria	*E. Coli* (wet and dry)	I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F	I/F
Metals	Wet Weather: Cadmium, Copper, Lead, Zinc	F	F	F		F	F	F	F	F	F	F	F
Metals	Dry Weather: Copper, Lead, Zinc (zinc only applies to Rio Hondo R1)	F	F			F	F	F	F				
Category 2: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements													
CO	2,3,7,8-TCDD (Dioxin)							Dry					
CO	Bis(2-ethylhexyl)Phthalate			Dry/Wet		Wet	Dry/Wet	Dry/Wet		Dry/Wet		Dry/Wet	
CO	Chlorodibromomethane							Dry					
Metals	Selenium Total							Delist			Dry	Dry	
Metals	Copper Total				Dry								
Salts	Chloride								Dry				
TBD	Benthic-Macroinvertebrates	303				303							
TBD	Dissolved Oxygen				Dry								
TBD	Chlorine (Total)							Wet					
TBD	Cyanide			303 Dry				Delist					
TBD	pH				Dry								

Table 2-4. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories for Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash	Bull Creek	Caballero Creek	Aliso Canyon Wash	Bell Creek, McCoy and Dry Canyons
			1	2	3								
Category 3: All other WBPCs with exceedances													
CO	2,3,7,8-TCDD (Dioxin)												
CO	Benzo(a)Pyrene				Dry			Dry					
CO	Benzo(b)Fluoranthene							Dry					
CO	Benzo(k)Fluoranthene				Dry								
CO	beta-BHC							Dry					
CO	Bis(2-ethylhexyl)Phthalate					Dry							
CO	Chlorpyrifos	Dry											
CO	Chrysene				Dry								
CO	Diazinon			Wet	Dry							Wet	
CO	Dibenzo(a,h)Anthracene				Dry								
CO	Indeno(1,2,3-cd)Pyrene				Dry								
HO	Heptachlor							Dry					
Metals	Cadmium Total							Dry	Dry		Dry		
Metals	Copper Dissolved			Dry									
Metals	Copper Total			Dry							Dry		
Metals	Lead Total			Dry							Dry		
Metals	Mercury Total	Dry/Wet			Dry	Wet	Wet	Dry/Wet	Dry		Dry		
Metals	Nickel Total										Dry		
Metals	Thallium Total							Dry					
Metals	Zinc Total						Dry	Dry	Dry		Dry		
Salts	Chloride	Dry			Dry			Dry					
Salts	Sulfate											Dry	
Salts	TDS							Dry	Dry			Dry	
TBD	Chlorine (Total)							Dry					

Table 2-4. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories for Tributaries

Class[(1)]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash	Bull Creek	Caballero Creek	Aliso Canyon Wash	Bell Creek, McCoy and Dry Canyons
			1	2	3								
TBD	Cyanide									Wet		Wet	
TBD	Dissolved Oxygen												
TBD	pH			Dry/Wet				Dry/Wet					

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).
I/F = Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.
NS = Not sampled
Dry/Wet = Weather condition was based on the designation provided by the sampling program. If no information was provided by the sampling program, flow records were reviewed and where flow was greater than 500 cubic feet per second (cfs) identified in the LA River Metals TMDL as a wet weather event, the sample was identified as a wet weather sample.
303 = WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.
Delist = WBPC on the 2010 303(d) List that meets the delisting requirements.
HO = Historical Organics – inclusive of historical pesticides.
CO = Current Organics – inclusive of current use pesticides and other organics such as PAHs.
TBD = To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Table 2-5. Summary of Upper Los Angeles River WMA Water Body-Pollutant Categories Associated with Lakes

Class[(1)]	Constituent	Lake		
		Legg	Calabasas	Echo Park
Category 1A: WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years. (I = Interim and F = Final Limits)				
Trash	Trash	I/F	--	--
Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan.				
Nutrients	Total-P	X	X	X
	Total-N	X	X	X
Trash	Trash	--	--	X
Legacy	PCBs (water and sediment)	--	--	X
	Chlordane (water and sediment)	--	--	X
	Dieldrin (water and sediment)	--	--	X

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49).
I/F – Denotes where the Permit includes interim (I) and/or final (F) limitations.
Note that unless explicitly stated as sediment, constituents are associated with the water column.

2.3 Source Assessment (Step 3)

Following classification of WPBCs into Category 1, 2 and 3, the next step in the prioritization process is to conduct a source assessment. The Permit requires that a source assessment be conducted to identify potential sources within the watershed for the WBPCs in Categories 1-3, utilizing existing information. The source assessment also evaluates whether pollutants likely originate from the MS4 versus other sources. Pollutant exceedances may come from point or non-point sources, described below. Often, however, non-point source discharges may flow through the MS4 and thus become associated with the MS4 and subject to the MS4 Permit requirements.

Watershed modeling conducted as part of the RAA during the EWMP development process may shed additional light on potential pollutant sources that will further inform the EWMP.

2.3.1 Permit Requirements

The specific requirements in the Permit for the source assessment are as follows (per section VI.C.5.a.iii, page 59):

> "(1) Permittees shall identify known and suspected storm water and non-storm water pollutant sources in discharges to the MS4 and from the MS4 to receiving waters and any other stressors related to MS4 discharges causing or contributing to the Water Quality Priorities. The identification of known and suspected sources of the highest Water Quality Priorities shall consider the following:
>
> (a) Review of available data, including but not limited to:
>
> (i) Findings from the Permittees' Illicit Connections and Illicit Discharge Elimination Programs;
>
> (ii) Findings from the Permittees' Industrial/Commercial Facilities Programs;
>
> (iii) Findings from the Permittees' Development Construction Programs;
>
> (iv) Findings from the Permittees' Public Agency Activities Programs;
>
> (v) TMDL source investigations;
>
> (vi) Watershed model results;
>
> (vii) Findings from the Permittees' monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring; and
>
> (viii) Any other pertinent data, information, or studies related to pollutant sources and conditions that contribute to the highest Water Quality Priorities.
>
> (b) Locations of the Permittees' MS4s, including, at a minimum, all MS4 major outfalls and major structural controls for storm water and non-storm water that discharge to receiving waters.
>
> (c) Other known and suspected sources of pollutants in non-storm water or storm water discharges from the MS4 to receiving waters within the watershed."

The findings from items *VI.C.5.a.iii (1)(a)(i)-(vii)* and item *VI.C.5.a.iii (1)(c)* of the Permit that are pertinent to the Category 1, 2 and 3 pollutants identified in Section 2.2 of this Draft Work Plan are summarized below.

Item *VI.C.5.a.iii (1)(b)* will be addressed by the CIMP, as it is included in the discussion of the MS4 database requirements of Part VII.A of Attachment D of the Permit (Monitoring and Reporting Program).

2.3.2 Point sources

Point sources are discrete conveyances that can carry pollutants to surface waters. Discharges from point sources are regulated by both federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permits and California's Porter-Cologne Water Quality Control Act Waste Discharge Requirements (WDRs). Combined NPDES/WDR permits are issued for discharges to surface waters. Urban runoff in the ULAR WMA is regulated as a point source under two municipal stormwater NPDES permits that cover MS4 discharges – one for LA County and one for Caltrans.

There are many non-MS4 point sources in the watershed including municipal wastewater from publicly owned treatment works, stormwater from industrial facilities, non-process industrial wastewater, and other non-stormwater and non-wastewater discharges in the watershed including dewatering from construction projects, potable supply wells discharges, groundwater cleanup sites and landfills. The non-MS4 NPDES permits in the ULAR watershed include the general construction stormwater permits, general industrial stormwater permits, and general NPDES permits identified in **Table 2-6**. **Table 2-6** also includes the type and number of NPDES permits in the entire LAR watershed.

The three "other major industrial" NPDES discharges identified in **Table 2-6** include:

- Pacific Terminals, LLC, Dominguez Hills Tank Farm: Hydrostatic test water
- The Boeing Company, Santa Susana Field Lab: Stormwater mixed with industrial wastewater
- Metropolitan Transit Authority, Eastside Light Rail Transit Project: Treated wastewater from underground construction activities

In addition to these three major industrial discharges, NPDES permits identified in **Table 2-6** include stormwater and treated wastewater for petrochemical facilities, paper production, glass manufacturing, metal fabrication and water treatment facilities.

The significance of these permitted discharges with respect to their potential contributions of pollutants to the watershed is a function of the volume of flow associated with their discharges and their water quality characteristics. The contributions of these discharges to dry weather runoff or wet weather runoff also varies. For example, discharges governed by General Construction and General Industrial stormwater permits can send contaminated wet weather runoff directly into the LA River and its tributaries, as well as into the MS4. However, during dry weather, their potential for pollutant contribution is expected to be fairly low. A broad assessment of the relative potential for pollutant contribution and runoff condition (wet weather or dry weather) of the discharges typically associated with each of the permit types is also provided in **Table 2-6**.

Table 2-6. NPDES Permits in the Los Angeles River Watershed[1]

Type of NPDES Permit	Number of Permits	Potential for Pollutant Contribution
Publicly Owned Treatment Works	6	High (dry weather)
Municipal Stormwater	3	High (wet/dry weather)
Industrial Stormwater	1,307	High (wet weather)
Construction Stormwater	204	High (wet weather)
Other Major Industrial NPDES Discharges	3	High (wet weather)
Minor NPDES Discharges	15	Medium (wet/dry weather)
General NPDES Permits:		
Construction and Project Dewatering	35	Medium (wet weather)
Petroleum Fuel Cleanup Sites	7	Medium (dry weather)
VOCs Cleanup Sites	6	Medium (dry weather)
Hydrostatic Test Water	8	Low (wet/dry weather)
Non-Process Wastewater	9	Medium (dry weather)
Potable Water	25	Low (wet/dry weather)
Total	**1,628**	

Notes
Source: LAR Metals TMDL, 2005
1The number of permits listed are from the entire LA River watershed. A subset of these apply to the ULAR watershed.

2.3.3 Non-point sources

Pollutants from non-point sources are conveyed to surface waters in a diffuse manner, i.e., not directly from point source conveyances. However, when contaminants from such non-point sources reach the MS4 system, they often become regulated through the MS4 point source NPDES permits. Non-point sources in the ULAR watershed include:

- Onsite Wastewater Treatment Systems (OWTS, a.k.a. septic systems)
- Runoff from the National and State forests outside of the MS4s into the headwaters of many tributaries
- Sources that occur within the channels of the LA River and tributaries ("in-channel sources") such as:
  - Groundwater discharges
  - Anthropogenic sources
  - Pet Waste
  - Sanitary sewer leaks/spills
  - Illicit/illegal discharges
  - Wildlife and birds
  - Suspension and/or regrowth of sediment-associated pollutants

2.3.4 Pollutants, Source Assessment and MS4 Linkage

Based on the source assessment and pollutant linkages to the MS4, the Water Quality Priorities were generated as summarized in **Table 2-7**. A source assessment discussion of the potential sources of these Category 1, 2 and 3 pollutants identified for the ULAR watershed is provided in **Appendix 2.D,** and the potential linkage of the MS4 system as a significant contributor of the these pollutants to the water quality exceedances is indicated in **Table 2-7**. Unless a pollutant is attributed to a non-MS4 source, such as a water reclamation plant, the EWMP will likely need to identify control measures to address the Water Quality Priorities.

If the findings of the source assessment indicate that there is likely a source other than the MS4 to which the water quality exceedances can be attributed, then the MS4 linkage is noted as "low". Where TMDLs exist (Category 1 pollutants) that has identified waste load allocation for the MS4, the linkage is "high". Where there is not a clear determination of positive or negative attribution to the MS4, the linkage is rated as "medium" and a conservative assumption of attribution will be assumed for the purposes of the EWMP development process.

Table 2-7. Water Quality Priorities for ULAR WMA

Category	Class	Pollutant	Water Body	MS4 Linkage
Category 1	Bacteria	*E. Coli*	LAR Reaches 1 through 6	High
	Current and Historical Organics	Sediment DDTs, PCBs, PAHs	LAR Reach 1	High
	Metals	Cadmium, Copper, Lead, Zinc	LAR Reaches 1 through 6 and tributaries	High
		Sediment Copper, Lead, Zinc	LAR Reach 1	High
	Nutrients	Ammonia-N, Nitrate- N, Nitrite-N, Nitrate-N + Nitrite-N	LAR Reaches 1 through 6 and tributaries	Low
	Trash	Trash	LAR Reaches 1 through 6 and tributaries	High
Category 2	Current Organics	2,3,7,8-TCDD (Dioxin)	LAR Reach 3 (Below LAG) and Burbank Western Channel	Medium
		Bis(2-ethylhexyl)Phthalate	LAR Reach 1, Rio Hondo Reach 2, Arroyo Seco, Verdugo Wash, Burbank Western Channel, Bull Creek and Aliso Canyon Wash	Low
	Pesticide	Diazinon	LAR Reach 1[a]	Medium
	Trihalomethane (THM) / Chlorination Byproduct	Chlorodibromomethane	Burbank Western Channel	Low
	Metals	Mercury Total	LAR Reaches 1 through 4 and 6	Medium
		Selenium Total	LAR Reaches 5 and 6, Caballero Creek, Aliso Canyon Wash and Burbank Western Channel[a]	Low
		Thallium Total	LAR Reach 6	Low
	Pollutant Class To Be Determined[b]	Benthic-Macroinvertebrates	Compton Creek and Arroyo Seco Reach 1	Medium
		Chlorine (Total)	Burbank Western Channel	Low

Category	Class	Pollutant	Water Body	MS4 Linkage
		Cyanide	LAR Reach 1, Rio Hondo River Reach 2 and Burbank Western Channel[a]	Medium
		pH	LAR Reaches 1 and 2	Medium
	Salts	Sulfate, TDS	LAR Reaches 5 and 6	Low
		Chloride	LAR Reaches 5 and 6, Tujunga Wash	Low
		Oil[a]	LAR Reaches 2 and 5	Low
Category 3	Current and Historical Organics	Pesticides		
		2,3,7,8-TCDD (Dioxin)	LAR Reaches 3 and 6	High
		4,4'-DDD	LAR Reach 5	High
		Chlorpyrifos	Compton Creek	High
		Heptachlor	LAR Reaches 3 and 5	High
	PAHs	Benzo(b)Fluoranthene	Burbank Western Channel	High
		beta-BHC	Burbank Western Channel	High
		Dibenzo(a,h)Anthracene	Burbank Western Channel	High
	Pesticide	Diazinon	LAR Reaches 4 and 5	Medium
	Trihalomethane (THM) / Chlorination Byproduct	Dichlorobromomethane	LA River Reach 3 (below LA Glendale WRP)	Low
	Metals	Copper	Rio Hondo Reach 2 (Dissolved and Total) and Caballero Creek (Total)	High
		Lead Total	Rio Hondo Reach 2 and Caballero Creek	High
		Nickel Total	LAR Reaches 3 and 5, and Caballero Creek	High
		Selenium Total	LAR Reaches 3 and 4	Low
		Thallium Total	LAR Reaches 1 through 4, and Burbank Western Channel	Low
		Zinc Total	LAR Reach 1	High
	Pollutant Class To Be Determined	Chlorine (Total)	LAR Reaches 3 through 6, and Burbank Western Channel	Low
	Salts	Chloride	Compton Creek and Burbank Western Channel	Low
		Sulfate	LAR Reaches 3 and 4, and Aliso Canyon Wash	Low
		TDS	LAR Reach 4, Burbank Western Channel, Tujunga Wash and Aliso Canyon Wash	Low

Notes
[a] Could be delisted
[b] Conditions that are not pollutants, or constituents where the linkage to another type of constituent will be further investigated during EWMP development

2.4 Approach to Prioritization (Step 4)

The Permit outlines a prioritization process that defines how pollutants in the various categories will be considered in scheduling during the EWMP development process. The factors to consider in the scheduling include the following based on the compliance approaches outlined in the Permit:

- TMDLs with past due interim and/or final limits and those with interim and/or final limits within the Permit term (schedule according to TMDL schedule)
- TMDLs with interim and/or final limits outside the Permit term (schedule according to TMDL schedule)
- Other receiving water exceedances
  - Pollutants in the same class[1] as TMDL (evaluate ability to consider on same time frame as TMDL)
  - Pollutants on 303(d) list or in same class as 303(d) listings (develop schedule to address as soon as possible with milestones)
  - Pollutants with exceedances that are not in same class as 303(d) listing (conduct monitoring under CIMP to confirm exceedances and if confirmed develop schedule with milestones)
  - Pollutants without exceedances in last 5 years (not prioritized for BMPs, but included in monitoring)

Based on the above, evaluating whether or not a pollutant is in the same class as either a TMDL or a 303(d) listed pollutant is a critical decision for prioritization and scheduling.

As part of EWMP development and the RAA, prioritizing and sequencing of BMPs will consider the aforementioned factors, including linking pollutants within the same class.

[1]Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit page 40, footnote 21)

Section 3
Watershed Control Measures

The EWMP provides the opportunity for Permittees to customize their stormwater programs to address Water Quality Priorities through implementation of stormwater BMPs, referred to in the Permit as watershed control measures. The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water quality and address the Water Quality Priorities. The development of the EWMP will involve the evaluation and selection of multiple BMP types. This section describes the different types of BMPs that may be considered for inclusion in the EWMP, with an emphasis on regional BMPs which are critical to the EWMP development process.

The main categories of BMPs outlined herein include structural, either regional or distributed scale, and institutional, as follows:

- **Regional Structural BMPs**[2] - Constructed structural practices intended to treat runoff from a contributing area of multiple parcels (normally on the order of 10s or 100s of acres or larger). These BMPs are described in **Section 3.1**.
- **Distributed Structural BMPs** - Constructed structural practices intended to treat runoff close to the source and typically implemented at a single- or few-parcel level (normally less than one acre). These BMPs are described in **Section 3.1**.
- **Institutional BMPs** - Policies, actions, and activities intended to prevent pollutants from entering stormwater runoff thus eliminating the source of the pollutants. These BMPs are not constructed, as described in **Section 3.2**.

Section 3.1 describes *structura*l BMPs and the process for identifying and selecting Regional EWMP Projects. **Section 3.2** describes *institutional* BMPs and potential approaches to customization.

3.1 Structural BMPs

Structural BMPs will likely be an important component of the EWMP, and information on existing and planned BMPs will support efforts to select among the many *potential* BMPs. This subsection describes nomenclature and categories used to compile BMP information and support the BMP planning process.

3.1.1 Sub-Categories of Structural BMPs

Structural BMPs vary in function and type, with each BMP requiring unique design characteristics and providing different types and levels of benefits from implementation.

The two main structural BMP implementation strategies outlined herein include regional and distributed, as shown in **Figure 3-1.**

[2] The term "regional BMP" does not necessarily indicate the project can capture the 85th percentile storm, as used in the Permit. The term "**Regional EWMP projects**" is used to describe those regional BMPs that qualify as able to capture the 85th percentile storm.

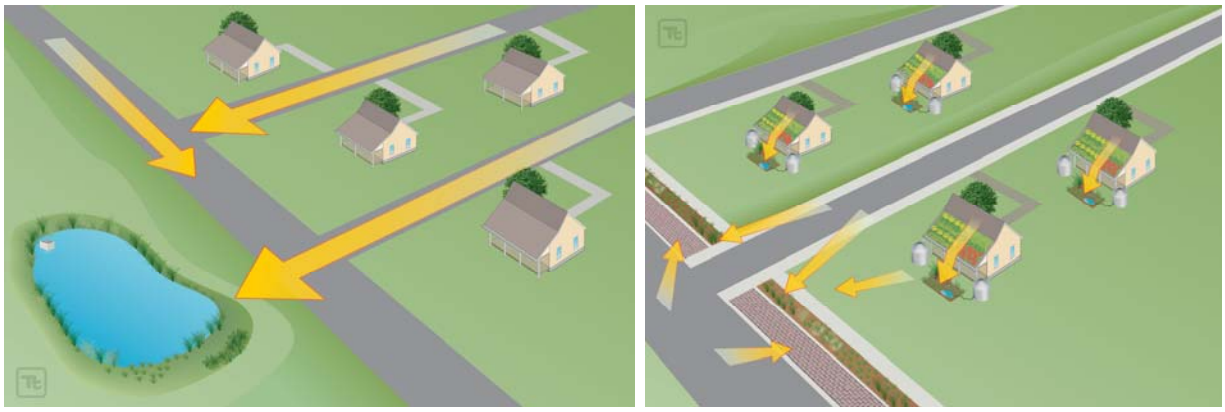


Figure 3-1. Conceptual schematic of regional (left) and distributed (right) BMP implementation approaches.

Regional and distributed BMPs were separated into subcategories as shown in **Table 3-1**. These categories have been used to compile and describe information on existing, planned, and potential BMPs. The nomenclature will be important for engaging participating agencies as the EWMP is developed. Each of these subcategories is described in more detail with BMP Fact Sheets in Appendices 3.A.1 and 3.A.2.

Table 3-1. Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional[1]	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water
	Low Flow Diversion	Facilities designed divert dry weather flows to the sanitary sewer
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips and vegetated swales)
		Rainfall harvest (green roofs, cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Structural BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

[1] – The term "regional BMP" does not necessarily indicate the project can capture the 85th percentile storm, as used in the Permit. The term "**Regional EWMP projects**" is used to describe those regional BMPs that qualify as able to capture the 85th percentile storm.

To assist with the process of compiling and describing existing, planned, and potential BMPs, the *BMP performance functions* that drive BMP performance are presented for each BMP in "BMP Fact Sheets" provided in Appendices 3.A1 and 3.A2. The three major BMP functions for structural BMPs are infiltration, water quality treatment, and storage, as shown in **Figures 3-2 through 3-4**.

Infiltration: Runoff is directed to percolate into the underlying soils. Volume reduction and groundwater recharge occur in infiltration practices.

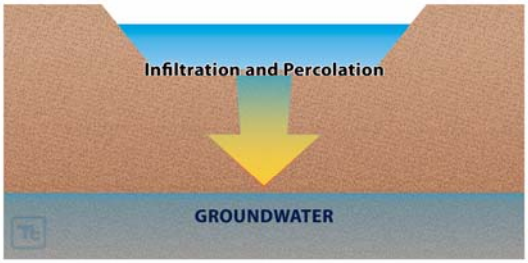


Figure 3-2. Conceptual Diagram Illustrating Infiltration.

Storage: Runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site but does not directly reduce runoff volume.

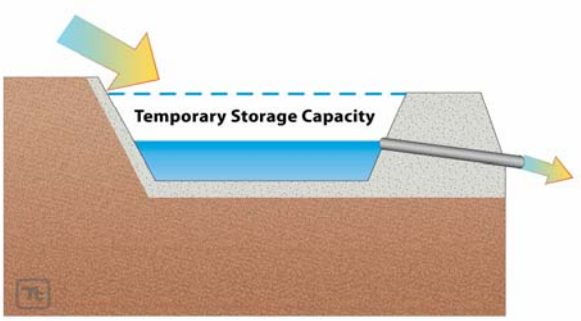


Figure 3-3. Conceptual Diagram Illustrating Storage.

Water Quality (WQ) Treatment: Pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.

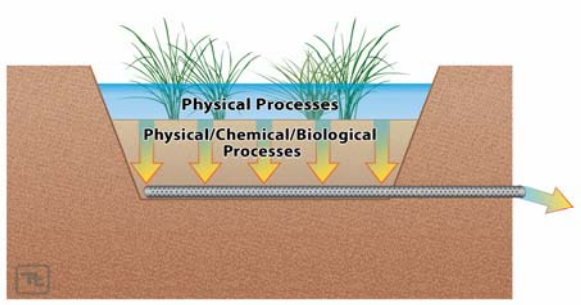


Figure 3-4. Conceptual Diagram Illustrating Water Quality Treatment.

Preceding BMP functions were incorporated into *relative performance gauges* (**Figure 3-5**) to graphically represent the functions achieved by each BMP subcategory. Relative performance gauges are used in the BMP Fact Sheets in Appendices 3.A.1 and 3.A.2. The circles in Figure 3-5 represent the relative magnitude and range of each performance function for the particular BMP, in order to allow for comparison among different BMP types. Characterization of performance is based on a "typical" BMP as analyzed and presented in **Section 3.1.3**.

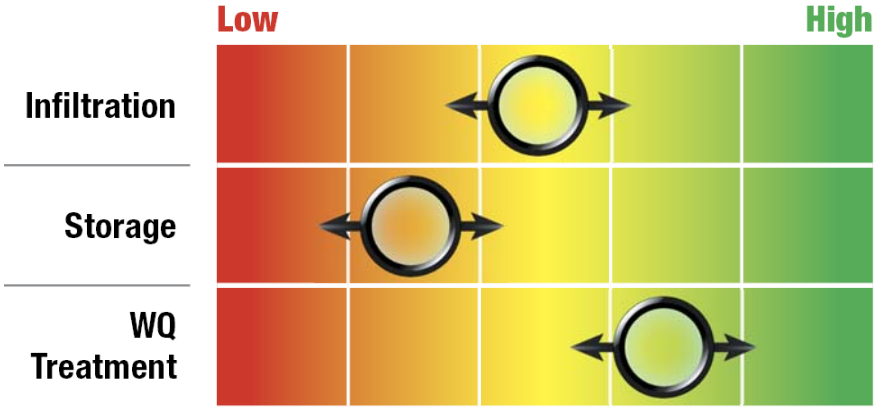


Figure 3-5. Example Relative Performance Gauge for Structural BMPs.

3.1.2 Selection of Regional BMPs for Inclusion in the EWMP

Development of the EWMP will involve a process by the ULAR WMG to develop networks of structural BMPs (Regional EWMP projects, regional BMPs, and distributed BMPs) that, when combined with institutional BMPs (including the effect of LID ordinances), have reasonable assurance of addressing Water Quality Priorities (see Section 4 for a description of the RAA). The ULAR WMG will evaluate multiple types of regional and distributed BMPs for inclusion in the EWMP. This section describes the process for identifying and selecting regional BMPs.

The process for selecting regional BMPs to be included in the EWMP will include the following steps:

1. Compilation of regional BMPs that have already been implemented (existing BMPs) or are listed in planning documents (planned BMPs),
2. Identification of potential additional regional BMPs (potential BMPs) using a set of screening criteria/tools (beyond those identified in planning documents),
3. Evaluation and ranking of regional BMPs identified in Steps 1 and 2 into appropriate categories for ranking based on readiness for the EWMP, including the following (also see Section 3.1.2.3):
   - Regional EWMP Projects to be implemented that capture and treat the 85th percentile storm event volume
   - Regional BMPs (which do not capture the 85th percentile storm, but provide cost-effective water quality improvement) to be included in the EWMP that provide significant load reductions
   - Other Potential Regional BMPs which are of interest for possible future implementation, but are not ready to be included in the EWMP
   - Other Potential Regional BMPs which need more study and re-evaluation before they can be included as projects of interest
4. Identification and evaluation of additional institutional and distributed structural BMPs to provide needed water quality improvement in subwatersheds where regional BMPs are *not* proposed for retention of the entire 85th percentile storm volume.

The prioritization of regional BMPs will use the process above in concert with the output from the RAA to determine which BMPs will be selected for the EWMP. The RAA provides a detailed estimation of

water quality improvements (load-based implementation, see Section 4) or volume reductions (volume-based implementation) as a result of implementing networks of watershed control measures (including regional BMPs). It should be noted that site-assessments are an important part of the regional BMP selection process. For a subset of the selected regional BMPs, site-assessments will be performed to evaluate critical design parameters (e.g., footprint, infiltration rates, etc.) and assess feasibility. **Figure 3-6** summarizes the key milestones in the development of the set of regional BMPs for inclusion in the EWMP.

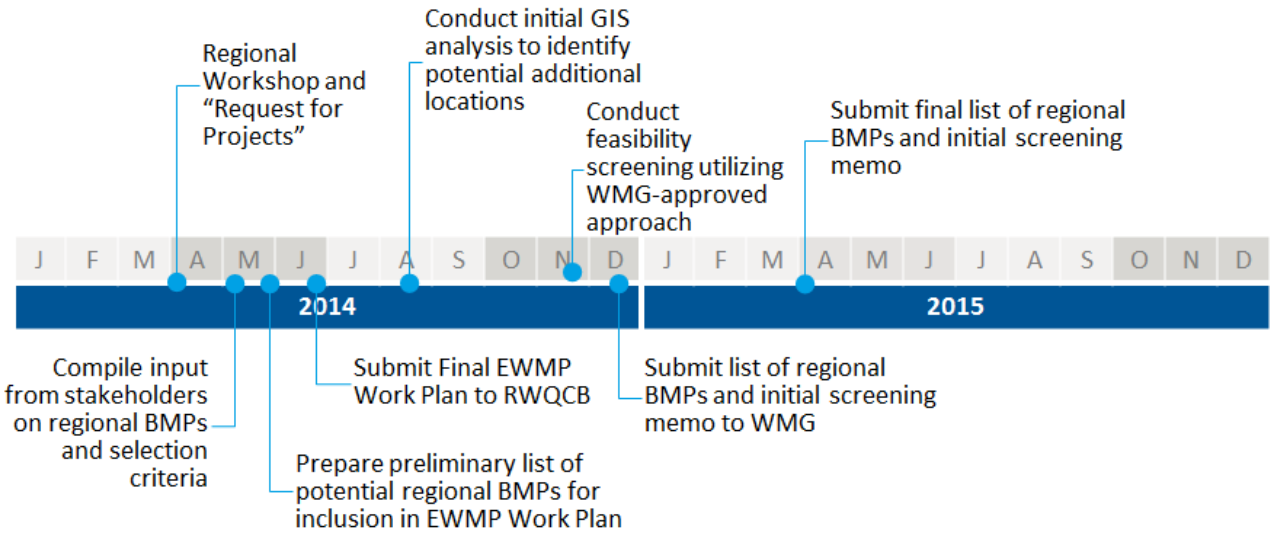


Figure 3-6. Summaries of Key Milestones in the Identification and Selection of Regional BMPs

To gather information on *existing* and *planned* regional BMPs (these are two distinct categories for EWMP development), a BMP data request was distributed to the Permittees participating in the ULAR WMG. The Cities of Alhambra, Burbank, Calabasas, Glendale, Los Angeles, Monterey Park, South Pasadena, and Temple City, County of Los Angeles, and LACFCD responded to the data request with summaries of existing and planned BMPs. In addition, a literature review was performed to identify further structural BMP projects that were not identified by the data request. The literature review included the following documents/sources:

- LA River and Tributaries Metals TMDLs (2007 & 2009) and its implementation plans:
    - City of Los Angeles Draft Implementation Plan, 2010
    - Calabasas Metals TMDL Implementation Plan, 2010
    - Hidden Hills Metals TMDL Implementation Plan, 2010
    - La Canada Flintridge Metals TMDL Implementation Plan, 2010
- LA River Watershed Bacteria TMDLs (2007, 2010)
- LA River Trash TMDL (2007)
- LA River Nitrogen Compounds and Related Effects TMDL (2012)
- Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of the Los Angeles River Watershed (2010)
- Los Angeles River Revitalization Plan, 2011

- USACE Ecosystem Restoration Feasibility Study (Draft), 2013
- Los Angeles River Master Plan, 1996
- Arroyo Seco Watershed Management Plan, 2006
- Tujunga-Pacoima Watershed Management Plan, 2008
- Sun Valley Watershed Management Plan, 2004
- Greater Los Angeles Integrated Regional Water Management Plan (LA IRWMP), 2006
- LA IRWMP, 2013
- City of Los Angeles Proposition O Monthly Report, October 2013
- Water Quality Compliance Master Plan for Urban Runoff (May 2009)
- Notice of Intent, Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program, Upper Los Angeles River Watershed Group, 2013

3.1.2.1 Existing Regional BMPs

Existing regional BMPs were identified during the data request and literature review as shown in **Figure 3-7**. Projects include: infiltration facilities, constructed wetlands, and detention facilities. A detailed list of existing regional BMPs is provided in Appendix 3.B1.

3.1.2.2 Planned Regional BMPs

Planned regional BMPs were identified during the data request and literature review, as shown in **Figure 3-8**. A detailed list of regional BMPs is provided in Appendix 3.B2. The process presented in the next subsection will be used to evaluate whether these planned regional BMPs will be included in the final EWMP.

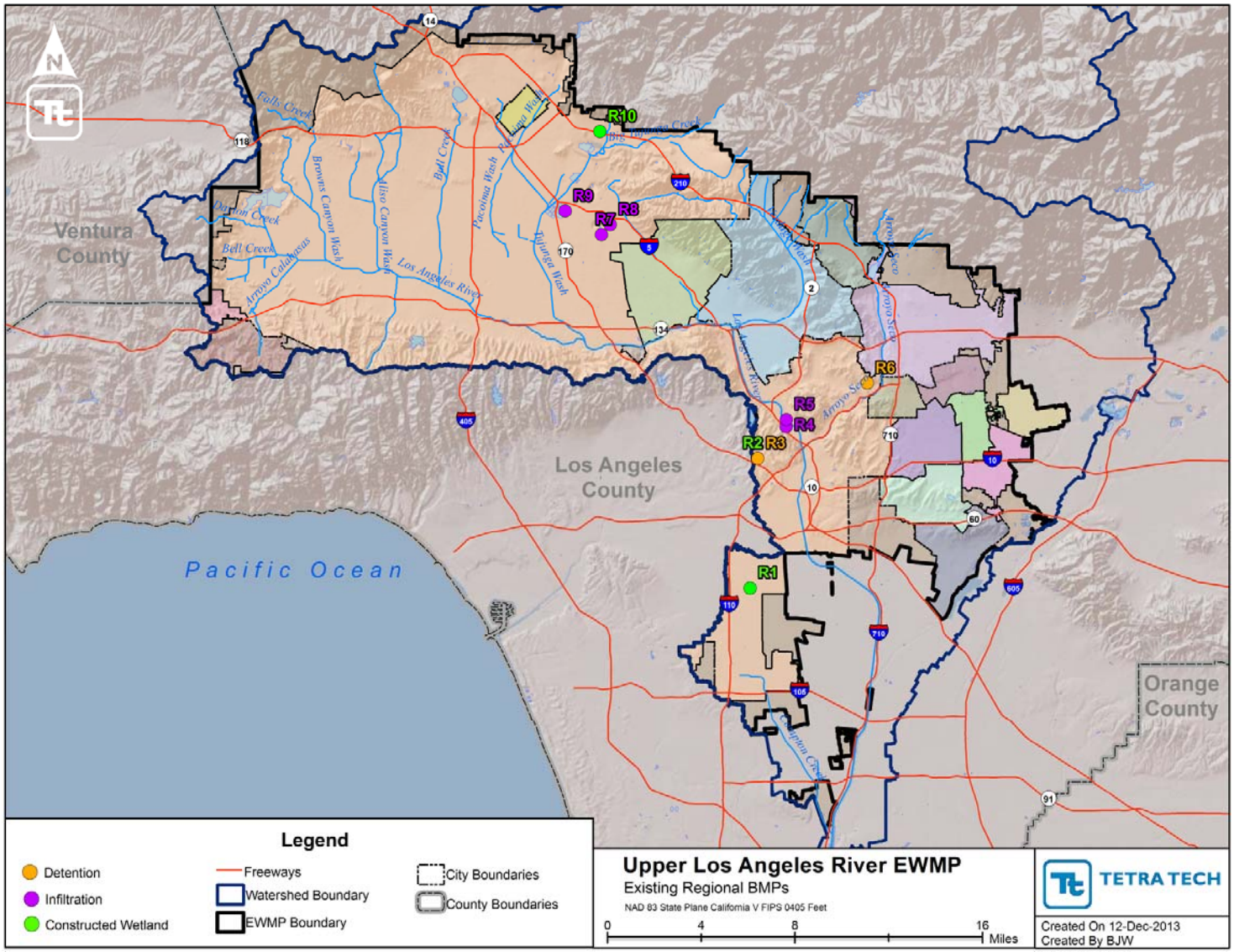


Figure 3-7. Existing Regional BMPs.

Notes: Numbering corresponds with project ID numbers listed in Appendix 3.B1.

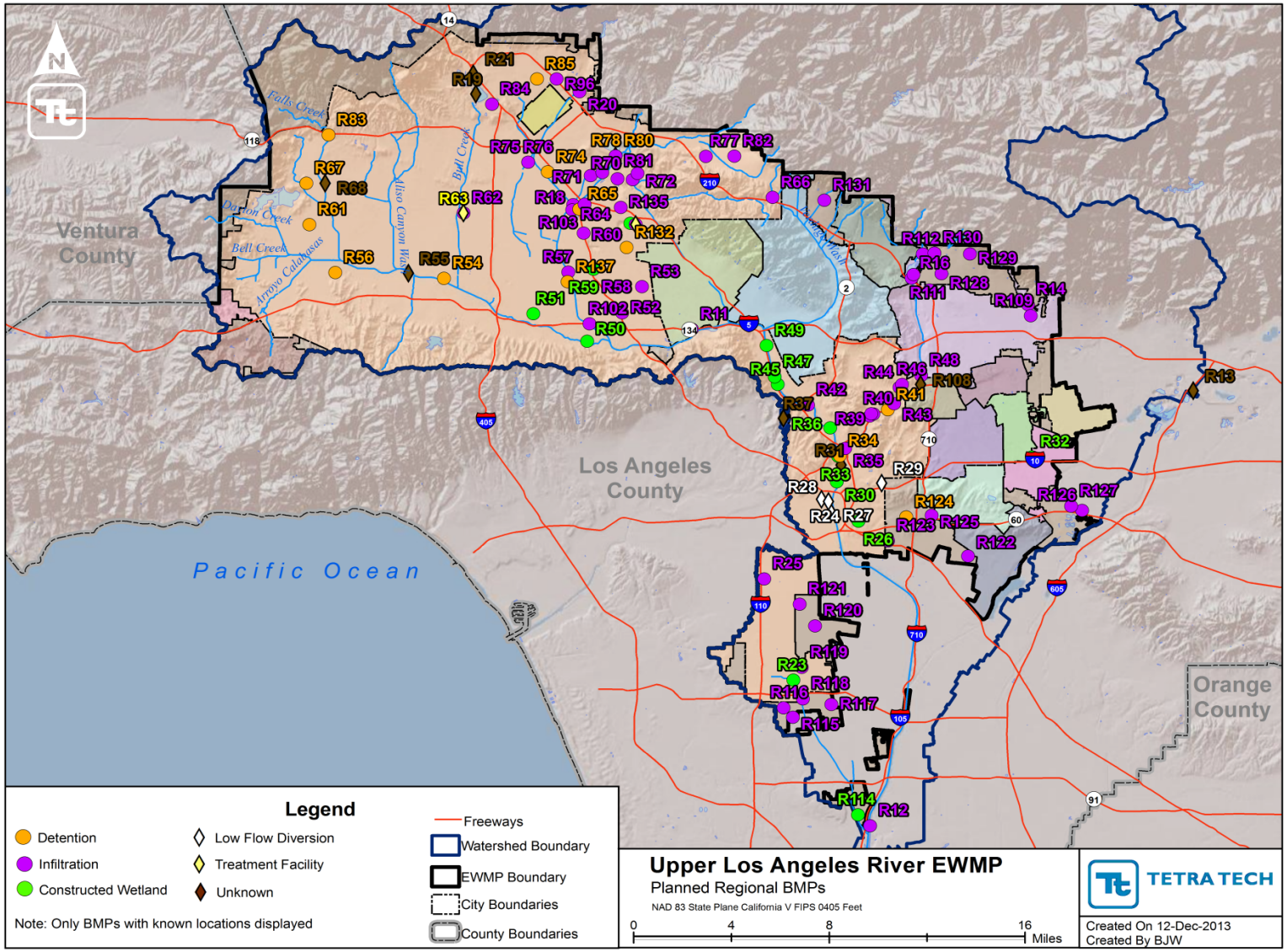


Figure 3-8. Planned Regional BMPs.

Notes: BMPs with no spatial data are not shown. Numbering corresponds with project ID numbers listed in Appendix 3.B2.

3.1.2.3 New/Additional Regional BMPs

Building upon the compiled information for existing and planned regional BMPs, the EWMP will also evaluate additional/new regional BMP concepts. The ULAR WMG provided input on the development of an approach to identify new/additional regional BMPs for inclusion in the EWMP, considering several existing and completed regional efforts to identify and evaluate regional BMPs including:

- The call for projects used in the LA IRWMP process,
- The 2013 LA IRWMP OPTI database,
- The Southern California Stormwater Committee (SCSC) Stormwater Capture Master Plan,
- The Los Angeles Department of Water and Power (LADWP) Stormwater Capture Master Plan, and
- Green Solutions Project (a GIS-based analysis developed by Community Conservation Solutions).

Based on this input, the approach to identifying new/additional regional BMPs will include three key components:

1) **Stakeholder Engagement** – Stakeholder outreach and engagement will be critical to the process for identifying potential additional regional BMPs for consideration during EWMP development. The following efforts have been conducted or are envisioned:

   a. An informal "Request for Projects" to ULAR WMG members and other watershed stakeholders was distributed in April 2014 to identify additional potential regional BMPs for inclusion in the final EWMP.

   b. A regional workshop was held in April 2014 including a broad cross section of stakeholders from throughout the region to provide input and ideas for additional regional BMPs.

   c. One-one-one meetings with key stakeholders with whom ULAR WMG members recognize may have unique opportunities to contribute ideas for additional regional BMPs.

2) **GIS-Based Approach for Identifying Potential Additional Regional BMPs** - The development of a GIS-based approach has been suggested as a useful tool for identifying additional Regional BMP opportunities.

   Figure 3-9 represents the GIS-based approach for identifying possible locations for additional regional BMPs. The approach builds on the preliminary set of regional BMPs identified in the "Request for Projects" and a preliminary output from the Watershed Management Modeling System (WMMS) that estimates per-sub watershed volumes that correspond to the 85th percentile storm. This initial output from the WMMS model will provide useful information about the areas of opportunity to capture runoff from critical areas.

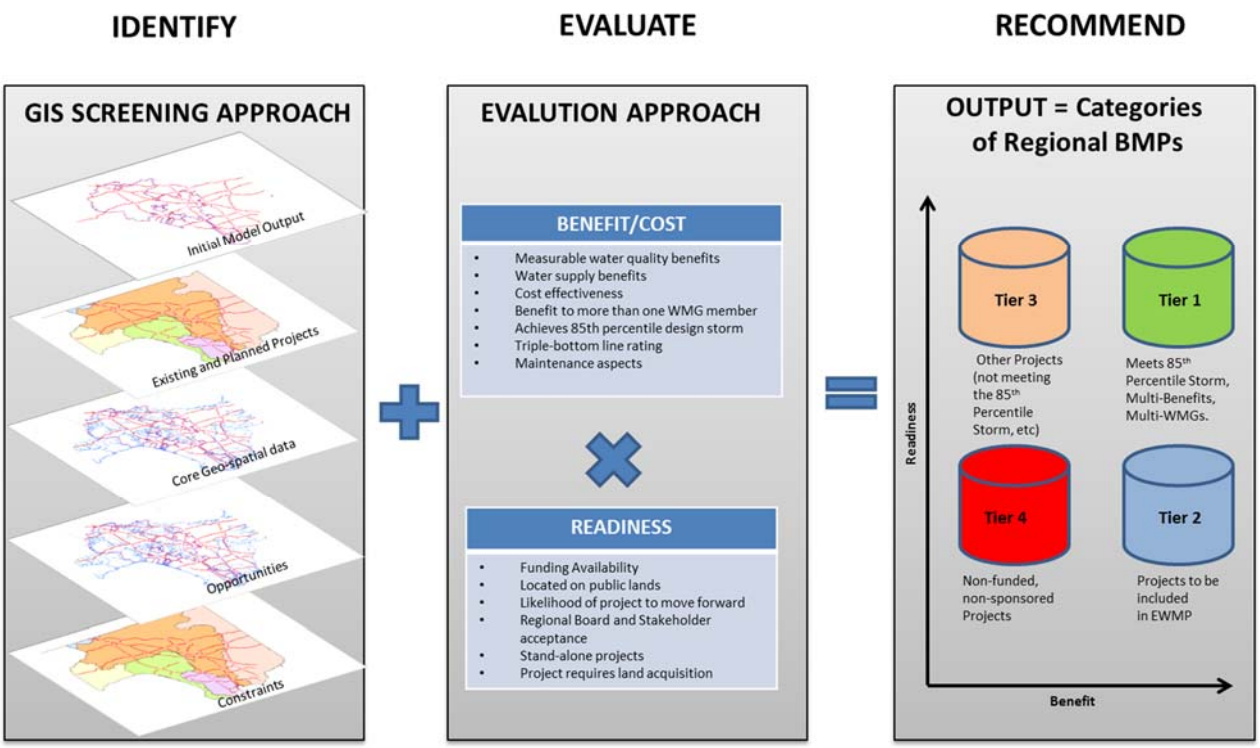


Figure 3-9. Suggested GIS Based Approach for Identifying Additional Regional BMPs

Potential regional BMP projects identified through the GIS-based approach will be screened based on a number of criteria, including:

i. Topography
ii. Hydrologic features
iii. Land use
iv. Transit infrastructure
v. Parcel data/ownership
vi. Existing storm drain infrastructure
vii. Storm drain invert depth
viii. Underground utilities

Key considerations of both opportunities and constraints that will be used in the final selection of regional BMPs are presented in **Table 3-2.** Each WMG member will participate in the selection of the final list of recommended regional projects in early 2015 as shown on the schedule provided in Figure 3-6. WMG members will obtain appropriate approvals from their City decision-makers including department management and City Councils of the final recommended list prior to submittal of the final EWMP in June 2015.

3) **Recommendations:** Based on all of the above, potential regional BMPs will be placed into appropriate prioritization "categories" (see the far right portion of the **Figure 3-9**).

Table 3-2. Opportunities and Constraints for Structural BMP Implementation

List of Opportunities	List of Constraints
▪ Water quality benefits	▪ Groundwater contamination
▪ Water supply benefits	▪ Soil contamination
▪ Multiple benefits	▪ Historical landmarks
▪ Recreation/open space benefits	▪ Brownfields
▪ Located on public lands	▪ High groundwater
▪ 85th percentile storm criteria	▪ Project requires land acquisition
▪ Benefit – cost ratio (ROI)	▪ Cost Effectiveness
▪ Benefits to more than one ULAR WMG member	▪ Proximity to pollutant sources or impaired waters
▪ Project sponsor is ULAR WMG member	▪ Located on private land
▪ Project readiness	▪ Liquefaction zones
▪ Stand-alone projects, i.e., those projects that do not require significant infrastructure development to implement	▪ Connectivity
▪ Likelihood of project to move forward	
▪ Project sponsor is committed	
▪ Flood control benefits or address historical flooding issues	
▪ Regional Board acceptance	
▪ Stakeholder acceptance	
▪ Proximity to pollutant sources or impaired waters	
▪ Adjacent to existing storm drain	

3.1.3 Summary of BMP Performance Data Analysis

An important consideration for EWMP development is the performance of structural BMPs. From BMP preferences to the RAA, data regarding performance of BMPs could influence many EWMP-related decisions. As such, a component of EWMP work planning included conducting a statistical analysis of BMP performance. The goal was to review and summarize data regarding performance of BMPs for reducing constituents of concern from stormwater flows.

Data for the BMP performance analysis were derived from the International BMP Database (IBD), the most extensive effort to collect and distribute BMP performance data in the U.S. (**Figure 3-10**). The IBD is sponsored by the USEPA, Water Environment Research Foundation (WERF), the American Society of Civil Engineers (ASCE)/Environmental and Water Resources Institute (EWRI), the American Public Works Association (APWA), and the Federal Highway Administration (FHWA). The stated purpose of the project is "to provide scientifically sound information to improve the design, selection and performance of BMPs."

This section provides a synopsis of the analysis and results. The complete analysis including analytical methods and extensive statistical results can be found in **Appendix 3.C.**

3.1.3.1 Data Sources for BMP Performance Data

As of November 2013, the available sites with monitoring data in Southern California are displayed in **Figure 3-10**. There are 44 sites with a total of 58 BMPs that were sampled. Each of these BMPs in the IBD was mapped to the categories and subcategories established in Section 3.1. Many of the BMPs, particularly bioswales, are owned and operated by Caltrans and therefore implemented on roadways, maintenance stations, and park and ride facilities.

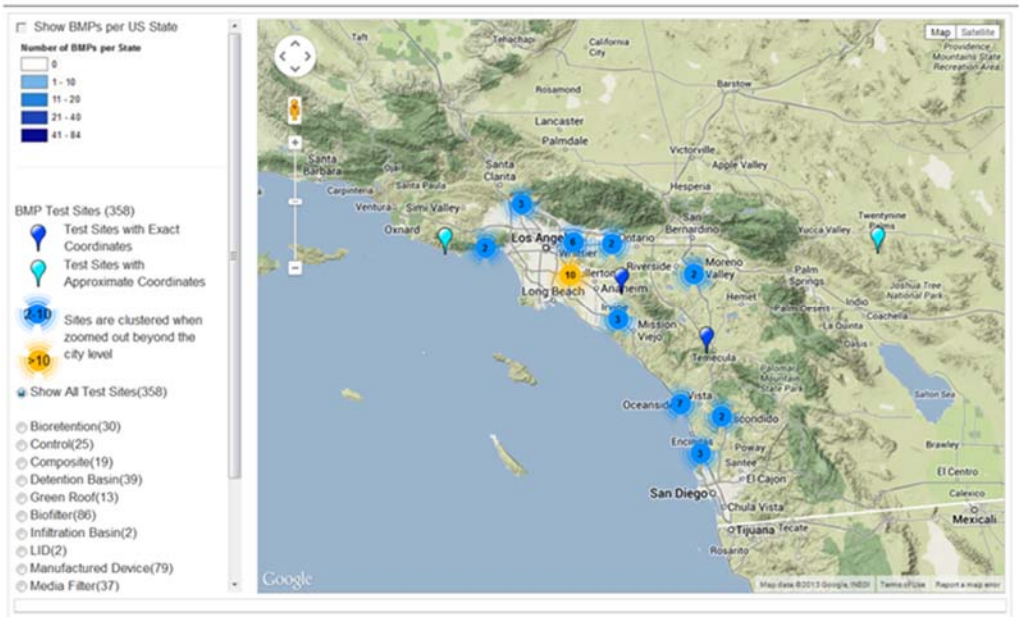


Figure 3-10. Southern California BMPs from the International BMP Database (www.bmpdatabase.org)

3.1.3.2 Description of Analyzed Data

The BMP analysis focused on specific subcategories of structural BMPs and constituents, as described in **Appendix 3.C**. A total of 22 constituents with sufficient performance data were analyzed, though the "common constituents of concern" were emphasized. These constituents, which were identified prior to the list of Water Quality Priorities, are simply those that are commonly associated with urban runoff.

3.1.3.3 Statistical Analysis

It is important to note that an overwhelming majority of pollutant removal associated with stormwater BMPs in the EWMP will be due to infiltration/volume reduction. Depending on the implementation approach, a small component maybe associated with *treatment*/removal of pollutants in BMP effluent. As such, percent reductions of stormwater constituents in BMP influent/effluent were analyzed, even though percent reduction is a BMP performance metric that deserves caveats (see the article "Voodoo Hydrology" in the July 2006 article of *Stormwater Magazine*[3]). Percent reduction is a readily-understandable BMP performance metric, and is also convenient for reporting in a compact form. However, BMP performance is ultimately characterized by both the reduction of pollutants from inflow to outflow and the concentration of constituents in the outflow. For this analysis, percent reduction is presented as a simple metric to compare different BMPs across different storm and land use conditions. In addition, and perhaps more importantly, inflow and outflow datasets were analyzed separately, in

[3] http://www.stormh2o.com/SW/Editorial/Voodoo_Hydrology_37.aspx

order to characterize the quality of BMP outfalls and allow for future comparison to Permit limitations. Non-detects were carefully handled with regression on order statistics.

3.1.3.4 Results

The analysis performed under this task produced thousands of statistical measures that can be used to evaluate BMPs. These results may support the RAA, by supporting assumptions regarding effluent concentrations from some BMPs. The results are presented in formats that are designed to allow readers to focus on both absolute (inflow and outflow concentrations) and relative performance of BMPs (percent reductions) for individual constituents and groups of constituents. The results of the analysis are presented as follows:

- **Percent removal:** the results in **Table 3-3** provide mean and median removal percentages for the BMPs and for each of the 22 constituents analyzed. The table can be used to evaluate relative performance across constituent and BMP categories.
- **Inflow and outfall concentrations for pollutants that are commonly associated with the Water Quality Priorities:** shown in **Table 3-4** through **Table 3-8** are comparisons of standard statistics for the five available BMP categories across each of the common constituents of concern.
- **Inflow and outflow concentrations for all 22 constituents:** standard statistics and box plots for inflow and outflow concentrations of all analyzed constituents are included in **Appendix 3.C**.
- **Performance statistics and box plots for all constituents:** detailed statistical comparisons of influent and effluent, including percent reductions, for each constituent and BMP category are presented in **Appendix 3.C**.

3.1.3.5 Discussion

The statistical analysis presented herein has many applications, including supporting the RAA for the EWMP. As future applications are undertaken, the results can be analyzed in more detail as necessary. In general, the majority of pollutant removal associated with potential stormwater BMPs in the RAA will be due to volume reduction (infiltration). WMMS, which will be used for the RAA, is a process-based model and thus is able to estimate volume reduction and the proportion of inflow that is infiltrated, treated, and overflowed. Because the model is dynamic, these proportions change from storm to storm (i.e., overflows are less frequent during small storms than large storms). For the subset of planned BMPs with a treatment component, some assumptions will be needed regarding the quality of treated and discharged outflow (e.g., biofiltration BMPs, which have an underdrain). The analysis herein will support those assumptions. It is noted that only a subset of the potential BMP categories (defined in Section 2) had sufficient data for data analysis. As such, an important consideration will be whether BMP performance statistics of the BMPs analyzed herein are relevant to some of the other BMPs that may be included in the RAA (but were not analyzed herein). For example, because biofiltration is vegetated filtration, it is reasonable to assume the performance data for the flow through treatment (filtration) BMPs (and perhaps constructed wetlands) are applicable to biofiltration. The specific approach for applying the statistics herein for estimating concentrations of constituents in underdrain outflows (if necessary) will be determined during the RAA effort.

Table 3-3. Mean and Median Percent Removal from Inflow to Outflow for All Pollutants and BMP Categories

Constituent Group	Pollutant	BioSwale (All)		BioSwale (Caltrans)		BioSwale (Non-Caltrans)		Constructed Wetland		Flow Through Treatment BMP		Site Scale Detention	
		% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median
Metals	Total Arsenic	-51.14%	-21.85%	21.19%	29.33%	**-70.90%**	-44.19%	**-64.23%**	-65.00%	-11.57%	-18.52%	-19.56%	-24.00%
	Total Cadmium	**-51.15%**	-58.47%	-15.99%	-49.52%	**-68.14%**	-66.32%	**-74.50%**	-62.40%	1.22%	-48.00%	**-53.72%**	-49.44%
	Total Chromium	-24.85%	-42.03%	-21.11%	-28.38%	-27.37%	-61.06%	**-81.54%**	-88.30%	**-35.10%**	-37.04%	-60.67%	-50.00%
	Total Copper	**-69.02%**	-68.29%	**-59.24%**	-60.98%	**-70.39%**	-60.32%	-98.02%	-85.81%	-55.03%	-38.89%	**-51.83%**	-48.04%
	Total Iron	-57.30%	-61.20%	-48.56%	-47.57%	---	---	---	---	---	---	---	---
	Total Lead	**-75.46%**	-77.05%	**-69.92%**	-75.02%	**-76.11%**	-67.68%	-98.11%	-97.41%	**-63.71%**	-76.15%	**-66.23%**	-59.26%
	Total Nickel	**-59.02%**	-64.38%	-41.24%	-46.58%	**-69.50%**	-72.97%	-48.11%	-36.78%	-21.04%	-28.57%	-62.53%	-45.21%
	Total Zinc	**-74.08%**	-75.66%	**-71.53%**	-76.14%	**-71.42%**	-68.65%	**-84.48%**	-85.56%	**-62.40%**	-74.89%	**-68.98%**	-64.64%
Bacteria	Fecal Coliform	-13.70%	-82.00%	---	---	-13.70%	-82.00%	-94.54%	-92.69%	-26.36%	-91.43%	99.1%	41.7%
	Total Coliform	---	---	---	---	---	---	-0.18%	-62.97%	**-99.91%**	-99.90%	---	---
Solids	Total Suspended Solids	**-50.46%**	-59.21%	-24.21%	-51.28%	-61.37%	**-58.33%**	**-94.55%**	-95.22%	**-65.0%**	-82.28%	**-62.82%**	-62.00%
	Total Dissolved Solids	-3.72%	7.32%	17.58%	12.36%	-17.36%	-2.50%	**+1169%**	1739%	12.12%	16.67%	-0.29%	0.00%
	Turbidity	**-62.65%**	-50.67%	**-62.65%**	-50.67%	---	---	---	---	---	---	---	---
Nutrients	Kjeldahl nitrogen (TKN)	-18.52%	-15.00%	29.02%	16.67%	**-31.74%**	-25.24%	-22.91%	8.33%	-24.22%	-30.97%	-14.86%	-20.21%
	Nitrogen, ammonia as N	15.93%	-25.50%	40.91%	-9.04%	---	---	-61.86%	-57.14%	28.35%	50.00%	---	---
	Nitrogen, Nitrate (NO_3) as N	-12.14%	-21.25%	13.77%	-1.31%	-22.54%	-23.29%	-66.90%	-87.87%	24.13%	41.41%	-13.89%	-10.59%
	Nitrogen, Nitrite (NO_2) as N	89.01%	31.91%	89.01%	31.91%	---	---	**-100%**	-100%	---	---	---	---
	Nitrogen, unionized ammonia (NH3) as N	---	---	---	---	---	---	---	---	**-56.11%**	-62.50%	---	---
	Organic carbon, Dissolved	-10.96%	7.50%	17.74%	34.02%	-28.27%	-14.14%	-32.54%	-40.91%	-1.43%	-7.14%	6.92%	9.09%
	Organic carbon, Total	-13.17%	0.00%	15.30%	18.18%	-29.70%	-5.56%	-23.90%	-6.67%	-4.78%	-12.79%	0.68%	6.06%
	Phosphorus as P, Dissolved	+263%	+250%	---	---	+263.42%	+250.00%	+186.92%	90.18%	-7.14%	-11.11%	-3.15%	22.22%
	Phosphorus as P, Total	+125%	+100%	+219%	+269%	92.89%	68.18%	-19.33%	-14.29%	**-34.10%**	-25.00%	**-35.61%**	-19.44%
	Phosphorus, orthophosphate as P	+369%	+553%	+531%	+795%	59.09%	31.91%	---	---	---	---	---	---

These mean and median values are based on composite samples from multiple storm events of varying duration.
Note 1: Bolded, orange values indicate statistically different inflow and outflow concentrations based on 95% confidence intervals.
Note 2: If insufficient data were available to calculate the % removal, then --- is shown.
Note 3: Catch basin inserts are not shown because effluent data were insufficient.

Table 3-4. Inflow/Outflow Summary Statistics for TSS (mg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	69	75	23	100	38	169	59
Bioswales	31	31	159	103	45.0	18.0	76.0	31.0	130	54
Catch Basin Inserts	0	6	---	88	---	20	---	37.5	---	71
Flow Through Treatment BMPs	13	13	230	218	8.875	2.875	39.5	7.00	89.25	22.25
Constructed Wetlands	1	1	13	14	140	3.50	230	11.0	255	13.5

These inflow/outflow values are based on composite samples from multiple storm events of varying duration.

Table 3-5. Inflow/Outflow Summary Statistics for Fecal Coliform (#/100mL)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	9	9	34	30	300	475	600	850	1700	3075
Bioswales	8	8	33	19	500	130	5000	900	16500	5000
Catch Basin Inserts	0	6	---	---	---	---	---	---	---	---
Flow Through Treatment BMPs	11	11	172	152	300	7.47	900	77.1	3000	797
Constructed Wetlands	2	2	13	14	230	20.0	1300	95.0	3800	255

Table 3-6. Inflow/Outflow Summary Statistics for Copper (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	68	26.25	15.00	39.45	20.50	63.75	28.00
Bioswales	31	31	150	100	22.00	8.23	41.00	13.00	70.50	19.90
Catch Basin Inserts	0	6	---	88	---	5.95	---	13	---	22
Flow Through Treatment BMPs	11	11	150	146	11.98	6.20	18.00	11.00	33.00	21.25
Constructed Wetlands	2	2	21	22	11.15	5.55	62.00	8.80	110.00	14.75

Table 3-7. Inflow/Outflow Summary Statistics for Lead (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	69	34.40	13.00	54.00	22.00	108.25	36.50
Bioswales	31	31	150	100	13.92	3.53	32.89	7.55	77.75	21.50
Catch Basin Inserts	0	6	---	88	---	2.3	---	6	---	12.45
Flow Through Treatment BMPs	11	11	149	146	6.50	1.00	13.00	3.10	25.50	7.10
Constructed Wetlands	2	2	21	22	3.32	2.70	170.00	4.40	315.00	8.32

Table 3-8. Inflow/Outflow Summary Statistics for Zinc (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	68	152.75	68.25	280.00	99.00	504.75	150.00
Bioswales	31	31	150	100	110	29.5	228	55.5	360	82.5
Catch Basin Inserts	0	6	---	88	---	50.5	---	107	---	220
Flow Through Treatment BMPs	11	11	150	146	110	23.00	221	55.5	400	131
Constructed Wetlands	2	2	21	22	109.00	28.53	270.00	39.00	450.00	84.35

3.2 Institutional BMPs including MCMs

Institutional BMPs are non-constructed control measures that limit the amount of stormwater runoff or pollutants that are transported within the MS4 area. Most institutional BMPs are implemented to meet MCM requirements in the MS4 Permit.

The LA MS4 Permit included changes to the MCMs that must be implemented as compared to the previous permit. The ULAR WMG has assessed these changes in Permit requirements (Appendix 3.E). One key change was to allow for *customized actions* within each category of control measures as set forth in an approved EWMP. Thus, Permittees can evaluate the MCMs, identify potential modifications that will address water quality priorities, and provide justification for modification and/or elimination of any MCM that is determined to not be applicable to the Permittee (with the exception of MCMs in the Planning and Land Development Program, which may not be eliminated). Customization may include replacement of an MCM for a more effective measure, reduced implementation of an MCM, augmented implementation of the MCM, focusing the MCM on the water quality priority, or elimination of an MCM.

3.2.1 Summary of Existing MCMs/Institutional BMPs

The MS4 Permit categorizes institutional BMPs and MCMs into the following six program categories:

- Development Construction Program
- Industrial/Commercial Facilities Program
- Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Program
- Public Agency Activities Program
- Public Information and Participation Program
- Planning and Land Development Program

Specific institutional BMPs currently implemented by the ULAR WMG member jurisdictions as part of these stormwater program categories are reported in the Los Angeles County MS4 Permit Unified Annual Report[4].

3.2.2 Potential EWMP Approach to Modifying MCMs/Institutional BMPs

As part of the implementation of the Work Plan, the ULAR WMG agencies may develop customized plans for MCM implementation. If one or more MCMs are customized, the approach and results of customization will be presented in the EWMP along with an overview of the remaining MCMs. The following subsections describe generalized steps for conducting the MCM customization process. Some of these steps have been completed and provide the basis for later steps in the process that may or may not be undertaken. Permittees may choose to forgo MCM customization during the initial EWMP development process and customize MCMs during subsequent revisions to the EWMP conducted as part of the regularly scheduled adaptive management process.

3.2.2.1 Step 1 Summarize the Current MCM Implementation

The existing MCM implementation was summarized to allow for a comparison of the implementation of current control measures to the MCMs specified in the Permit. The 2010-2011 and 2011-2012 Annual Reports were used as the basis for the summary, which is included as Appendix 3.D.

3.2.2.2 Step 2 Compare Current MCM Implementation to 2012 Permit

The summary of current MCM implementation provided a basis for a comparison of control measure implementation from the 2001 Permit requirements against the 2012 Permit, thus allowing for a general assessment of the potential gaps in the current program with the required MCMs. In general, the 2001 Permit and 2012 Permit requirements are worded differently and contain different specific requirements that cannot easily be compared. Additionally, as shown in Appendix 3.D, the activities undertaken by each ULAR WMG agency are different and the details of the MCM implementation are specific to each agency.

The initial summary of current MCM implementation in Appendix 3.D serves as the basis for further evaluation of the MCMs, as described below.

[4] Los Angeles County provides access to Permittee Annual Reports at the following website: http://ladpw.org/wmd/NPDESRSA/AnnualReport/

3.2.2.3 Step 3 Develop a list of MCMs that are candidates for customization

For those ULAR WMG agencies that choose to customize MCMs, Step 3 is intended to develop a list of the MCMs that may be evaluated for customization, (with the exception of the Planning and Land Development Program that cannot be customized.) A generalized assessment of the water quality priorities that MCMs address was completed and is included as Appendix 3.E based on the classes of the various WBPCs identified in Section 2. Resources such as the CASQA BMP Handbooks provide information that relate control measures to the targeted constituents, and information on sources of the pollutant (such as TMDLs) were utilized to complete the assessment. In some cases an MCM only indirectly addresses a water quality priority. For example, a Public Outreach control measure may directly address a water quality priority if that pollutant is the focus of an outreach message, or the message may broadly address pollution prevention without targeting a specific pollutant.

Subsequently, a general assessment to identify the potential effectiveness of MCMs was conducted and included in Appendix 3.F. Where possible, the assessment identified whether each MCM (or grouping of related MCMs) is expected to generally have high, medium, or low effectiveness. This assessment is qualitative, based on readily available resources including CASQA BMP Handbooks and effectiveness assessment guidance and stormwater program implementation experience.

The information presented in Appendix 3.E and Appendix 3.F combined with an understanding of the Permittees' current approach to implementing the MCMCs provide a basis for individual Permittees to develop a focused list of MCMs that are candidates for customization.

3.2.2.4 Step 4 Evaluate existing information and data and develop justifications for MCM customization

MCMs that are candidates for customization may be either modified to be more effective/efficient or to provide greater water quality benefits. Examples of evaluation that could be conducted to identify more effective/efficient approaches to MCM implementation include:

- Public Outreach material could be evaluated on whether it addresses a water quality priority. If public outreach is found to be ineffective (Step 3), then the material is general (broadly addresses pollution prevention without targeting a specific pollutant), it could be modified to focus on a water quality priority (i.e., pesticides).
- Industrial Inspection checklists could be evaluated to ensure consistency with water quality priorities.
- Industrial and commercial inspection frequencies could be evaluated to better target identified sources of water quality priorities.
- Permittees can evaluate whether changes in equipment (e.g., from mechanical broom to vacuum to further assist street sweepers) may provide a meaningful improvement in the reduction of water quality priority pollutants.

Hypothetical Example*

Assessment and Justification

A stormwater program's Illicit Discharges Program Element contains multiple control measures to detect and eliminate illicit discharges (IDs) and illicit connections (ICs), including dry weather field screening. Program staff recognized that dry weather field screening was a resource-intensive effort, but was not effective in identifying any consistent or definitive sources of IDs. Over multiple years of outfall screening, only a small percentage of screened outfalls exceeded action levels for only one parameter, and a definitive source was not identified. Program staff provided justification for discontinuing field screening and refocusing efforts on other more cost-effective mechanisms for detection and elimination of IDs (*e.g.*, public reporting and field crew inspections during regular maintenance activities).

Bottom Line: This control measure was a good candidate for elimination since it was resource intensive with poor performance, and there were redundant program elements that were effective.

* This example is provided for illustrative purposes only and does not indicate any intent by a WMG member to modify their ID/IC MCM at this time.

If there are no reasonable opportunities to modify MCMs to improve effectiveness/efficiency or to focus on a water quality priority, the MCM could be considered for reduced implementation or elimination. Note that the Permit (Part VI.C.5.b) directs Permittees to "provide justification for elimination of any MCM that is determined not to be applicable to the Permittee." Thus any reduction/ elimination must be supported by sufficient information.

The following outline procedures that may be followed by the Permittees to determine if there is justification to reduce/eliminate an MCM. At minimum, there are two potential rationales for reduced implementation or elimination:

- **MCMs that are not expected to address a water quality priority:** For those MCMs that do not address, at least in part, a water quality priority, potential opportunities to focus the MCM on one or more water quality priorities may be considered and identified. If there are no reasonable opportunities to modify MCMs to focus on a water quality priority, the MCM may be considered for reduced implementation or elimination. It is expected that MCMs that address, at least in part,

a water quality priority will continue to be implemented. However, customization may still be desirable to make the MCM more effective.

- **MCMs that address a water quality priority but are not an effective or efficient use of program resources:** For those MCMs that are determined to not be an effective or efficient use of program resources; an assessment of the effectiveness of the MCM is needed to justify reduced implementation or elimination. Similar to the customization discussion for water quality priorities, reasonable opportunities should be explored to modify MCMs to make them more effective. Looking at the effectiveness of an MCM may require combining information from a variety of measurement tools, depending on what data are collected (e.g., survey results in response to number of items turned in or changes in sales of certain products). If the effectiveness evaluation shows that an MCM is not effective or the costs are high compared to other MCMs that address the same water quality priorities, the Permittee may determine if the implementation strategy be modified to be more effective, or if there an alternative measure that may work better. Potential tools for evaluating MCM effectiveness are available from CASQA (*Municipal Stormwater Program Effectiveness Assessment Guidance*), and WERF/ASCE (WERF and ASCE, 2012).

3.2.3 Other Institutional BMPs Under Consideration for EWMP

There may be other institutional BMPs that are not considered as MCMs in the MS4 Permit, but that could provide significant water quality improvements for one or more WBPCs. The ULAR WMG may consider alternative institutional BMPs for inclusion in the EWMP. These BMPs could replace existing MCMs in the MS4 Permit that are reduced or eliminated, or could serve to reduce the need placed on structural BMPs to meet water quality objectives. Several additional institutional BMPs proposed within several existing ULAR WMA plans, include but are not limited to the following:

- Water-use efficiency BMPs for dry weather runoff reduction
- Support for new legislation to reduce allowable copper content in brake pads
- Rebates or other incentive programs for property owners to install rain barrels or disconnect downspouts

Section 4
Reasonable Assurance Analysis Approach

4.1 Introduction

A key element of each EWMP is the Reasonable Assurance Analysis (RAA), which is used to demonstrate "that the activities and control measures…will achieve applicable WQBELs and/or RWLs with compliance deadlines during the Permit term" (Section C.5.b.iv.(5), page 63). The purpose of this section of the Work Plan is to describe the process to be used to conduct an RAA for the Upper LA River EWMP area. While the Permit prescribes the RAA as a quantitative demonstration that control measures (BMPs) will be effective, the RAA also provides an opportunity to utilize a modeling process to identify and prioritize potential control measures. In other words, the RAA approach for the Upper LA River EWMP area will result in not only demonstrating the cumulative effectiveness of BMPs to be implemented, it will also support BMP *selection*. Additionally, the RAA considers the applicable compliance dates and milestones for attainment of the WQBELs and RWLs, and therefore supports BMP scheduling.

The modeling component of the RAA effort will begin in summer 2014, and the methodology described herein will likely evolve over the course of EWMP development. Also, the proposed RAA methodology is generally consistent with the RAA Guidelines document from the LARWQCB.

4.2 Modeling System to be used for the RAA

The Watershed Management Modeling System (WMMS) will be used to support the RAA. WMMS is identified in the Permit as a potential tool to conduct the RAA. The LACFCD, through a joint effort with USEPA, developed WMMS specifically to support informed decisions associated with managing stormwater. The ultimate goal of WMMS is to identify cost-effective water quality improvement projects through an integrated, watershed-based approach. The WMMS encompasses Los Angeles County's coastal watersheds of approximately 3,100 square miles, representing 2,655 subwatersheds (**Figure 4-1**). As described in the following subsections, WMMS is a modeling system that incorporates three tools: (1) a watershed model for prediction of long-term hydrology and pollutant loading (LSPC – Loading Simulation Program C++), (2) a BMP model (SUSTAIN – System for Urban Stormwater Treatment Analysis and Integration), and (3) a BMP optimization tool to support regional, cost-effective planning efforts (NIMS). A total of 762 subwatersheds in the ULAR EWMP area are represented by WMMS (**Figure 4-2**). To support evaluation of regional BMPs, these subwatersheds *will be further grouped* by "pour points", or locations where runoff enters the receiving water.

WMMS is available for public download from LACFCD. The version of WMMS to be used for the ULAR EWMP has been customized through enhancements and modifications in several ways, including the following:

- Updates to meteorological records to represent the last 10 years and to allow for simulation of the design storm;
- Calibration adjustments to incorporate the most recent 10 years of water quality data collected at the nearby LA River mass emission station;
- Enhancements to LSPC to allow for simulation of non-structural BMPs;

- Enhancements to SUSTAIN to allow for representation of an expanded/modified BMP network;
- Application of a second-tier of BMP optimization using SUSTAIN, which replaces the NIMS component of WMMS.
- Optimization of BMP effectiveness for removal of bacteria pollutant (rather than metals only); and
- Updates to GIS layers, as available.

4.2.1 Watershed Model - LSPC

The watershed model included within WMMS is the Loading Simulation Program C++ (LSPC) (Shen et al. 2004; Tetra Tech and USEPA 2002; USEPA 2003). LSPC is a watershed modeling system for simulating watershed hydrology, erosion, and water quality processes, as well as in-stream transport processes. LSPC also integrates a GIS, comprehensive data storage and management capabilities, and a data analysis/post-processing system into a convenient PC-based Windows environment. The algorithms of LSPC are identical to a subset of those in the Hydrologic Simulation Program–FORTRAN (HSPF) model with selected additions, such as algorithms to dynamically address land use change over time. Another advantage of LSPC is that there is no inherent limit to the size and resolution of the model than can be developed, making it an attractive option for modeling the Los Angeles region watersheds. USEPA's Office of Research and Development (Athens, Georgia) first made LSPC available as a component of USEPA's National TMDL Toolbox (http://www.epa.gov/athens/wwqtsc/index.html). LSPC has been further enhanced with expanded capabilities since its original public release.

The WMMS development effort culminated in a comprehensive watershed model of the entire LA County area that includes the unique hydrology and hydraulics of the system and characterization of water quality loading, fate, and transport for all the key TMDL constituents (Tetra Tech 2010a, 2010b). The 762 subwatersheds in the ULAR EWMP area that are represented by WMMS are shown in **Figure 4-2.** Since the original development of the WMMS LSPC model, LA County personnel have independently updated the model with meteorological data through 2012, and refined the physical representation of the spreading grounds with higher resolution information.



Figure 4-1. WMMS model domain and represented land uses and slopes by subwatershed

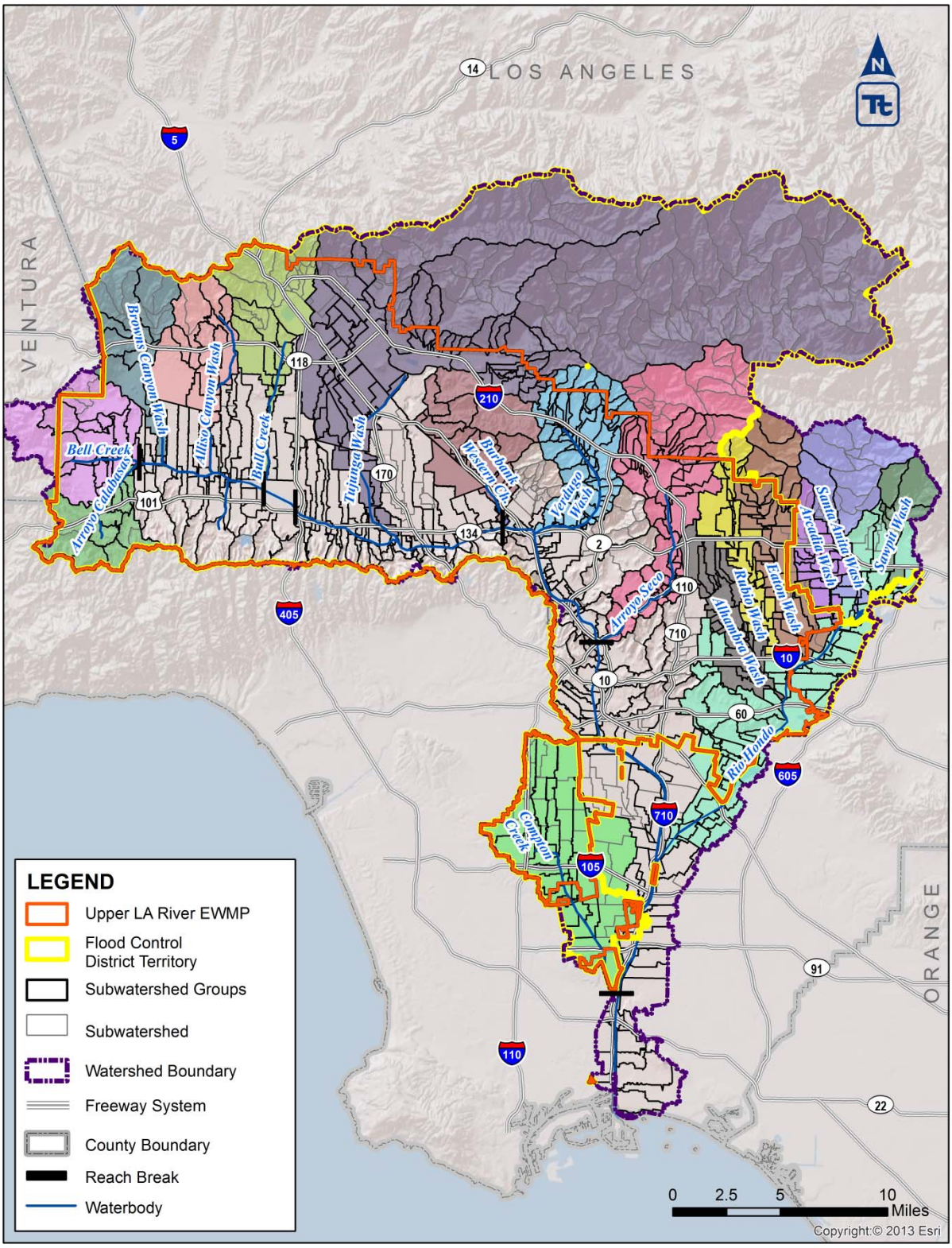


Figure 4-2. Upper LA River EWMP Area, Major Tributaries and subwatersheds in WMMS

4.2.2 Small-Scale BMP Model – SUSTAIN

The System for Urban Stormwater Treatment and Analysis INtegration (SUSTAIN) was developed by USEPA to support practitioners in developing cost-effective management plans for municipal stormwater programs and evaluating and selecting BMPs to achieve water resource goals (USEPA, 2009). It was specifically developed as a decision-support system for selection and placement of BMPs at strategic locations in urban watersheds. It includes a process-based continuous simulation BMP module for representing flow and pollutant transport routing through various types of structural BMPs. Users are given the option to select from various algorithms for certain processes (e.g., flow routing, infiltration, etc.) depending on available data, consistency with coupled modeling assumptions, and the level of detail required. **Figure 4-3** shows images from the SUSTAIN model user interface and documentation depicting some of the available BMP simulation options in a watershed context.

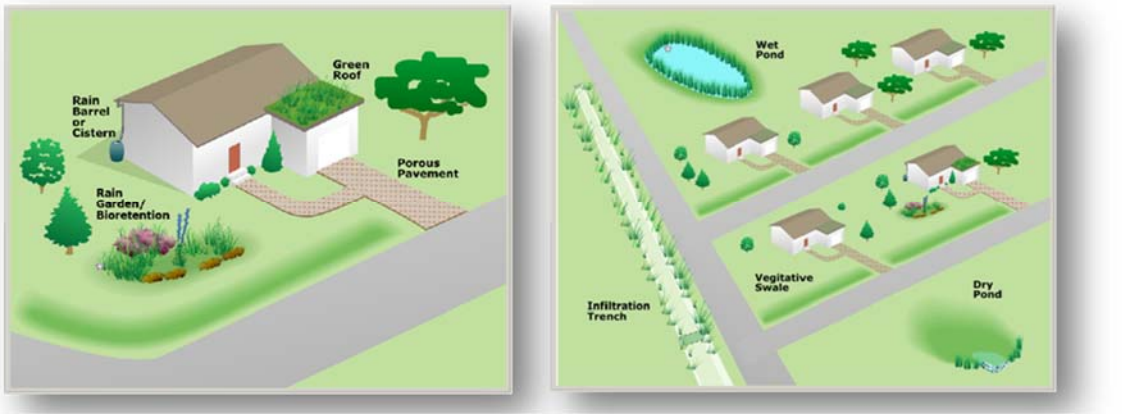


Figure 4-3. SUSTAIN model interface illustrating some available BMPs in watershed settings

SUSTAIN extends the capabilities and functionality of traditionally available models by providing integrated analysis of water quantity, quality, and *cost factors*. The SUSTAIN model in WMMS includes a cost database comprised of typical BMP component cost data from a number of published sources including BMPs constructed and maintained in LA County. SUSTAIN considers certain BMP properties as "decision variables," meaning that they are permitted to change within a given range during model simulation to support BMP selection and placement optimization. As BMP size changes, so do cost and performance. SUSTAIN runs iteratively to generate a cost-effectiveness curve comprised of optimized BMP combinations within the modeled study area (e.g., the model evaluates the optimal width and depth of certain BMPs to determine the most cost-effective configurations for planning purposes).

4.2.3 Large-Scale BMP Optimization Tool – NIMS

WMMS was specifically designed to dynamically evaluate effectiveness of BMPs implemented in subwatersheds for meeting downstream RWLs while maximizing cost-benefit. The structural BMP strategies included in WMMS primarily focus on (1) distributed green infrastructure BMPs and (2) large regional BMPs. With the number of alternative combinations of BMPs possible in a watershed, the ability to evaluate and compare the benefits and costs of each scenario (representing a combination of multiple BMPs) is highly desirable. As such, WMMS employs optimization based on an algorithm named Nonlinearity-Interval Mapping Scheme (NIMS) to navigate through the many potential scenarios of BMP strategies and identify the strategies that are the most cost-effective (Zou et al. 2010). The RAA will employ a similar watershed-scale optimization approach as NIMS, except SUSTAIN will be leveraged because optimization at the jurisdictional level (rather than watershed-wide) is not readily achieved

with NIMS. This optimization approach with SUSTAIN is referred to as "two-tiered", meaning both subwatershed-scale and watershed-scale optimization is being conducted.

4.3 Overview of the RAA Process and Elements

The proposed RAA approach is a predictive quantitative process that includes the following components (see **Figure 4-4** and described in more detail in the following subsections):

1. **Incorporates Water Quality Priorities and identifies Numerical Goals to address them** (Step 1): the Water Quality Priorities identified in Section 2 and corresponding Numeric Goals (i.e., TMDL targets, WQBELs, and RWLs) represent RAA drivers,. The estimated baseline/existing loading provides a reference point of comparison for measuring BMP performance and cost-effectiveness (i.e. the difference (Δ) between the current loading and predicted loading after BMPs are implemented, and the cost ($) of those BMPs).
2. **Identifies opportunities for BMP implementation in the EWMP area** (Step 2): the RAA inherently includes an exploratory element for evaluating BMP opportunities. The opportunities include BMPs under construction (committed BMPs), BMPs in planning documents (proposed BMPs), and additional BMPs identified through the iterative modeling process (potential BMPs).
3. **Evaluates effectiveness of potential BMPs on receiving water quality and jurisdictional loading** (Step 3): EWMPs are ultimately developed as "recipes for compliance" for each jurisdiction, but compliance is also assessed in the receiving waters. As such, assessment of the effectiveness of BMP scenarios requires consideration of averaging/simulation periods and determination of points where load reductions will be assessed.
4. **Identifies the combination of BMPs expected to attain Numeric Goals** (Step 4): the RAA will be an iterative process that evaluates different combinations of BMPs and quantifies their effectiveness. It is through the iterative modeling process that certain BMPs will be prioritized for inclusion in the EWMP.
5. **Supports scheduling to implement the BMPs over a timeline that addresses milestones cost-effectively** (Step 5): BMPs that offer the greatest immediate benefit for the lowest cost would be among those first identified and included in the early implementation phases. Furthermore, the pace at which BMPs are implemented will be dictated by applicable TMDL and EWMP milestones.

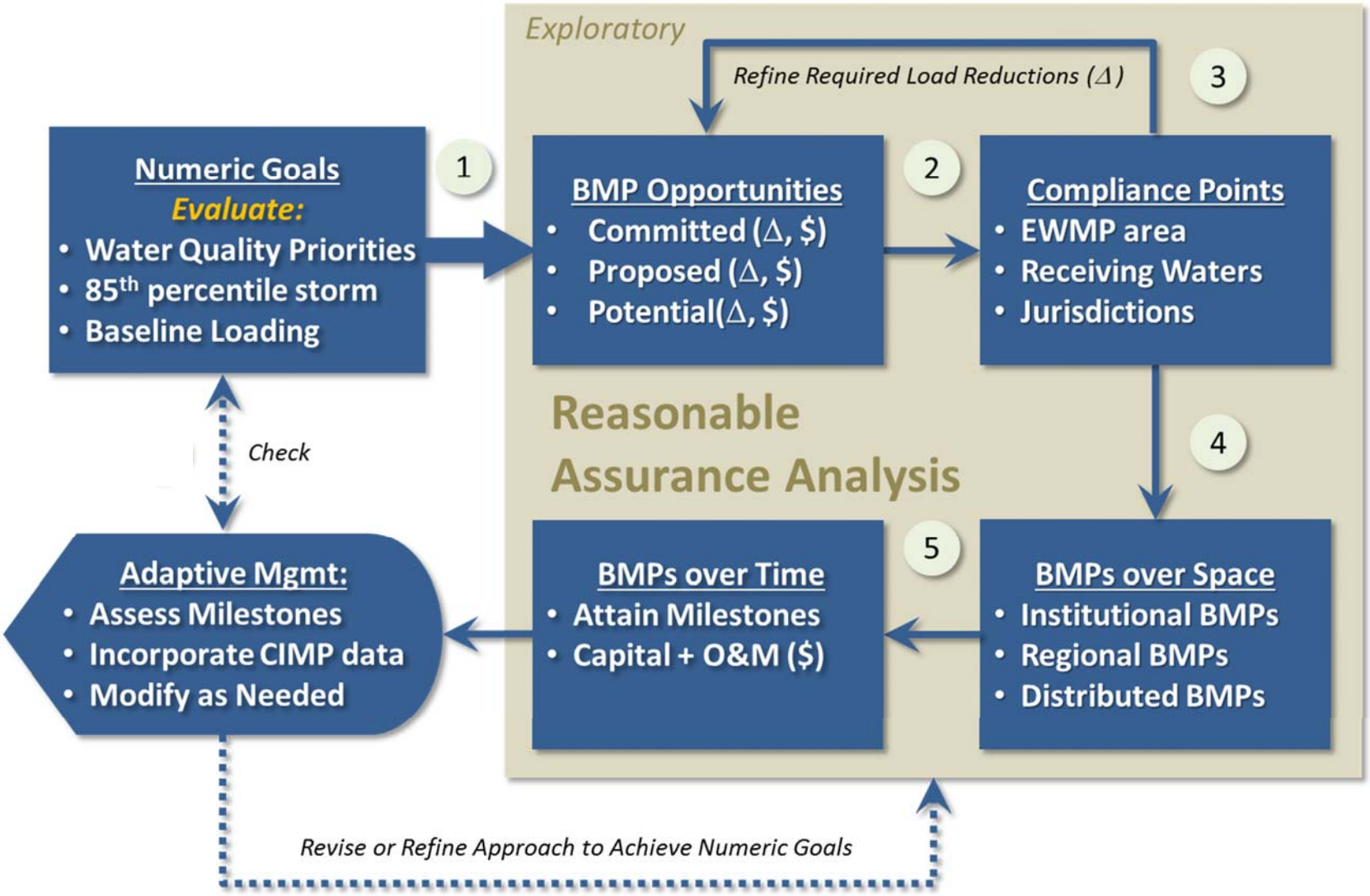


Figure 4-4. Conceptual diagram of RAA components

4.3.1 Establishing Numeric Goals to Address Water Quality Priorities (Step 1)

The Water Quality Priorities (WQ Priorities) are the primary driver of the EWMP and its BMPs. The Permit provides two types of Numeric Goals for addressing WQ Priorities (see **Figure 4-5**):

- Retain the standard runoff *volume* from the 85th percentile, 24-hour storm
- Achieve the necessary *pollutant load* reductions to attain RWLs or WQBELs

At this time, the difference in these two compliance paths (in terms of number and types of BMPs) is unknown. As such, early in the RAA process, both types of Numeric Goals will be evaluated. If the Numeric Goal based on the 85th percentile storm is similar to the pollutant-based Numeric Goal, then the volume-based goal may be selected because [1] it offers increase compliance coverage (also applies to final TMDL limits) and [2] it represents a more comprehensive approach to addressing all Water Quality Priorities while also promoting increased sustainability of local water supplies.

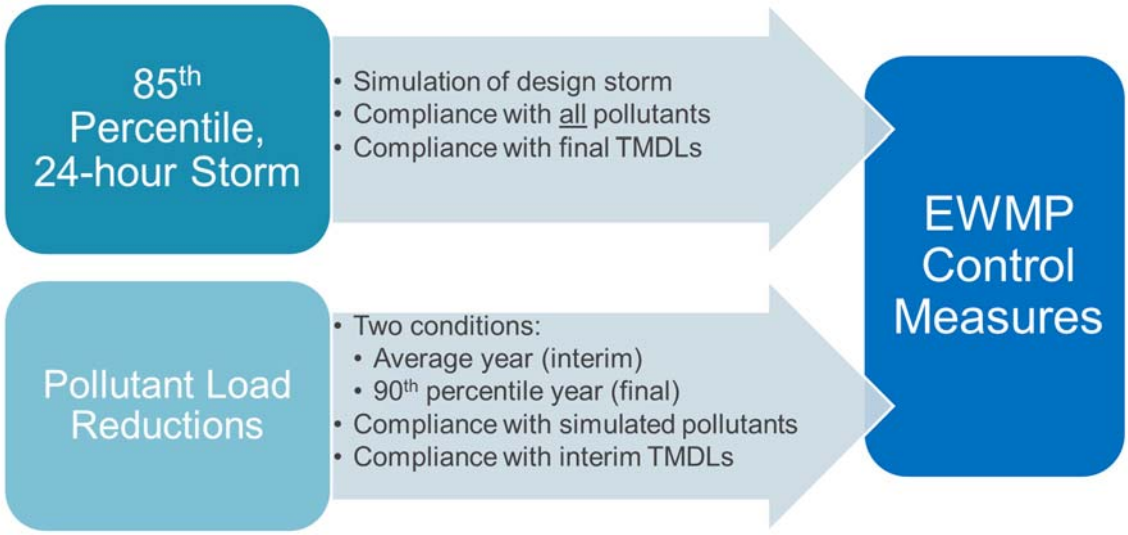


Figure 4-5. Two types of Numeric Goals and EWMP compliance paths

4.3.1.1 Numeric Goals based on 85th Percentile, 24-hour Storm Volume

The volume associated with the 85th percentile, 24-hour storm varies by subwatershed. Each of the 762 subwatersheds in the ULAR EWMP area will have a unique volume, due to varying rainfall amounts and land characteristics (imperviousness, soils, slope, etc.). Shown in **Figure 4-6** are the rainfall depths associated with the 85th percentile, 24-hour storm. These rainfall amounts will be used as boundary conditions in the LSPC watershed model, in order to predict the associated runoff volumes for each of the 762 subwatersheds in the ULAR River EWMP area. These runoff volumes could potentially be attained with distributed BMPs (both retrofits and BMP implemented through LID ordinances) as well as Regional EWMP Projects.

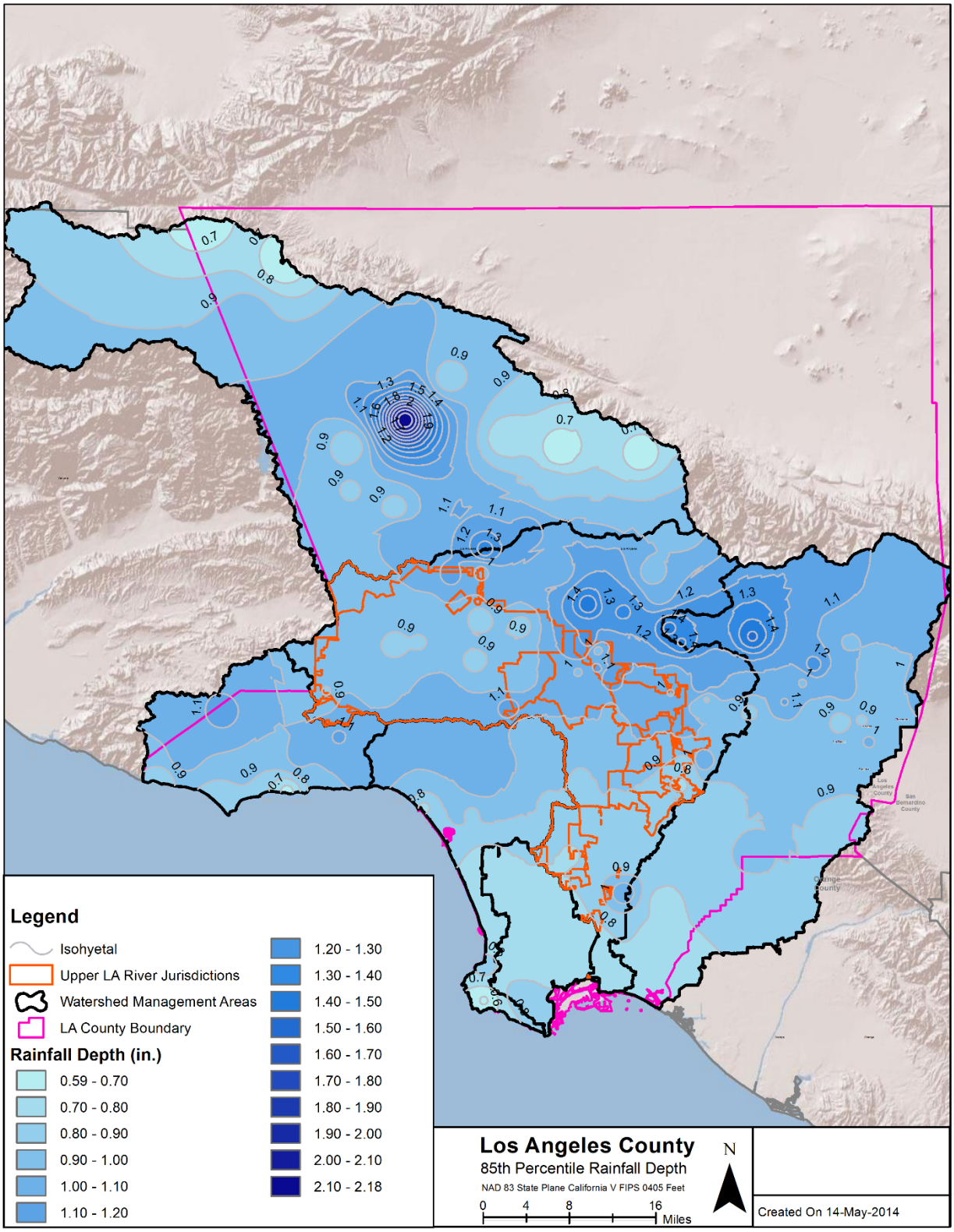


Figure 4-6. Rainfall depths associated with the 85th percentile, 24-hour storm.

4.3.1.2 Numeric Goals based on Pollutant Load Reductions

The numeric goals based on pollutant load reductions are derived from WQBELs and RWLs. The required pollutant load reduction is the difference between current/baseline loading and the loading predicted to attain the WQBELs and RWLs. The baseline loading will be calculated for most WQ Priority pollutants by simulating the hydrology and water quality that occurred during average conditions and critical conditions, per the RAA Guidelines from the LARWQCB. At this time, it is anticipated the 90th percentile wet year will serve as a "default" critical condition for many pollutants.

The load-based Numeric Goals will assume each jurisdiction is held to the same percent load reduction for the critical pollutant associated with the compliance point of concern. With each jurisdiction held equitably to the same load reduction percentage, this ensures (1) the overall net load reduction for the entire watershed is consistent with the required TMDL reduction, and (2) that each contributing jurisdiction does an equal amount of effort to achieve this goal relative to the loads emanating from their jurisdiction. The result is that jurisdictions with higher existing loads also have more loads to reduce in order to achieve the same percent reduction as jurisdictions with lower existing loads.

The EWMP will prescribe responsibilities for each MS4 Permittee and thus a GIS analysis will be performed to support determination of the EWMP areas within each MS4 jurisdiction. Caltrans facilities and parcels with facilities subject to general or individual industrial NPDES permits will be extracted prior to determination of baseline MS4 loading. Other parcels outside of the MS4 jurisdictions will also be excluded, including state and federally-owned land.

Many of the pollutants included in the WQ Priorities for the ULAR EWMP are listed in **Table 4-1**, along with the approach for modeling them for the RAA. The LSPC watershed model in WMMS includes modules for modeling sediment, metals, bacteria, and nutrients (not all pollutants can be modeled cost-effectively). Pollutants in the WQ Priorities that do not fall directly in these classes will be indirectly modeled by associating them with a surrogate pollutant to which they are typically associated within the environment, as shown in **Table 4-1**. For example, certain toxic and legacy pollutants are typically associated with sediment, and therefore sediment reductions will be associated with toxics/legacy pollutant reductions.

The RAA will include many pollutants, yet it is likely that one or two pollutants are "limiting," meaning that achieving the Numeric Goal applicable to those pollutants (through BMP implementation) will result in other pollutant also meeting their Numeric Goals. An analysis will be performed to determine which of the pollutants in **Table 4-1** are limiting.

Table 4-1. Approach for modeling a subset of the Water Quality Priority pollutants

Group	Pollutant	Modeled LSPC Pollutant Category ● Directly modeled ○ Indirectly modeled			
		Sediment	Metals	Nutrients	Bacteria
Metals	Copper		●		
	Lead		●		
	Zinc		●		
	Selenium		○		
Legacy Organics	DDT	○			
	PAH	○			
	PCBs	○			
Nutrients[1]	Ammonia			○	
	Nitrate+Nitrite			○	
	Nitrate,N			○	
	Nitrite,N			○	
Bacteria	*E. coli*				●
Trash	Trash	n/a			
Other	Toxicity	○			
	Cyanide	○			
	Oil	○			
	Benthic-Macroinvertebrates	○			

1: Nitrogen constituents estimated as a portion of Total Nitrogen (Directly Modeled)
n/a: Trash will not be modeled. The trash capture and quantification approach of the Trash TMDL will be used.

4.3.2 Identifying Opportunities for BMP Implementation (Step 2)

Opportunities for BMP implementation are driven by locations where BMPs are feasible/desirable. This step in the RAA process includes the following analyses:

- **Distributed BMPs:** the RAA process will perform a desktop GIS analysis to identify roads, public parcels and rights-of-way (see **Figure 4-7**). Then, screening criteria such as slope and soil contamination are used to exclude areas where BMP implementation is less feasible. The potential capacity available for distributed BMPs will be determined for each of the 762 subwatersheds (one capacity per subwatershed), based on the GIS screening. For example, the capacity available for green streets will be assessed based on the estimated length and width of roads in each subwatershed that met the screening criteria.

- **Regional BMPs:** the process for identifying Regional EWMP Projects and regional BMPs is described in **Section 4.1**. The WMMS model will be used iteratively to assess the effect of potential Regional EWMP Projects, and evaluate which, if any, additional BMPs are needed.

Overall, the results of the BMP screening determine the capacity available on public parcels and rights-of-way for BMP deployment, and ultimately the amount of private land acquisition required (if any) to provide additional BMP capacity to meet the Numeric Goals.

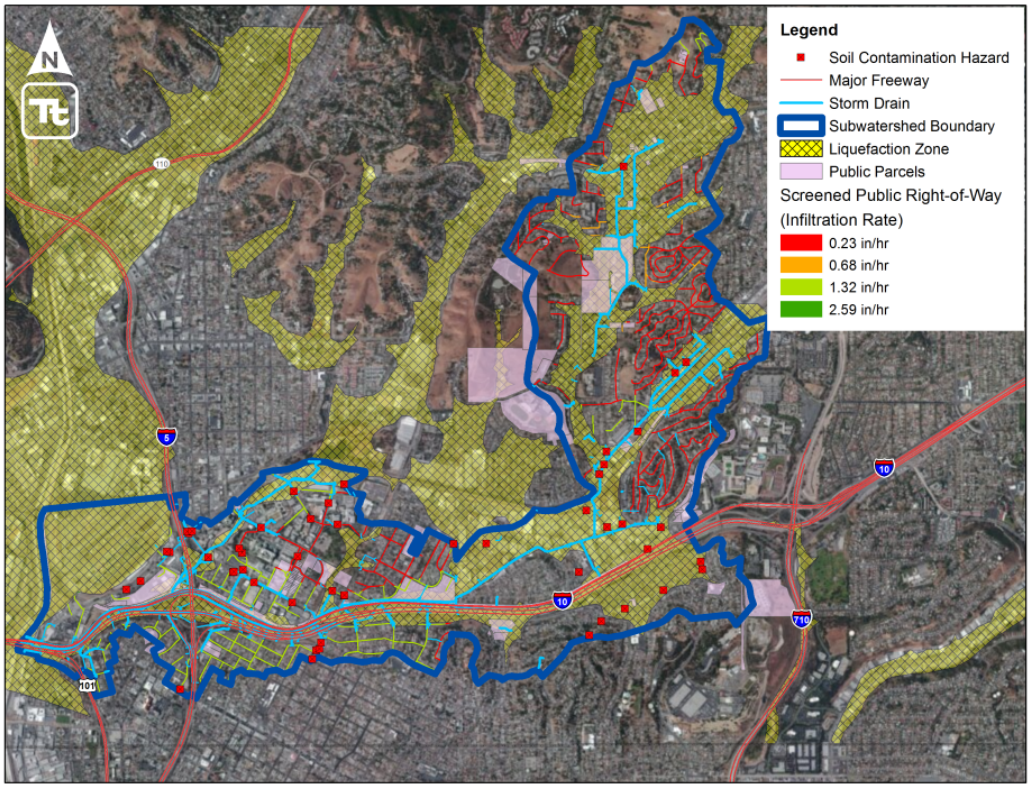


Figure 4-7. Example of GIS data used to screen for regional and distributed BMP opportunities

4.3.3 Evaluating Effectiveness of Potential BMPs (Step 3)

BMP performance varies according to multiple factors including BMP type, location, size to drainage area ratio, contributing area imperviousness, etc. WMMS will be used to explore scenarios for BMPs to be included in the EWMP, including the following:

- **Institutional BMPs:** using the LSPC watershed model, the potential effectiveness of new or enhanced institutional BMPs including enhanced street sweeping, enhanced irrigation control (elimination of non-stormwater discharges), and brake pad replacement will be quantified. In addition, a small percent will be assumed to apply to all other "non-modeled" institutional BMP enhancements (e.g., enhanced public outreach/education). Note that only enhancements will be modeled as it is assumed the effect on water quality of current level of institutional BMP implementation is captured in the water quality data utilized to establish baseline loading.

- **Distributed BMPs:** using the SUSTAIN BMP model, the potential effectiveness of distributed BMPs on volume reduction and pollutant loading from each of the 762 subwatersheds in the ULAR EWMP area will be assessed. The specific distributed BMPs to be modeled are presented in **Section 4**.

- **Regional BMPs:** using the LSPC watershed model, the potential effectiveness of Regional EWMP Projects identified through the regional BMP selection process will be quantified (see **Section 4.1**). A generalized approach to incorporating Regional EWMP Projects into the RAA process is shown in **Figure 4-8**.

An illustration of using WMMS to identify required BMP capacities at the watershed-scale is shown in **Figure 4-9**. The figure shows the interaction between compliance points, distributed BMP capacities, and decisions on regional BMPs.

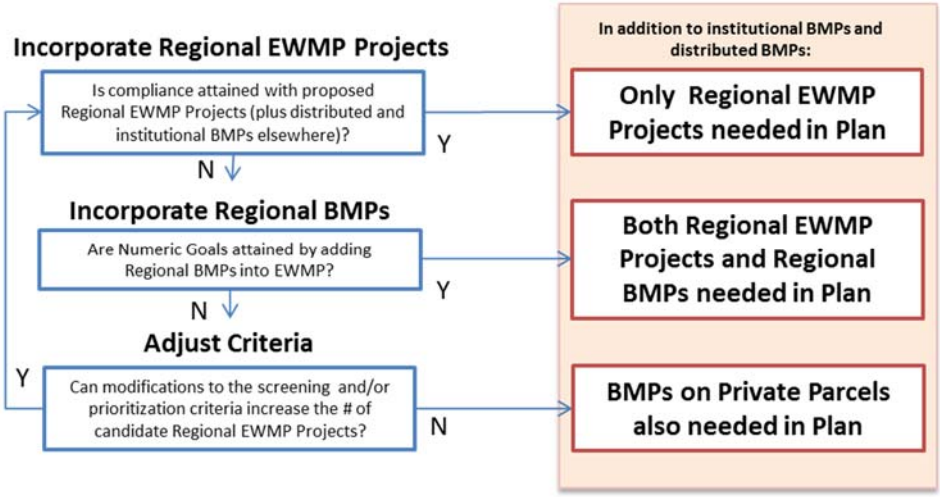


Figure 4-8. Generalized process for incorporating Regional EWMP Projects into the RAA

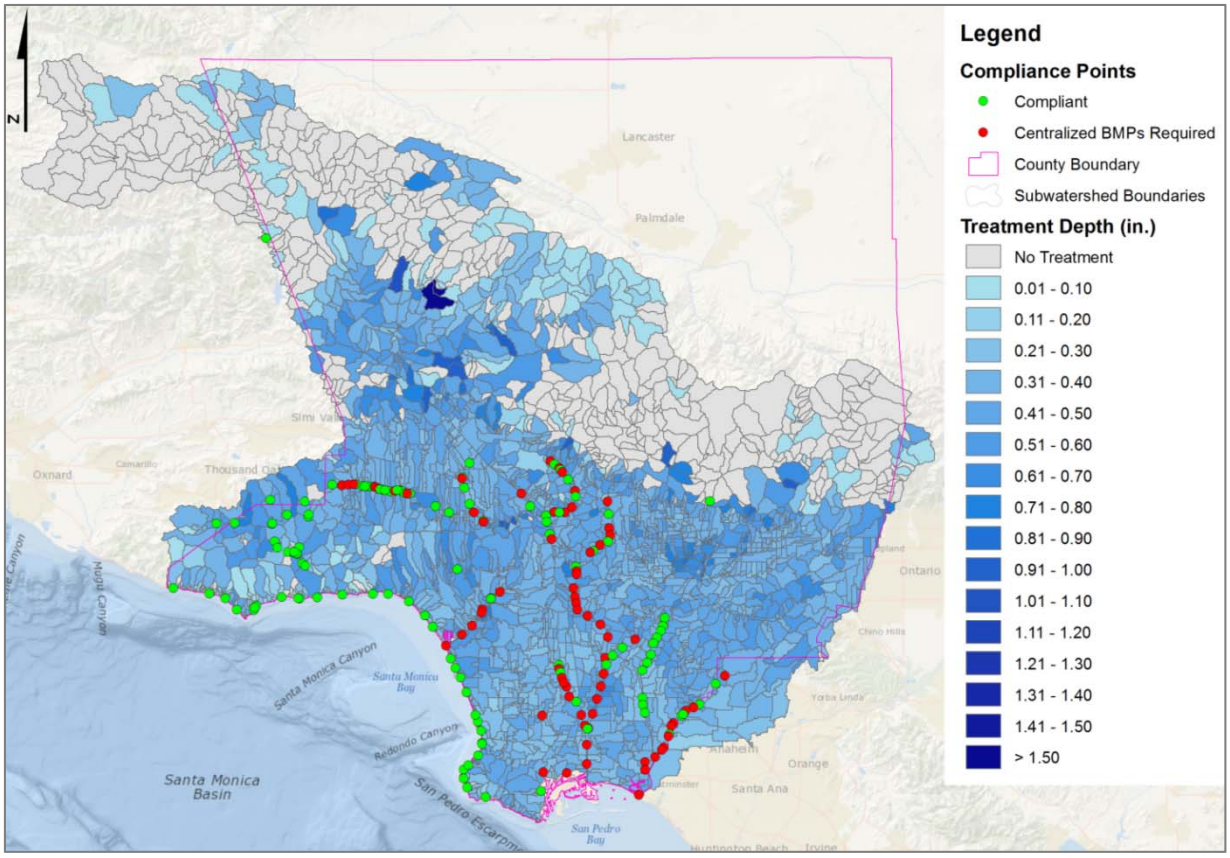


Figure 4-9. HYPOTHETICAL EXAMPLE WMMS output showing BMP capacities by subwatershed and linkage to receiving water conditions

The shading of the subwatersheds shows the capacity of distributed BMPs necessary to meet the Numeric Goals (darker blue indicates more BMP capacity to be implemented to meet Numeric Goals). The dots indicate whether RWLs are attained (green is attainment, red is non-attainment). In cases, where red dots are shown, the output indicates that additional BMPs are required upstream to attain RWLs.

The process for determining the necessary *cumulative* BMP capacity for both distributed and regional BMPs in each of the 762 subwatersheds in the ULAR EWMP area depends on the type of Numeric Goal being addressed. As shown in **Figure 4-10**, the volume-based (85th percentile storm) approach, necessary BMP capacity is determined through a design storm analysis. For the load-based (pollutant reduction), the analysis is more intensive and will utilize in-stream receiving water assessment points to guide optimization of load-reduction BMPs. Attainment of load-based Numeric Goals will be evaluated based on [1] analysis of the subwatershed loadings and opportunities and [2] linkage to receiving water conditions through simulation of the representative year. The BMP treatment capacities determined to be needed will drive the number and type of BMPs selected for inclusion in the EWMP, as described in the next subsection. A key factor for selecting those BMPs is the preferences among the different BMP types.

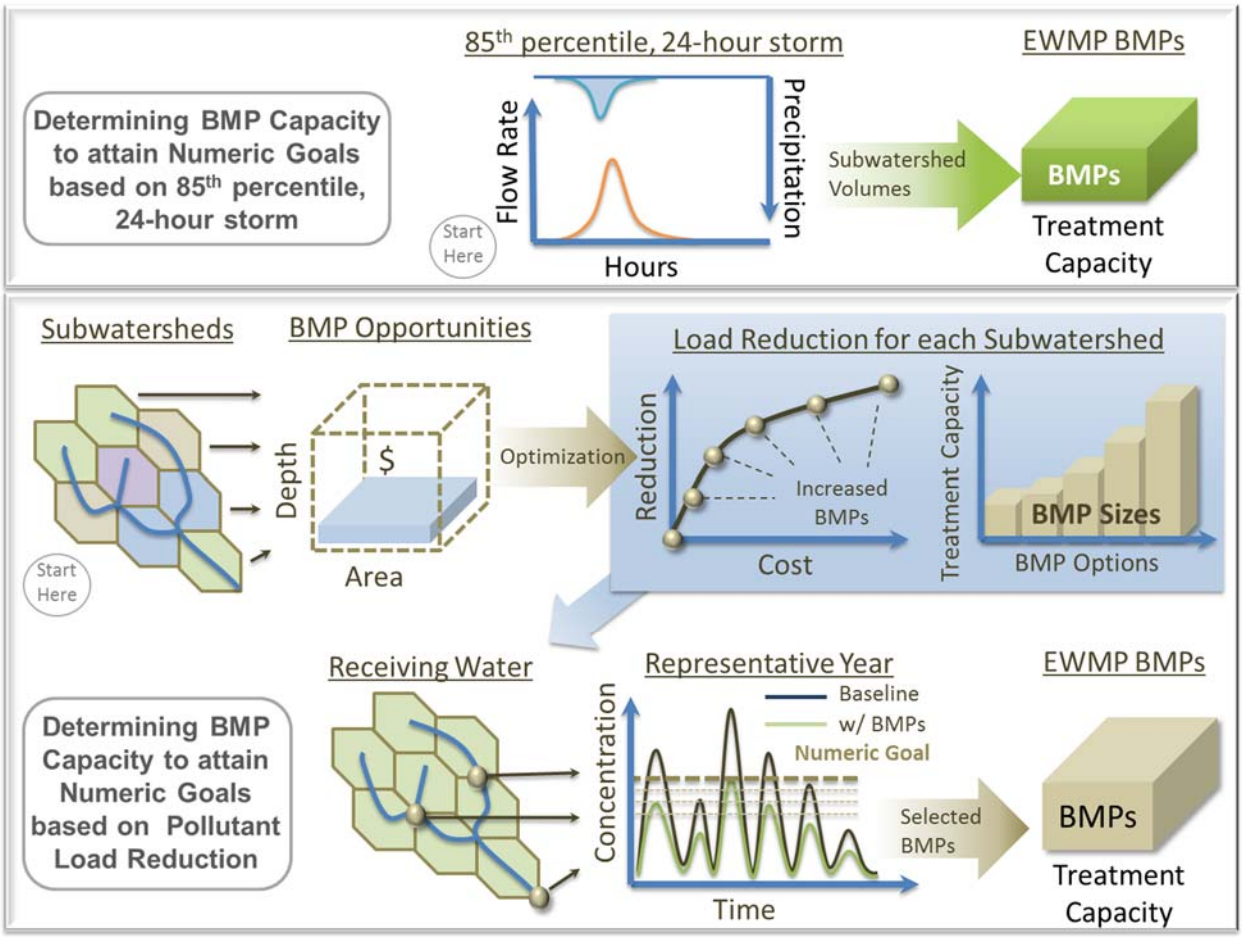


Figure 4-10. Illustration of process for determining required BMP Capacities for the EWMP using volume-based (top panel) and load-based (bottom panel) Numeric Goals

In general, the BMP preferences for the RAA, based on cost effectiveness, are shown in **Figure 4-11**. Notice the diminishing returns of load reduction associated with each additional BMP effort moving up the curve. These default preferences will be modified on a jurisdiction-by-jurisdiction basis, using a BMP Preferences Survey that has been distributed to the ULAR WMA Group. Some ULAR WMA Group members may choose to implement a BMP type, while others choose to not (regardless of the generalized approach below). As shown in **Figure 4-11** the generalized approach to BMP preferences includes the following:

- **Minimum control measures and other institutional BMPs** (such as street sweeping) are often preferred because they can reduce flows and/or pollutants with little capital cost. Enhancement of institutional BMPs can provide an immediate load reduction at a relatively low cost. However, implementation of institutional BMPs often requires coordination with multiple departments within a municipality/agency.
- The preference of distributed versus regional BMPs is determined on a case-by-case basis.
  - **Regional BMPs** located on public parcels are often preferred because (1) there are little to no land acquisition costs, (2) publicly-owned land has fewer barriers for maintenance, and (3) regional facilities offer economies-of-scale in terms of treated drainage area.

However, while they may have the lowest cost per pollutant load reduced, regional BMPs are also generally the most expensive *individual* projects. Finally, the regional BMPs that qualify as Regional EWMP Projects provide additional compliance coverage.

- **Distributed BMPs** may be preferred because (1) they can often be implemented in the rights-of-way, (2) they often have multiple benefits including green infrastructure (e.g., green streets) improving aesthetics and enhancing property values and (3) the costs for *individual* projects are less than regional BMPs. However, distributed BMPs may be limited in their ability to achieve the necessary volume/load reductions identified by the RAA. Also, it may take more time to treat the volume that regional BMPs can treat, because so many *individual* projects must be completed and the multitude of projects increases maintenance requirements.

There will likely be locations where the BMP capacity on public parcels is insufficient to attain the Numeric Goals, and BMP sites on private land will need to be incorporated into the EWMP. BMPs on private land will be avoided to the extent possible. However, where needed to support compliance, they will be slated later in the EWMP implementation schedule as described in **Section 4.5**.

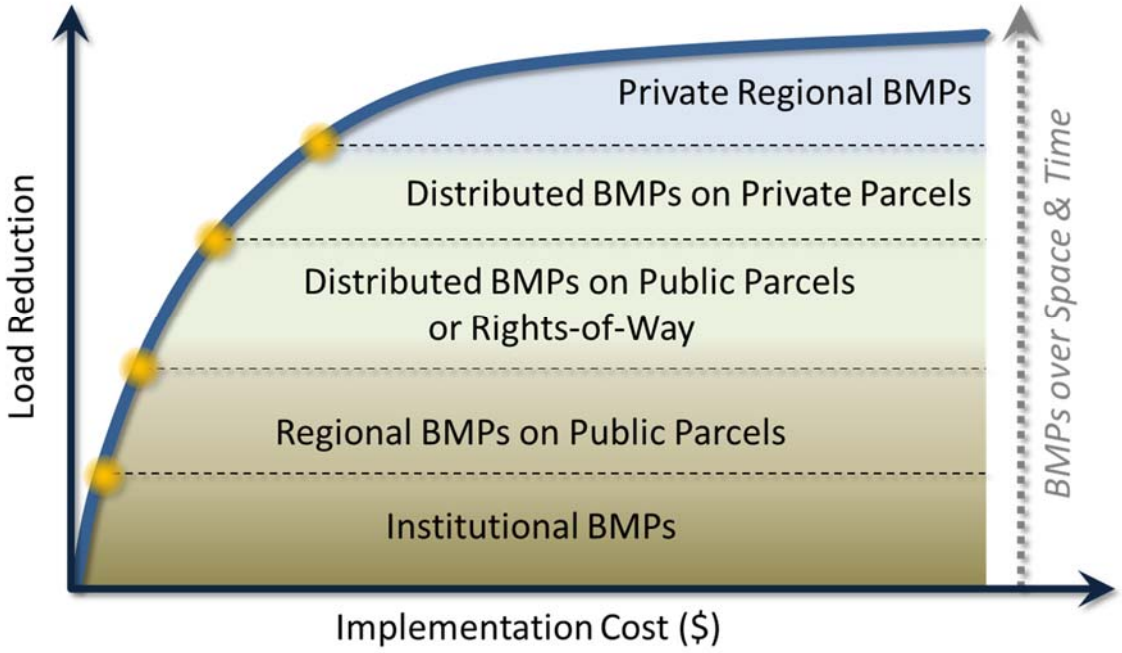


Figure 4-11. Generalized preferences for BMP types to be incorporated into the RAA and EWMP

4.3.4 Identify the Combination of BMPs Expected to Attain Numeric Goals (Step 4)

The iterative RAA process will ultimately result in combinations of BMPs predicted by the customized WMMS to cost-effectively attain the Numeric Goals. As shown in **Figure 4-12**, the RAA output for key Numeric Goal-milestone combinations will present BMPs in the following manner:

- **Individual jurisdictions:** each jurisdiction will have its own set of BMPs to attain the Numeric Goals (top of **Figure 4-11**). In addition, each jurisdiction will receive a detail BMP "recipe" for each subwatershed within its jurisdiction (bottom of **Figure 4-12**).
- **Regional BMPs:** the regional BMPs, including Regional EWMP Projects selected by the ULAR WMA Group according to the decision process (see **Section 4.1**), will be included. In the EWMP, these BMPs will be identified with details on location (cross streets) and concepts for the projects (capacity, footprint, etc.).
- **Distributed BMPs:** for each jurisdiction and each of the 762 subwatersheds, a total *treatment capacity* ("treatment depth" expressed in inches of runoff) to be achieved by distributed BMPs will be identified. Within that treatment capacity, recommendations for the *types* of distributed BMPs to implement will be provided. The ULAR WMA Group members will have flexibility to substitute one type of distributed BMP for another type during adaptive management, as long as the total treatment capacity is achieved for the subwatershed (bottom of **Figure 4-12**). The model identifies the capacities of distributed BMPs needed in each of the 762 subwatersheds, but does not identify specific locations (cross streets) for the distributed BMPs *within* a subwatershed. Also, there may be opportunities to leverage LID ordinances to achieve some distributed BMP capacity on private land (implemented by private developers).
- **Institutional BMPs:** for ULAR WMA Group members that choose to implement the modeled institutional BMPs (enhanced street sweeping, enhanced irrigation control, or brake pad replacement) those enhanced BMPs will be highlighted in the RAA output. In addition, a small % will be assumed to apply to all other "non-modeled" institutional BMP enhancements.

A unique set of BMPs will be identified for each interim and final TMDL and other EWMP milestones[5] that occur in the next two Permit cycles. In contrast, TMDL milestones that occur more than two Permit cycles in the future (but prior to the final TMDL compliance dates) will not be considered to the same level of detail. The BMP sequencing process is described in the next subsection.

[5] Because EPA TMDLs, Category 2 WQ Priorities, and Category 3 WQ Priorities do not have adopted TMDL implementation schedules, the EWMP shall propose milestones to address them.

Jurisdiction	Total Number of Regional BMPs	Total Capacity of Distributed BMPs				Non-structural BMPs/MCMs	
		Treat-ment Depth (inches)	Green streets (ft)	Bio-retention (ft^3)	LID on private (ft^3)	Enhanced Irrigation ordinances	Enhanced sweeping
City A	6	0.54	884,323	662,676	421,567	●	
City B	3	0.37	97,634	88,954	14,623	·	●
City C	2	0.34	56,534	47,453	7,890	●	
City D	2	0.12	45,323	39,494	6,375	●	
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
City Z	4	0.48	297,634	188,954	114,623		●

Jurisdictional Sub-area (sub-watershed)	Total Number of Regional BMPs	Total Capacity of Distributed BMPs				Non-structural BMPs/MCMs	
		Treat-ment Depth (inches)	Green streets (ft)	Bio-retention (ft^3)	LID on private (ft^3)	Enhanced Irrigation ordinances	Enhanced sweeping
1	1	0.54	4,323	676	567	●	
2	0	0	0	0	0	●	
3	1	0.24	534	453	890	●	
4	2	0	0	0	0	●	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
762	0	0.68	8,634	4,954	3,623	●	

Figure 4-12. Hypothetical example RAA Output for one set of Numeric Goals, for the entire EWMP area (top panel, one row per jurisdiction) **and for an individual jurisdiction** (bottom panel, one row per subwatershed)

The BMP numbers, types, capacities and locations are completely hypothetical, for illustration purposes only. Note the output (bottom) is separated into 762 subwatersheds. This type of output will be generated each interim and final TMDL milestones that occur in the next two Permit cycles.

4.3.5 Using the RAA to Support BMP Scheduling (Step 5)

The TMDL and EWMP milestones/compliance dates establish the pace at which BMPs must be implemented. Traditionally, the approach of TMDL implementation plans has been focused on *final* TMDL compliance, whereas the Permit compliance paths offered to EWMPs increase emphasis on *milestones*. For each interim and final TMDL milestones that occur in the next two Permit cycles, the combination of BMPs expected to result in attainment of the corresponding Numeric Goals will be identified by the RAA. In addition, the control measures to attain final TMDL Numeric Goals (even if beyond two Permit terms) will be identified to support long-term planning. An illustration of the BMP scheduling to account for milestones is shown in **Figure 4-13**.

The TMDL milestones for the ULAR EWMP area are shown in **Table 4-2**, which illustrates the potentially complicated sequence based on multiple pollutants. For example, in the two years following submittal of the EWMP, there are milestones for both metals and toxics. As such, the limiting pollutant analysis will be important for establishing the pace of BMPs. Furthermore, dry weather milestones tend to occur earlier in the schedule than wet weather milestones. Because the structural BMPs implemented for wet weather will also be relied on for dry weather reductions, the pacing to attain dry weather milestones may be dependent on the pacing to attain wet weather milestones. It is important to note that **Table 4-2** does not show the EWMP milestones (for Category 2 and 3 WQ Priorities), which will be established during EWMP development.

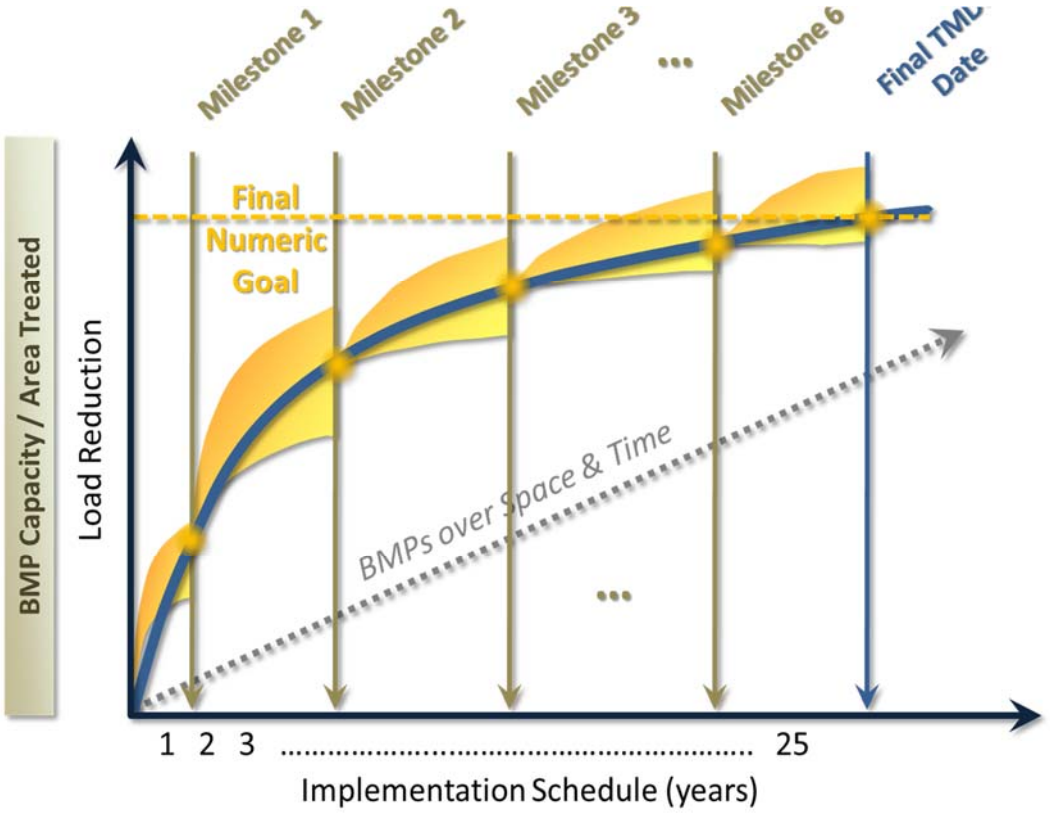


Figure 4-13. Illustration of BMP scheduling based on TMDL and EWMP milestones

A unique set of BMPs will be generated for each interim and final TMDL milestones that occur in the next two Permit cycles. The width of the yellow bands represents the relative cumulative BMP capacity to be constructed over the course of each milestone period. The BMPs being implemented during early versus late milestones will likely reflect the BMP preferences shown in Figure 4-11 (i.e., BMPs on private land will be implemented late in the schedule).

Table 4-2. Schedule of TMDL milestones for the LA River

TMDL	Waterbodies	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestone (Bolded numbers indicated milestone deadlines within the current Permit term) 1									
					2012	2013	2014	2015	2016	2020	2024	2028	2032	2037
LAR Nutrients	All Waterbodies	Ammonia-N, Nitrate-N, Nitrite-N, Nitrate-N+Nitrite-N	Meet WQBELs	All	Pre 2012									
					Final									
LAR Trash	All Waterbodies	Trash	% Reduction	All	9/30	9/30	9/30	9/30	9/30					
					70%	80%	90%	96.70%	100%					
Legg Lake Trash	Legg Lake	Trash	% Reduction	All	3/6	3/6	3/6	3/6	3/6					
					20%	40%	60%	80%	100%					
LAR Metals	Reach 1 through 6, CC, RH, AS,	Copper, Lead, Zinc (only RH)	% of MS4 area Meets WQBELs	Dry	1/11					1/11	1/11			
	VW, BWC, TW, ACW, MC, DC, BeC and BuC				50%					75%	100%			
	All Waterbodies	Copper, Lead, Zinc, Cadmium	% of MS4 area Meets WQBELs	Wet	1/11						1/11	1/11		
					25%						50%	100%		
LA River Bacteria (Wet Weather)	All Waterbodies	*E. coli*	Meet WQBELs	Wet										3/23
														Final
Dominguez Channel and	Estuary	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	Meet WQBELs	All	12/28								3/23	
LA/LB Harbors Toxics					Interim								Final	
USEPA Lakes TMDLs	Lake Calabasas	Total-P, Total-N	Meet WLAs	All										
	Legg Lake	Total-P, Total-N	Meet WLAs	All										
	Echo Park Lake	Total-P, Total-N, Trash Water and Sediment: PCBs, Chlordane, Dieldrin	Meet WLAs	All										

[1] CC (Compton Creek), RH (Rio Hondo), AS (Arroyo Seco), VW (Verdugo Wash), BWC (Burbank Western Channel), TW(Tujunga Wash), ACW (Aliso Canyon Wash), MC (McCoy Canyon Creek), DC (Dry Canyon Creek), BeC (Bell Creek), and BuC (Bull Creek).

[2] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.

[3] The schedule for attaining the dry weather Bacteria TMDL is not shown in Table 4-2. See the WQ Priorities technical memorandum for the detailed dry weather schedule, which accounts for whether a Load Reduction Strategy is implemented.

4.4 Conclusions

The previous efforts used to develop WMMS will be built upon to develop the RAA for the ULAR EWMP. The EWMPs will drive innovative approaches for using models to select BMPs to address WQ Priorities based on an array of pollutants over implementation schedules that differ by pollutant. The models used to develop the RAA will also support adaptive management as additional monitoring data are collected and watershed conditions and regulatory requirements change. The RAA developed for the ULAR EWMP will include detailed appendices to document the methods and assumptions used to select BMPs and demonstrate the BMPs will be effective.

Section 5
Next Steps Toward EWMP Development

This EWMP Work Plan provides the foundation for the ULAR EWMP development process that will culminate in the submittal of an EWMP to the Regional Board by June 2015. The following subsections briefly describe the formal stakeholder process to be leveraged for development of the EWMP and the EWMP development schedule and milestones.

The ULAR WMG looks forward to engaging the LARWQCB and other interested parties on this Work Plan as needed. It is anticipated that comments on the Work Plan provided by the LARWQCB and others will be addressed in the submitted EWMP (rather than revising the Work Plan). The ULAR will follow up with interested parties, as needed, to discuss received comments and ideas.

5.1 Stakeholder Process

Members of the ULAR WMG have actively participated in the Watershed Management Program Technical Advisory Committee and associated subcommittees. The goals of the ULAR WMG participation were to gain a better understanding of the perspectives of the interested parties as it related to County-wide considerations for EWMP development and to provide input on the considerations. Additionally, the ULAR WMG is participating in an EWMP stakeholder outreach process led by the City of Los Angeles, which is intended to [1] provide additional opportunities for all interested parties to provide meaningful input on their issues and concerns, and [2] facilitate proactive attempts by the ULAR WMG to address comments and ideas received in the submitted EWMP.

The ULAR WMG has identified stakeholders comprised of the following groups:

- Key city administrators, stormwater program managers, council districts, etc.
- Environmental and community organizations
- Collaborating governmental agencies, e.g., LARWQCB, US EPA Region 9, Caltrans, and the US Army Corps of Engineers

A series of three EWMP workshops have been designed to engage the stakeholders by providing a common and consistent orientation to the EWMP process. The first workshop was held during the development of the ULAREWMP Work Plan on April 10, 2014 and included not only the ULAR WMG members and watershed interested parties, but also four additional watersheds within the County: Ballona Creek, Dominguez Channel, Santa Monica Bay Jurisdictions 2 and 3, and Marina del Rey.

The topics for each of the three workshops are as follows:

1. **Workshop No.1 – Input for the Draft EWMP Work Plans**
   Date: April 10, 2014

   The first workshop initiated the formal stakeholder process. The agenda consisted of introducing the planned EWMP stakeholder process, explaining the relevance and context of the EWMP process, and soliciting input from stakeholders on projects to potentially include in the EWMP. The second half of this workshop included breakout sessions in which watershed-specific discussions and project solicitation occurred. The target audience was local and "regional" stakeholders.

2. **Workshop No.2 – Draft EWMP Work Plans/RAA Preliminary Results/Regional Projects**
Target date: October 2014

The second workshop will include a brief recap of the first workshop and highlights of feedback from stakeholders. As with the first workshop, the target audience for this workshop will be the local and regional stakeholders. The agenda will focus on a presentation of the EWMP Work Plan and explain how the input received at the first workshop was addressed in the draft plans. Preliminary results of the RAA will be presented and discussed. Potential regional projects and the GIS tools used for the initial screening will also be discussed. An advance notice, including a more detailed agenda, will be sent out to all stakeholders.

3. **Workshop No.3 – Input on the Draft EWMP**
Target date: Late 2014/Early 2015

The third workshop will be specific to the ULAR watershed. The purpose of the third workshop will be to provide a summary of activities and work products to date, and to present the outline and key elements of the Draft EWMPs to solicit input. A primary objective of the third workshops will be to present the draft list of proposed regional projects and solicit input. The target audience will be focused towards local stakeholders; however, regional stakeholders will also be invited.

5.2 Project Schedule and Milestones

In order support EWMP development, a series of memoranda will be developed to address key study elements as indicated in the schedule provided in the June 2013 NOI. These memoranda will describe the analysis conducted, results and recommendations for consideration by the WMG members. The major tasks and associated milestone deadlines are summarized in Table 5-1 below.

Table 5-1. ULAR EWMP Development Schedule

Deliverable	Description	Schedule
Approach to Addressing Water Quality Priorities not Addressed by a State TMDL Memo	TMDLs adopted by the LARWQCB were incorporated into the Permit as WQBELs, RWLs, and a corresponding compliance schedule to meet final milestones TMDLs adopted by USEPA as well as other WBPCs not addresses by a LARWQCB TMDL do not have a commiserate set of interim and final milestones. The memo will describe the approach to establishing appropriate milestones for the EWMP.	July 2014 – March 2015
Regional Projects and Initial Screening	Describes process for assembling a comprehensive list of potential Regional projects, and the screening process employed to ultimately identify Regional projects to include in the EWMP.	April 2014 – March 2015
Watershed Control Measures and RAA Results	Describes WMMS model development for RAA and key modeling assumptions. Incorporates Regional projects presented in the *Regional Projects and Initial Screening Memo*, summarizes results of RAA and provides recommended program of implementation to achieve the water quality goals established in the *Water Quality Improvement Memo*.	September 2014 – March 2015
Project Schedules and Cost Estimates	Summarizes costs and schedules for proposed watershed control measures recommended in the *Watershed Control Measures and RAA Results Memo* that will serve as the basis for the recommended EWMP.	December 2014 – March 2015
Draft EWMP	Compiles relevant findings contained in the Work Plan as well as the content of the four memos prepared during the EWMP development process.	February 2015 – May 2015
Final Draft EWMP (to Regional Board)	Describes plan that will serves as the basis for MS4 NPDES compliance by the ULAR WMG members.	May 2015 – June 28, 2015

Section 6
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Appendix 1.A
Notice of Intent

CITY OF LOS ANGELES
CALIFORNIA

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WATERSHED PROTECTION DIVISION
1149 South Broadway, 10TH Floor
Los Angeles, CA 90015
TEL: (213) 485-0587
FAX: (213) 485-3939

June 27, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

Dear Mr. Unger:

SUBMITTAL OF NOTICE OF INTENT FOR DEVELOPMENT OF ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM FOR THE UPPER LOS ANGELES RIVER WATERSHED MANAGEMENT AREA GROUP

Please find attached the Notice of Intent (NOI) for the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) for the Upper Los Angeles River Watershed Management Area Group (ULARWMA). The participating permittees of the ULARWMA Group have mutually agreed to a collaborative approach in meeting the requirements of the new MS4 Permit (Order No. R4-2012-0175). Please note that the ULARWMA Group does not have all MS4 permittees in the Upper Los Angeles River watershed participating as some have opted to develop their own strategy in complying with the MS4 Permit. The City of Los Angeles, as lead agency for the ULARWMA Group, has prepared this Notice of Intent on behalf of itself, the County of Los Angeles and Los Angeles County Flood Control District, and the Cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, South Pasadena, San Marino, Temple City. All agencies have reviewed and approved this NOI for submission to your Board, and we appreciate the collaboration by the participating MS4 co-permittees in the preparation of the NOI materials.

The attached document satisfies the requirements for submitting the NOI as provided by Part VI.C.4.b of the MS4 Permit and the CIMP notification requirements as provided by Attachment E Section IV.C.1. We look forward to continuing the process of plan developments for the

ULARWMA group with the Technical Advisory Committee, the Los Angeles Regional Water Quality Control Board, and other watershed stakeholders.

Should you have any questions about this submittal, please contact me at Shahram.Kharaghani@lacity.org or phone (213) 485-0587 or your staff may contact Alfredo Magallanes at Alfredo.Magallanes@lacity.org or phone (213) 485-3958.

Sincerely

SHAHRAM KHARAGHANI, Ph.D., PE, BCEE
Program Manager

SK:AM:am
WPDCR9047

Attachment

cc: Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Enrique Zaldivar, City of Los Angeles, Bureau of Sanitation
Adel Hagekhalil, City of Los Angeles, Bureau of Sanitation
Gary Hildebrand, County of Los Angeles, Department of Public Works
Jolene Guererro, County of Los Angeles, Department of Public Works
Alvin Cruz, City of Burbank
Alex Farassati, City of Calabasas
Amy Ho, City of Monterey Park
Armond Ghazarian, County of Los Angeles, Department of Public Works
David Dolphin, City of Alhambra
Daren Grilley , City of San Gabriel
Edward Hitti, City of La Canada Flintridge
Elaine Unitake, County of Los Angeles,
Elroy Kiepke, Willdan Engineering
John Hunter, John L. Hunter and Associates
Joe Bellomo, City of Hidden Hills,
Kevin Sales, City of San Marino
Luis Perez, County of Los Angeles
Mark Perisco, City of Temple City
Maurice Oillataguerre, City of Glendale,
Michelle Marquez-Riley, City of El Monte
Mikki Klee, John Hunter and Associates
Norma Salinas. City of Montebello
Sean Sulivan, City of Rosemead
Sheila Kennedy, Enfact Solutions
Shin Furukawa, City of South Pasadena
Steve Walker, City of Pasadena
Tona Avalos, County of Los Angeles, Department of Public Works
Ying Kwan, City of La Canada Flintridge

NOTICE OF INTENT

Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program

Submitted by the:

Upper Los Angeles River Watershed Group

City of Los Angeles
County of Los Angeles
Los Angeles County Flood Control District
City of Alhambra
City of Burbank
City of Calabasas
City of Glendale
City of Hidden Hills
City of La Canada Flintridge
City of Montebello
City of Monterey Park
City of Pasadena
City of Rosemead
City of San Gabriel
City of San Marino
City of South Pasadena
City of Temple City

June 28, 2013

1. Introduction

The Upper Los Angeles River Watershed Group respectfully submits this Notice of Intent (NOI) to develop an Enhanced Watershed Management Program (EWMP) for the Upper Los Angeles River Watershed per Part VI.C.4.b.i of Order No. R4-2012-0175 (MS4 Permit). The Upper Los Angeles River Watershed Group (Group) includes the following entities: the Cities of Los Angeles, Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City; the County of Los Angeles; and, the Los Angeles County Flood Control District. This NOI includes a statement of the Group's intent to follow a Coordinated Integrated Monitoring Program (CIMP) approach.

The Los Angeles River Watershed encompasses approximately 834 square miles and includes 43 different cities as well as unincorporated Los Angeles County. The 303(d) List has identified the Los Angeles River Watershed as being impaired by several pollutants. Accordingly, the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) and the U.S. Environmental Protection Agency (USEPA) have adopted and/or established several TMDLs for the receiving waters throughout the Los Angeles River Watershed. The Group proposes the development of an EWMP specifically for the Upper Los Angeles River Watershed as the most effective approach to utilize opportunities to retain and reuse runoff and to address the unique challenges of the watershed. The Group does not include all jurisdictions located within the watershed; thus, this EWMP and CIMP will only apply to those areas governed by the participating entities, delineated in Attachment 1. All drainage infrastructure operated and maintained by the LACFCD within the boundaries shown in Attachment 1 are also covered under this EWMP and CIMP.

The Group has been collaborating since the first Los Angeles River Watershed TMDLs were adopted by the LARWQCB. TMDL-related monitoring in the Upper Los Angeles River Watershed has been implemented in a coordinated manner and is being cost-shared by all Upper Los Angeles River Watershed Group members as well as Caltrans.

The City of Los Angeles will act as the lead agency for developing the EWMP and CIMP; however, development of the Work Plan, CIMP, and EWMP Plan will be a collaborative process between all members of the Group, coordinated with the Technical Advisory Committee as well as with watershed stakeholders.

The following sections:

a) Satisfy the EWMP requirements for NOI submittal as provided by Section VI.C.4.b of the MS4 Permit;
b) Satisfy the CIMP notification requirements as provided by Attachment E Section IV.C.1.; and,
c) Provide the LARWQCB with additional information on the approach that the Group intends to follow for EWMP development.

2. Notification of Intent (Section VI.C.4.b.i and Attachment E Section IV.C.1.)

With this NOI, the Group hereby notifies the LARWQCB of their intention to collaboratively develop an EWMP for the Upper Los Angeles River Watershed, request a Work Plan due date of 18 months after the effective date of the MS4 Permit (June 28, 2014), and request a draft EWMP Plan due date of 30 months after the effective date of the MS4 Permit (June 28, 2015).

Additionally, with this NOI, the Group notifies the LARWQCB of their intention to collaboratively develop a CIMP for the Upper Los Angeles River Watershed, and request a draft CIMP due date of 18 months after the effective date of the MS4 Permit (June 28, 2014).

3. Interim and Final TDML Compliance Deadlines (Section VI.C.4.b.ii)

Table 1 lists the TMDLs that apply to the Upper Los Angeles River subwatershed of the Los Angeles River Watershed Management Area. Interim and final compliance deadlines of the Los Angeles River Watershed Trash

TMDL and final compliance deadlines of other TMDLs occurring prior to the anticipated approval date of the EWMP (April 28, 2016) are included in Table 2.

The watershed control measures that will be implemented to meet the requirements of the interim and final trash water quality based effluent limits (WQBELs) and all other final WQBELs are described in more detail in Section 12 of this NOI submittal.

Table 1. TMDLs Applicable to Upper Los Angeles River Watershed

TMDL	LARWQCB Resolution Number	Effective Date and/or EPA Approval Date
Los Angeles River Watershed Trash TMDL	2007-012	09/23/2008
Los Angeles River Nitrogen Compounds and Related Effects TMDL	2003-009	03/23/2004
Los Angeles River Watershed Bacteria TMDL	R10-007	03/23/2012
Los Angeles River and Tributaries Metals TMDL	2007-014	10/29/2008
Legg Lake Trash TMDL	2007-010	03/06/2008
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL	R11-008	03/23/2012
Long Beach City Beaches and Los Angeles River Estuary Bacteria TMDL	USEPA Established TMDL	03/26/2012
Los Angeles Area Lakes TMDLs for Lake Calabasas, Echo Park Lake, and Legg Lake	USEPA Established TMDL	03/26/2012

Table 2. Interim (Trash) and Final TMDL Compliance Deadlines Prior to EWMP Approval

TMDL	Milestone	Interim/Final	Deadline
Los Angeles River Watershed Trash TMDL	20% reduction of baseline load	Interim	09/30/2005
	30% reduction of baseline load	Interim	09/30/2006
	40% reduction of baseline load	Interim	09/30/2007
	50% reduction of baseline load	Interim	09/30/2008
	60% reduction of baseline load	Interim	09/30/2009
	70% reduction of baseline load	Interim	09/30/2010
	80% reduction of baseline load	Interim	09/30/2013
	90% reduction of baseline load	Interim	09/30/2014
	96.7% reduction of baseline load	Interim	09/30/2015
	100% reduction of baseline load	Final	09/30/2016
Legg Lake Trash TMDL	20% reduction of baseline load	Interim	03/06/2012
	40% reduction of baseline load	Interim	03/06/2013
	60% reduction of baseline load	Interim	03/06/2014
	80% reduction of baseline load	Interim	03/06/2015
	100% reduction of baseline load	Final	03/06/2016
Los Angeles River Watershed Nitrogen Compounds and Related Effects TMDL	100% of MS4 drainage area complies with waste load allocations	Final	03/23/2004

4. Geographical Scope (Section VI.C.4.b.iii.(1))

As previously mentioned, this EWMP for the Upper Los Angeles River Watershed only covers the areas associated with the participating entities, known collectively as the Upper Los Angeles River Watershed Group (Group). The Group includes the Cities of Los Angeles, Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City; the County of Los Angeles, and the Los Angeles County Flood Control District (LACFCD). Thus, the area

included in this Upper Los Angeles River Watershed EWMP is approximately 479 square miles. This includes the drainage infrastructure operated and maintained by the LACFCD within the above jurisdictions as well as those within the non-participating Cities of San Fernando, Compton, Irwindale, El Monte, and South El Monte. Attachment 1 provides a map of the watershed boundaries, land areas of the participating MS4 Permittees, and the other entities within the watershed that will be covered in this EWMP.

The Los Angeles River is approximately 55 miles long. The natural hydrology of the Los Angeles River Watershed has been altered by channelization and the construction of dams and flood control reservoirs. The Los Angeles River and many of its tributaries are lined with concrete for most or all of their lengths. Soft-bottomed segments of the Los Angeles River occur where groundwater upwelling prevented armoring of the river bottom.

The Los Angeles River has been divided into six reaches (listed here from upstream to downstream):

- Reach 6 begins at the headwaters of the Los Angeles River (the confluence of Arroyo Calabasas and Bell Creek) and extends to Balboa Boulevard.
- Reach 5 runs from Balboa Boulevard through the Sepulveda Basin.
- Reach 4 runs from Sepulveda Dam to Riverside Drive.
- Reach 3 runs from Riverside Drive to Figueroa Street.
- Reach 2 runs from Figueroa Street to Carson Street.
- Reach 1 runs from Carson Street to the estuary.

In addition, the Los Angeles River is also divided into five segments:

- Segment A includes lower Reach 2 and Reach 1 from Rosecrans Avenue to Willow Street.
- Segment B includes upper and middle Reach 2 from Figueroa Street to Rosecrans Avenue.
- Segment C includes lower Reach 4 and Reach 3 from Tujunga Avenue to Figueroa Street.
- Segment D includes Reach 5 and upper Reach 4 from Balboa Boulevard to Tujunga Avenue.
- Segment E includes Reach 6 from the headwaters of the Los Angeles River to Balboa Boulevard.

Major tributaries to Upper Los Angeles River Watershed include Aliso Creek, Bell Creek, Bull Creek, Tujunga Wash, Burbank Western Channel, Arroyo Seco, Rio Hondo, and Compton Creek.

The total area of the Upper Los Angeles River Watershed is XX square miles; however, this EWMP only covers the areas associated with the Group, encompassing approximately XX square miles. Table 3 provides a summary of the areas associated with the participating MS4 Permittees and other participating agencies. Collectively, the MS4 Permittees in the Upper Los Angeles River Watershed have jurisdiction over 479 square miles or 57.43% of the total watershed area. The Group has no jurisdiction over the land that is owned by the State of California (i.e., California Department of Fish and Wildlife, the State Lands Commission, and Caltrans) and the US Government.

Table 3. Upper LA River Watershed Area Distribution for Entities participating in this EWMP

Agency	Area (acres)	Area (percent)
City of Los Angeles	181,288.00	59.22
County of Los Angeles	40,553.34	13.25
Los Angeles County Flood Control District	N/A	N/A
City of Alhambra	4,884.31	1.60
City of Burbank	11,095.20	3.62
City of Calabasas	4,005.68	1.31
City of Glendale	19,587.50	6.40
City of Hidden Hills	961.03	0.31
City of La Canada Flintridge	5,534.46	1.81
City of Montebello	5,356.38	1.75
City of Monterey Park	4,951.51	1.62
City of Pasadena	14,805.30	4.84
City of Rosemead	3,310.87	1.08
City of San Gabriel	2,644.87	0.86
City of San Marino	2,409.64	0.79
City of South Pasadena	2,186.20	0.71
City of Temple City	2,576.50	0.84
Group Total	**306,150.79**	**100**

5. Plan Concept (Section VI.C.4.b.iii.(1))

Collectively, the Group has developed several Implementation Plans that include strategies for demonstrating compliance with the Los Angeles River Watershed Bacteria and Metals TMDLs. The Implementation Plans and strategies for compliance are based on a multi-pollutant approach that maximizes the retention and use of urban runoff as a resource for groundwater recharge and irrigation. The Group has collaborated with key watershed stakeholders to identify the distributed and regional BMPs as part of the Implementation Plans. The Upper Los Angeles River Watershed EWMP will further enhance the TMDL implementation plans; re-evaluate the proposed watershed control measures; identify additional regional projects to maximize opportunities for retaining all non-stormwater runoff and stormwater from the 85th percentile, 24-hour storm event; and, identify additional watershed control measures for those areas in the watershed that cannot be addressed by a regional project.

In order to meet the requirements of the MS4 Permit, the Group will develop the following documents:

- A Work Plan for submittal to the LARWQCB by June 28, 2014. The Work Plan will meet the requirements of the MS4 Permit, provide an understanding of where the agencies are today, and outline a path forward.
- A CIMP for submittal to the LARWQCB by June 28, 2014. The CIMP will address all TMDL monitoring requirements applicable to the Los Angeles River Watershed and all five monitoring elements of the MS4 Permit Monitoring and Reporting Program (MRP).
- An EWMP Plan for draft submittal to the LARWCB by June 28, 2015 and final submittal by January 28, 2016. Using the information developed for the Work Plan, the EWMP will meet the requirements of the MS4 Permit.

6. Cost Estimate (Section VI.C.4.b.iii.(2))

The Group collaboratively prepared a scope of work and cost estimate for developing the Work Plan, the CIMP, and the EWMP for the participating areas within the Upper Los Angeles River Watershed. It is estimated that the cost for the Work Plan, the CIMP, and the EWMP Plan development is approximately $1.45 million. This estimate assumes that the CIMP and EWMP will, in part, be based on the existing TMDL Coordinated Monitoring Plans and any available Implementation Plans. In addition, the Group will contribute several hundred thousands of dollars in in-kind services and contract administration costs.

7. Memorandum of Understanding (Section VI.C.4.b.iii.(3))

Attachment 2 includes the final draft of the Memoranda of Agreement between the City of Los Angeles, as the lead agency, and the other Group members. All agencies have committed to the execution of these agreements as indicated by the signed letters of intent (Attachment 3). The agreements will be executed before December 28, 2013.

8. Interim Milestones and Deadlines for Plan Development (Section VI.C.4.b.iii.(4))

Table 4 summarizes the interim milestone and deadlines based on the scope of work for developing the Work Plan, CIMP, and EWMP agreed to by the Group. In addition to the monthly agency coordination meetings and coordination meetings with the Technical Advisory Committee, the schedule in Table 4 assumes meetings and/or workshops with local watershed stakeholders. Technical memorandums summarizing information and approaches utilized by the Group in developing the Work Plan, CIMP, and EWMP Plan will be submitted and viewed as interim milestones. It is expected that the draft technical memos will not be finalized per section; rather, the information presented in the memos will be revised based on comments and presented in the final Work Plan, CIMP, and EWMP Plan.

Table 4. Proposed Interim Milestones and Deadlines for Plan Development

Deliverable	Milestones and Deadlines
Work Plan	
Draft Technical Memos • Identification of water quality priorities • Existing and future watershed control measures, identification of potential regional projects • Reasonable assurance analysis approach • BMP selection approaches	March 2014
Draft Work Plan	April 2014
Final Work Plan Submitted to the LARWQCB	June 2014
Coordinated Integrated Monitoring Plan	
Draft Technical Memos • Outfall and receiving water monitoring approach • Monitoring sites selection • New development and redevelopment effectiveness tracking	March 2014
Draft CIMP	April 2014
Final Draft CIMP Submitted to the LARWQCB	June 2014
Enhanced Watershed Management Program	
Draft Technical Memos • Approach to USEPA TMDLs, 303(d) listings, other exceedances of RWLs • Final selection of regional projects • Feasibility analyses of regional projects, customization of MCMs, identification of other BMPs • Project schedules and cost estimates	April 2015
Draft EWMP	May 2015
Final Draft EWMP Submitted to the LARWQCB	June 2015

9. Structural BMP (Section VI.C.4.b.iii.(5))

During the 30-month EWMP Plan development, the Group will be implementing two structural BMPs to demonstrate its responsibility to improving water quality in the watershed. The goal of both projects is to utilize dry- and wet-weather runoff after natural treatment for the beneficial use of surface irrigation or infiltration. The cumulative investment by the County of Los Angeles and the City of Los Angeles for these projects is that of $7.4

million. These two structural BMP projects are summarized below. More information can be found on the Project Fact Sheets included as Attachment 4.

Brandon Street and Green Street Improvements Project (County of Los Angeles)

The project will reconstruct approximately 0.16 miles of roadway on Green Street and 0.39 miles on Brandon Street. The design includes several green street elements including permeable pavers, bio-retention planters, sediment filtration catch basins, and an underground infiltration basin. Much of the runoff from the streets and private properties that would have otherwise drained to the Rio Hondo will be directed to the infiltration area. This will help to augment groundwater supplies and prevent pollutants from entering the Los Angeles River.

Humboldt Greenway Project

This project will intercept an existing storm drain system and construct a stormwater greenway with a "stream" eco-system through the corridor on Humboldt Street with a pedestrian path connecting Avenue 18 and Avenue 19. The project is adjacent to the Los Angeles River, just north of Civic Center area of the City of Los Angeles. The bioremediation elements include a pollution reduction/infiltration system and an approximately 175-foot long graded swale/open-channel, which is surrounded by a vegetated basin. Work also includes a) an overflow structure; b) a pedestrian bridge; c) an irrigation system; d) landscaping and tree planting; and e) solar lighting.

10. LID Ordinance (Sections VI.C.4.b.iii.(6) and VI.C.4.c.iv.(1))

Table 5 summarizes the status of Low Impact Development (LID) ordinances mandated by the Group. As presented in Table 5, greater than 50% of the land area addressed by the geographical scope of the Group is addressed by an LID ordinance that is in place.

Table 5. Upper LA River Watershed Group EWMP Area Percentage Addressed by LID Ordinances

Agency	Area (percent)	Status LID ordinance SEE NOTE BELOW
City of Los Angeles	59.22	Revising Ordinance
County of Los Angeles	13.25	Draft Ordinance
LACFCD	N/A	N/A
City of Alhambra	1.60	In Development
City of Burbank	3.62	In Development
City of Calabasas	1.31	In Development
City of Glendale	6.40	In Development
City of Hidden Hills	0.31	In Development
City of La Canada Flintridge	1.81	In Development
City of Montebello	1.75	In Development
City of Monterey Park	1.62	In Development
City of Pasadena	4.84	In Development
City of Rosemead	1.08	In Development
City of San Gabriel	0.86	In Development
City of San Marino	0.79	In Development
City of South Pasadena	0.71	In Development
City of Temple City	0.84	In Development

Note:

1. **Revising Ordinance**. The City of Los Angeles LID Ordinance became effective on May 12, 2012. The City is currently amending sections of the LID Ordinance, as well as its Stormwater and Urban Runoff Pollution Control Ordinance (L.A.M.C. Chapter VI, Article 4.4) to meet all the MS4 Permit requirements.
2. **Draft Ordinance**. Permittee has completed or will complete by June 28, 2013 the development of a draft LID Ordinance that is in compliance with the MS4 Permit for its portion of the watershed.
3. **In Development**. Permittee initiated development of an LID Ordinance that is in compliance with the requirements of the MS4 Permit for its portion of the watershed.

11. Green Street Polices (Sections VI.C.4.b.iii.(6) and VI.C.4.c.iv.(2))

Table 6 summarizes the status of green street policies observed by the Group. As presented in Table 6, greater than 50% of the land area addressed by the geographical scope of the EMWP is addressed by green streets policies that are in place.

Table 6. Summary of Percent EWMP Area Addressed by Green Street Policies

EWMP agency	% EWMP area	Status green street policies SEE NOTE BELOW
City of Los Angeles	59.22	In Effect
County of Los Angeles	13.25	In Development
LACFCD	N/A	N/A
City of Alhambra	1.60	In Development
City of Burbank	3.62	In Development
City of Calabasas	1.31	In Development
City of Glendale	6.40	In Development
City of Hidden Hills	0.31	In Development
City of La Canada Flintridge	1.81	In Development
City of Montebello	1.75	In Development
City of Monterey Park	1.62	In Development
City of Pasadena	4.84	In Development
City of Rosemead	1.08	In Development
City of San Gabriel	0.86	In Development
City of San Marino	0.79	In Development
City of South Pasadena	0.71	In Development
City of Temple City	0.84	In Development

Note:

1. **In Effect**. Permittee has adopted a Green Street Policy that is in compliance with the requirements of the MS4 Permit for its portion of the watershed.
2. **Draft Policy**. Permittee has completed or will complete by June 28, 2013 the development of a draft Green Street Policy that is in compliance with the MS4 Permit for its portion of the watershed.
3. **In Development**. Permittee initiated development of a Green Street Policy that is in compliance with the requirements of the MS4 Permit for its portion of the watershed.

12. Implementation of Watershed Control Measures during Plan Development (Section VI.C.4.b.ii)

The Group has developed TMDL Implementation Plans incorporating structural and institutional watershed control measures for a multi-pollutant and multi-benefit approach, as well as the timelines for implementation to meet the water quality limitations of the various TMDLs. Table 7 summarizes the TMDL Implementation Plans that have been developed to date. Three TMDLs have interim and/or final compliance milestones prior to the final approval of the EWMP by April 28, 2016, as shown in Table 2, that will be met through the continued implementation efforts as outlined in the Implementation Plans. The Group will continue their efforts to implement the actions of the TMDL Implementation Plans concurrently with the development of the Upper Los Angeles River Watershed EWMP. Attachment 5 provides more details of the ongoing and planned actions.

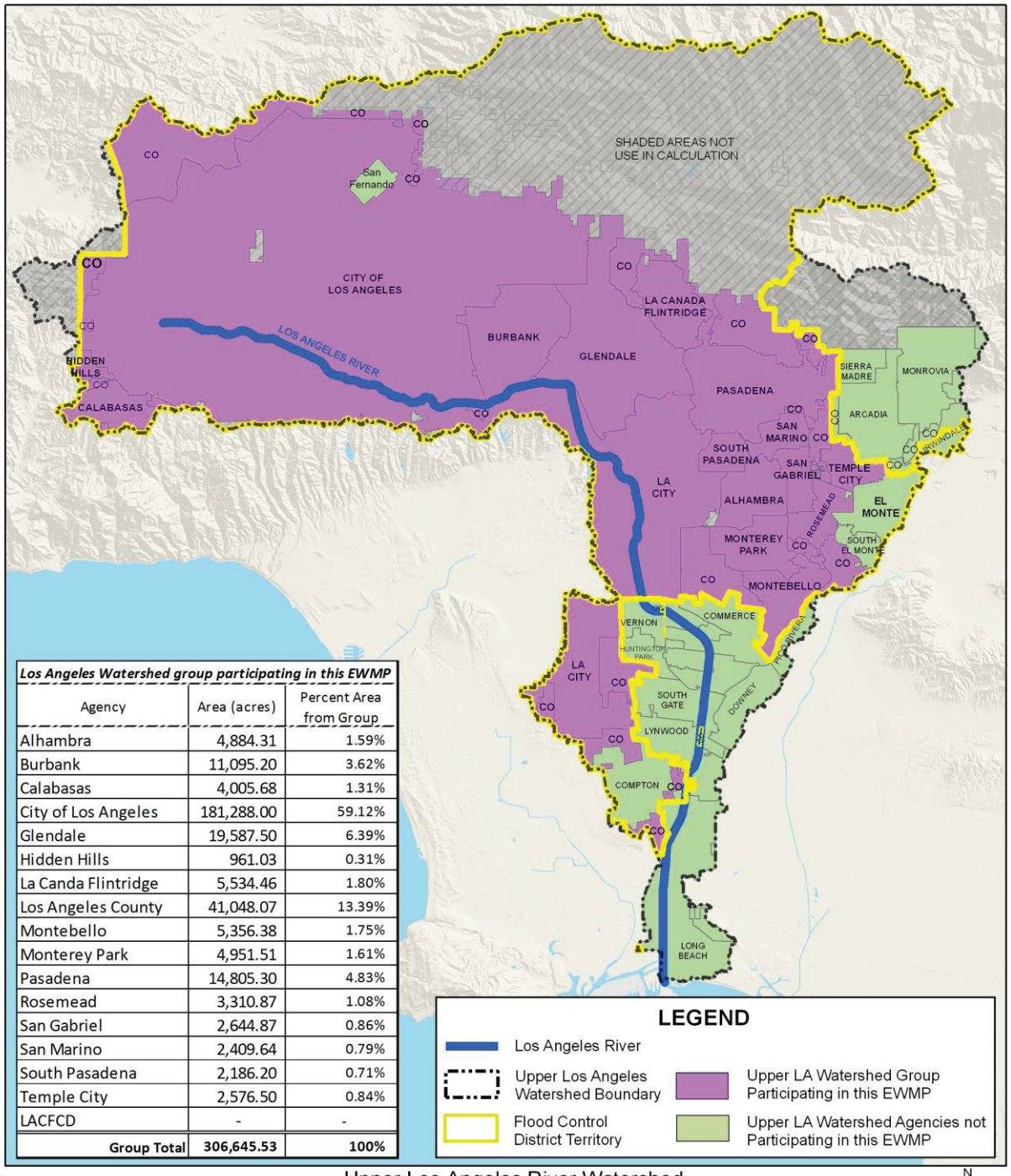
Table 7. Implementation Plans for Upper Los Angeles River Watershed TMDLs

Implementation Plan	Agencies	Plan Status
Implementation Plan for Upper Los Angeles River Watershed Metals TMDL	Cities of Los Angeles, Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel , San Marino, South Pasadena, and Temple City; Caltrans	Final plan submitted 10/07/2010
Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed	County of Los Angeles	Final plan submitted 10/07/2010

Three TMDLs have interim and/or final compliance milestones prior to the final approval of the EWMP by April 28, 2016 as summarized in Table 2. The Upper Los Angeles River Watershed Group will continue the implementation of watershed control measures concurrently with EWMP Plan development to ensure compliance with these interim and/or final milestones, as follows:

- **Interim and final milestones of the Los Angeles River Watershed Trash TMDL**: Each EWMP agency has developed its own program for compliance with this TMDL. Agency-specific programs and the status of implementation and compliance are provided in Attachment 5.
- **Interim and final milestones of the Legg Lake Trash TMDL**: The County of Los Angeles is in compliance with this TMDL.
- **Final compliance milestone of the Los Angeles River Watershed Nitrogen Compounds and Related Effects TMDL**: As required by this TMDL, the Monitoring Work Plan to Assess Nutrient Loading from the Municipal Separate Storm Sewer System was submitted on March 23, 2005.

Attachment 1 – Upper Los Angeles River Watershed Group Map



Los Angeles Watershed group participating in this EWMP

Agency	Area (acres)	Percent Area from Group
Alhambra	4,884.31	1.59%
Burbank	11,095.20	3.62%
Calabasas	4,005.68	1.31%
City of Los Angeles	181,288.00	59.12%
Glendale	19,587.50	6.39%
Hidden Hills	961.03	0.31%
La Canda Flintridge	5,534.46	1.80%
Los Angeles County	41,048.07	13.39%
Montebello	5,356.38	1.75%
Monterey Park	4,951.51	1.61%
Pasadena	14,805.30	4.83%
Rosemead	3,310.87	1.08%
San Gabriel	2,644.87	0.86%
San Marino	2,409.64	0.79%
South Pasadena	2,186.20	0.71%
Temple City	2,576.50	0.84%
LACFCD	-	-
Group Total	**306,645.53**	**100%**

Upper Los Angeles River Watershed
EWMP Agencies

BUREAU OF SANITIATION

ENRIQUE C. ZALDIVAR
DIRECTOR

SHAHRAM KHARAGHANI
PROGRAM MANAGER

ULARW_EWMPAgencies	DRAWN BY: NH	CHECKED BY:	DATE 6/18/2013 / DATE REVISED	This map shall not be copied or reproduced, all or any part thereof, whether for distribution or resale,without the proper written permission of the Dept. of Public Works, City of Los Angeles Thomas Bros Data reproduce with permission granted by THOMAS BROS MAP

WATERSHED PROTECTION DIVISION

Attachment 2 – Draft Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF LOS ANGELES, THE CITY OF ALHAMBRA, THE CITY OF BURBANK, THE CITY OF CALABASAS, THE CITY OF GLENDALE, THE CITY OF HIDDEN HILLS, THE CITY OF LA CANADA FLINTRIDGE, THE CITY OF MONTEBELLO, THE CITY OF MONTEREY PARK, THE CITY OF PASADENA, THE CITY OF ROSEMEAD, THE CITY OF SAN GABRIEL, THE CITY OF SAN MARINO, THE CITY OF SOUTH PASADENA, THE CITY OF TEMPLE CITY, THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT, AND THE COUNTY OF LOS ANGELES
REGARDING THE ADMINISTRATION AND COST SHARING FOR DEVELOPMENT OF THE ENHANCED WATERSHED MANAGEMENT PROGRAM AND THE COORDINATED INTEGRATED MONITORING PROGRAM FOR THE UPPER LOS ANGELES RIVER WATERSHED

REGARDING THE ADMINISTRATION AND COST SHARING FOR DEVELOPMENT OF THE ENHANCED WATERSHED MANAGEMENT PROGRAM AND THE COORDINATED INTEGRATED MONITORING PROGRAM FOR THE UPPER LOS ANGELES RIVER WATERSHED

This Memorandum of Understanding (MOU) is made and entered into as of the date of the last signature set forth below by and between: the City of Los Angeles, a municipal corporation; the City of Alhambra, a municipal corporation; the City of Burbank, a municipal corporation; the City of Calabasas, a municipal corporation; the City of Glendale, a municipal corporation; the City of Hidden Hills, a municipal corporation; the City of La Canada Flintridge, a municipal corporation; the City of Montebello, a municipal corporation; the City of Monterey Park, a municipal corporation; the City of Pasadena, a municipal corporation; the City of Rosemead, a municipal corporation; the City of San Gabriel, a municipal corporation; the City of San Marino, a municipal corporation; the City of South Pasadena, a municipal corporation; the City of Temple City, a municipal corporation; the Los Angeles County Flood Control District (LACFCD), a political subdivision of the State of California; and the County of Los Angeles, a political subdivision of the State of California. Collectively, these entities shall be known herein as "Parties" or individually as "Party."

WITNESSETH

WHEREAS, the Regional Water Quality Control Board, Los Angeles Region ("Regional Board") adopted National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit Order No. R4-2012-0175 (MS4 Permit); and

WHEREAS, the MS4 Permit became effective on December 28, 2012 and requires that the LACFCD, County of Los Angeles, and 84 of the 88 cities (excluding Avalon, Long Beach, Palmdale, and Lancaster) within the County of Los Angeles comply with the prescribed elements of the MS4 Permit; and

WHEREAS, the MS4 Permit identified the Parties as the MS4 permittees that are responsible for compliance with the MS4 Permit requirements pertaining to the Los Angeles River Watershed Management Area; and

WHEREAS, the Parties have agreed to collaborate on the development of an Enhanced Watershed Management Program (EWMP) for the Los Angeles River Watershed Management Area to comply with certain elements of the MS4 Permit; and

WHEREAS, the Parties agree that each shall assume full and independent responsibility for ensuring its own compliance with the MS4 Permit despite the collaborative approach of the MOU; and

WHEREAS, the development of an EWMP includes the preparation of a Work Plan, a draft and final Coordinated Integrated Monitoring Plan ("CIMP"), and a draft and final Enhanced Watershed Management Program Plan ("EWMP Plan"), collectively referred to herein as "Plans"; and

WHEREAS, the Parties collaboratively prepared a final Scope of Work and Request for Proposal to obtain a Consultant for preparing the Plans that will satisfy the requirements of the MS4 Permit; and

WHEREAS, the Parties have determined that hiring a Consultant to prepare and deliver the Plans will be beneficial to the Parties and they desire to participate and will provide funding in accordance with the cost allocation on Exhibit A; and

WHEREAS, the Parties have agreed that the total cost for developing the Plans shall not exceed $1,593,410.05 including the project administration and management cost but excluding 10% contingency; and

WHEREAS, the Parties have agreed to retain the City of Los Angeles to coordinate the services of a Consultant to develop the Plans, the Parties have agreed to share in the cost and pay the City of Los Angeles for these consultant services as provided by Exhibit A of this MOU, and the City of Los Angeles has agreed to act on behalf of all Parties in the preparation of the Plans and the coordination of the consultant services;

NOW, THEREFORE, in consideration of the mutual benefits to be derived by the Parties, and of the promises contained in this MOU, the Parties agree as follows:

Section 1. Recitals: The recitals set forth above are fully incorporated into this MOU.

Section 2. Purpose: The purpose of this MOU is to cooperatively fund the preparation and submittal of the Plans to the Regional Board.

Section 3. Cooperation: The Parties shall fully cooperate with one another to attain the purpose of this MOU.

Section 4. Voluntary: This MOU is voluntarily entered into for the purpose of preparing and submitting the Plans to the Regional Board.

Section 5. Term: This MOU shall become effective on the last date of execution by the Parties or December 28, 2013, whichever comes first, and shall remain and continue to remain in effect until June 30, 2016. If a Party does not execute this MOU by December 28, 2013, that Party shall be excluded from this MOU and this MOU shall become effective on December 28, 2013 by execution by the remaining Parties.

Section 6. Assessment for Proportional Cost: The Parties agree to pay the City of Los Angeles for preparation and delivery of the Plans in the amounts shown in Table (4) of Exhibit A, based on the total costs shown in Tables (1) and (2) and the cost allocation formula shown in Table (3) of Exhibit A, attached hereto and made part of this MOU by this reference. The City of Los Angeles will invoice the Parties in two installments upon execution of this MOU as shown in Table (4) of Exhibit A, based on the allocated costs for developing the Plans by the Consultant and the project administration and management costs at a percentage of 10% of the allocated costs for development of the Plans. At the end of each fiscal year, the City of Los Angeles will provide the Parties with a statement with the actual expenditures. Unexpended funds at the termination of this MOU will be returned to the Parties in accordance with the cost allocation formula set forth in Table (3) of Exhibit A.

Section 7. City of Los Angeles agrees:

a. To solicit proposals for, award and administer a Consultant contract for the preparation and delivery of the Plans. The City of Los Angeles will be reimbursed for the administration and management of the Consultant contract as described in Exhibit A.

b. To utilize the funds deposited by the Parties only for the administration of the Consultant contract, project management, and the preparation and completion of the Plans.

c. To provide the Parties with an electronic copy of the technical memos, draft Plans and completed Plans within 10 business days of receipt from the Consultant.

d. To notify the Parties if the actual cost for the preparation of the Plans will exceed the cost estimates shown on Exhibit A and obtain approval of the increase from the Parties. Upon approval of the cost increase by the Parties, the City of Los Angeles will invoice the Parties per the cost allocation formula on Exhibit A.

e. To ensure all comments and concerns raised by the Parties during the preparation of the Plans are addressed to the satisfaction of the simple majority of the Parties.

f. To invoice the Parties in the amounts and according to the schedule shown in Table 4 of Exhibit A.

g. To provide an accounting within 90 days after at the termination of the MOU or within 90 after the early termination of the MOU pursuant to Section 11. The City of Los Angeles shall return the unused portion of all funds deposited with the City of Los Angeles in accordance with the cost allocation formula set forth in Table 3 in Exhibit A.

Section 8. The Parties further agree:

a. To make a full faith effort to cooperate with one another to achieve the purposes of this MOU by providing information about project opportunities, reviewing deliverables in a timely manner, and informing administration and council and appropriate legislative bodies.

b. To fund the cost of the preparation and delivery of the Plans and to pay the City of Los Angeles for the preparation and delivery of the Plans based on the cost allocation shown in Exhibit A. This includes the costs incurred by the City of Los Angeles for administering the Consultant services between awarding the Consultant contract and the execution of this MOU.

c. To grant access rights and entry to the City of Los Angeles and the Consultant during the terms of this MOU to the Parties' facilities (i.e. storm drains, channels, catch basins, properties, etc.) ("Facilities") to achieve the purposes of this MOU. Prior to exercising said right of entry, the City of Los Angeles or their Consultant shall provide written notice to the Parties at least 72 hours in advance. For the purposes of this provision, written notice shall include notice delivered via e-mail that has been delivered to the Parties' representatives identified in Exhibit B. The City of Los Angeles shall require the Consultant retained pursuant to this MOU to agree to indemnify, defend, and hold harmless each Party, its special districts, elected and appointed officers, employees, and agents, from and against any and all liability, including but not limited to demands, claims, actions, fees, costs, and expenses (including attorney and expert fees), arising from or connected with the Consultant's performance of its agreement with the City of Los Angeles. In addition, the City of Los Angeles shall require the Consultant to carry, maintain, and keep in full force and effect an insurance policy or policies, and each Party, its officers, employees, attorneys, and designated volunteers shall be named as additional insured on the policy(ies) with respect to liabilities arising out of the Consultant's work. These requirements will also apply to any subcontractors hired by the Consultant.

Section 9. Invoice and Payment

a. Payment: The Parties shall pay the City of Los Angeles their proportional share of the cost for the preparation and delivery of the Plans and project administration and management as shown in Table 4 of Exhibit A. Payments are due within sixty (60) days of receiving the invoice from the City of Los Angeles.

b. Invoice: The City of Los Angeles will invoice Parties in two installments in the amounts shown in Table 4 of Exhibit A. The first invoice will be sent upon execution of this MOU or in January 2014, whichever comes first. The second invoice will be sent in July 2014.

c. Contingency: The City of Los Angeles will notify the Parties if actual expenditures are anticipated to exceed the cost estimates contained in Exhibits A and obtain approval of such expenditures from all Parties. Upon approval, the Parties agree to reimburse the City of Los Angeles for their proportional share of these additional expenditures at an amount not to exceed 10% of the original cost estimate as shown in Exhibit A. This 10% contingency will not be invoiced, unless actual expenditures exceed the original cost estimate. Expenditures that exceed the 10% contingency will require an amendment of this MOU.

Section 10. Indemnification

a. Each Party shall indemnify, defend, and hold harmless each other Party, including its special districts, elected and appointed officers, employees, and agents, from and against any and all liability, including but not limited to demands, claims, actions, fees, costs, and expenses (including attorney and expert witness fees), arising from or connected with the respective acts of each Party arising from or related to this MOU; provided, however, that no party shall indemnify another party for that party's own negligence or willful misconduct.

b. In light of the provisions of Section 895.2 of the Government Code of the State of California imposing certain tort liability jointly upon public entities solely by reason of such entities being parties to an agreement (as defined in Section 895 of said Code), each of the Parties hereto, pursuant to the authorization contained in Section 895.4 and 895.6 of said Code, shall assume the full liability imposed upon it or any of its officers, agents, or employees, by law for injury caused by any act or omission occurring in the performance of this MOU to the same extent that such liability would be imposed in the absence of Section 895.2 of said Code.

c. To achieve the above stated purpose, each Party indemnifies, defends, and holds harmless each other Party for any liability, cost, or expense that may be imposed upon such other Party solely by virtue of said Section 895.2. The provisions of Section 2778 of the California Civil Code are made a part hereof as if incorporated herein.

Section 11. Termination

a. This MOU may be terminated in whole or in part, upon the express written agreement to all Parties by giving 30 day written notice. The terminating Party shall be responsible for its Proportional Costs, which the City of Los Angeles incurred or to which it became bound through the effective date of termination. Such MOU Costs shall include the remaining fees of any Consultant retained by the City of Los Angeles prior to the effective date of termination. Should any Party terminate the

MOU, the remaining Parties' Proportional Cost allocation shall be adjusted in accordance with the Cost Share Formula. If this MOU is terminated, all Parties must agree on the equitable redistribution of remaining funds deposited, if there are any, or payment of invoices due at the time of termination. Completed work shall be owned by all Parties. Rights to uncompleted work by the Consultant still under contract will be held by the Party or Parties who fund the completion of such work.

b. If a Party fails to comply with any of the terms or conditions of this MOU, that Party shall forfeit its rights to the work completed through this MOU.

Section 12. General Provisions

a) Notices. Any notices, bills, invoices, or reports relating to this MOU, and any request, demand, statement or other communication required or permitted hereunder shall be in writing and shall be delivered to the Representative of the Party at the address set forth in Exhibit B. Parties shall promptly notify each other of any change of contact information, including personnel changes, provided in Exhibit B. Written notice shall include notice delivered via email or fax. A notice shall be deemed to have been received on (a) the date of delivery, if delivered by hand during regular business hours, or by confirmed facsimile or by email; or (b) on the third (3) business day following mailing by registered or certified mail (return receipt requested) to the addresses set forth in Exhibit B.

b) Administration. For the purpose of this MOU, the Parties hereby designate as their respective Party Representatives the persons named in Exhibit B. The designated Party Representatives, or their respective designees, shall administer the terms and conditions of this MOU on behalf of their respective Party. Each of the persons signing below on behalf of a Party represents and warrants that they are authorized to sign this MOU on behalf of such Party.

c) Relationship of Parties. The Parties are and shall remain at all times as to each other, wholly independent entities. No Party to this MOU shall have power to incur any debt, obligation, or liability on behalf of another Party unless expressly provided to the contrary by this MOU. No employee, agent, or officer of a Party shall be deemed for any purpose whatsoever to be an agent, employee or officer of another Party.

d) Binding Effect. This MOU shall be binding upon and inure to the benefit of each Party to this MOU and their respective heirs, administrators, representatives, successors and assigns.

e) Amendment. The terms and provisions of this MOU may not be amended, modified or waived, except by an instrument in writing signed by all the Parties. This section applies to, but is not limited to, amendments proposed to address regulatory changes in the MS4 permit, modifications to the Scope of Work, or changes in the number of

Parties to this MOU. For the City of Los Angeles, the Director of Bureau of Sanitation or his/her designee is authorized to execute such amendments.

f) Waiver. Waiver by any Party to this MOU of any term, condition, or covenant of this MOU shall not constitute a waiver of any other term, condition, or covenant. Waiver by any Party to any breach of the provisions of this MOU shall not constitute a waiver of any other provision, nor a waiver of any subsequent breach or violation of any provision of this MOU.

g) Law to Govern; Venue. This MOU shall be interpreted, construed and governed according to the laws of the State of California. In the event of litigation between the Parties, venue in the state trial courts shall lie exclusively in the County of Los Angeles.

h) No Presumption in Drafting. The Parties to this MOU agree that the general rule that an MOU is to be interpreted against the Party drafting it, or causing it to be prepared shall not apply.

i) Entire Agreement. This MOU constitutes the entire agreement of the Parties with respect to the subject matter hereof and supersedes all prior or contemporaneous agreements, whether written or oral, with respect thereto.

j) Severability. If any term, provision, condition or covenant of this MOU is declared or determined by any court or competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of this MOU shall not be affected thereby and this MOU shall be read and constructed without the invalid, void, or unenforceable provision(s).

k) Counterparts. This MOU may be executed in any number of counterparts, each of which shall be an original, but all of which taken together shall constitute but one and the same instrument, provided, however, that such counterparts shall have been delivered to all Parties to this MOU.

l) All Parties have been represented by counsel in the preparation and negotiation of this MOU. Accordingly, this MOU shall be construed according to its fair language.

IN WITNESS WHEREOF, the Parties hereto have caused this MOU to be executed by their duly authorized representatives and affixed as of the date of signature of the Parties:

THE CITY OF LOS ANGELES

Date: _____

By: _____
Capri W. Maddox, President
Board of Public Works

ATTEST:

By: _____
June Lagmay
City Clerk

APPROVED AS TO FORM:

Carmen Trutanich
City Attorney

By: _____
John A. Carvalho
Deputy City Attorney

THE CITY OF ALHAMBRA

Dated: _____

CITY OF ALHAMBRA

By _____
Steven Placido, Mayor

ATTEST:

_____
Mary Swink,Interim City Manager

APPROVED AS TO FORM:

_____
Joseph Montes, City Attorney

THE CITY OF BURBANK

Dated: _____ CITY OF BURBANK

By _____
Emily Gabel-Luddy, Mayor

ATTEST:

_____
Mark Scott, City Manager

APPROVED AS TO FORM:

_____
Joseph H. McDougall, Senior Assistant City Attorney

THE CITY OF CALABASAS

Dated: _____

CITY OF CALABASAS

By _____
Fred Gaines, Mayor

ATTEST:

_____
Maricela Hernandez, City Clerk

APPROVED AS TO FORM:

_____
Scott Howard, Interim City Attorney

THE CITY OF GLENDALE

Dated: _____

CITY OF GLENDALE

By _____
Dave Weaver, Mayor

ATTEST:

_____
Scott Ochoa, City Manager

APPROVED AS TO FORM:

_____
Michael Garcia, City Attorney

THE CITY OF HIDDEN HILLS

Dated: _____ CITY OF HIDDEN HILLS

By _____
Steve Freedland, Mayor

ATTEST:

_____
Cherie L. Paglia, City Manager

APPROVED AS TO FORM:

_____
Roxanne M. Diaz, City Attorney

THE CITY OF LACANADA FLINTRIDGE

Dated: _____ CITY OF LA CANADA FLINTRIDGE

By _____
Laura Olhasso, Mayor

ATTEST:

_____
Mark R. Alexander, City Manager

APPROVED AS TO FORM:

_____
Mark Sreres, City Attorney

THE CITY OF MONTEBELO

Dated: _____ CITY OF MONTEBELLO

By _____
Christina Cortez, Mayor

ATTEST:

_____
Daniel Hernandez, City Clerk

APPROVED AS TO FORM:

_____
Arnold Alvarez-Glasman, City Attorney

CITY OF MONTEREY PARK

Date: _____ By: _____
Paul Talbot, City Manager

ATTEST:

By: _____
Vincent D. Chang, City Clerk

APPROVED AS TO FORM:

By: _____
Karl H. Berger, Assistant City Attorney

CITY OF PASADENA

Dated: _____

CITY OF PASADENA

By _____
Michael J. Beck, City Manager

ATTEST:

_____
Mark Jomsky, City Clerk

APPROVED AS TO FORM:

_____
Brad L. Fuller, Assistant City Attorney

CITY OF ROSEMEAD

Dated: _____

CITY OF ROSEMEAD

By _____
Jeff Allred, City Manager

ATTEST:

_____
Gloria Molleda, City Clerk

APPROVED AS TO FORM:

_____
Rachel H. Richman, City Attorney

THE CITY OF SAN GABRIEL

Dated: _____

CITY OF SAN GABRIEL

By _____
Steven A. Preston, City Manager

ATTEST:

_____
Nina Castruita, Deputy City Clerk

APPROVED AS TO FORM:

_____
Robert L. Kress, City Attorney

CITY OF SAN MARINO

Dated: _____

CITY OF SAN MARINO

By _____
Richard Ward, Mayor

ATTEST:

_____
John Schaefer, City Manager

APPROVED AS TO FORM:

_____
Steve Dorsey, City Attorney

THE CITY OF SOUTH PASADENA

Dated: _____ CITY OF SOUTH PASADENA

By _____
Sergio Gonzalez, City Manager

ATTEST:

_____

Sally Kilby, City Clerk

APPROVED AS TO FORM:

_____

Richard L. Adams II, City Attorney

CITY OF THE TEMPLE CITY

Date: _____

CITY OF TEMPLE CITY

By _____
Cynthia Sternquist, Mayor

ATTEST:

_____
Peggy Kuo, City Clerk

APPROVED AS TO FORM:

_____
Deputy City Attorney

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

By _____
Chief Engineer

APPROVED AS TO FORM:

John F. Krattli
County Counsel

By: _____ _____

Deputy Date

COUNTY OF LOS ANGELES

By: _____ _____
Gail Farber Date

APPROVED AS TO FORM:

John F. Krattli
County Counsel

By: _____ _____
Deputy Date

EXHIBIT A

Table 1. Estimated Consultant Contract Cost

Item		Total Cost
Contract Cost	(a)	$ 1,448,555.00
City of Los Angeles Contract Management Fee (10%)	(a) X 5% = (b)	$ 144,855.50
SUB-TOTAL COST	(a)+(b)=(c)	**$1,593,410.05**
LAFCD Allocation (10%)[1]	(c) x 10% = (d)	$159,341.00
TOTAL COST TO BE DISTRIBUTED	(c)-(d)=(e)	**$1,434,069.05**

Note:
1. The Los Angeles Flood Control District (LAFCD) has committed to contributing 10% of the Total Cost, including contract management fee, as their allocation in the development of the Plans.

EXHIBIT A

Table 2. Distribution of Estimated Total Cost

Agency	Acres[1,2]	Percent of Area[3]	Distributed Total Cost[4]
Alhambra	4,884.31	1.60%	$22,879.05
Burbank	11,095.20	3.62%	$51,972.05
Calabasas	4,005.68	1.31%	$18,763.37
Glendale	19,587.50	6.40%	$91,751.61
Hidden Hills	961.03	0.31%	$4,501.65
La Canada Flintridge	5,534.46	1.81%	$25,924.47
Los Angeles	181,288.00	59.22%	$849,187.78
Los Angeles County	40,553.34	13.25%	$189,959.63
Montebello	5,356.38	1.75%	$25,090.31
Monterrey Park	4,951.51	1.62%	$23,193.82
Pasadena	14,805.30	4.84%	$69,350.87
Rosemead	3,310.87	1.08%	$15,508.75
San Gabriel	2,644.87	0.86%	$12,389.08
San Marino	2,409.64	0.79%	$11,287.22
South Pasadena	2,186.20	0.71%	$10,240.58
Temple City	2,576.50	0.84%	$12,068.82
TOTAL	**306,150.79**	**100.00%**	**$1,434,069.05**

Note:
1. The areas owned by Caltrans, State Parks, and U.S. Government have been excluded from the total area of the Upper Los Angeles River watershed.
2. Area (acres) determined by GIS analysis as shown in EXHIBIT C
3. Percent Area = Agency Area / Total Area
4. Total Cost = $1,434,069.05 X Agency Percent of Area

EXHIBIT A

Table 3. Cost Allocation Formula

Distributed Total Cost = Total Cost X Agency Percent of Area

EXHIBIT A

Table 4. City of Los Angeles Invoicing Schedule and Invoice Amounts to Parties

Agency	Invoice Schedule		Distributed Total Cost (a)+(b)=(c)	Contingency (10%)[1] (c)x0.1=(d)	TOTAL COST INCLUDING CONTINGENCY (c)+(d)=(e)
	Jan. 2014 (a)	Jul. 2014 (b)			
Alhambra	$11,439.52	$11,439.52	$22,879.05	$2,287.90	$25,166.95
Burbank	$25,986.02	$25,986.02	$51,972.05	$5,197.20	$57,169.25
Calabasas	$9,381.69	$9,381.69	$18,763.37	$1,876.34	$20,639.71
Glendale	$45,875.80	$45,875.80	$91,751.61	$9,175.16	$100,926.77
Hidden Hills	$2,250.82	$2,250.82	$4,501.65	$450.16	$4,951.81
La Canada Flintridge	$12,962.24	$12,962.24	$25,924.47	$2,592.45	$28,516.92
Los Angeles	$424,593.89	$424,593.89	$849,187.78	$84,918.78	$934,106.56
Los Angeles County	$94,979.81	$94,979.81	$189,959.63	$18,995.96	$208,955.59
Montebello	$12,545.16	$12,545.16	$25,090.31	$2,509.03	$27,599.34
Monterrey Park	$11,596.91	$11,596.91	$23,193.82	$2,319.38	$25,513.21
Pasadena	$34,675.43	$34,675.43	$69,350.87	$6,935.09	$76,285.95
Rosemead	$7,754.38	$7,754.38	$15,508.75	$1,550.88	$17,059.63
San Gabriel	$6,194.54	$6,194.54	$12,389.08	$1,238.91	$13,627.99
San Marino	$5,643.61	$5,643.61	$11,287.22	$1,128.72	$12,415.94
South Pasadena	$5,120.29	$5,120.29	$10,240.58	$1,024.06	$11,264.64
Temple City	$6,034.41	$6,034.41	$12,068.82	$1,206.88	$13,275.70
LACFD	$79,670.50	$79,670.50	$159,341.00	$15,934.10	$175,275.10
TOTAL	**$717,034.53**	**$717,034.53**	**$1,593,410.05**	**$143,406.91**	**$1,752,751.06**

Note:
1. Contingency is 10% of the total invoice amount. Contingency will not be invoiced unless there is a need for its expenditure as agreed by all Parties.

EXHIBIT B

UPPER LOS ANGELES RIVER WATERSHED EWMP/CIMP GROUP
Responsible Agencies Representatives

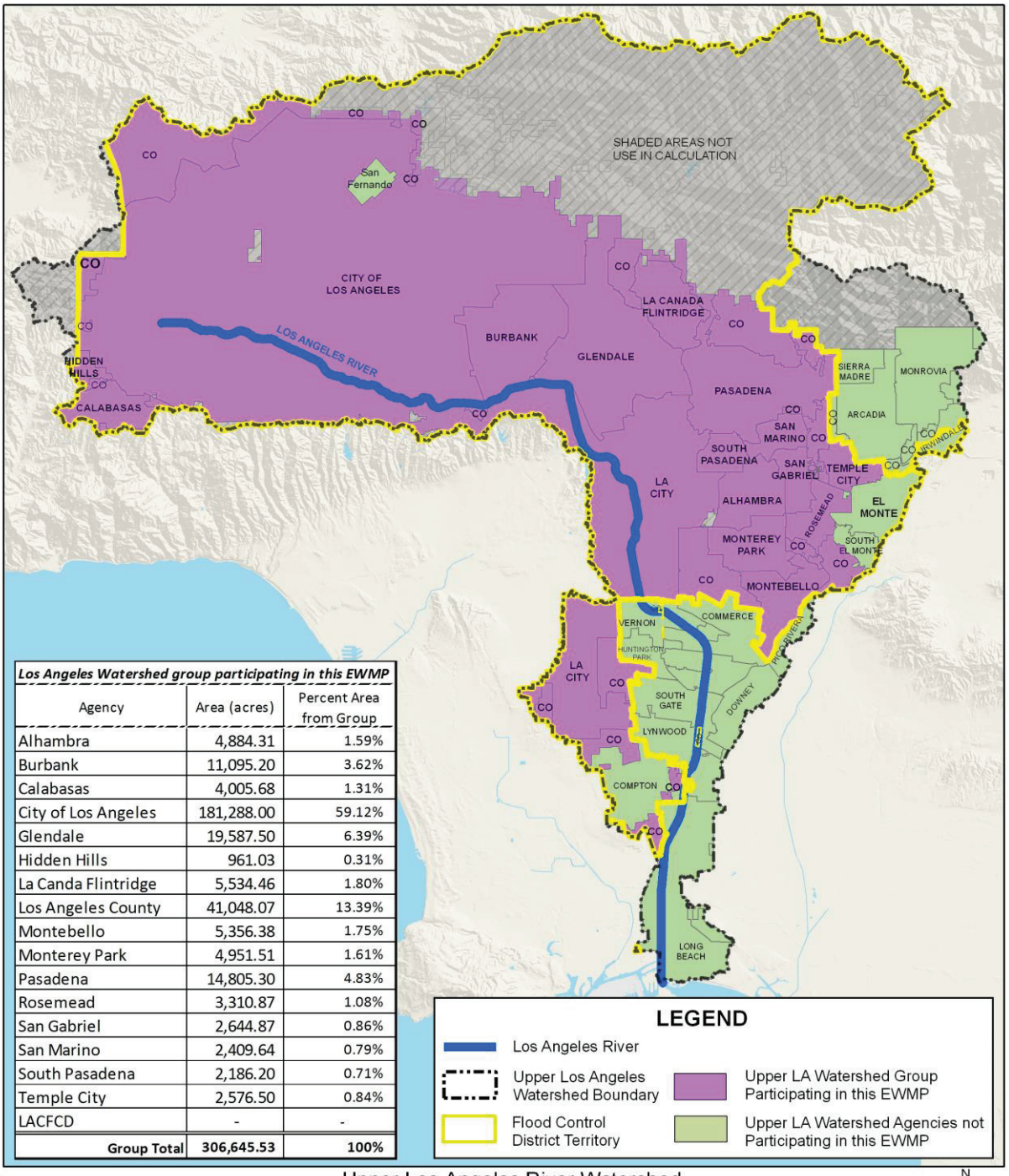
Agency Address	Agency Contact
City of Los Angeles Department of Public Works Bureau of Sanitation, Watershed Protection Division 1149 S. Broadway Los Angeles, CA 90015	Shahram Kharaghani E-mail: Shahram.Kharaghani@Lacity.org Phone: (213) 485-0587 Fax: (213) 485-3939
County of Los Angeles Department of Public Works Watershed Management Division, 11th Floor 900 South Fremont Avenue Alhambra, CA 91803-1331	Gary Hildebrand E-mail: GHILDEB@dpw.lacounty.gov Phone: (626) 458-4300 Fax: (626) 457-1526
Los Angeles County Flood Control District Department of Public Works Watershed Management Division, 11th Floor 900 South Fremont Avenue Alhambra, CA 91803-1331	Gary Hildebrand E-mail: GHILDEB@dpw.lacounty.gov Phone: (626) 458-4300 Fax: (626) 457-1526
City of Alhambra 11 South First Street Alhambra, XA 91801-3796	David Dolphin E-mail: DDOLPHIN@cityofalhambra.org Phone: (626) 300-1571 Fax:
City of Burbank P.O. Box 6459 Burbank, CA 91510	Alvin Cruz E-mail: ACruz@burbankca.gov Phone: (818) 238-3941 Fax:
City of Calabasas 100 Civic Center Way Calabasas, CA 91302-3172	Alex Farassati E-mail: afarassati@cityofcalabasas.com Phone: Fax:
City of Glendale Engineering Section, 633 East Broadway, Room 209 Glendale, CA 91206-4308	Maurice Oillataguerre E-mail: moillataguerre@ci.glendale.ca.us Phone: Fax:
City of La Canada Flintridge 1327 Foothill Blvd. La Canada Flintridge, CA 91011-2137	Edward Hitti E-mail: EHitti@lcf.ca.gov Phone: Fax:

EXHIBIT B

UPPER LOS ANGELES RIVER WATERSHED EWMP/CIMP GROUP
Responsible Agencies Representatives

City of Montebello 1600 W Beverly Blvd Montebello, CA 90640	Norma Salinas Nsalinas@city ofmontebello.com Phone: 323-887-1365 Fax: 323- 887-1410
City of Monterery Park 320 West Newmark Avenue Monterrey Park, CA 91754-2896	Amy Ho E-mail: amho@montereypark.ca.gov Mikki Klee E-mail: mklee@jlha.net Phone: (562) 802-7880 Fax: (562) 802-2297
City of Pasadena P.O. Box 7115 Pasadena, CA 91109-7215	Stephen Walker E-mail: SWalker@cityofpasadena.net Phone: (626) 744-4271 Fax:
City of Rosemead, 8838 East Valley Blvd. Rosemead, CA 91770-1787	Elroy Kiepke E-mail: Ekiepke@willdan.com Phone: Fax:
City of San Gabriel 425 South Mission Avenue San Gabriel, CA 91775	Daren Grilley E-mail: dgrilley@sgch.org Phone: Fax:
City of San Marino 2200 Huntington Drive San Marino, CA 91108-2691	Kevin Sales E-mail: kjserv@aol.com Phone: Fax:
City of South Pasadena 1414 Mission Street South Pasadena, CA 91020-3298	Shin Furukawa E-mail: SFurukawa@ci.south-pasadena.ca.us Phone: (626) 403-7246 Fax:
City of Temple City 9701 Las Tunas Drive Temple City, CA 9178	Mark Persico E-mail: mpersico@templecity.us Mikki Klee E-mail: mklee@jlha.net Phone: (562) 802-7880 Fax: (562) 802-2297

EXHIBIT C
UPPER LOS ANGELES RIVER WATERSHED
EWMP/CIMP GROUP



Los Angeles Watershed group participating in this EWMP

Agency	Area (acres)	Percent Area from Group
Alhambra	4,884.31	1.59%
Burbank	11,095.20	3.62%
Calabasas	4,005.68	1.31%
City of Los Angeles	181,288.00	59.12%
Glendale	19,587.50	6.39%
Hidden Hills	961.03	0.31%
La Canda Flintridge	5,534.46	1.80%
Los Angeles County	41,048.07	13.39%
Montebello	5,356.38	1.75%
Monterey Park	4,951.51	1.61%
Pasadena	14,805.30	4.83%
Rosemead	3,310.87	1.08%
San Gabriel	2,644.87	0.86%
San Marino	2,409.64	0.79%
South Pasadena	2,186.20	0.71%
Temple City	2,576.50	0.84%
LACFCD	-	-
Group Total	**306,645.53**	**100%**

Upper Los Angeles River Watershed
EWMP Agencies

BUREAU OF SANITATION

ENRIQUE C. ZALDIVAR
DIRECTOR

SHAHRAM KHARAGHANI
PROGRAM MANAGER

ULARW_EWMPAgencies	DRAWN BY: NH	CHECKED BY:	DATE 6/18/2013 / DATE REVISED	This map shall not be copied or reproduced, all or any part thereof, whether for distribution or resale,without the proper written permission of the Dept. of Public Works, City of Los Angeles Thomas Bros Data reproduce with permission granted by THOMAS BROS MAP

WATERSHED PROTECTION DIVISION

Attachment 3 – Signed Letters of Intent

BOARD OF
PUBLIC WORKS

COMMISSIONERS

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PRESIDENT

VALERIE LYNNE SHAW
VICE PRESIDENT

STEVEN T. NUTTER
PRESIDENT PRO TEMPORE

WARREN T. FURUTANI
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JERILYN LÓPEZ-MENDOZA
COMMISSIONER

CITY OF LOS ANGELES
CALIFORNIA

ANTONIO R. VILLARAIGOSA
MAYOR

BUREAU OF SANITATION

ENRIQUE C. ZALDIVAR
DIRECTOR

TRACI J. MINAMIDE
CHIEF OPERATING OFFICER

VAROUJ S. ABKIAN
ADEL H. HAGEKHALIL
ALEXANDER E. HELOU
ASSISTANT DIRECTORS

NEIL M. GUGLIELMO
ACTING CHIEF FINANCIAL OFFICER

WATERSHED PROTECTION DIVISION
1149 SOUTH BROADWAY, 10TH FLOOR
LOS ANGELES, CA 90015
TEL: (213) 485-0587
FAX: (213) 485-3939

June 20, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

Dear Mr. Unger:

CITY OF LOS ANGELES COMMITMENT TO PARTICIPATE IN AND SHARE THE COST FOR THE DEVELOPMENT OF ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM FOR THE UPPER LOS ANGELES RIVER WATERSHED GROUP

The City of Los Angeles submits this letter of intent with our commitment to participate in and share the cost for the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) for the Upper Los Angeles River Watershed as outlined in the Notice of Intent submitted by the City of Los Angeles to meet the requirements of Part VI.C.4.b of the MS4 Permit (Order No. R4-2012-0175) and the CIMP notification requirements specified in Attachment E Section IV.C.1.

The Upper Los Angeles River Watershed Group consists of the following MS4 Permittees: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of El Monte, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Montebello, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the City of Temple City, the County of Los Angeles and the Los Angeles County Flood Control District. The final draft agreement to fund program development by the Upper Los Angeles River Watershed Group has been included in the Notice of Intent and the City of Los Angeles is committed to execute this agreement prior to December 28, 2013.

Should you have any questions about this submittal, please contact me at Shahram.Kharaghani@lacity.org or at phone number (213) 485-0587 or Alfredo Magallanes, of my staff, at Alfredo.Magallanes@lacity.org or at phone number (213) 485-3958.

Sincerely,

SHAHRAM KHARAGHANI, Ph.D., PE, BCEE
Program Manager

SK:AM:VD
WPDCR 9040

AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER

Recyclable and made from recycled waste

cc: Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Enrique Zaldivar, City of Los Angeles, BOS
Adel Hagekhalil, City of Los Angeles, BOS
Gary Hildebrand, County of Los Angeles, Department of Public Works
Alvin Cruz, City of Burbank
Alex Farassati, City of Calabasas
Amy Ho, City of Monterey Park
Armond Ghazarian, County of Los Angeles
David Dolphin, City of Alhambra
Daren Grilley , City of San Gabriel
Edward Hitti, City of La Canada Flintridge
Elaine Unitake, County of Los Angeles,
Elroy Kiepke, Willdan Engineering
John Hunter, John L. Hunter and Associates
Joe Bellomo, City of Hidden Hills,
Jolene Gurerro, County of Los Angeles
Kevin Sales, City of San Marino
Luis Perez, County of Los Angeles
Mark Perisco, City of Temple City
Maurice Oillataguerre, City of Glendale,
Michelle Marquez-Riley, City of El Monte
Mikki Klee, John Hunter and Associates
Norma Salinas. City of Montebello
Sean Sulivan, City of Rosemead
Shiela Kennedy, Enfact Solutions
Shin Furukawa, City of South Pasadena
Steve Walker, City of Pasadena
Tona Avalos, County of Los Angeles
Ying Kwan, City of La Canada Flintridge

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

June 24, 2013

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – COUNTY OF LOS ANGELES
UPPER LOS ANGELES RIVER WATERSHED
ENHANCED WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The County of Los Angeles (County) submits this Letter of Intent to participate in and share the cost of the development of an Enhanced Watershed Management Program (EWMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Upper Los Angeles River Watershed Group. This Letter of Intent serves to satisfy the EWMP notification requirements of Section VI.C.4.b.iii(3) of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Upper Los Angeles River Watershed Group consists of the following agencies: City of Los Angeles as the coordinating agency for EWMP and CIMP development, County, Los Angeles County Flood Control District, and cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City. The Upper Los Angeles River Group has included a final draft Memorandum of Understanding as Attachment 2 of the Notice of Intent. The County intends to submit a final Memorandum of Understanding to its Board of Supervisors for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Angela George at (626) 458-4325 or ageorge@dpw.lacounty.gov.

Very truly yours,

FOR GAIL FARBER
Director of Public Works

TA:jht
P:\wmpub\Secretarial\2013 Documents\Letter\LOI Upper LAR County.doc\C13231

cc: City of Alhambra
City of Burbank
City of Calabasas
City of Glendale
City of Hidden Hills
City of La Canada Flintridge
City of Los Angeles
City of Montebello
City of Monterey Park
City of Pasadena
City of Rosemead
City of San Gabriel
City of San Marino
City of South Pasadena
City of Temple City

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

June 24, 2013

IN REPLY PLEASE
REFER TO FILE: WM-7

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
UPPER LOS ANGELES RIVER WATERSHED
ENHANCED WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The Los Angeles County Flood Control District (LACFCD) submits this Letter of Intent to participate in and share the cost of the development of an Enhanced Watershed Management Program (EWMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Upper Los Angeles River Watershed Group. This Letter of Intent serves to satisfy the EWMP notification requirements of Section VI.C.4.b.iii(3) of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Upper Los Angeles River Watershed Group consists of the following agencies: City of Los Angeles as the coordinating agency for EWMP and CIMP development, LACFCD, County of Los Angeles, and cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City. The Upper Los Angeles River Watershed Group has included a final draft Memorandum of Understanding as Attachment 2 of the Notice of Intent. The LACFCD intends to submit a final Memorandum of Understanding to the County of Los Angeles Board of Supervisors (which is the LACFCD's governing body) for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

for GAIL FARBER
Chief Engineer of the Los Angeles County Flood Control District

TA:jht
P:\wmpub\Secretarial\2013 Documents\Letter\LOI Upper LAR LACFCD.doc\C813232

cc: City of Alhambra
City of Burbank
City of Calabasas
City of Glendale
City of Hidden Hills
City of La Canada Flintridge
City of Los Angeles
City of Montebello
City of Monterey Park
City of Pasadena
City of Rosemead
City of San Gabriel
City of San Marino
City of South Pasadena
City of Temple City

City of Alhambra
Office of the City Manager

June 10, 2013

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

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of Alhambra, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group includes only the following agencies: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the City of Temple City, the County of Los Angeles and the Los Angeles County Flood Control District.

The City of Alhambra further pledges to share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed upon by all participating members of the Group as to the equitable distribution of costs.

Gateway to the San Gabriel Valley

111 South First Street Alhambra California 91801

626 570-5010

FAX 281-2248

PRINTED ON RECYCLED PAPER

Should you have any questions, please contact my staff, Mary Chavez, Director of Public Works at mchavez@cityofalhambra.org or at (626) 570-5067 or David Dolphin, Environmental Compliance Specialist at ddolphin@cityofalhambra.org or at (626) 300-1571.

Sincerely,

Mary K. Swink
Interim City Manager

cc:
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Mary Chavez, Director of Public Works

City of Burbank
PUBLIC WORKS DEPARTMENT
275 East Olive Avenue, Burbank CA 91510-6459
Tel: 818) 238-3950 Fax (818) 238-3999
www.ci.burbank.ca.us

June 11, 2013

Mr. Samuel Unger, P.E.
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

LETTER OF INTENT TO COMMIT TO THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

This letter represents the City of Burbank's intent to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new Municipal Separate Storm Sewer System (MS4) Permit by Order No. R4-2012-0175 for submission to your Board.

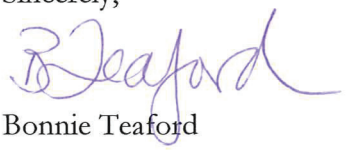
The Group includes the following agencies:

- City of Los Angeles
- County of Los Angeles
- Los Angeles County Flood Control District
- City of Alhambra
- City of Burbank
- City of Calabasas
- City of El Monte
- City of Glendale
- City of Hidden Hills
- City of La Canada Flintridge
- City of Montebello
- City of Monterey Park
- City of Pasadena
- City of Rosemead
- City of San Gabriel
- City of San Marino
- City of South Pasadena
- City of Temple City

The City of Burbank further intends to share the development cost of both the EWMP and CIMP. A cost sharing formula has been agreed to by all participating members of the Group as to the equitable distribution of costs, which will be reflected in the Memorandum of Agreement to be signed by all participating entities.

Should you have any questions, please contact Daniel Rynn, Assistant Public Works Director, at (818) 238-3940 or drynn@burbankca.gov.

Sincerely,



Bonnie Teaford
City of Burbank
Public Works Director

cc:
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region

CITY *of* CALABASAS

June 10, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

SUBJECT: LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of Calabasas, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board.

The Upper Los Angeles Watershed Group includes only the following agencies: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the County of Los Angeles and the Los Angeles County Flood Control District.

The City of Calabasas further pledges to share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

100 Civic Center Way
Calabasas, CA 91302
(818) 224-1600
Fax (818) 225-7324

Should you have any questions, please contact Dr. Alex Farassati, Environmental Services Supervisor, at (818) 224-1680 or via e-mail at afarassati@cityofcalabasas.com.

Sincerely,

Anthony M. Coroalles
City Manager

c: City Council
Robert Yalda, Calabasas Public Works Director/City Engineer
Alex Farassati, Calabasas Environmental Services Supervisor
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region

CITY OF GLENDALE, CALIFORNIA
Public Works Department

633 East Broadway, Room 209
Glendale, California 91206-4385
(818) 548-3900 Fax (818) 546-2207
www.ci.glendale.ca.us

May 7, 2013

RECEIVED
MAY 22 2013
WATERSHED PROTECTION DIVISION

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of Glendale, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board.

The Group includes only the following agencies: The City of Los Angeles, the city of Alhambra, the city of Burbank, the city of Calabasas, the city of Glendale, the city of Hidden Hills, the city of La Canada Flintridge, the city of Monterey Park, the city of Pasadena, the city of Rosemead, the city of San Gabriel, the city of South Pasadena, the city of San Marino, the County of Los Angeles and the Los Angeles County Flood Control District. The City of Los Angeles, as lead agency for the Group, is preparing the comprehensive Notice of Intent on behalf of the Group.

The City of Glendale further pledges to cost share the development cost of both the EWMP and CIMP. A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs, which will be reflected in the Memorandum of Agreement to be signed by all participating entities.

Should you have any questions, please contact Maurice Oillataguerre, Senior Environmental Program Specialst, at (818) 937-8219 or moillataguerre@ci.glendale.ca.us.

WE RECYCLE

Sincerely,

Stephen M. Zurn
City of Glendale
Public Works Director

cc:
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region

City of Hidden Hills

6165 Spring Valley Road • Hidden Hills, California 91302
(818) 888-9281 • Fax (818) 719-0083

June 11, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

RE: LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of Hidden Hills, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Group includes the following agencies: the City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Montebello, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the City of Temple City, Los Angeles County, and the Los Angeles County Flood Control District.

The City of Hidden Hills further pledges to cost share the development cost of both the EWMP and CIMP. A cost sharing formula has been agreed to by all participating members of the Group as to the equitable distribution of costs.

Should you have any questions, please contact our Water Quality Consultant, Joe Bellomo, at jbellomo@willdan.com or at (805) 279-6856.

Sincerely,

CITY OF HIDDEN HILLS

Steve Freedland
Mayor

SF/dlg

cc: Cherie L. Paglia, City Manager
Joe Bellomo, Willdan Engineering
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Shahram Kharaghani, City of Los Angeles, Bureau of Sanitation
Alfredo Magallanes, City of Los Angeles, Bureau of Sanitation

City Council
Laura Olhasso, Mayor
Michael T. Davitt, Mayor Pro Tem
Jonathan C. Curtis
David A. Spence
Donald R. Voss

June 26, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

CITY OF LA CAÑADA FLINTRIDGE COMMITMENT TO PARTICIPATE IN AND SHARE THE COST FOR THE DEVELOPMENT OF ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM FOR THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of La Cañada Flintridge submits this letter of intent with our commitment to participate in and share the cost for the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) for the Upper Los Angeles River Watershed as outlined in the Notice of Intent submitted by the City of Los Angeles to meet the requirements of Part VI.C.4.b of the MS4 Permit (Order No. R4-2012-0175) and the CIMP notification requirements specified in Attachment E Section IV.C.1.

The Upper Los Angeles River Watershed Group consists of the following MS4 Permittees: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Cañada Flintridge, the City of Montebello, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the City of Temple City, the County of Los Angeles and the Los Angeles County Flood Control District. The final draft agreement to fund program development by the Upper Los Angeles River Watershed Group has been included in the Notice of Intent and the City of Los Angeles is committed to execute this agreement prior to December 28, 2013.

The City of La Cañada Flintridge further pledges to share the cost of both EWMP and CIMP. A cost sharing formula has been agreed upon by all parties on an equitable basis by participating members which will be reflected in the Memorandum of Understanding to be signed by all participating members.

Should you have any questions about this submittal, please contact Edward Hitti, P.E., Public Works Director, at (818) 790-8882 or email him at ehitti@lcf.ca.gov.

Sincerely,

Mark R. Alexander
City Manager

1327 Foothill Boulevard • La Cañada Flintridge • California 91011 • (818) 790-8880 • FAX: (818) 790-7536

City of Montebello

May 28, 2013

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

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of Montebello, with this letter, agrees to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group included only the following agencies: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, The City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the County of Los Angeles, and the Los Angeles County Flood Control District.

The City of Montebello further agrees to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs which will be binding once Montebello City Council approves the final Memorandum of Understanding.

Should you have any questions, please contact Norma Salinas at (323) 887-1365 or email her at nsalinas@cityofmontebello.com.

Sincerely,

Francesca Tucker-Schuyler
City Administrator

NFS/lg

CITY OF MONTEREY PARK
320 West Newmark Avenue • Monterey Park • California 91754-2896
www.ci.monterey-park.ca.us

City Council
Peter Chan
Mitchell Ing
Hans Liang
Teresa Real Sebastian
Anthony Wong

City Clerk
Vincent D. Chang

City Treasurer
Joseph Leon

June 5, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of Monterey Park, with this letter, pledges to cooperate with the Upper Los Angeles River Watershed Group (Group) in developing an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group includes only the following agencies: The city of Los Angeles; the city of Alhambra; the city of Burbank; the city of Calabasas; the city of Glendale; the city of Hidden Hills; the city of La Canada Flintridge; the city of Monterey Park; the city of Pasadena; the city of Rosemead; the city of San Gabriel; the city of South Pasadena; the city of San Marino; the city of Temple City; the County of Los Angeles and the Los Angeles County Flood Control District.

The City of Monterey Park further agrees to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

Should you have any questions, please contact my staff, Amy Ho, at (626) 307-1383.

Sincerely,

Paul L. Talbot
City Manager

DEPARTMENT OF PUBLIC WORKS

June 12, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of Pasadena, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board.

The Group includes only the following agencies: the Cities of Los Angeles, Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, the County of Los Angeles, and the Los Angeles County Flood Control District. The City of Los Angeles, as lead agency for the Group, is preparing the comprehensive Notice of Intent on behalf of the Group.

The City of Pasadena further pledges to share the development cost of both the EWMP and CIMP. A cost sharing formula has been agreed to by all participating members of the Group as to the equitable distribution of costs, which will be reflected in the Memorandum of Agreement to be signed by all participating entities.

100 North Garfield Avenue · P.O. Box 7115 · Pasadena, CA 91109-7215
(626) 744-4191

If you have any questions, please contact Dan Rix, City Engineer, at drix@cityofpasadena.net or 626-744-4267, or Steve Walker, Principal Engineer, at swalker@cityofpasadena.net or 626-744-4271.

Sincerely,

for SIOBHAN FOSTER
Director of Public Works

cc:
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region

MAYOR:
POLLY LOW

MAYOR PRO TEM:
WILLIAM ALARCON

COUNCIL MEMBERS:
SANDRA ARMENTA
MARGARET CLARK
STEVEN LY

City of Rosemead

8838 E. VALLEY BOULEVARD P.O BOX 399
ROSEMEAD, CALIFORNIA 91770
TELEPHONE (626) 569-2100
FAX (626) 307-9218

June 13, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

LETTER OF INTENT TO PARTICIPATE IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM AS A MEMBER OF THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of Rosemead hereby submits its intention to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). The development of these programs is authorized by Order No. R4-2012-0175, the MS4 permit for Los Angeles County, which became effective on December 28, 2012.

The Upper Los Angeles Watershed Group includes only the following agencies: The City of Rosemead, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of El Monte, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Los Angeles, the City of Monterey Park, the City of Pasadena, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the County of Los Angeles and the Los Angeles County Flood Control District.

As a participant in the group, the City of Rosemead intends to share in the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) as determined by the group. A cost sharing formula, which demonstrates an equitable distribution of project costs, has been agreed upon by all participating members of the Group.

The City's continued participation in the development of these programs is contingent upon the successful procurement of a qualified professional services firm during Fall 2013. Additionally, the City of Rosemead will actively participate in this effort unless any administrative order or judicial action causes the permit, or any portions thereof, to be stayed or invalidated. This intention to participate applies solely to the creation of the Enhanced Watershed Management Program and Coordinated Integrated monitoring Program.

Should you have any questions, please contact staff members Chris Marcarello at (626) 569-2118 or cmarcarello@cityofrosemead.org or Sean Sullivan at (626) 569-2189 or ssullivan@cityofrosemead.org.

Sincerely,

Jeff Allred
City Manager

Cc: Ivar Ridgeway, Los Angeles Regional Water Quality Control Board
Renee Purdy, Los Angeles Regional Water Quality Control Board
Rosemead City Council
Chris Marcarello, City of Rosemead
Sean Sullivan, City of Rosemead
Alfredo Magallanes, City of Los Angeles

City of San Gabriel

♦ City With A Mission ♦ Founded 1771 ♦

May 30, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger:

The City of San Gabriel, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Group includes the following agencies: the City of Los Angeles, the County of Los Angeles, Los Angeles County Flood Control District, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Cañada Flintridge, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, and the City of San Marino.

The City of San Gabriel further pledges to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

Should you have any questions, please contact Daren Grilley, of my staff, at dgrilley@sgch.org or at (626) 308-2806 ext. 4631.

Sincerely,

Steven A. Preston
City Manager

cc: Rene Purdy, Los Angeles Regional Water Quality Control Board
Ivar Ridgeway, Los Angeles Regional Water Quality Control Board
Jennifer Davis, Community Development Director
Daren Grilley, City Engineer
Enrique Zaldivar, City of Los Angeles, Bureau of Sanitation
Shahram Kharaghani, City of Los Angeles, Bureau of Sanitation

City of San Marino
Office of the City Manager

RECEIVED
JUN 12 2013
WATERSHED PROTECTION DIVISION

JOHN T. SCHAEFER
City Manager

June 4, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of San Marino, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group includes only the following agencies: The City of Alhambra, the City of Burbank, The City of Calabasas, the City of Los Angeles, the city of El Monte, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the County of Los Angeles, the City of Montebello, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of San Marino, the City of South Pasadena, the City of Temple City, and the Los Angeles County Flood Control District.

The City of San Marino further pledges to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

2200 Huntington Drive, San Marino, CA 91108 • Phone: (626) 300-0700 Fax: (626) 300-0709
Email: jschaefer@smpd.us

Sincerely,

John Schaefer
City Manager

cc:
Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Alfredo Magellanes, City of Los Angeles, Bureau of Sanitation

CITY OF SOUTH PASADENA
OFFICE OF THE CITY MANAGER
1414 MISSION STREET, SOUTH PASADENA, CA 91030
TEL: 626.403.7210 ▪ FAX: 626.403.7211
WWW.CI.SOUTH-PASADENA.CA.US

June 5, 2013

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

Attention: Renee Purdy

Subject: **LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP**

Dear Mr. Unger:

The City of South Pasadena, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group includes only the following agencies: The City of Los Angeles, the City of Alhambra, the City of Burbank, the City of Calabasas, the City of Glendale, the City of Hidden Hills, the City of La Canada Flintridge, the City of Monterey Park, the City of Pasadena, the City of Rosemead, the City of San Gabriel, the City of South Pasadena, the City of San Marino, the County of Los Angeles and the Los Angeles County Flood Control District.

The City of South Pasadena further pledges to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

Should you have any questions, please contact Public Works Director Paul Toor at ptoor@ci.south-pasadena.ca.us or (626) 403-7242.

Sincerely

Sergio Gonzalez
City Manager

cc:

Renee Purdy, California Regional Water Quality Control Board, Los Angeles Region
Ivar Ridgeway, California Regional Water Quality Control Board, Los Angeles Region
Paul Toor, Public Works Director
Shin Furukawa, Deputy Public Works Director
John L. Hunter, John L. Hunter & Associates, Inc.

9701 LAS TUNAS DRIVE • TEMPLE CITY • CALIFORNIA 91780-2249 • (626) 286-2171

June 17, 2013

Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

LETTER OF INTENT PLEDGING COMMITMENT IN THE DEVELOPMENT OF AN ENHANCED WATERSHED MANAGEMENT PROGRAM AND COORDINATED INTEGRATED MONITORING PROGRAM IN COLLABORATION WITH THE UPPER LOS ANGELES RIVER WATERSHED GROUP

Dear Mr. Unger;

The City of Temple City, with this letter, pledges to collaborate with the Upper Los Angeles River Watershed Group (Group) in the development of an Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP) in accordance with the new MS4 Permit by Order No. R4-2012-0175 for submission to your Board. The Upper Los Angeles Watershed Group includes only the following agencies: The City of Los Angeles, the city of Alhambra, the city of Burbank, the city of Calabassas, the city of Glendale, the city of Hidden Hills, the city of La Canada Flintridge, the city of Monterey Park, the city of Pasadena, the city of Rosemead, the city of San Gabriel, the city of South Pasadena, the city of San Marino, the city of Temple City, the County of Los Angeles and the Los Angeles County Flood Control District.

The City of Temple City further pledges to cost share the development cost of both the Enhanced Watershed Management Program (EWMP) and Coordinated Integrated Monitoring Program (CIMP). A cost sharing formula has been agreed by all participating members of the Group as to the equitable distribution of costs.

Should you have any questions, please contact me at Mark Persico, AICP, Community Development Director, at (626)285-2171 or mpersico@templecity.us.

Sincerely,

Jose Pulido
City Manager

Attachment 4 – Structural BMP Fact Sheet

Green Street and Brandon Street Road Improvement Project

Regulatory Background

The Brandon Street and Green Street Improvements Project area drains to Eaton Wash which is tributary to Rio Hondo and then to the Los Angeles River. The Los Angeles River has Total Maximum Daily Load (TMDL) regulations for Trash, Nutrients, Metals, and Bacteria.

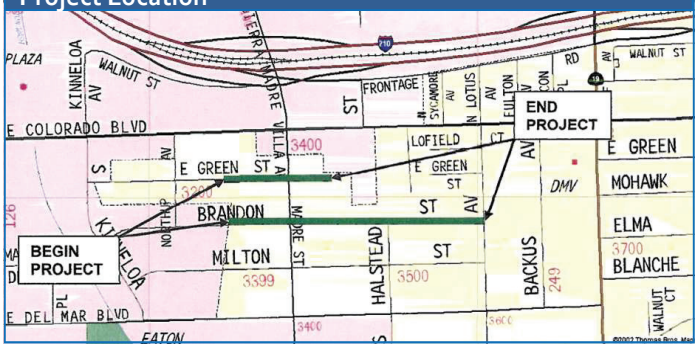
Environmental Benefits

The project will reconstruct approximately 0.16 miles of roadway on Green Street and 0.39 miles on Brandon Street. The design includes several green street elements including permeable pavers, bio-retention planters, sediment filtration catch basins, and an underground infiltration basin.

Approximately 1,800 feet of bioretention planter boxes (bioswales) will be constructed throughout the project limits. In addition, an underground infiltration basin system will be installed at the cul-de-sac of Green Street with 5,800 cubic feet of infiltration capacity. Trees and drought-tolerant plants will also be added throughout the project.

Much of the runoff from the streets and private properties that had previously drained to Rio Hondo untreated will now infiltrate through the permeable sidewalks and gutters, bioswales, and infiltration basin. This will help augment the groundwater and prevent pollutants from entering the Los Angeles River.

Project Location



Location

The project consists of 0.55 miles of street improvements on Brandon and Green Streets in the unincorporated area of East Pasadena. The surrounding area is predominantly residential with some commercial uses.

Schedule

Award	December 2013
Construction	Spring 2014 to Fall 2014

Cost

The construction cost is estimated to be $2.9 million.

Green Street Rendering



HUMBOLDT GREENWAY PROJECT

Los Angeles River Watershed

January 2013

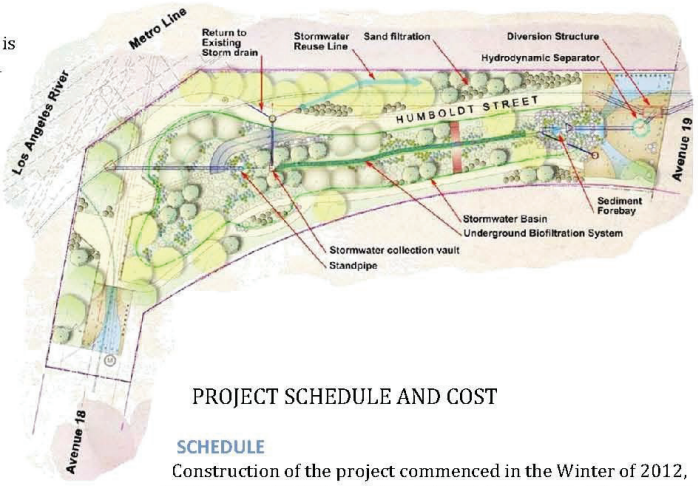
FACT SHEET

CITY OF LOS ANGELES
SANITATION
DEPARTMENT OF PUBLIC WORKS

PROJECT DESCRIPTION

ENVIRONMENTAL SETTING

The Humboldt Neighborhood Greenway Project is located in the Lincoln Heights neighborhood within the northeastern part of the City of Los Angeles. The project site currently consists of 1.15 acres total area which includes an unpaved portion of the Humboldt Street right of way between 18th and 19th Avenue along with four city owned vacant parcels (0.3 acres). The project will intercept and treat street level flows from the Humboldt and Avenue 19 intersection area through a bio-swale within the plaza and storm drain day-lighting as both an aesthetic and functional feature that will help to alleviate local street flooding. The project will also include a fenced area for public use that supports enhanced native habitats along the LA River corridor and will integrate native plant materials within a constructed topography that features signage, trails, passive recreation and an open plaza on site frontage at 19th Street. This project will enhance water quality, provide a natural habitat and community recreational opportunities, and promote the idea that urban streams are a valuable resource to be enjoyed rather than a nuisance to be constructed underground.



DESCRIPTION OF BMP

This project consists of intercepting an existing storm drain system and constructing a stormwater greenway with a "stream" eco-system through the corridor on Humboldt Street with a pedestrian path connecting Avenue 18 and Avenue 19. The elements include a pollution reduction/infiltration system and an approximately 175-foot long graded swale/open-channel, which is surrounded by a vegetated basin. Work also includes a) an overflow structure; b) a pedestrian bridge; c) an irrigation system; d) landscaping and tree planting; e) solar lighting.

PROJECT SCHEDULE AND COST

SCHEDULE

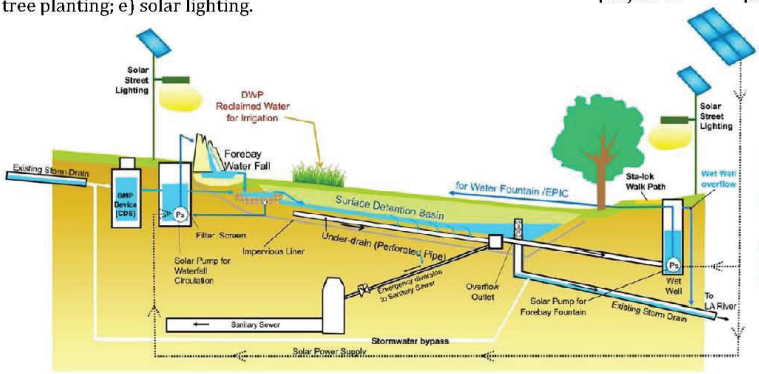
Construction of the project commenced in the Winter of 2012, with an anticipated duration of 14 to 16 months. The project schedule is shown below.

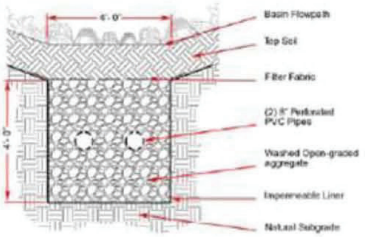
Project Schedule

	2012	2013	2014	2015
Construction				
Post-Construction				

COST

The project is estimated to cost approximately $4.5 million, which includes administration, design and construction management, construction, and optimization phase. This project is projected to result in an annual increase of approximately $50,000 in operation and maintenance to the City.





Attachment 5 – Specific Actions and Status for Compliance with Interim and Final Milestones of the Upper Los Angeles River Watershed Trash TMDL

TMDL	Permittees	Implementation Plan and Control Measures	Status of Implementation
Los Angeles River Trash TMDL	County of Los Angeles	Install Full Capture Systems or other BMPs to reduce baseline by 80%	Completed
2007-012		Install Full Capture Systems or other BMPs to reduce baseline by 90%	Completion anticipated by September 30, 2014
		Install Full Capture Systems or other BMPs to reduce baseline by 96.7%	Completion anticipated by September 30, 2015
		Install Full Capture Systems or other BMPs to reduce baseline by 100%	Completion anticipated by September 30, 2016

Monterey Park

Monterey Park has chosen to conduct Daily Generation Rate (DGR) studies to demonstrate compliance with the Trash TMDL. John L. Hunter and Associates (JLHA) has conducted five DGR studies for Monterey Park since 2008. The 2012 studies demonstrate that the city of Monterey Park has met at least a 94% compliance level. This year, JLHA will be conducting a 6th DGR study for Monterey Park. The city has installed approximately 148 full capture CPS inserts in high generating trash areas (commercial and industrial areas).

Compliance reports have been submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) every year after completion of the DGR studies. The intention of such studies is to demonstrate to the Regional Board that the city is within established levels of the scheduled waste load allocations and has met stormwater discharge compliance requirements.

South Pasadena

South Pasadena has chosen to conduct Daily Generation Rate (DGR) studies to demonstrate compliance with the Trash TMDL. John L. Hunter and Associates (JLHA) has conducted five DGR studies for South Pasadena since 2008. The 2012 studies demonstrate that the city of South Pasadena has met at least a 95% compliance level. This year, JLHA will be conducting a 6th DGR study for South Pasadena. South Passadena is currently reviewing the possibilities of installing full capture CPS and/or ARS units.

Compliance reports have been submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) every year after completion of the DGR studies. The intention of such studies is to demonstrate to the Regional Board that the city is within established levels of the scheduled waste load allocations and has met stormwater discharge compliance requirements.

Temple City

Temple City has chosen to conduct Daily Generation Rate (DGR) studies to demonstrate compliance with the Trash TMDL. John L. Hunter and Associates (JLHA) has conducted five DGR studies for Temple City and has surpassed the targets for each of those years. The 2012 studies demonstrate that the city of Temple City has met at least a 93% compliance level. This year, JLHA will be conducting a 6th DGR study for Temple City. Temple City is currently reviewing the possibilities of installing full capture CPS and/or ARS units.

Compliance reports have been submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) every year after completion of the DGR studies. The intention of such studies is to demonstrate to the Regional Board that the city is within established levels of the scheduled waste load allocations and has met stormwater discharge compliance requirements.

Appendix 1.B
Summary of ULAR WMA TMDL Waste Load Allocations (WLAs)

Appendix 1.B: LACFCD Background Information

In 1915, the Los Angeles County Flood Control Act established the LACFCD and empowered it to manage flood risk and conserve stormwater for groundwater recharge. In coordination with the United States Army Corps of Engineers the LACFCD developed and constructed a comprehensive system that provides for the regulation and control of flood waters through the use of reservoirs and flood channels. The system also controls debris, collects surface storm water from streets, and replenishes groundwater with storm water and imported and recycled waters. The LACFCD covers the 2,753 square-mile portion of Los Angeles County south of the east-west projection of Avenue S, excluding Catalina Island. It is a special district governed by the County of Los Angeles Board of Supervisors, and its functions are carried out by the Los Angeles County Department of Public Works. The LACFCD service area is shown in **Figure 1.B-1.**

Unlike cities and counties, the LACFCD does not own or operate any municipal sanitary sewer systems, public streets, roads, or highways. The LACFCD operates and maintains storm drains and other appurtenant drainage infrastructure within its service area. The LACFCD has no planning, zoning, development permitting, or other land use authority within its service area. The permittees that have such land use authority are responsible under the Permit for inspecting and controlling pollutants from industrial and commercial facilities, development projects, and development construction sites. (Permit, Part II.E, p. 17.)

The MS4 Permit language clarifies the unique role of the LACFCD in storm water management programs: "[g]iven the LACFCD's limited land use authority, it is appropriate for the LACFCD to have a separate and uniquely-tailored storm water management program. Accordingly, the storm water management program minimum control measures imposed on the LACFCD in Part VI.D of this Order differ in some ways from the minimum control measures imposed on other Permittees. Namely, aside from its own properties and facilities, the LACFCD is not subject to the Industrial/Commercial Facilities Program, the Planning and Land Development Program, and the Development Construction Program. However, as a discharger of storm and non-storm water, the LACFCD remains subject to the Public Information and Participation Program and the Illicit Connections and Illicit Discharges Elimination Program. Further, as the owner and operator of certain properties, facilities and infrastructure, the LACFCD remains subject to requirements of a Public Agency Activities Program."
(Permit, Part II.F**,** p. 18.)

Consistent with the role and responsibilities of the LACFCD under the Permit, the EWMPs and CIMPs reflect the opportunities that are available for the LACFCD to collaborate with permittees having land use authority over the subject watershed area. In some instances, the opportunities are minimal, however the LACFCD remains responsible for compliance with certain aspects of the MS4 permit as discussed above.

In some instances, in recognition of the increased efficiency of implementing certain programs regionally, the LACFCD has committed to responsibilities above and beyond its obligations under the 2012 Permit. For example, although under the 2012 Permit the Public Information and

Participation Program is a responsibility of each Permittee, the LACFCD is committed to implementing certain regional elements of the PIPP on behalf of all Permittees at no cost to the Permittees. These regional elements include:

- Maintaining a countywide hotline (888-CLEAN-LA) and website (www.888cleanla.com) for public reporting and general stormwater management information at an estimated annual cost of $250,000. Each Permittee can utilize this hotline and website for public reporting within its jurisdiction.
- Broadcasting public service announcements and conducting regional advertising campaigns at an estimated annual cost of $750000.
- Facilitating the dissemination of public education and activity specific stormwater pollution prevention materials at an estimated annual cost of $100,000.
- Maintaining a stormwater website at an estimated annual cost of $10,000.

The LACFCD will implement these elements on behalf of all Permittees starting July 2015 and through the Permit term. With the LACFCD handling these elements regionally, Permittees can better focus on implementing local or watershed-specific programs, including student education and community events, to fully satisfy the PIPP requirements of the 2012 Permit.

Similarly, although water quality monitoring is a responsibility of each Permittee under the 2012 Permit, the LACFCD is committed to implement certain regional elements of the monitoring program. Specifically, the LACFCD will continue to conduct monitoring at the seven existing mass emissions stations required under the previous Permit. The LACFCD will also participate in the Southern California Stormwater Monitoring Coalition's Regional Bioassessment Program on behalf of all Permittees. By taking on these additional responsibilities, the LACFCD wishes to increase the efficiency and effectiveness of these programs.



Figure 1.B-1 Los Angeles County Flood Control District Service Area

Appendix 1.C
Summary of TMDL Requirements in the ULARWMA

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
LAR Nutrients	Ammonia-N	POTW/One-hour average (mg/L)/ Thirty-day average (mg/L): D.C. Tillman/4.7/1.6 LA-Glendale/8.7/2.4 Burbank /10.1/2.3	POTW or Water Body/One-hour average (mg/L)/ Thirty-day average (mg/L): D.C. Tillman/4.2/1.4 LA-Glendale/7.8/2.2 Burbank /9.1/2.1 LA River above LA -Glendale/4.7/1.6 LA River below LA-Glendale/8.7/2.4 LA River Tributaries/10.1/2.3	Final/Pre-2012	Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)
	Nitrate-N	8 mg/L	POTW/ Thirty-day average (mg/L): D.C. Tillman/7.2 LA-Glendale/7.2 Burbank /7.2		
	Nitrite-N	1 mg/L	POTW/ Thirty-day average (mg/L): D.C. Tillman/0.9 LA-Glendale/0.9 Burbank /0.9		
	Nitrate-N+Nitrite-N	8 mg/L above Figueroa Street, between Figueroa Street and Los Angeles River Estuary including Rio Hondo below Santa Ana Freeway, and Rio Hondo above Santa Ana Freeway 10 mg/L in other tributaries	POTW/ Thirty-day average (mg/L): D.C. Tillman/7.2 LA-Glendale/7.2 Burbank /7.2		
LAR Trash	Trash	Zero Trash	Zero Discharge	70%/2012 80%/2013 90%/2014 96.7%/2015 100%/2016	Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)
Legg Lake Trash	Trash	Zero Trash	Zero Discharge	20%/2012 40%/2013 60%/2014 80%/2015 100%/2016	Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
					Watershed (County of Los Angeles)
LAR Metals	Copper	Dry Weather **Waterbody/ Dissolved (µg/L)/Total Recoverable (µg/L):** LAR Reach 6/29/30 LAR Reach 5/29/30 LAR Reach 4/19/26 LAR Reach 3 Above LAG WRP/22/23 LAR Reach 3 Below LAG WRP/21/26 LAR Reach 2/21/22 LAR Reach 1/22/23 Bell/29/30 Tujunga/19/20 Verdugo Wash/22/23 Burbank (Above WRP)/25/26 Burbank (below WRP)/18/19 Arroyo Seco/21/22 Compton Creek/18/19 Rio Hondo Reach 1/12/13 Wet Weather Dissolved 11 µg/L Total Recoverable 17 µg/L	Dry Weather **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/26/7.8 Glendale/26/2.0 Burbank/19/0.64 **Open Space Tributary/ Total Recoverable (Kg/day):** Tujunga Wash/0.0056 Arroyo Seco/0.018 **Waterbody/ Direct Atmospheric Deposition (Kg/day)/Storm water Permittees (Kg/day):** LAR Reach 6/3.3x10^{-4}/0.53 LAR Reach 5/3.6x10^{-4}/0.05 LAR Reach 4/8.1x10^{-4}/0.32 LAR Reach 3/6.04x10^{-4}/0.06 LAR Reach 2/1.4 x10^{-3}/0.13 LAR Reach 1/4.4x10^{-4}/0.14 Bell Creek/2.98x10^{-4}/0.06 Tujunga Wash/7.4x10^{-4}/0.001 Verdugo Wash/4.7x10^{-4}/0.15 Burbank Western Channel/7.1x10^{-4}/0.18 Arroyo Seco/7.3x10^{-4}/0.01 Rio Hondo Reach 1/6.4x10^{-4}/0.01 Compton Creek/6.5x10^{-4}/0.04 Wet Weather **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/26/7.8	Dry: 50%/2012 75%/2020 100%/2024 Wet: 25%/2012 50%/2024 100%/2028	Metals TMDL Implementation Plan (City of Los Angeles) Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
			Glendale/26/2.0 Burbank/19/0.64 Combined storm water permittees (Kg/day): $1.7x10^{-8}$ x daily volume (L) - 10.4 MS4 Permitees (Kg/day): $1.5x10^{-6}$ x daily volume (L) – 9.5		
	Lead	<u>Dry Weather</u> Waterbody/ Dissolved (µg/L)/Total Recoverable (µg/L): LAR Reach 6/11/19 LAR Reach 5/11/19 LAR Reach 4/6.6/10 LAR Reach 3 Above LAG/7.6/12 LAR Reach 3 Below LAG/7.5/12 LAR Reach 2/7.3/11 LAR Reach 1/7.6/12 Bell/11/19 Tujunga/6.6/10 Verdugo Wash/7.6/12 Burbank (Above WRP)/9.1/14 Burbank (below WRP)/6.1/9.1 Arroyo Seco/7.3/11 Compton Creek/6.0/8.9 Rio Hondo Reach 1/3.7/5.0 Monrovia Canyon Creek/5.6/8.2 <u>Wet Weather</u> Dissolved 51 µg/l Total Recoverable 62 µg/L	<u>Dry Weather</u> **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/10/3.03 Glendale/12/0.88 Burbank/9.1/0.31 **Open Space Tributary/ Total Recoverable (Kg/day):** Tujunga Wash/0.0028 Arroyo Seco/0.009 **Waterbody/ Direct Atmospheric Deposition (Kg/day)/Storm water Permittees (Kg/day):** LAR Reach 6/$2.2x10^{-4}$/0.33 LAR Reach 5/$2.4x10^{-4}$/0.03 LAR Reach 4/$5.4x10^{-4}$/0.12 LAR Reach 3/$4.03x10^{-4}$/0.03 LAR Reach 2/1.4 $x10^{-4}$/0.07 LAR Reach 1/$9.5x10^{-4}$/0.07 Bell Creek/$1.99x10^{-4}$/0.04 Tujunga Wash/$4.9x10^{-4}$/0.0002 Verdugo Wash/$3.2x10^{-4}$/0.07 Burbank Western Channel/$4.7x10^{-4}$/0.10 Arroyo Seco/$4.9x10^{-4}$/0.01 Rio Hondo Reach 1/$4.2x10^{-4}$/0.06 Compton Creek/$4.3x10^{-4}$/0.02		

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
			Wet Weather **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/10/3.03 Glendale/12/0.88 Burbank/9.1/0.31 Combined storm water permittees: $6.2x10^{-8}$ x daily volume (L) -4.2 MS4 permittees: $5.6x10^{-8}$ x daily volume (L) -3.5		
	Zinc	Wet Weather Dissolved 97 µg/l Total Recoverable 159 µg/L	Dry Weather **Waterbody/ Direct Atmospheric Deposition (Kg/day)/Storm water Permittees (Kg/day):** Rio Hondo Reach 1/0.0021/0.16 Wet Weather **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/212/64 Glendale/253/19 Burbank/212/7.3 Combined storm water permittees: $1.6x10^{-7}$ x daily volume (L) -90 MS4 permittees: $1.4x10^{-7}$ x daily volume (L) -83		
	Cadmium	Wet Weather Dissolved 3 µg/l Total Recoverable 3.1 µg/L	Wet Weather **WRP/ Total Recoverable (µg/L)/Mass Based (Kg/day):** Tillman/4.7/1.4		

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
			Glendale/5.3/0.40 Burbank/4.5/0.15 Combined storm water permittees: $3.1x10^{-9}$ x daily volume (L) - 1.95water permittees: $2.8x10^{-9}$ x daily volume (L) -1.82		
LA River Bacteria (Wet Weather)	*E. coli*	Geometric Mean Limits • *E. coli* density shall not exceed 126/100 mL. • Fecal coliform density shall not exceed 200/100 mL. Single Sample Limits • *E. coli* density shall not exceed 235/100 mL. • Fecal coliform density shall not exceed 400/100 mL.	**Interim WLA for MS4s** **Waterbody/*E. coli* Load (10^9 MPN/day):** LAR Segment E (~Reach 6)/32 LAR Segment D (~Reach 5 and 6)/454 LAR Segment C (~Reach 3 and 4)/463 LAR Segment B(~Reach 1 and 2)/518 LAR Segment A (Portion of Reach 1)/301 Bell Creek/14 Bull Creek/9 Aliso Canyon Wash/23 Dry Canyon/7 McCoy Canyon/7 Tujunga Wash/10 Verdugo Wash/51 Burbank Western Channel/86 Arroyo Seco/24 Compton Creek/7 Rio Hondo/2	Final/2037	Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)
Dominguez Channel and LA/LB Harbors Toxics	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	Criteria for Protection of Aquatic Life (Freshwater)/ Acute (µg/L)/Chronic(µg/L): Copper/6.86/4.87 Lead/29.5/1.15	Concentration-based Sediment for Metals (mg/Kg dry sediment): Cadmium/1.2 Chromium/81 Mercury/0.15	Interim/2012 Final/2032	Metals TMDL Implementation Plan (City of Los Angeles) Multi-Pollutant TMDL Implementation

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
		Zinc/64.0/64.5 4,4'-DDT/11/0.001 Total PCBs/-/0.0002 Freshwater Sediment (TECs) (mg/Kg): Copper/31.6 Lead/35.8 Zinc/121	LA River Estuary-TMDL MS4/DDTs (g/year)/PCBs (g/year): LA County et al/0.100/0.324 City of Long Beach/1.067/3.441 Caltrans/0.014/0.047		Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)
USEPA Lakes TMDLs	Total-P, Total-N, Trash Water and Sediment: PCBs, Chlordane, Dieldrin	<u>Lake Calabasas</u> Total-P = 0.066 mg-P/L Total-N = 0.66 mg-N/L <u>Legg Lake</u> Total-P = 0.065 mg-P/L Total-N = 0.65 mg-N/L <u>Echo Park lake</u> Total-P = 0.12 mg-P/L Total-N = 1.20 mg-N/L Zero Trash PCBs: Maximum Contaminant Level = 500 ng/L Chronic Criterion = 14 ng/L Human Health Criterion = 0.17 ng/L Consensus-based TEC Sediment Target= 59.8 (µg/kg)[3] BSAF-derived Sediment Target = 1.77 µg/kg Fish Contaminant Goal = 3.6 ppb Chlordane:	<u>Lake Calabasas</u> Input/Total-P (lb-P/yr)/ Total-N (lb-P/yr): MS4/48.5/220 Supplemental Water/1.23/72.0 <u>Legg Lake</u> Input/Total-P (lb-P/yr)/ Total-N (lb-P/yr): Caltrans to Center Lake/4.6/15.5 Caltrans to Legg Lake/1.2/4.0 Caltrans to North Lake/19.1/64.1 Caltrans Northwestern/9.4/29.3 LA County MS4/53.6/148.7 South El Monte MS4/526.3/1500.6 General Industrial Stormwater Permittees/5.8/18.0 LA CountyMS4/12.8/39.2 South El Monte MS4/498.7/1394.8 Whittier Narrows Operable Unit Groundwater Treatment Plant/172.3/5,296.8 <u>Echo Park Lake</u> City of LA Additional Parkland Loading:	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in an EWMP.	Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed (County of Los Angeles)

Appendix 1.C Summary of TMDL Requirements in the ULARWMA

TMDL	Pollutant	Numeric Target	WLA	Compliance Milestone / Date	TMDLIP and Coordinating Agencies
		Acute Criterion=2,400 ng/L Chronic criterion=4.3 ng/L Criterion for Consumption of Water and Organisms = 0.57 ng/L Consensus-based TEC Sediment Target=3.24 (µg/kg)[3] BSAF-derived Sediment Target = 2.10 µg/kg Fish Contaminant Goal = 5.6 ppb Dieldrin: Acute Criterion=240 ng/L Chronic criterion=56 ng/L Human Health Criterion for Consumption of Organisms Only = 0.14 ng/L Consensus-based TEC Sediment Target=1.90 (µg/kg)[3] BSAF-derived Sediment Target = 0.80 µg/kg Fish Contaminant Goal = 0.46 ppb	Total-P = 26.1 lb-P/yr Total-N = 40 lb-N/yr Zero Trash PCBs: Input/Sediment (µg/kg dry weight)/Water column (ng/L): Caltrans stormwater N/1.77/0.17 City of LA MS4 N/1.77/0.17 General Industrial Stormwater Permitees/1.77/0.17 Caltrans stormwater S/1.77/0.17 City of LA MS4 S/1.77/0.17 Chlordane: Input/Sediment (µg/kg dry weight)/Water column (ng/L): Caltrans stormwater N/2.10/0.59 City of LA MS4 N/2.10/0.59 General Industrial Stormwater Permitees/2.10/0.59 Caltrans stormwater S/2.10/0.59 City of LA MS4 S/2.10/0.59 Dieldren: Input/Sediment (µg/kg dry weight)/Water column (ng/L): Caltrans stormwater N/0.88/0.14 City of LA MS4 N/0.88/0.14 General Industrial Stormwater Permitees/0.88/0.14 Caltrans stormwater S/0.88/0.14 City of LA MS4 S/0.88/0.14		

Appendix 2.A
Supporting Information for the Receiving Water Data Analysis

Appendix 2.A Supporting Information for the Receiving Water Data Analysis

Per Part VI.C.5.a.i (pg 58) of the Permit, each EWMP shall include an evaluation of existing water quality conditions, including characterization of receiving water quality. The following provides a summary of the information considered and analysis conducted to support the classification of Waterbody Pollutant Combinations (WBPCs) into the three categories identified in the Permit (Table 1). The characterization process consisted of the following steps, which are discussed in subsections below:

1. Identifying the water bodies within the EWMP area and downstream of the area.
2. Compiling WBPCs with applicable TMDLs listed in the Permit.
3. Compiling 303(d) Listings from the 2010 303(d) List, the most recent approved list.
4. Gathering additional relevant data and information (e.g., water quality data).
5. Conducting data analysis to evaluate attainment of water quality objectives (relevant to TMDL requirements, 303(d) impairment listings, and existing water quality data).

Table 1. Water Body-Pollutant Classification Categories (Permit Section IV.C.5.a.ii)

Category	Water Body-Pollutant Combinations (WBPCs) Included
1 Highest Priority	WBPCs for which TMDL Water Quality Based Effluent Limits (WQBELs) and/or Receiving Water Limitations (RWLs) are established in Part VI.E and Attachments L and O of the MS4 Permit.
2 High Priority	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List and for which the MS4 discharges may be causing or contributing.
3 Medium Priority	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

EWMP Area

Figure 1 displays the ULARWMA and the participating jurisdictions, which include the County of Los Angeles and the cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South Pasadena, and Temple City; and the Los Angeles County Flood Control District. The EWMP area covers the portion of the Los Angeles River located within these jurisdictions. The water bodies named in the Basin Plan are summarized in **Table 2** and presented in **Figure 1**. Beneficial uses for the water bodies listed in **Table 2** can be found in Chapter 3 of the California Water Quality Control Plan, Los Angeles Region (Basin Plan).

Table 2. Significant Waterbodies Associated with the ULARWMA EWMP and Identified in TMDLs

Mainstem	Associated Tributaries	Waters Immediately Downstream of EWMP Area
LA River Reach 6	Dry Canyon Creek McCoy Creek Bell Creek Aliso Canyon Wash	
LA River Reach 5	Bull Creek	
LA River Reach 4	Pacoima Wash Tujunga Wash	
LA River Reach 3	Burbank Western Channel Verdugo Wash Arroyo Seco	
LA River Reach 2	Rio Hondo Reach 2 and 3	Rio Hondo Reach 1
	Compton Creek	LA River Reach 1
Lakes		
Echo Park Lake	Legg Lake	Lake Calabasas

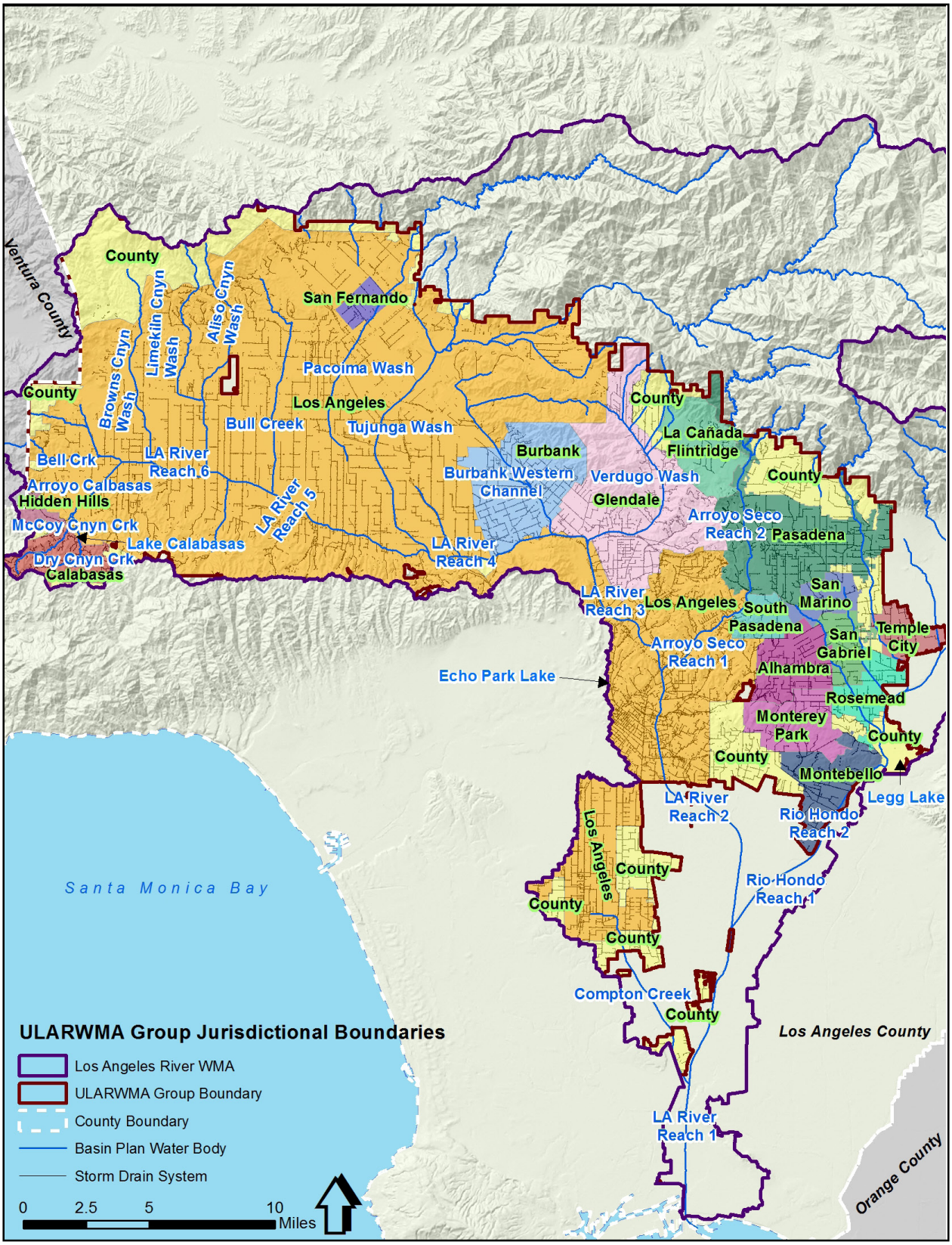


Figure 1. Upper Los Angeles River Watershed Management Area Group

Summary of Existing TMDLs and Deadlines

A summary of the existing TMDLs in the watershed is presented in the following tables:

- **Table 3** presents TMDLs developed for water bodies within the ULARWMA and also TMDLs for downstream waterbodies. **Table 3** includes amendments to nutrients and metals TMDLs in the watershed.
- **Table 4** presents interim and final compliance deadlines for the relevant TMDLs except for the dry weather LA River Bacteria TMDL, which are presented in **Table 5**.
- **Table 6** (mainstem and tributaries) and **Table 7** (lakes) show where the Permit assigns water quality-based effluent limits (WQBELs), receiving water limitations (RWLs), or wasteload allocations (WLAs) to Permittees within the ULARWMA. The numeric WQBELs and RWLs as well as the WLAs for the USEPA TMDLs listed in **Table 6** and **Table 7** can be found in Attachments N and O of the Permit.

Table 3. TMDLs Applicable to the Upper Los Angeles River Watershed Management Area Group

TMDL	LARWQCB Resolution Number	Effective Date and/or EPA Approval Date
LA River Nitrogen Compounds and Related Effects	2003-009	03/23/2004
	2012-010	Not Yet Effective
Legg Lake Trash TMDL	2007-010	03/06/2008
LA River Trash	2007-012	09/23/2008
LA River Metals TMDL	2007-014	10/29/2008
	2010-003	11/03/2011
LA River Bacteria TMDL	2010-007	03/23/2012
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL	2011-008	03/23/2012
Los Angeles Area Lakes TMDLs for Lake Calabasas, Echo Park Lake, and Legg Lake	NA (USEPA TMDL)	03/26/2012

Table 4. Interim and Final TMDL Compliance Milestones Applicable to the ULARWMA Group (Except for LAR Bacteria Dry Weather)

TMDL	Waterbodies[1]	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestones (Bolded **numbers** indicated milestone deadlines within the current Permit term) [1]									
					2012	**2013**	**2014**	**2015**	**2016**	2020	2024	2028	2032	2037
LAR Nutrients	All Waterbodies	Ammonia-N, Nitrate-N, Nitrite-N, Nitrate-N+Nitrite-N	Meet WQBELs	All	**Pre 2012**									
					Final									
LAR Trash	All Waterbodies	Trash	% Reduction	All	**9/30**	**9/30**	**9/30**	**9/30**	**9/30**					
					70%	**80%**	**90%**	**96.7%**	**100%**					
Legg Lake Trash	Legg Lake	Trash	% Reduction	All	**3/6**	**3/6**	**3/6**	**3/6**	**3/6**					
					20%	**40%**	**60%**	**80%**	**100%**					
LAR Metals[2]	Reach 1 through 6, CC, RH, AS, VW, BWC, TW, ACW, MC, DC, BeC and BuC	Copper, Lead, Zinc (only RH)	% of MS4 area Meets WQBELs	Dry	**1/11**					1/11	1/11			
					50%					75%	100%			
	All Waterbodies	Copper, Lead, Zinc, Cadmium	% of MS4 area Meets WQBELs	Wet	**1/11**						1/11	1/11		
					25%						50%	100%		
LA River Bacteria (Wet Weather)	All Waterbodies	*E. coli*	Meet WQBELs	Wet										3/23
														Final
Dominguez Channel and LA/LB Harbors Toxics	Estuary	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	Meet WQBELs	All	**3/23**								3/23	
					Interim								Final	
USEPA Lakes TMDLs	Lake Calabasas	Total-P, Total-N	Meet WLAs	All	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in an EWMP.									
	Legg Lake	Total-P, Total-N	Meet WLAs	All										
	Echo Park Lake	Total-P, Total-N, Trash Water and Sediment: PCBs, Chlordane, Dieldrin	Meet WLAs	All										

[1] CC (Compton Creek), RH (Rio Hondo), AS (Arroyo Seco), VW (Verdugo Wash), BWC (Burbank Western Channel), TW(Tujunga Wash), ACW (Aliso Canyon Wash), MC (McCoy Canyon Creek), DC (Dry Canyon Creek), BeC (Bell Creek), and BuC (Bull Creek)

[2] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.

Table 5. Dry Weather Compliance Milestones for the Los Angeles River Bacteria TMDL Applicable to ULARWMA Group with and without the use of a Load Reduction Strategy (LRS)

Waterbodies		Compliance Dates and Compliance Milestones											
		2022	2023	2024	2025	2028	2029	2030	2031	2032	2035	2036	2037
Compton Creek	w/o LRS				3/23								
					Final								
	w LRS				3/23					3/23			
					Interim					Final			
Segment B	w/o LRS	3/23											
		Final											
	w LRS	3/23				3/23							
		Interim				Final							
Rio Hondo and Arroyo Seco	w/o LRS		3/23										
			Final										
	w LRS		3/23					3/23					
			Interim					Final					
Segment C	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Tujunga Wash, Burbank Western Channel, and Verdugo Wash	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Segment D	w/o LRS							3/23					
								Final					

Waterbodies		Compliance Dates and Compliance Milestones											
		2022	2023	2024	2025	2028	2029	2030	2031	2032	2035	2036	2037
	w LRS							3/23					3/23
								Interim					Final
Bull Creek	w/o LRS							3/23					
								Final					
	w LRS							3/23					3/23
								Interim					Final
Segment E	w/o LRS				3/23								
					Final								
	w LRS				3/23				3/23				
					Interim				Final				
Dry Canyon Creek, McCoy Creek, Bell Creek, and Aliso Canyon Wash	w/o LRS						3/23						
							Final						
	w LRS						3/23				3/23		
							Interim				Final		

Table 6. Applicability of WQBELs and RWLs Associated with TMDLs as Identified in the Permit

TMDL	Constituent	LA River Reaches 1 – 6	Compton Creek	Rio Hondo R1 – R3	Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash	Bell Creek	Bull Creek Aliso Canyon Wash McCoy Canyon Dry Canyon
LAR Trash	Trash	E	E	E	E	E	E	E	E	E
LAR Nutrients	Ammonia -N	E	E	E	E	E	E	E	E	E
	Nitrate – N	E	E	E	E	E	E	E	E	E
	Nitrite – N	E	E	E	E	E	E	E	E	E
	Nitrate as N + Nitrite as N	E	E	E	E	E	E	E	E	E
LAR Metals	Copper and Lead (dry and wet weather)	E	E	E[1]	E	E	E	E	E	--
	Zinc (dry weather)	--	--	E[1]	--	--	--	--	--	--
	Zinc (wet weather)	E	E	E	E	E	E	E	E	--
	Cadmium (wet weather)	E	E	E	E	E	E	E	E	--
DC and LA/LB Harbors Toxics	Sediment: DDTs, PCBs, Copper, Lead, Zinc, PAHs	--	--	--	--	--	--	--	--	--
LAR Bacteria	*E. coli*	E/R	E/R	E/R	E/R	E/R	E/R	E/R	E/R	E/R

Note that unless explicitly stated as sediment, constituents are associated with the water column

E – Effluent limit established based on a TMDL.

R – Receiving water limit established based on a TMDL.

1 – The dry weather metals limits only apply to Rio Hondo Reach 1.

Table 7. Applicability of Water Quality Based Effluent Limitations and/or Wasteload Allocations Associated with TMDLs for Lakes as Identified in the Permit

TMDL	Constituents	Lake		
		Legg	Calabasas	Echo Park
Legg Lake Trash TMDL	Trash	E		
USEPA Lakes TMDLs	Total-P	WLA	WLA	WLA
	Total-N	WLA	WLA	WLA
	Trash			WLA
	PCBs (water and sediment)			WLA
	Chlordane (water and sediment)			WLA
	Dieldrin (water and sediment)			WLA

Note that unless explicitly stated as sediment, constituents are associated with the water column.

E – Effluent limit established based on a TMDL.

WLA – Wasteload Allocation assigned in a USEPA TMDL, but not included as effluent or receiving water limitations.

Summary of Existing 303(d) Listings

Table 8 presents a summary of the WBPCs on the 2010 303(d) List that have not been addressed by a TMDL for waterbodies in and immediately downstream of the ULARWMA. The waterbodies immediately downstream are LA River Reach 1 and Rio Hondo Reach 1.

Table 8. 2010 303(d) Listed Water Body-Pollutant Combinations in the Los Angeles River Watershed not Addressed by a TMDL

Constituent	Los Angeles River			Compton Creek	Rio Hondo		Arroyo Seco Reach 1	Burbank Western Channel
	1	2	5		1	2		
Diazinon	W							
Cyanide	W/D					D		D
Toxicity					D			
Selenium								W/D
Benthic-Macroinvertebrates				D			D	
Oil		D	D					

W and D denote whether the listing appears to be associated with wet weather and/or dry weather conditions.

Data Gathering

Data were obtained from numerous sources. A data request was submitted to the ULARWMA to gather information necessary to meet the water quality characterization and source assessment requirements outlined in the Permit (pages 58 and 59). The data requested included:

- Monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring;
- Findings from the Permittees' Illicit Connections and Illicit Discharge Eliminations, Industrial/Commercial Facilities, Development Construction, and Public Agency Activities Programs;
- TMDL source investigations; and
- Any other pertinent data, information, or studies related to constituent sources and conditions that could contribute to identification of the highest water quality priorities.

Monitoring data collected within the Los Angeles River Watershed was received from the following sources:

- Los Angeles Department of Public Works (LACDPW)
- DC Tillman, Los Angeles/Glendale, and Burbank Water Reclamation Plants (WRPs)
- City of Los Angeles Status and Trends program
- LA River Metals TMDL Coordinated Monitoring Program
- City of Los Angeles Echo Park Monitoring Program
- Los Angeles River Watershed Monitoring Program (LARWMP)

Over 170,000 data records were compiled and reviewed as part of the data analysis. **Figure 2** presents the site locations for the monitoring data received and used for the water quality characterization process.

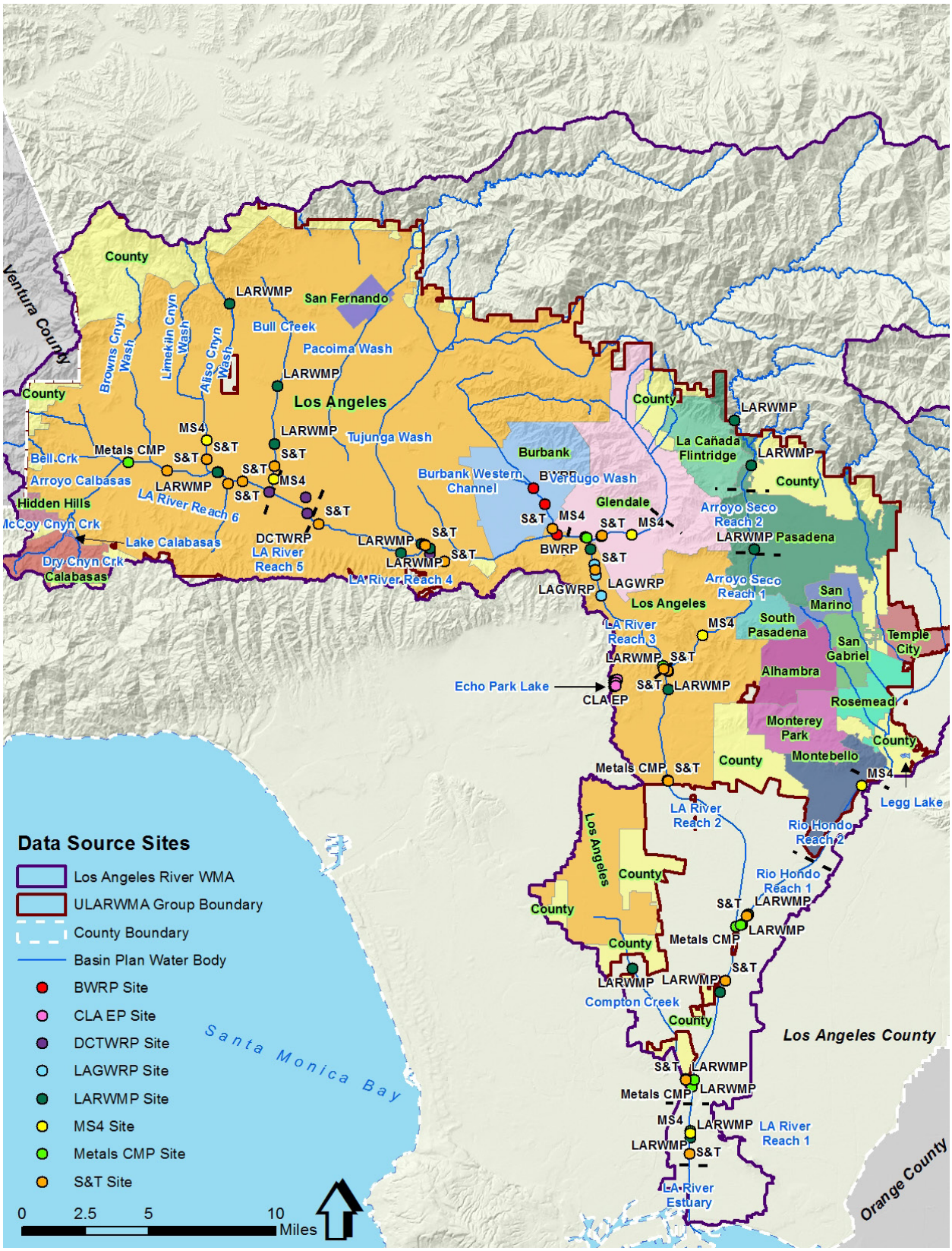


Figure 2. Monitoring Site Locations for Data Utilized in the Water Quality Priorities Process

Receiving Water Data Analysis

Per Part VI.C.5.a.i (pg 58) of the Permit, each EWMP shall include an evaluation of existing water quality conditions, including characterization of receiving water quality. Data were compiled to identify constituents exceeding applicable water quality objectives in the ULARWMA and immediate downstream waterbodies. Applicable water quality objectives were obtained from the California Toxics Rule (CTR), Basin Plan, and relevant TMDLs. Applicable water quality objectives from the CTR and Basin Plan were selected based on the beneficial uses identified in the Basin Plan. Generally, the water quality objectives utilized included those established for the protection of aquatic life, contact recreation and human health related to the consumption of organisms.

In order to characterize receiving water conditions for each WBPC, the following steps were taken:

- The first step in the analysis was to develop a list of constituents that were sampled for but were never detected in any water body within the EWMP area and therefore would not fall into one of the three Permit categories (see **Table 1**). A list of these constituents is presented in **Attachment 1.**
- Next, constituents that were detected but the sample results never exceeded a corresponding water quality objective and therefore would not fall into one of the three Permit categories were identified. A list of these constituents is presented in **Attachment 2.**
- All other constituents (i.e., all constituents detected and with sample results that had at least one result greater than an applicable water quality objective) were subject to further analysis.
    - Those constituents that exceeded but at a frequency that did not meet the 303(d) listing requirements are presented in summary tables in **Attachment 3.** These tables generally include the following attributes:
        - Applicable water body segments (i.e., tributaries, reaches, etc.)
        - TMDL target or applicable water quality objective (e.g., CTR and/or Basin Plan)
        - Applicable wet or dry weather conditions
        - Date range of data
        - Total number of samples, number of samples exceeding the water quality objectives, percent exceedance frequency, and number of exceedances in the past five years of available data
        - Whether or not the number of exceedances suggested an impairment per the State's 303(d) Listing Policy[1]
        - Maximum and minimum of sample results
        - Additionally, for those constituents that exceeded at a frequency that met the 303(d) Listing requirements the average and median of the sample results is also provided.

For the analysis presented in **Attachment 3**, the determination of weather condition was based on the designation provided by the sampling program. If no information was provided by the sampling program, flow records were reviewed. If flow on the sample date exceeded the definition of wet weather of 500 cubic feet per second (cfs) identified in the LA River Metals TMDL, it was identified as a wet weather sample.

A large proportion of the data included non-detect values. Using these data to calculate summary statistics requires methods for dealing with the inherent uncertainty in characterizing the true range of water quality conditions. The method used to consider non-detect data results is typically known as regression on order statistics (ROS). Use of the ROS method, when statistical criteria are met, more

[1] 2004 Water Quality Control Policy for Developing California's Clean Water Act Section 303 (d) List.

appropriately estimates actual values than the commonly employed practice of assuming one half the detection limit for non-detect values. Criteria for sufficient data to use the ROS method are: 1) at least 20% and preferably 50% detected data and 2) at least three unique detected values. Instances of insufficient detected data results are noted in the summary tables as <20% detect in **Attachment 3**.

Summary of Key Findings of Receiving Water Data Analysis

The following provides a summary of key findings from the receiving water data analysis. It is not intended to be a detailed discussion of all the results of the data analysis. Instead, the summary highlights outcomes of the data analysis that may affect the constituents addressed by the EWMP and/or the way the EWMP will approach addressing the constituent. For example, some constituents addressed by the Metals TMDL appear to exceed less frequently than in the past and as such, are discussed in this subsection. Conversely, indicator bacteria continue to exceed on a frequent basis and nothing "new" was learned from the data analysis. As such, indictor bacteria are not discussed in this subsection. The key findings are organized as follows:

- Summary of findings related to the LA River Metals TMDL.
- Summary of findings related to the Nutrients TMDL.
- Identification of constituents that are not currently on the 303(d) List, but appear to meet the listing requirements.
- Identification of constituents that exhibited exceedances of relevant water quality objectives, but do not meet the 303(d) listing requirements.
- Identification of current 303(d) listed constituents not addressed by a TMDL that appear to meet the delisting requirements.

Key findings related to the LA River Metals TMDL

Wet weather is the primary condition where exceedances of TMDL targets persist. Over the past five years, copper, lead and zinc exceedances of TMDL targets during dry weather are infrequent in the majority of the watershed. Cadmium did not exceed in any of the data reviewed. As noted in the Metals TMDL, frequent selenium exceedances are confined to the upper reaches of the watershed and appear to originate from natural sources. The following provides a generalized summary of the key findings from comparing the data collected over the past five years to the Metals TMDL targets (note that percentages are rounded and presented as a range to represent the range across multiple waterbodies) (see **Attachment 3** for detailed summary):

- Dissolved Cadmium: Zero exceedances in 64 and 83 wet and dry weather samples, respectively.
- Total Cadmium: Zero exceedances in 38 and 220 wet and dry weather samples, respectively.
- Dissolved Copper: Frequently exceeds in wet weather (13-46%), but rarely in dry weather (0%-3%), except for Tujunga Wash (71%).
- Total Copper: Consistently exceeds in wet weather (63-100%), but rarely during dry weather in the majority of the watershed (0-5%), except for Burbank Western Channel (18%), Rio Hondo (64%), and Tujunga Wash (78%).
- Dissolved Lead: Rarely exceeds during wet weather (0-6%) and only one exceedance during dry weather (Rio Hondo Reach 1) of 322 samples.
- Total Lead: Frequently exceeds in wet weather in LA River Reaches 1 and 2 (19 and 17%, respectively) but there were zero exceedances in the 76 samples collected in Reaches 3, 4, and 6. Rarely exceeds during dry weather in the majority of the watershed (0-6%), except for Rio Hondo (43%).
- Dissolved Zinc: Frequently exceeds in wet weather (0%-29%), but rarely in dry weather with only one exceedance (LA River Reach 1) out of 440 samples.

- Total Zinc: Consistently exceeds in wet weather (35%-100%), but rare in dry weather 12 of 662 samples (0%-11%).
- Total Selenium: Consistently exceeds in the upper reaches of the watershed where 66 of 136 dry weather samples collected in Reaches 5 and 6 exceeded. In the remainder of the watershed, only one sample (Reach 1) out of 242 exceeded.

Key findings related to the LA River Nutrients TMDL

Over the past five years ammonia, nitrate and nitrite have rarely exceeded (<0.3%) LA River Nutrient TMDL targets. This is likely due to the fact that the primary sources of these constituents (DC Tillman, LA/Glendale, and Burbank WRPs) all upgraded their facilities to include nitrification/de-nitrification processes more than five years ago. The data analysis suggests that ammonia, nitrate and nitrite are not a water quality issue in the Watershed. The following provides a generalized summary of the key findings from comparing the data collected over the past five years to the Nutrients TMDL targets (see **Appendix 3** for detailed summary):

- Ammonia as N: Of the 2,015 samples collected only one exceeded (Tujunga Wash).
- Nitrate as N: Of the 2,015 samples collected zero samples exceeded.
- Nitrite as N: Of the 2,015 samples collected only one exceeded (Arroyo Seco).
- Nitrogen (NO3-N+NO2-N): Of the 2,015 samples collected zero samples exceeded.

Constituents not on the 303(d) List, but appear to meet listing requirements

The data analysis identified a number of constituents exceeding relevant water quality objectives, at a frequency that appears to meet the 303(d) listing criteria. **Table 9** identifies the constituents by waterbody and presents the frequency of exceedances during wet and/or dry weather conditions over the past five and ten year periods. A more detailed summary of the analysis can be found in the tables presented in **Attachment 3**.

Table 9. Summary of Key Findings – Constituents not currently on the 303(d) List, but appear to meet listing criteria

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
Aliso Canyon Wash	Bis(2-ethylhexyl)Phthalate	Dry	10/03	1/04	2	100%	NS	NS	CTR HH Organism
		Wet	10/03	2/04	4	75%	NS	NS	CTR HH Organism
Arroyo Seco	Bis(2-ethylhexyl)Phthalate	Wet	10/03	2/04	4	75%	NS	NS	CTR HH Organism
Bull Creek	Bis(2-ethylhexyl)Phthalate	Dry	10/03	1/04	2	100%	NS	NS	CTR HH Organism
		Wet	10/03	2/04	4	50%	NS	NS	CTR HH Organism
Burbank Western Channel	2,3,7,8-TCDD (Dioxin)	Dry	2/07	8/13	64	44%	40	43%	CTR HH Organism
	Bis(2-ethylhexyl)Phthalate	Dry	10/03	8/13	137	26%	45	18%	CTR HH Organism
		Wet	10/03	2/04	4	75%	NS	NS	CTR HH Organism
	Chlorine (Total)	Wet	2/04	2/12	42	12%	7	0%	BP Aquatic Life Objective
	Chlorodibromomethane	Dry	2/04	10/13	231	12%	123	1%	CTR HH Organism
Echo Park Lake	Mercury Total	Wet	2/04	2/05	6	50%	NS	NS	CTR HH Organism
Rio Hondo Reach 2	Bis(2-ethylhexyl)Phthalate	Dry	10/03	1/04	2	100%	NS	NS	CTR HH Organism
		Wet	10/03	2/04	4	75%	NS	NS	CTR HH Organism
Rio Hondo Reach 2	Copper Total	Dry	1/04	12/12	105	24%	46	7%	CTR Chronic
	Dissolved Oxygen	Dry	1/04	12/12	210	36%	46	41%	Basin Plan Minimum
	pH	Dry	1/04	12/12	210	21%	46	11%	Basin Plan Maximum
Tujunga Wash	Chloride	Dry	6/09	6/11	3	100%	3	100%	BP SSO
Verdugo Wash Reach 1	Bis(2-ethylhexyl)Phthalate	Dry	10/03	1/04	2	100%	NS	NS	CTR HH Organism
		Wet	10/03	2/04	4	75%	NS	NS	CTR HH Organism
LAR Reach 1	Bis(2-ethylhexyl)Phthalate	Dry	10/02	7/13	29	10%	17	6%	CTR HH Organism
	Mercury Total	Dry	6/01	7/13	81	14%	17	0%	CTR HH Organism
	pH	Dry	10/02	7/13	48	67%	16	75%	BP Maximum
LAR Reach 2	Mercury Total	Dry	4/01	6/10	108	19%	2	0%	CTR HH Organism
		Wet	1/01	3/05	9	22%	NS	NS	CTR HH Organism

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
	pH	Dry	3/06	2/08	40	75%	NS	NS	BP Maximum
LAR Reach 3, below LAG	2,3,7,8-TCDD (Dioxin)	Dry	8/07	9/13	14	14%	11	18%	CTR HH Organism
	Mercury Total	Dry	4/01	11/13	156	11%	23	0%	CTR HH Organism
LAR Reach 3, above LAG	Mercury Total	Dry	5/01	11/13	11	9%	23	0%	CTR HH Organism
LAR Reach 4	Mercury Total	Dry	4/01	11/13	231	14%	37	0%	CTR HH Organism
		Wet	1/01	3/05	10	20%	NS	NS	CTR HH Organism
LAR Reach 5	Chloride	Dry	5/07	11/13	81	28%	60	28%	BP Maximum
	Diazinon	Dry	5/12	9/13	18	11%	18	11%	USEPA Chronic
	Sulfate	Dry	5/07	11/13	81	36%	60	37%	BP SSO
	TDS	Dry	5/07	8/13	78	32%	57	32%	BP SSO
LAR Reach 6	Chloride	Dry	2/02	6/10	49	43%	1	100%	BP SSO
	Mercury Total	Dry	4/01	6/10	111	12%	2	0%	CTR HH Organism
	Sulfate	Dry	2/02	6/10	49	98%	1	100%	BP SSO
	TDS	Dry	2/02	11/08	28	100%	NS	NS	BP SSO
	Thallium Total	Dry	3/01	8/08	71	8%	NS	NS	CTR HH Organism

BP = Basin Plan

SSO = Site Specific Objective

CTR = California Toxics Rule

NS = Not Sampled

HH Organism = Human Health Organisms only criteria

Constituents exceeding objectives, but do not meet the listing requirements

The data analysis identified a number of constituents as exceeding relevant water quality objectives, but not at a frequency that meets the 303(d) listing criteria. **Table 10** identifies the constituents by waterbody and presents the frequency of exceedances during relevant conditions (e.g., wet and/or dry weather) over the past five and ten year periods. A more detailed summary of the analysis can be found in the tables presented in **Attachment 3**.

Table 10. Summary of Key Findings – Constituents exceeding objectives, but do not appear to meet listing criteria

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
Aliso Canyon Wash	Cyanide	Wet	10/03	2/04	4	25%	NS	NS	CTR Acute
	Diazinon	Wet	10/03	2/04	4	25%	NS	NS	USEPA Acute
	Sulfate	Dry	10/03	5/09	3	33%	1	100%	BP SSO
	TDS	Dry	10/03	5/09	3	33%	1	100%	BP SSO
Arroyo Seco	Bis(2-ethylhexyl)Phthalate	Dry	10/03	1/04	2	50%	NS	NS	CTR HH Organism
	Mercury Total	Wet	10/03	3/05	6	17%	NS	NS	CTR HH Organism
Bull Creek	Cyanide	Wet	10/03	2/04	4	25%	NS	NS	CTR Acute
Burbank Western Channel	Benzo(a)Pyrene	Dry	10/03	8/13	137	1%	45	2%	CTR HH Organism
	Benzo(b)Fluoranthene	Dry	2/04	8/13	135	4%	45	4%	CTR HH Organism
	beta-BHC	Dry	10/03	8/13	131	1%	39	0%	CTR HH Organism
	Chloride	Dry	10/03	8/13	239	3%	125	3%	BP SSO
	Chlorine (Total)	Dry	10/03	10/13	1299	5%	526	3%	BP Aquatic Life Objective
	Cyanide	Dry	10/03	10/13	206	7%	93	1%	CTR Chronic
	Heptachlor	Dry	10/03	8/13	131	1%	39	0%	CTR HH Organism
	Mercury Total	Dry	10/03	8/13	244	7%	99	1%	CTR HH Organism
	Mercury Total	Wet	10/03	3/05	7	14%	NS	NS	CTR HH Organism
	pH	Dry	10/03	10/13	805	1%	249	0%	BP Minimum
	pH	Wet	10/03	1/08	41	10%	NS	NS	BP Minimum
	TDS	Dry	10/03	8/13	170	1%	55	2%	BP SSO
	Thallium Total	Dry	10/03	8/13	61	2%	21	0%	CTR HH Organism
Caballero Creek	Mercury Total	Dry	2/05	2/06	12	8%	NS	NS	CTR HH Organism
	Nickel Total	Dry	2/05	8/08	41	2%	NS	NS	CTR Chronic
Compton Creek	Chloride	Dry	6/09	6/11	4	50%	4	50%	BP SSO
	Chlorpyrifos	Dry	6/09	6/11	4	25%	4	25%	USEPA Chronic
	Mercury Total	Dry	2/05	6/11	16	6%	4	0%	CTR HH Organism
	Mercury Total	Wet	1/05	3/05	2	50%	NS	NS	CTR HH Organism
Echo Park Lake	Mercury Total	Dry	5/03	11/10	87	3%	24	0%	CTR HH Organism
Rio Hondo Reach 2	Cyanide	Dry	10/03	1/04	2	50%	NS	NS	CTR Chronic
	Diazinon	Wet	10/03	2/04	4	25%	NS	NS	USEPA Acute
	pH	Dry	10/03	1/04	2	50%	NS	NS	BP Minimum
	pH	Wet	10/03	2/04	4	25%	NS	NS	BP Minimum

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
Rio Hondo Reach 3	Benzo(a)Pyrene	Dry	2/04	8/12	43	2%	9	22%	CTR HH Organism
	Benzo(k)Fluoranthene	Dry	2/04	8/12	43	2%	9	22%	CTR HH Organism
	Chloride	Dry	1/04	12/12	111	1%	52	0%	Basin Plan SSO
	Chrysene	Dry	2/04	8/12	43	2%	9	22%	CTR HH Organism
	Diazinon	Dry	2/04	11/12	60	5%	17	12%	CTR Chronic
	Dibenzo(a,h)Anthracene	Dry	2/04	8/12	43	5%	9	78%	CTR HH Organism
	Indeno(1,2,3-cd)Pyrene	Dry	2/04	8/12	36	3%	8	75%	CTR HH Organism
	Mercury Total	Dry	2/04	12/12	74	3%	41	2%	CTR HH Organism
Tujunga Wash	Mercury Total	Dry	2/05	6/11	15	7%	3	0%	CTR HH Organism
	TDS	Dry	6/09	6/09	1	100%	1	100%	BP SSO
Verdugo Wash Reach 1	Mercury Total	Wet	10/03	3/05	6	17%	NS	NS	CTR HH Organism
LAR Reach 1	Bis(2-ethylhexyl)Phthalate	Wet	11/02	5/13	49	8%	23	4%	CTR HH Organism
	Diazinon	Wet	11/02	5/13	41	2%	16	0%	USEPA Acute
	Dissolved Oxygen	Wet	11/02	5/13	41	2%	17	0%	BP Minimum
	Mercury Total	Wet	11/02	5/13	52	4%	23	0%	CTR HH Organism
	pH	Wet	11/02	1/13	50	4%	23	0%	BP Maximum
	Thallium Total	Dry	3/01	7/13	91	3%	23	0%	CTR HH Organism
LAR Reach 2	pH	Wet	12/07	1/08	4	50%	NS	NS	BP Maximum
	Thallium Total	Dry	3/01	2/06	112	2%	NS	NS	CTR HH Organism
LAR Reach 3, above LAG	2,3,7,8-TCDD (Dioxin)	Dry	8/07	9/13	13	8%	9	0%	CTR HH Organism
	2,3,7,8-TCDD (Dioxin)	Wet	2/10	2/10	2	50%	2	50%	CTR HH Organism
	Bis(2-ethylhexyl)Phthalate	Dry	2/02	9/13	44	2%	14	0%	CTR HH Organism
	Cyanide	Dry	2/02	11/13	64	8%	22	0%	CTR Chronic
	Dibenzo(a,h)Anthracene	Dry	2/02	9/13	47	4%	15	0%	CTR HH Organism
	Indeno(1,2,3-cd)Pyrene	Dry	2/02	9/13	22	5%	9	0%	CTR HH Organism
	Mercury Total	Dry	5/01	11/13	129	9%	23	0%	CTR HH Organism
	Mercury Total	Wet	1/01	2/10	7	14%	1	0%	CTR HH Organism
	Nickel Total	Dry	3/01	8/13	140	1%	19	0%	CTR Chronic
	pH	Dry	1/02	11/13	583	2%	232	5%	BP Minimum
	Sulfate	Dry	2/02	11/13	68	1%	21	0%	BP SSO
	Thallium Total	Dry	3/01	8/13	91	2%	18	0%	CTR HH Organism

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
LAR Reach 3, below LAG	2,3,7,8-TCDD (Dioxin)	Wet	2/10	2/10	2	50%	2	50%	CTR HH Organism
	Benzo(a)Anthracene	Dry	2/02	9/13	75	1%	16	0%	CTR HH Organism
	Bis(2-ethylhexyl)Phthalate	Dry	2/02	9/13	70	1%	15	0%	CTR HH Organism
	Chrysene	Dry	2/02	9/13	75	1%	16	0%	CTR HH Organism
	Cyanide	Dry	2/02	11/13	102	6%	23	0%	CTR Chronic
	Dibenzo(a,h)Anthracene	Dry	2/02	9/13	75	8%	16	0%	CTR HH Organism
	Dichlorobromomethane	Wet	2/10	2/10	1	100%	1	0%	CTR HH Organism
	Dissolved Oxygen	Dry	1/02	11/13	879	2%	235	0%	BP Minimum
	Indeno(1,2,3-cd)Pyrene	Dry	2/02	9/13	34	6%	9	0%	CTR HH Organism
	Mercury Total	Wet	1/01	2/10	8	13%	1	0%	CTR HH Organism
	Thallium Total	Dry	3/01	8/13	86	2%	18	0%	CTR HH Organism
LAR Reach 4	Chrysene	Dry	2/02	8/13	38	3%	10	0%	CTR HH Organism
	Cyanide	Dry	2/02	11/13	123	6%	37	3%	CTR Chronic
	Diazinon	Dry	6/11	9/13	7	14%	7	14%	CTR Chronic
	Dissolved Oxygen	Dry	1/02	11/13	901	1%	227	0%	BP Minimum
	Sulfate	Dry	2/02	11/13	111	9%	21	5%	BP SSO
	TDS	Dry	2/02	8/13	75	8%	19	0%	BP SSO
	Thallium Total	Dry	3/01	8/13	128	2%	10	0%	CTR HH Organism
LAR Reach 5	4,4-DDD	Dry	2/02	8/13	72	3%	30	3%	CTR HH Organism
	4,4-DDE	Dry	2/02	8/13	72	6%	30	7%	CTR HH Organism
	Bis(2-ethylhexyl)Phthalate	Dry	2/02	8/13	84	1%	30	0%	CTR HH Organism
	Cyanide	Dry	2/02	11/13	156	3%	102	1%	CTR Chronic
	Dibenzo(a,h)Anthracene	Dry	2/02	8/13	75	1%	30	3%	CTR HH Organism
	Dissolved Oxygen	Dry	1/02	11/13	1684	8%	674	4%	BP Minimum
	Heptachlor	Dry	2/02	8/13	72	3%	30	0%	CTR HH Organism
	Indeno(1,2,3-cd)Pyrene	Dry	2/02	8/13	75	1%	30	3%	CTR HH Organism
	Mercury Total	Dry	2/02	11/13	156	4%	102	0%	CTR HH Organism
	Nickel Total	Dry	2/02	8/13	72	1%	30	3%	CTR Chronic
LAR Reach 6	2,3,7,8-TCDD (Dioxin)	Dry	8/07	8/08	4	25%	NS	NS	CTR HH Organism
	Chlorine (Total)	Dry	1/02	1/09	321	1%	3	0%	BP Aquatic Life Objective
	Chrysene	Dry	2/02	8/08	15	7%	NS	NS	CTR HH Organism

Waterbody	Constituent	W/D	Date Range of Data		N	% Exceed	Past 5 Years		Source of Water Quality Objective
							N	% Exceed	
	Cyanide	Dry	2/02	1/09	44	2%	1	0%	CTR Chronic
	Mercury Total	Wet	1/01	3/05	7	14%	NS	NS	CTR HH Organism

BP = Basin Plan

SSO = Site Specific Objective

CTR = California Toxics Rule

NS = Not Sampled

HH Organism = Human Health Organisms only criteria

Identification of current 303(d) listed constituents not addressed by a TMDL that meet the delisting requirements

A number of 303(d) listings not addressed by an existing TMDL were identified as potentially meeting delisting requirements as shown in **Table 11**.

Table 11. 2010 303(d) Listed Water Body-Pollutant Combinations in the Los Angeles River Watershed not Addressed by a TMDL that Appears to Meet Delisting Requirements

Constituent	Los Angeles River			Burbank Western Channel
	1	2	5	
Diazinon	W			
Cyanide				W/D
Selenium				W/D
Oil		D	D	

W and D denote whether the listing is associated with wet weather and/or dry weather conditions.

Diazinon – LA River Reach 1: Diazinon in LA River Reach 1 was listed based on two of 22 samples exceeding criteria developed by the California Department of Fish and Game (DFG) at the LA County mass emission station between October 2000 and April 2003. A review of the past 10 years of data, which includes the data identified in the 303(d) listing fact sheet, indicates that only one of 41 samples during wet weather and zero of 36 dry weather samples exceed USEPA's recommended criteria for diazinon. Although neither criteria have been formally adopted by California, USEPA's criteria is utilized rather than the DFG criteria as it was completed in 2005 (five years after DFG's) and it addresses a transcription error in data utilized in the DFG criteria. The data analysis suggests that diazinon is not a water quality issues in LA River Reach 1. A more detailed summary of the analysis can be found in the tables presented in **Attachment 3**.

Cyanide – Burbank Western Channel: Cyanide in Burbank Western Channel was listed based on two of six samples exceeding CTR chronic criterion at a LA County tributary station monitored between October 2003 and February 2004. A review of the past 10 years of data, which includes the data identified in the 2010 303(d) listing fact sheet, indicates that:

- One of the two exceedances noted in the 2010 303(d) listing fact sheet occurred during wet weather and should have been compared to the CTR acute criterion.
- Of the four wet weather samples collected all were below the CTR acute criterion.
- Of the 206 dry weather samples collected over the past 10 years, 15 exceeded the CTR chronic criteria.
- Of the 93 dry weather samples collected in the past five years, only one of 93 (1%), exceeded.

The 303(d) listing guidance indicates that with a sample size as large as 206 a delisting can occur if there are 17 or fewer exceedances. The data analysis suggests that cyanide in the Burbank Western Channel is not a water quality issue based on the past 10 years of available data and, particularly given the past five years of data. A more detailed summary of the analysis can be found in the tables presented in **Attachment 3**.

Selenium – Burbank Western Channel: Selenium in Burbank Western Channel was listed based on 12 of 48 samples exceeding CTR chronic criterion at stations sampled by the Burbank WRP during dry

weather. A review of the past 10 years of data, which includes the data identified in the 2010 303(d) listing fact sheet, indicates that:

- Of the 235 dry weather samples collected over the past 10 years, 15 exceeded the CTR chronic criteria.
- Of the 99 dry weather samples collected in the past five years, zero exceeded.

The 303(d) listing guidance indicates that with a sample size as large as 235 a delisting can occur if there are 19 or fewer exceedances. The data analysis suggests that selenium in the Burbank Western Channel is not a water quality issue based on the past 10 years of available data and, particularly given the past five years of data. A more detailed summary of the analysis can be found in the tables presented in **Attachment 3**.

Oil – LA River Reaches 2 and 5: The 2010 303(d) listing fact sheet does not provide a synopsis of the data used to list oil in LA River Reach 2 or 5. As stated in the fact sheet, "303(d) listing decisions made prior to 2006 were not held in an assessment database. The Regional Boards will update this decision when new data and information become available and are assessed." Repeated efforts have been made to obtain the historical information utilized to develop the original listing; however, the Regional Board has not provided the information for inclusion in the analysis. Therefore, the following is based information gathered by the City of Los Angeles, Bureau of Sanitation, Watershed Protection Division (WPD). Three relevant studies/correspondences were reviewed:

- Pollution Report (2002), EPA Region IX
- Correspondence (2002) from Michael P. Brown, Manager, Geotechnical Engineering Division, Bureau of Engineering, City of Los Angeles
- Correspondence (2002) from Steven Poole, Claims Manager, United States Coast Guard, National Pollution Funds Center

The source of oil seeping into the River was found to be naturally-occurring crude oil. This conclusion is supported by the results of investigations completed by various agencies, which are summarized as follows. An investigation was conducted following seeps of petroleum hydrocarbons into the LA River in June 2001. Based on lab results and borings, it was concluded that the source of the LA River channel oil seeps is naturally-occurring crude oil from Puente formation sands. Oil was visible in Puente formation seams, partings and fractures, as well as sand lenses, and appeared to have migrated upward into sandy alluvial soils. Gasses encountered included hydrogen sulfide, commonly sources from crude oil reservoirs. The hydrocarbon seeps appeared to be concentrated where the Puente formation contacts with younger, less permeable units or layers.

The EPA On-Scene Coordinator (OSC) conducted subsurface investigations of the oil seeps in the LA River during August and September 2001. Based on the investigation, the OSC found that the oil did not discharge as a result of a spill, leak, or discharge from any facility and that the oil has been discharging to the river since at least 1943 and there is no practical means of preventing this oil seep from discharging to the River.

On April 19, 2002, an email was sent to Steven Pederson of WPD by Steven Poole of the US Coast Guard/National Pollution Funds Center (USGC/NPFC). Mr. Poole stated that City of Los Angeles cannot submit to USGC/NPFC a claim for reimbursement for cost incurred by the City associated with May 2001 oil clean-up efforts in the LA River because Title 1 of the Oil Pollution Act does not allow for reimbursement for **naturally-occurring oil** (natural seepage).

In summary, the reports and correspondence discussed herein, indicate that multiple agencies believe that the oil found in the listed reaches of the LA River is associated with naturally occurring seepage suggesting that a 303(d) listing is not warranted, or at a minimum, not addressable through the MS4 Permit.

Attachment 1. List of Constituents That Have Not Been Detected in Water

Constituents in this attachment were not detected in any available data reviewed.

Aliso Canyon Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,2,4-Trichlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
1,2-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,2-Diphenylhydrazine	10/03	2/04	6	3	3	µg/L
1,3-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,4-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
2,4,5-TP	10/03	2/04	6	1	1	µg/L
2,4,6-Trichlorophenol	10/03	2/04	6	1	1	µg/L
2,4-D	10/03	2/04	6	10	10	µg/L
2,4-Dichlorophenol	10/03	2/04	6	2	2	µg/L
2,4-Dimethylphenol	10/03	2/04	6	2	2	µg/L
2,4-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2,4-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2,6-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2-Chloronaphthalene	10/03	2/04	6	0.1	0.1	µg/L
2-Chlorophenol	10/03	2/04	6	2	2	µg/L
2-Methyl-4,6-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2-Nitrophenol	10/03	2/04	6	3	3	µg/L
3,3-Dichlorobenzidine	10/03	2/04	6	3	3	µg/L
3-Methyl-4-Chlorophenol	10/03	2/04	6	3	3	µg/L
4,4-DDD	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDE	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDT	10/03	2/04	6	0.1	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	2/04	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/03	2/04	6	0.1	0.1	µg/L
4-Nitrophenol	10/03	2/04	6	3	3	µg/L
Acenaphthene	10/03	2/04	6	0.05	0.05	µg/L
Acenaphthylene	10/03	2/04	6	0.05	0.05	µg/L
Aldrin	10/03	2/04	6	0.05	0.05	µg/L
alpha-BHC	10/03	2/04	6	0.05	0.05	µg/L
Aluminum Dissolved	10/03	2/04	6	100	100	µg/L
Anthracene	10/03	2/04	6	0.05	0.05	µg/L

Aliso Canyon Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Aroclor 1016	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1221	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1232	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1242	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1248	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1254	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1260	10/03	2/04	6	0.5	0.5	µg/L
Atrazine	10/03	2/04	6	2	2	µg/L
Benzidine	10/03	2/04	6	3	3	µg/L
Benzo(a)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(a)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(k)Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Beryllium - Dissolved	10/03	2/06	20	0.4	1	µg/L
Beryllium - Total	10/03	2/06	20	0.4	1	µg/L
beta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Bifenthrin	5/09	5/09	1	0.0005	0.0005	µg/L
Bis(2-chloroethoxy)Methane	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroethyl)Ether	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroisopropyl)Ether	10/03	2/04	6	1	1	µg/L
Bolstar	5/09	5/09	1	0.002	0.002	µg/L
Butylbenzyl Phthalate	10/03	2/04	6	0.3	0.3	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chlorpyrifos	10/03	5/09	7	0.001	0.05	µg/L
Chromium (VI) Dissolved	10/03	2/04	6	10	10	µg/L
Chromium (VI) Total	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	2/04	6	0.1	0.1	µg/L
Cyanazine	10/03	2/04	6	2	2	µg/L
Cyfluthrin	5/09	5/09	1	0.0005	0.0005	µg/L
Cypermethrin	5/09	5/09	1	0.0005	0.0005	µg/L
delta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Deltamethrin	5/09	5/09	1	0.0005	0.0005	µg/L
Demeton-S	5/09	5/09	1	0.001	0.001	µg/L
Dibenzo(a,h)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Dichlorvos	5/09	5/09	1	0.003	0.003	µg/L

Aliso Canyon Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Dieldrin	10/03	2/04	6	0.1	0.1	µg/L
Dimethoate	5/09	5/09	1	0.003	0.003	µg/L
Dimethyl Phthalate	10/03	2/04	6	0.5	0.5	µg/L
Di-n-Octyl Phthalate	10/03	2/04	6	1	1	µg/L
Disulfoton	5/09	5/09	1	0.001	0.001	µg/L
Endosulfan I	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan II	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan Sulfate	10/03	2/04	6	0.1	0.1	µg/L
Endrin	10/03	2/04	6	0.1	0.1	µg/L
Endrin Aldehyde	10/03	2/04	6	0.1	0.1	µg/L
Esfenvalerate	5/09	5/09	1	0.0005	0.0005	µg/L
Ethoprop	5/09	5/09	1	0.001	0.001	µg/L
Fensulfothion	5/09	5/09	1	0.001	0.001	µg/L
Fenthion	5/09	5/09	1	0.002	0.002	µg/L
Fenvalerate	5/09	5/09	1	0.0005	0.0005	µg/L
Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Fluorene	10/03	2/04	6	0.1	0.1	µg/L
gamma-BHC (Lindane)	10/03	2/04	6	0.05	0.05	µg/L
Glyphosate	10/03	2/04	6	25	25	µg/L
Heptachlor	10/03	2/04	6	0.05	0.05	µg/L
Heptachlor Epoxide	10/03	2/04	6	0.05	0.05	µg/L
Hexachlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
Hexachlorobutadiene	10/03	2/04	6	1	1	µg/L
Hexachlorocyclopentadiene	10/03	2/04	6	3	3	µg/L
Hexachloroethane	10/03	2/04	6	1	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
L-Cyhalothrin	5/09	5/09	1	0.0005	0.0005	µg/L
Malathion	10/03	5/09	7	0.003	2	µg/L
Mercury Dissolved	10/03	5/09	21	0.004	1	µg/L
Merphos	5/09	5/09	1	0.001	0.001	µg/L
Methyl Parathion	5/09	5/09	1	0.001	0.001	µg/L
Mevinphos	5/09	5/09	1	0.008	0.008	µg/L
Naphthalene	10/03	2/04	6	0.05	0.05	µg/L
Nitrobenzene	10/03	2/04	6	0.05	0.05	µg/L
N-Nitrosodimethylamine	10/03	2/04	6	0.3	0.3	µg/L

Aliso Canyon Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
N-Nitrosodi-n-Propylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/03	2/04	6	0.3	0.3	µg/L
Pentachlorophenol	10/03	2/04	6	2	2	µg/L
Permethrin	5/09	5/09	1	0.005	0.005	µg/L
Phenanthrene	10/03	2/04	6	0.05	0.05	µg/L
Phenols (Total)	10/03	2/04	6	1	1	µg/L
Phorate	5/09	5/09	1	0.006	0.006	µg/L
Prometryn	10/03	2/04	6	2	2	µg/L
Pyrene	10/03	2/04	6	0.05	0.05	µg/L
Ronnel	5/09	5/09	1	0.002	0.002	µg/L
Simazine	10/03	2/04	6	2	2	µg/L
Tetrachlorvinphos	5/09	5/09	1	0.002	0.002	µg/L
Tokuthion	5/09	5/09	1	0.003	0.003	µg/L
Toxaphene	10/03	2/04	6	1	1	µg/L
Trichloronate	5/09	5/09	1	0.001	0.001	µg/L

Arroyo Seco – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,2,4-Trichlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
1,2-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,2-Diphenylhydrazine	10/03	2/04	6	3	3	µg/L
1,3-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,4-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
2,4,5-TP	10/03	2/04	6	1	1	µg/L
2,4,6-Trichlorophenol	10/03	2/04	6	1	1	µg/L
2,4-D	10/03	2/04	6	10	10	µg/L
2,4-Dichlorophenol	10/03	2/04	6	2	2	µg/L
2,4-Dimethylphenol	10/03	2/04	6	2	2	µg/L
2,4-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2,4-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2,6-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2-Chloronaphthalene	10/03	2/04	6	0.1	0.1	µg/L

Arroyo Seco – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
2-Chlorophenol	10/03	2/04	6	2	2	µg/L
2-Methyl-4,6-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2-Nitrophenol	10/03	2/04	6	3	3	µg/L
3,3-Dichlorobenzidine	10/03	2/04	6	3	3	µg/L
3-Methyl-4-Chlorophenol	10/03	2/04	6	3	3	µg/L
4,4-DDD	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDE	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDT	10/03	2/04	6	0.1	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	2/04	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/03	2/04	6	0.1	0.1	µg/L
4-Nitrophenol	10/03	2/04	6	3	3	µg/L
Acenaphthene	10/03	2/04	6	0.05	0.05	µg/L
Acenaphthylene	10/03	2/04	6	0.05	0.05	µg/L
Aldrin	10/03	2/04	6	0.05	0.05	µg/L
alpha-BHC	10/03	2/04	6	0.05	0.05	µg/L
Aluminum - Dissolved	10/03	2/04	6	100	100	µg/L
Anthracene	10/03	2/04	6	0.05	0.05	µg/L
Aroclor 1016	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1221	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1232	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1242	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1248	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1254	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1260	10/03	2/04	6	0.5	0.5	µg/L
Atrazine	10/03	2/04	6	2	2	µg/L
Benzidine	10/03	2/04	6	3	3	µg/L
Benzo(a)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(a)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(k)Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Beryllium - Dissolved	10/03	2/06	20	0.4	1	µg/L
Beryllium - Total	10/03	2/06	20	0.4	1	µg/L
beta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Bifenthrin	5/09	6/11	6	0.0005	0.001	µg/L
Bis(2-chloroethoxy)Methane	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroethyl)Ether	10/03	2/04	6	0.1	0.1	µg/L

Arroyo Seco – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Bis(2-chloroisopropyl)Ether	10/03	2/04	6	1	1	µg/L
Bolstar	5/09	6/11	6	0.002	0.002	µg/L
Butylbenzyl Phthalate	10/03	2/04	6	0.3	0.3	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chlorpyrifos	10/03	6/11	12	0.001	0.05	µg/L
Chromium (VI) - Dissolved	10/03	2/04	6	10	10	µg/L
Chromium (VI) - Total	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	2/04	6	0.1	0.1	µg/L
cis-Permethrin	6/11	6/11	2	0.005	0.005	µg/L
Cyanazine	10/03	2/04	6	2	2	µg/L
Cyfluthrin	5/09	6/11	6	0.0005	0.001	µg/L
Cypermethrin	5/09	6/11	6	0.0005	0.001	µg/L
delta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Deltamethrin	5/09	6/11	6	0.0005	0.005	µg/L
Demeton-S	5/09	6/11	5	0.001	0.001	µg/L
Dibenzo(a,h)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Dichlorvos	5/09	6/11	6	0.003	0.003	µg/L
Dieldrin	10/03	2/04	6	0.1	0.1	µg/L
Dimethoate	5/09	7/10	4	0.002	0.003	µg/L
Dimethyl Phthalate	10/03	2/04	6	0.5	0.5	µg/L
Di-n-Octyl Phthalate	10/03	2/04	6	1	1	µg/L
Disulfoton	5/09	6/11	6	0.001	0.001	µg/L
Endosulfan I	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan II	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan Sulfate	10/03	2/04	6	0.1	0.1	µg/L
Endrin	10/03	2/04	6	0.1	0.1	µg/L
Endrin Aldehyde	10/03	2/04	6	0.1	0.1	µg/L
Esfenvalerate	5/09	7/10	4	0.0005	0.0005	µg/L
Ethoprop	5/09	6/11	6	0.001	0.001	µg/L
Fensulfothion	5/09	6/11	6	0.001	0.001	µg/L
Fenthion	5/09	6/11	6	0.002	0.002	µg/L
Fenvalerate	5/09	6/11	8	0.0005	0.001	µg/L
Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Fluorene	10/03	2/04	6	0.1	0.1	µg/L

Arroyo Seco – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
gamma-BHC (Lindane)	10/03	2/04	6	0.05	0.05	µg/L
Glyphosate	10/03	2/04	6	25	25	µg/L
Heptachlor	10/03	2/04	6	0.05	0.05	µg/L
Heptachlor Epoxide	10/03	2/04	6	0.05	0.05	µg/L
Hexachlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
Hexachlorobutadiene	10/03	2/04	6	1	1	µg/L
Hexachlorocyclopentadiene	10/03	2/04	6	3	3	µg/L
Hexachloroethane	10/03	2/04	6	1	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
L-Cyhalothrin	5/09	6/11	6	0.0005	0.001	µg/L
Malathion	10/03	6/11	12	0.003	2	µg/L
Merphos	5/09	7/10	4	0.001	0.001	µg/L
Methyl Parathion	5/09	6/11	6	0.001	0.001	µg/L
Mevinphos	5/09	6/11	6	0.008	0.008	µg/L
Naphthalene	10/03	2/04	6	0.05	0.05	µg/L
Nitrobenzene	10/03	2/04	6	0.05	0.05	µg/L
N-Nitrosodimethylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodi-n-Propylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/03	2/04	6	0.3	0.3	µg/L
Pentachlorophenol	10/03	2/04	6	2	2	µg/L
Permethrin	5/09	7/10	4	0.005	0.005	µg/L
Phenanthrene	10/03	2/04	6	0.05	0.05	µg/L
Phenols (Total)	10/03	2/04	6	1	1	µg/L
Phorate	5/09	6/11	6	0.006	0.006	µg/L
Prometryn	10/03	2/04	6	2	2	µg/L
Pyrene	10/03	2/04	6	0.05	0.05	µg/L
Ronnel	5/09	6/11	6	0.002	0.002	µg/L
Simazine	10/03	2/04	6	2	2	µg/L
Tetrachlorvinphos	5/09	6/11	6	0.002	0.002	µg/L
Tokuthion	5/09	6/11	6	0.003	0.003	µg/L
Toxaphene	10/03	2/04	6	1	1	µg/L
TPH	10/03	2/04	6	1	1	mg/L
trans-Permethrin	6/11	6/11	2	0.005	0.005	µg/L
Trichloronate	5/09	6/11	6	0.001	0.001	µg/L

Bull Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,2,4-Trichlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
1,2-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,2-Diphenylhydrazine	10/03	2/04	6	3	3	µg/L
1,3-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,4-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
2,4,5-TP	10/03	2/04	6	1	1	µg/L
2,4,6-Trichlorophenol	10/03	2/04	6	1	1	µg/L
2,4-D	10/03	2/04	6	10	10	µg/L
2,4-Dichlorophenol	10/03	2/04	6	2	2	µg/L
2,4-Dimethylphenol	10/03	2/04	6	2	2	µg/L
2,4-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2,4-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2,6-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2-Chloronaphthalene	10/03	2/04	6	0.1	0.1	µg/L
2-Chlorophenol	10/03	2/04	6	2	2	µg/L
2-Methyl-4,6-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2-Nitrophenol	10/03	2/04	6	3	3	µg/L
3,3-Dichlorobenzidine	10/03	2/04	6	3	3	µg/L
3-Methyl-4-Chlorophenol	10/03	2/04	6	3	3	µg/L
4,4-DDD	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDE	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDT	10/03	2/04	6	0.1	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	2/04	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/03	2/04	6	0.1	0.1	µg/L
4-Nitrophenol	10/03	2/04	6	3	3	µg/L
Acenaphthene	10/03	2/04	6	0.05	0.05	µg/L
Acenaphthylene	10/03	2/04	6	0.05	0.05	µg/L
Aldrin	10/03	2/04	6	0.05	0.05	µg/L
alpha-BHC	10/03	2/04	6	0.05	0.05	µg/L
Aluminum Dissolved	10/03	2/04	6	100	100	µg/L

Bull Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Anthracene	10/03	2/04	6	0.05	0.05	µg/L
Aroclor 1016	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1221	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1232	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1242	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1248	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1254	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1260	10/03	2/04	6	0.5	0.5	µg/L
Atrazine	10/03	2/04	6	2	2	µg/L
Benzidine	10/03	2/04	6	3	3	µg/L
Benzo(a)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(a)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(k)Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Beryllium - Dissolved	10/03	2/06	20	0.4	1	µg/L
Beryllium Total	10/03	2/06	20	0.4	1	µg/L
beta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Bis(2-chloroethoxy)Methane	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroethyl)Ether	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroisopropyl)Ether	10/03	2/04	6	1	1	µg/L
Bolstar	6/10	6/10	2	0.002	0.002	µg/L
Butylbenzyl Phthalate	10/03	2/04	6	0.3	0.3	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chlorpyrifos	10/03	6/10	8	0.001	0.05	µg/L
Chromium (VI) Dissolved	10/03	2/04	6	10	10	µg/L
Chromium (VI) Total	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	2/04	6	0.1	0.1	µg/L
Cyanazine	10/03	2/04	6	2	2	µg/L
Cyfluthrin	6/10	6/10	2	0.0005	0.0005	µg/L
Cypermethrin	6/10	6/10	2	0.0005	0.0005	µg/L

Bull Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
delta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Deltamethrin	6/10	6/10	2	0.0005	0.0005	µg/L
Dibenzo(a,h)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Dichlorvos	6/10	6/10	2	0.003	0.003	µg/L
Dieldrin	10/03	2/04	6	0.1	0.1	µg/L
Dimethoate	6/10	6/10	2	0.002	0.002	µg/L
Dimethyl Phthalate	10/03	2/04	6	0.5	0.5	µg/L
Di-n-Octyl Phthalate	10/03	2/04	6	1	1	µg/L
Disulfoton	6/10	6/10	2	0.001	0.001	µg/L
Endosulfan I	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan II	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan Sulfate	10/03	2/04	6	0.1	0.1	µg/L
Endrin	10/03	2/04	6	0.1	0.1	µg/L
Endrin Aldehyde	10/03	2/04	6	0.1	0.1	µg/L
Esfenvalerate	6/10	6/10	2	0.0005	0.0005	µg/L
Ethoprop	6/10	6/10	2	0.001	0.001	µg/L
Fensulfothion	6/10	6/10	2	0.001	0.001	µg/L
Fenthion	6/10	6/10	2	0.002	0.002	µg/L
Fenvalerate	6/10	6/10	2	0.0005	0.0005	µg/L
Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Fluorene	10/03	2/04	6	0.1	0.1	µg/L
gamma-BHC (Lindane)	10/03	2/04	6	0.05	0.05	µg/L
Glyphosate	10/03	2/04	6	25	25	µg/L
Heptachlor	10/03	2/04	6	0.05	0.05	µg/L
Heptachlor Epoxide	10/03	2/04	6	0.05	0.05	µg/L
Hexachlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
Hexachlorobutadiene	10/03	2/04	6	1	1	µg/L
Hexachlorocyclopentadiene	10/03	2/04	6	3	3	µg/L
Hexachloroethane	10/03	2/04	6	1	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/03	2/04	6	0.1	0.1	µg/L

Bull Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Isophorone	10/03	2/04	6	0.05	0.05	µg/L
L-Cyhalothrin	6/10	6/10	2	0.0005	0.0005	µg/L
Malathion	10/03	6/10	8	0.003	2	µg/L
Merphos	6/10	6/10	2	0.001	0.001	µg/L
Methyl Parathion	6/10	6/10	2	0.001	0.001	µg/L
Mevinphos	6/10	6/10	2	0.008	0.008	µg/L
Naphthalene	10/03	2/04	6	0.05	0.05	µg/L
Nitrobenzene	10/03	2/04	6	0.05	0.05	µg/L
N-Nitrosodimethylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodi-n-Propylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/03	2/04	6	0.3	0.3	µg/L
Pentachlorophenol	10/03	2/04	6	2	2	µg/L
Permethrin	6/10	6/10	2	0.005	0.005	µg/L
Phenanthrene	10/03	2/04	6	0.05	0.05	µg/L
Phenols (Total)	10/03	2/04	6	1	1	µg/L
Phorate	6/10	6/10	2	0.006	0.006	µg/L
Prometryn	10/03	2/04	6	2	2	µg/L
Pyrene	10/03	2/04	6	0.05	0.05	µg/L
Ronnel	6/10	6/10	2	0.002	0.002	µg/L
Simazine	10/03	2/04	6	2	2	µg/L
Tetrachlorvinphos	6/10	6/10	2	0.002	0.002	µg/L
Thallium - Total	10/03	2/06	20	1	5	µg/L
Tokuthion	6/10	6/10	2	0.003	0.003	µg/L
Toxaphene	10/03	2/04	6	1	1	µg/L
TPH	10/03	2/04	6	1	1	mg/L
Trichloronate	6/10	6/10	2	0.001	0.001	µg/L

Burbank Western Channel – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,1,1-Trichloroethane	2/04	10/13	231	0.11	0.5	µg/L
1,1,2,2-Tetrachloroethane	2/04	10/13	231	0.051	0.5	µg/L
1,1,2-Trichloroethane	2/04	10/13	231	0.087	0.5	µg/L
1,1-Dichloroethane	2/04	10/13	231	0.063	0.5	µg/L
1,1-Dichloroethylene	2/04	10/13	231	0.14	0.5	µg/L
1,2,3,4,7,8,9-HpCDF	2/07	8/13	33	0.125	2.57	pg/L
1,2,3,7,8,9-HxCDF	2/07	8/13	33	0.122	1.92	pg/L
1,2,3-Trichloropropane	2/07	8/13	33	0.031	0.36	µg/L
1,2,4-Trichlorobenzene	10/03	8/13	141	0.26	5	µg/L
1,2-Dichlorobenzene	10/03	10/13	237	0.05	0.5	µg/L
1,2-Dichloroethane	2/04	10/13	231	0.063	0.5	µg/L
1,2-Dichloropropane	2/04	10/13	231	0.12	0.5	µg/L
1,2-Diphenylhydrazine	10/03	8/13	141	0.25	3.5	µg/L
1,2-Trans-Dichloroethylene	2/04	10/13	231	0.092	0.5	µg/L
1,3-Dichlorobenzene	10/03	10/13	237	0.05	0.5	µg/L
1,3-Dichloropropylene	11/06	10/13	198	0.24	1	µg/L
1,3-trans-Dichloropropene	2/04	8/06	33	0.03	0.5	µg/L
2,4,5-TP	10/03	8/12	31	0.036	1	µg/L
2,4,5-Trichlorophenol	2/04	2/04	3	5	5	µg/L
2,4-Dichlorophenol	10/03	8/13	141	0.26	7.7	µg/L
2,4-Dimethylphenol	10/03	8/13	141	0.3	8	µg/L
2,4-Dinitrophenol	10/03	8/13	141	0.6	50	µg/L
2,4-Dinitrotoluene	10/03	8/13	141	0.05	5	µg/L
2-Chloroethylvinyl Ether	2/04	10/13	231	0.24	10	µg/L
2-Chloronaphthalene	10/03	8/13	141	0.1	5	µg/L
2-Chlorophenol	10/03	8/13	141	0.28	7.1	µg/L
2-Methyl-4,6-Dinitrophenol	10/03	8/13	141	0.33	10	µg/L
2-Methylnaphthalene	2/04	8/06	12	2	5	µg/L
2-Methylphenol	8/05	8/06	9	5	5	µg/L
2-Nitrophenol	10/03	8/13	141	0.26	8.4	µg/L

Burbank Western Channel – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
3,3-Dichlorobenzidine	10/03	8/13	141	0.3	10	µg/L
3-Methylphenol	2/06	8/06	6	5	5	µg/L
4,4-DDD	10/03	8/13	135	0.0011	0.1	µg/L
4,4-DDE	10/03	8/13	135	0.0017	0.1	µg/L
4,4-DDT	10/03	8/13	135	0.0009	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	8/13	141	0.23	5	µg/L
4-Methylphenol	2/04	8/05	12	2	5	µg/L
Acenaphthene	10/03	8/13	141	0.05	5	µg/L
Acenaphthylene	10/03	8/13	141	0.05	5	µg/L
Acrolein	2/04	10/13	231	0.27	50	µg/L
Acrylonitrile	2/04	10/13	231	0.11	20	µg/L
Aldrin	10/03	8/13	135	0.0015	0.05	µg/L
alpha-BHC	10/03	8/13	135	0.0008	0.05	µg/L
Aluminum Dissolved	10/03	2/04	6	100	100	µg/L
Anthracene	10/03	8/13	141	0.05	5	µg/L
Aroclor 1016	10/03	8/13	135	0.024	0.5	µg/L
Aroclor 1221	10/03	8/13	135	0.06	0.5	µg/L
Aroclor 1232	10/03	8/13	135	0.06	0.75	µg/L
Aroclor 1242	10/03	8/13	135	0.07	0.5	µg/L
Aroclor 1248	10/03	8/13	135	0.025	0.5	µg/L
Aroclor 1254	10/03	8/13	135	0.04	0.5	µg/L
Aroclor 1260	10/03	8/13	135	0.04	0.5	µg/L
Atrazine	10/03	2/04	6	2	2	µg/L
Azinphos-methyl	2/07	8/13	37	0.007	1.2	µg/L
Benzene	2/04	10/13	231	0.11	0.5	µg/L
Benzidine	10/03	8/13	141	0.7	20	µg/L
Benzo(a)Anthracene	10/03	8/13	141	0.1	5	µg/L
Benzo(ghi)Perylene	2/04	8/13	135	0.1	5	µg/L
Benzo(k)Fluoranthene	10/03	8/13	141	0.1	5	µg/L
Beryllium - Dissolved	10/03	2/06	32	0.4	1	µg/L

Burbank Western Channel – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Bis(2-chloroethyl)Ether	10/03	8/13	141	0.1	4.6	µg/L
Bis(2-chloroisopropyl)Ether	10/03	8/13	141	0.38	4.8	µg/L
Carbon Tetrachloride	2/04	10/13	231	0.089	0.5	µg/L
Chlordane (Total)	2/04	8/13	129	0.003	1	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chloroethane	2/04	10/13	231	0.13	0.5	µg/L
Chlorpyrifos	10/03	2/04	6	0.05	0.05	µg/L
Chromium (VI) Dissolved	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	8/13	141	0.1	5	µg/L
cis-1,2-Dichloroethene	2/04	8/06	33	0.052	0.5	µg/L
cis-1,3-Dichloropropene	2/04	8/06	33	0.083	0.5	µg/L
Cyanazine	10/03	2/04	6	2	2	µg/L
delta-BHC	10/03	8/13	135	0.0008	0.05	µg/L
Demeton	2/07	8/13	37	0.014	0.63	µg/L
Demeton-O	8/13	8/13	2	0.007	0.014	µg/L
Demeton-S	8/13	8/13	2	0.007	0.014	µg/L
Dibenzo(a,h)Anthracene	10/03	8/13	141	0.08	5	µg/L
Dieldrin	10/03	8/13	135	0.0014	0.1	µg/L
Endosulfan I	10/03	8/13	135	0.0011	0.1	µg/L
Endosulfan II	10/03	8/13	135	0.0012	0.1	µg/L
Endrin	10/03	8/13	135	0.0015	0.1	µg/L
Endrin Aldehyde	10/03	8/13	135	0.0028	0.1	µg/L
Ethyl Parathion	2/07	8/13	39	0.054	1.2	µg/L
Ethylbenzene	2/04	10/13	231	0.094	0.5	µg/L
Heptachlor Epoxide	10/03	8/13	135	0.0009	0.05	µg/L
Hexachlorobenzene	10/03	8/13	141	0.15	2	µg/L
Hexachlorobutadiene	10/03	8/13	141	0.41	4.1	µg/L
Hexachlorocyclopentadiene	10/03	8/13	141	0.36	50	µg/L
Hexachloroethane	10/03	8/13	141	0.36	5	µg/L

Burbank Western Channel – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Indeno(1,2,3-cd)Pyrene	10/03	8/13	141	0.1	5	µg/L
Isophorone	10/03	8/13	141	0.05	3.3	µg/L
Malathion	10/03	8/13	43	0.063	2	µg/L
Mercury - Dissolved	10/03	2/06	32	0.022	1	µg/L
Methoxychlor	2/04	8/13	129	0.0009	0.054	µg/L
Methyl Chloride	2/04	10/13	231	0.098	0.5	µg/L
Methyl Parathion	8/13	8/13	2	0.006	0.091	µg/L
Methylene bromide	2/04	8/06	33	0.071	0.5	µg/L
Mirex	2/04	8/13	129	0.005	0.067	µg/L
MTBE	11/03	8/13	72	0.03	0.5	µg/L
Naphthalene	10/03	8/13	162	0.05	5	µg/L
Nitrobenzene	10/03	8/13	141	0.05	3.7	µg/L
N-Nitrosodi-n-Propylamine	10/03	8/13	141	0.3	5	µg/L
N-Nitrosodiphenylamine	10/03	8/13	141	0.19	2.3	µg/L
Phenanthrene	10/03	8/13	141	0.05	5	µg/L
Phenols (Total)	10/03	8/13	141	0.16	3	µg/L
Prometryn	10/03	2/04	6	2	2	µg/L
Pyrene	10/03	8/13	141	0.05	5	µg/L
Simazine	10/03	2/04	6	2	2	µg/L
Styrene	2/04	8/06	33	0.091	0.5	µg/L
Toxaphene	10/03	8/13	135	0.04	4	µg/L
TPH	10/03	2/04	6	1	1	mg/L
Trichloroethylene	2/04	10/13	231	0.079	0.5	µg/L
Vinyl Chloride	2/04	10/13	231	0.064	0.5	µg/L
Xylenes (Total)	2/04	8/06	33	0.29	1	µg/L

Caballero Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Beryllium Dissolved	1/05	2/06	14	0.4	0.4	µg/L
Beryllium Total	1/05	2/06	14	0.4	0.4	µg/L

Compton Creek – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Bolstar	6/09	6/11	4	0.002	0.002	µg/L
cis-Permethrin	6/11	6/11	2	0.005	0.005	µg/L
Cyfluthrin	6/09	6/11	4	0.0005	0.001	µg/L
Cypermethrin	6/09	6/11	4	0.0005	0.001	µg/L
Deltamethrin	6/09	6/11	4	0.0005	0.005	µg/L
Demeton-S	6/09	6/11	3	0.001	0.001	µg/L
Diazinon	6/09	6/11	4	0.002	0.002	µg/L
Dichlorvos	6/09	6/11	4	0.003	0.003	µg/L
Dimethoate	6/09	7/10	2	0.002	0.003	µg/L
Disulfoton	6/09	6/11	4	0.001	0.001	µg/L
Esfenvalerate	6/09	7/10	2	0.0005	0.0005	µg/L
Ethoprop	6/09	6/11	4	0.001	0.001	µg/L
Fensulfothion	6/09	6/11	4	0.001	0.001	µg/L
Fenthion	6/09	6/11	4	0.002	0.002	µg/L
Fenvalerate	6/09	6/11	6	0.0005	0.001	µg/L
L-Cyhalothrin	6/09	6/11	4	0.0005	0.001	µg/L
Malathion	6/09	6/11	4	0.003	0.003	µg/L
Merphos	6/09	7/10	2	0.001	0.001	µg/L
Methyl Parathion	6/09	6/11	4	0.001	0.001	µg/L
Mevinphos	6/09	6/11	4	0.008	0.008	µg/L
Nitrate as N	6/09	6/11	4	0.02	0.02	mg/L
Nitrite as N	6/09	6/11	4	0.02	0.02	mg/L
Permethrin	6/09	7/10	2	0.005	0.005	µg/L
Phorate	6/09	6/11	4	0.006	0.006	µg/L
Ronnel	6/09	6/11	4	0.002	0.002	µg/L
Tetrachlorvinphos	6/09	6/11	4	0.002	0.002	µg/L
Tokuthion	6/09	6/11	4	0.003	0.003	µg/L
trans-Permethrin	6/11	6/11	2	0.005	0.005	µg/L
Trichloronate	6/09	6/11	4	0.001	0.001	µg/L

Echo Park Lake – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Ammonia as N	2/04	2/05	6	0.05	0.1	mg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,2,4,5-Tetrachlorobenzene	10/04	3/05	6	1	1	µg/L
1,2,4-Trichlorobenzene	10/02	7/13	76	0.33	1	µg/L
1,2-Dichlorobenzene	10/02	7/13	76	0.05	1	µg/L
1,2-Diphenylhydrazine	10/02	7/13	76	0.33	3.00	µg/L
1,3-Dichlorobenzene	10/02	7/13	76	0.05	1	µg/L
1,4-Dichlorobenzene	10/02	7/13	76	0.05	1	µg/L
1-Chloronaphthalene	10/04	3/05	6	0.1	0.1	µg/L
1-Naphthylamine	10/04	3/05	6	3	3	µg/L
2,3,4,6-Tetrachlorophenol	10/04	3/05	6	1	1	µg/L
2,4,5-TP	10/02	7/13	76	0.067	10	µg/L
2,4,5-Trichlorophenol	10/04	3/05	6	1	1	µg/L
2,4,6-Trichlorophenol	10/02	7/13	80	0.4	3.33	µg/L
2,4-D	10/02	7/13	76	0.015	10	µg/L
2,4-DDD	10/06	7/09	17	0.05	0.05	µg/L
2,4-DDE	10/06	7/09	17	0.05	0.05	µg/L
2,4-DDT	10/06	7/09	17	0.005	0.01	µg/L
2,4-Dichlorophenol	10/02	7/13	79	0.33	2	µg/L
2,4-Dimethylphenol	10/02	7/13	79	0.67	2	µg/L
2,4-Dinitrophenol	10/02	7/13	79	1	3	µg/L
2,4-Dinitrotoluene	10/02	7/13	76	0.05	5	µg/L
2,6-Dichlorophenol	10/04	3/05	6	2	2	µg/L
2,6-Dinitrotoluene	10/02	7/13	76	0.05	5	µg/L
2-Chloroethylvinyl Ether	10/05	7/13	67	0.33	2.5	µg/L
2-Chloronaphthalene	10/02	7/13	76	0.1	10	µg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
2-Chlorophenol	10/02	7/13	76	0.67	2	µg/L
2-Methylphenol	10/04	3/05	6	3	3	µg/L
2-Naphthylamine	10/04	3/05	6	3	3	µg/L
2-Nitroaniline	10/04	3/05	6	3	3	µg/L
2-Nitrophenol	10/02	7/13	79	1	3	µg/L
2-Picoline	10/04	3/05	6	3	3	µg/L
3,3-Dichlorobenzidine	10/02	7/13	76	1.67	5.00	µg/L
3-Methyl-4-Chlorophenol	10/02	7/13	79	1	3	µg/L
3-Methylcholanthrene	10/04	3/05	6	0.3	0.3	µg/L
3-Nitroaniline	10/04	3/05	6	3	3	µg/L
4,4-DDD	10/02	7/13	58	0.01	0.10	µg/L
4,4-DDE	10/02	7/13	58	0.00	0.10	µg/L
4,4-DDT	10/02	7/13	58	0.01	0.10	µg/L
4-Aminobiphenyl	10/04	3/05	6	3	3	µg/L
4-Bromophenyl Phenyl Ether	10/02	7/13	76	0.4	1.67	µg/L
4-Chloroaniline	10/04	3/05	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/02	7/13	76	0.04	1.67	µg/L
4-Nitroaniline	10/04	3/05	6	3	3	µg/L
4-Nitrophenol	10/02	7/13	79	1	3	µg/L
7,12-Dimethylbenz(a)anthracene	10/04	3/05	6	0.1	0.1	µg/L
Acenaphthene	10/02	7/13	76	0.05	1	µg/L
Acenaphthylene	10/02	7/13	76	0.05	2	µg/L
Acetophenone	10/04	3/05	6	0.3	0.3	µg/L
Aldrin	10/02	7/13	76	0.00	0.05	µg/L
alpha,alpha-Dimethylphenethylamine	10/04	3/05	6	3	3	µg/L
alpha-BHC	10/02	7/13	76	0.003	0.05	µg/L
Aniline	10/04	3/05	6	3	3	µg/L
Anthracene	10/02	7/13	76	0.05	2	µg/L
Aroclor 1016	10/02	7/13	76	0.01	0.5	µg/L
Aroclor 1221	10/02	7/13	81	0.01	0.5	µg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Aroclor 1232	10/02	7/13	76	0.01	0.5	µg/L
Aroclor 1242	10/02	7/13	76	0.01	0.5	µg/L
Aroclor 1248	10/02	7/13	76	0.01	0.5	µg/L
Aroclor 1254	10/02	7/13	76	0.01	0.5	µg/L
Aroclor 1260	10/02	7/13	76	0.01	0.5	µg/L
Atrazine	10/02	7/13	76	0.667	2	µg/L
Bentazon	10/04	3/05	6	2	2	µg/L
Benzidine	10/02	7/13	76	1.67	5.00	µg/L
Benzo(a)Anthracene	10/02	7/13	76	0.03	1.67	µg/L
Benzo(a)Pyrene	10/02	7/13	76	0.1	2	µg/L
Benzo(b)Fluoranthene	10/04	7/13	61	0.10	3.33	µg/L
Benzo(ghi)Perylene	10/05	7/13	55	0.2	1.67	µg/L
Benzo(k)Fluoranthene	10/02	7/13	76	0.10	2.00	µg/L
beta-BHC	10/02	7/13	76	0.005	0.05	µg/L
Bifenthrin	6/10	6/10	1	0.0005	0.0005	µg/L
Bis(2-chloroethoxy)Methane	10/02	7/13	82	0.1	5	µg/L
Bis(2-chloroethyl)Ether	10/02	7/13	70	0.1	0.1	µg/L
Bis(2-chloroisopropyl)Ether	10/02	7/13	76	0.67	2	µg/L
Bolstar	6/10	6/10	1	0.002	0.002	µg/L
Butylbenzyl Phthalate	10/02	7/13	76	0.1	3.33	µg/L
Carbofuran	10/04	4/08	13	5	5	µg/L
Chlordane-alpha	10/02	7/13	70	0.033	0.1	µg/L
Chlordane-gamma	10/02	7/13	70	0.033	0.1	µg/L
Chlordanes	10/04	7/13	61	0.01	0.05	µg/L
Chlorpyrifos	10/02	7/13	77	0.001	0.05	µg/L
Chrysene	10/02	7/13	76	0.10	5.00	µg/L
Cyanazine	10/02	7/13	76	0.667	2	µg/L
Cyfluthrin	6/10	6/10	1	0.0005	0.0005	µg/L
Cypermethrin	6/10	6/10	1	0.0005	0.0005	µg/L
delta-BHC	10/02	7/13	76	0.005	0.05	µg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Deltamethrin	6/10	6/10	1	0.0005	0.0005	µg/L
Dibenz(a,j)acridine	10/04	3/05	6	0.3	0.3	µg/L
Dibenzo(a,h)Anthracene	10/02	7/13	76	0.03	0.10	µg/L
Dichlorvos	6/10	6/10	1	0.003	0.003	µg/L
Dieldrin	10/02	7/13	76	0.00	0.10	µg/L
Dimethoate	6/10	6/10	1	0.002	0.002	µg/L
Di-n-Octyl Phthalate	10/02	7/13	69	1	10	µg/L
Diphenylamine	10/04	3/05	6	1	1	µg/L
Disulfoton	6/10	6/10	1	0.001	0.001	µg/L
Diuron	10/04	3/05	6	1	1	µg/L
Endosulfan I	10/02	7/13	76	0.01	0.1	µg/L
Endosulfan II	10/02	7/13	76	0.004	0.1	µg/L
Endosulfan Sulfate	10/02	7/13	76	0.05	0.1	µg/L
Endrin	10/02	7/13	76	0.006	0.1	µg/L
Endrin Aldehyde	10/02	7/13	76	0.01	0.1	µg/L
Endrin ketone	10/04	7/09	23	0.1	1	µg/L
Esfenvalerate	6/10	6/10	1	0.0005	0.0005	µg/L
Ethoprop	6/10	6/10	1	0.001	0.001	µg/L
Ethyl methanesulfonate	10/04	3/05	6	0.3	0.3	µg/L
Fensulfothion	6/10	6/10	1	0.001	0.001	µg/L
Fenthion	6/10	6/10	1	0.002	0.002	µg/L
Fenvalerate	6/10	6/10	1	0.0005	0.0005	µg/L
Fluorene	10/02	7/13	76	0.033	0.1	µg/L
gamma-BHC (Lindane)	10/02	7/13	76	0.004	0.05	µg/L
Glyphosate	10/02	7/13	76	5	25	µg/L
Heptachlor	10/02	7/13	76	0.003	0.05	µg/L
Heptachlor Epoxide	10/02	7/13	76	0.01	0.05	µg/L
Hexachlorobenzene	10/02	7/13	76	0.33	1	µg/L
Hexachlorobutadiene	10/02	7/13	76	0.33	1	µg/L
Hexachlorocyclopentadiene	10/02	7/13	76	1.67	5	µg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Hexachloroethane	10/02	7/13	76	0.33	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/02	7/13	76	0.02	0.10	µg/L
Isophorone	10/02	7/13	76	0.05	1	µg/L
L-Cyhalothrin	6/10	6/10	1	0.0005	0.0005	µg/L
Malathion	10/02	7/13	76	0.003	2.0	µg/L
Manganese - Dissolved	10/04	3/05	6	30	30	µg/L
Merphos	6/10	6/10	1	0.001	0.001	µg/L
Methoxychlor	10/04	7/13	55	0.5	0.5	µg/L
Methyl methanesulfonate	10/04	3/05	6	0.3	0.3	µg/L
Methyl Parathion	6/10	6/10	1	0.001	0.001	µg/L
Mevinphos	6/10	6/10	1	0.008	0.008	µg/L
Molinate	10/04	3/05	6	2	2	µg/L
Naphthalene	10/02	7/13	76	0.05	0.2	µg/L
Nitrobenzene	10/02	7/13	76	0.05	1	µg/L
N-Nitrosodibutylamine	10/04	3/05	6	0.3	0.3	µg/L
N-Nitrosodimethylamine	10/02	7/13	79	0.3	0.3	µg/L
N-Nitrosodi-n-Propylamine	10/02	7/13	76	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/02	7/13	79	0.3	1	µg/L
N-Nitrosopiperidine	10/04	3/05	6	1	1	µg/L
Pentachlorophenol	10/02	7/13	76	0.67	2.00	µg/L
Permethrin	6/10	6/10	1	0.005	0.005	µg/L
Phenacetin	10/04	3/05	6	3	3	µg/L
Phenanthrene	10/02	7/13	72	0.017	0.05	µg/L
Phorate	6/10	6/10	1	0.006	0.006	µg/L
Prometryn	10/02	7/13	75	0.67	2	µg/L
Pronamide	10/04	3/05	6	5	5	µg/L
Ronnel	6/10	6/10	1	0.002	0.002	µg/L
Simazine	10/02	7/13	76	0.67	2	µg/L
Tetrachlorvinphos	6/10	6/10	1	0.002	0.002	µg/L
Thiobencarb	10/04	3/05	6	1	1	µg/L

LA River – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Tokuthion	6/10	6/10	1	0.003	0.003	µg/L
Toxaphene	10/02	7/13	76	0.24	1	µg/L
Trichloronate	6/10	6/10	1	0.001	0.001	µg/L
Vanadium Dissolved	2/01	2/01	1	5	5	µg/L

LA River – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Ammonia as N	6/09	6/10	2	0.05	0.05	mg/L
Bolstar	6/09	6/10	2	0.002	0.002	µg/L
Chlorpyrifos	6/09	6/10	2	0.001	0.001	µg/L
Cyfluthrin	6/09	6/10	2	0.0005	0.0005	µg/L
Deltamethrin	6/09	6/10	2	0.0005	0.0005	µg/L
Demeton-S	6/09	6/09	1	0.001	0.001	µg/L
Diazinon	6/09	6/10	2	0.002	0.002	µg/L
Dichlorvos	6/09	6/10	2	0.003	0.003	µg/L
Dimethoate	6/09	6/10	2	0.002	0.003	µg/L
Disulfoton	6/09	6/10	2	0.001	0.001	µg/L
Esfenvalerate	6/09	6/10	2	0.0005	0.0005	µg/L
Ethoprop	6/09	6/10	2	0.001	0.001	µg/L
Fensulfothion	6/09	6/10	2	0.001	0.001	µg/L
Fenthion	6/09	6/10	2	0.002	0.002	µg/L
Fenvalerate	6/09	6/10	2	0.0005	0.0005	µg/L
L-Cyhalothrin	6/09	6/10	2	0.0005	0.0005	µg/L
Malathion	6/09	6/10	2	0.003	0.003	µg/L
Merphos	6/09	6/10	2	0.001	0.001	µg/L
Methyl Parathion	6/09	6/10	2	0.001	0.001	µg/L
Mevinphos	6/09	6/10	2	0.008	0.008	µg/L
Permethrin	6/09	6/10	2	0.005	0.005	µg/L
Phorate	6/09	6/10	2	0.006	0.006	µg/L

LA River – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Ronnel	6/09	6/10	2	0.002	0.002	µg/L
Tetrachlorvinphos	6/09	6/10	2	0.002	0.002	µg/L
Tokuthion	6/09	6/10	2	0.003	0.003	µg/L
Trichloronate	6/09	6/10	2	0.001	0.001	µg/L
Vanadium Dissolved	2/01	2/01	2	5	5	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,1,1-Trichloroethane	8/07	8/13	14	0.05	0.23	µg/L
1,1,2,2-Tetrachloroethane	8/07	8/13	14	0.02	0.19	µg/L
1,1,2-Trichloroethane	8/07	8/13	14	0.05	0.21	µg/L
1,1-Dichloroethane	8/07	8/13	14	0.11	0.16	µg/L
1,1-Dichloroethylene	8/07	8/13	14	0.12	0.2	µg/L
1,2,3,4,6,7,8-HpCDF	8/07	9/13	13	1.5	56	pg/L
1,2,3,4,7,8,9-HpCDF	8/07	9/13	13	0.59	56	pg/L
1,2,3,4,7,8-HxCDD	8/07	9/13	13	0.75	56	pg/L
1,2,3,4,7,8-HxCDF	8/07	9/13	13	0.68	56	pg/L
1,2,3,6,7,8-HxCDD	8/07	9/13	13	0.68	56	pg/L
1,2,3,6,7,8-HxCDF	8/07	9/13	13	0.59	56	pg/L
1,2,3,7,8,9-HxCDD	8/07	9/13	13	0.68	56	pg/L
1,2,3,7,8,9-HxCDF	8/07	9/13	13	0.58	56	pg/L
1,2,3,7,8-PeCDD	8/07	9/13	13	0.95	56	pg/L
1,2,3,7,8-PeCDF	8/07	9/13	13	0.67	56	pg/L
1,2,3-Trichloropropane	8/07	8/13	14	0.13	0.27	µg/L
1,2,4-Trichlorobenzene	2/02	9/13	24	0.08	2	µg/L
1,2-Dichloroethane	8/07	8/13	14	0.03	0.13	µg/L
1,2-Dichloropropane	8/07	8/13	14	0.09	0.13	µg/L
1,2-Trans-Dichloroethylene	8/07	8/13	14	0.07	0.2	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,3-Dichlorobenzene	2/02	9/13	24	0.05	1.5	µg/L
1,3-trans-Dichloropropene	8/07	8/13	14	0.06	0.15	µg/L
1,4-Dichlorobenzene	2/02	9/13	24	0.07	1.8	µg/L
2,3,4,6,7,8-HxCDF	8/07	9/13	13	0.51	56	pg/L
2,3,4,7,8-PeCDF	8/07	9/13	13	0.76	56	pg/L
2,3,7,8-TCDF	8/07	9/13	13	1.8	12	pg/L
2,4,5-TP	8/07	9/13	13	0.11	0.34	µg/L
2,4-D	8/07	9/13	13	0.2	0.8	µg/L
2,4-DDE	3/02	2/07	11	0.001	0.004	µg/L
2,4-DDT	3/02	2/07	11	0.002	0.005	µg/L
2,4-Dichlorophenol	2/02	9/13	24	0.09	6.8	µg/L
2,4-Dimethylphenol	2/02	9/13	24	0.17	6.2	µg/L
2,4-Dinitrophenol	2/02	9/13	24	0.21	31	µg/L
2,4-Dinitrotoluene	2/02	9/13	24	0.08	2.3	µg/L
2,6-Dinitrotoluene	2/02	9/13	24	0.022	1.6	µg/L
2-Chloroethylvinyl Ether	8/07	8/13	14	0.13	0.63	µg/L
2-Chloronaphthalene	2/02	9/13	24	0.07	1.5	µg/L
2-Chlorophenol	2/02	9/13	24	0.09	8.1	µg/L
2-Methyl-4,6-Dinitrophenol	2/02	9/13	24	0.4	8.9	µg/L
2-Nitrophenol	2/02	9/13	24	0.09	7.9	µg/L
3,3-Dichlorobenzidine	2/02	9/13	24	0.11	2.78	µg/L
3-Methyl-4-Chlorophenol	2/02	9/13	24	0.18	6	µg/L
4,4-DDD	3/02	8/13	24	0.001	0.006	µg/L
4,4-DDE	3/02	8/13	24	0.001	0.004	µg/L
4,4-DDT	3/02	8/13	24	0.001	0.007	µg/L
4-Bromophenyl Phenyl Ether	2/02	9/13	24	0.07	1.5	µg/L
4-Chlorophenyl Phenyl Ether	2/02	9/13	24	0.04	2	µg/L
4-Nitrophenol	2/02	9/13	24	0.06	5	µg/L
Acenaphthene	2/02	9/13	24	0.04	1.7	µg/L
Acenaphthylene	2/02	9/13	24	0.06	1.7	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Acrolein	8/07	8/13	14	0.61	1.96	µg/L
Acrylonitrile	8/07	8/13	14	0.08	0.57	µg/L
Aldrin	3/02	8/13	24	0.001	0.008	µg/L
alpha-BHC	3/02	8/13	24	0.001	0.004	µg/L
Anthracene	2/02	9/13	24	0.06	1.6	µg/L
Aroclor 1016	3/02	8/13	24	0.022	0.081	µg/L
Aroclor 1221	3/02	8/13	24	0.02	0.49	µg/L
Aroclor 1232	3/02	8/13	24	0.028	0.1	µg/L
Aroclor 1242	3/02	8/13	24	0.024	0.23	µg/L
Aroclor 1248	3/02	8/13	24	0.019	0.121	µg/L
Aroclor 1254	3/02	8/13	24	0.017	0.05	µg/L
Aroclor 1260	3/02	8/13	24	0.029	0.1	µg/L
Azinphos-methyl	8/07	9/13	13	0.007	1.7	µg/L
Azobenzene	2/02	9/13	24	0.06	7	µg/L
Benzene	8/07	8/13	14	0.07	0.22	µg/L
Benzidine	2/02	9/13	24	0.3	47	µg/L
Benzo(a)Anthracene	2/02	9/13	49	0.0048	1.2	µg/L
Benzo(a)Pyrene	2/02	9/13	24	0.06	1.6	µg/L
Benzo(b)Fluoranthene	2/02	9/13	24	0.07	1.5	µg/L
Benzo(k)Fluoranthene	2/02	9/13	24	0.11	2.3	µg/L
beta-BHC	3/02	8/13	24	0.0019	0.005	µg/L
Bifenthrin	5/09	5/09	1	0.0005	0.0005	µg/L
Bis(2-chloroethoxy)Methane	2/02	9/13	24	0.05	1.6	µg/L
Bis(2-chloroethyl)Ether	2/02	9/13	24	0.09	1.9	µg/L
Bolstar	5/09	5/09	1	0.002	0.002	µg/L
Bromoform	8/07	8/13	14	0.04	0.19	µg/L
Carbon Tetrachloride	8/07	8/13	14	0.09	0.27	µg/L
Chlordanes	3/02	8/13	24	0.012	0.06	µg/L
Chlorobenzene	8/07	8/13	14	0.06	0.15	µg/L
Chloroethane	8/07	8/13	14	0.04	0.79	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Chlorpyrifos	5/09	5/09	1	0.001	0.001	µg/L
Chrysene	2/02	9/13	49	0.004	1.5	µg/L
cis-1,3-Dichloropropene	8/07	8/13	14	0.04	0.15	µg/L
Cyfluthrin	5/09	5/09	1	0.0005	0.0005	µg/L
Cypermethrin	5/09	5/09	1	0.0005	0.0005	µg/L
delta-BHC	3/02	8/13	24	0.0007	0.007	µg/L
Deltamethrin	5/09	5/09	1	0.0005	0.0005	µg/L
Demeton-O	8/07	9/13	13	0.007	0.9	µg/L
Demeton-S	8/07	9/13	14	0.001	1.1	µg/L
Diazinon	5/09	9/13	8	0.002	0.006	µg/L
Dichlorvos	5/09	5/09	1	0.003	0.003	µg/L
Dieldrin	3/02	8/13	24	0.0009	0.006	µg/L
Dimethoate	5/09	5/09	1	0.003	0.003	µg/L
Dimethyl Phthalate	2/02	9/13	24	0.08	3	µg/L
Di-n-Octyl Phthalate	2/02	9/13	24	0.15	2.5	µg/L
Disulfoton	5/09	5/09	1	0.001	0.001	µg/L
Endosulfan II	3/02	8/13	24	0.001	0.007	µg/L
Endosulfan Sulfate	3/02	8/13	24	0.002	0.008	µg/L
Endrin	3/02	8/13	24	0.001	0.007	µg/L
Endrin Aldehyde	3/02	8/13	24	0.001	0.006	µg/L
Esfenvalerate	5/09	5/09	1	0.0005	0.0005	µg/L
Ethoprop	5/09	5/09	1	0.001	0.001	µg/L
Ethyl Parathion	8/07	9/13	13	0.085	1.2	µg/L
Ethylbenzene	8/07	8/13	14	0.08	0.17	µg/L
Fensulfothion	5/09	5/09	1	0.001	0.001	µg/L
Fenthion	5/09	5/09	1	0.002	0.002	µg/L
Fenvalerate	5/09	5/09	1	0.0005	0.0005	µg/L
Fluoranthene	2/02	9/13	24	0.02	1.3	µg/L
Fluorene	2/02	9/13	24	0.02	1.6	µg/L
Heptachlor	3/02	8/13	24	0.001	0.008	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Heptachlor Epoxide	3/02	8/13	24	0.001	0.004	µg/L
Hexachlorobenzene	2/02	9/13	24	0.07	1.1	µg/L
Hexachlorobutadiene	2/02	9/13	24	0.07	2	µg/L
Hexachlorocyclopentadiene	2/02	9/13	24	1.3	3.83	µg/L
Hexachloroethane	2/02	9/13	24	0.07	2	µg/L
L-Cyhalothrin	5/09	5/09	1	0.0005	0.0005	µg/L
Malathion	8/07	9/13	14	0.003	1.1	µg/L
Merphos	5/09	5/09	1	0.001	0.001	µg/L
Methoxychlor	3/02	8/13	24	0.003	0.38	µg/L
Methyl Bromide	8/07	8/13	14	0.11	1.02	µg/L
Methyl Chloride	8/07	8/13	14	0.13	0.37	µg/L
Methyl Parathion	5/09	5/09	1	0.001	0.001	µg/L
Methylene Chloride	8/07	8/13	14	0.08	0.14	µg/L
Mevinphos	5/09	5/09	1	0.008	0.008	µg/L
Mirex	3/02	8/13	24	0.002	0.12	µg/L
Naphthalene	2/02	9/13	24	0.028	2	µg/L
Nitrobenzene	2/02	9/13	24	0.05	1.5	µg/L
N-Nitrosodimethylamine	2/02	9/13	24	0.17	100	µg/L
N-Nitrosodi-n-Propylamine	2/02	9/13	47	0.13	4.5	µg/L
N-Nitrosodiphenylamine	2/02	9/13	24	0.09	1.7	µg/L
OCDF	8/07	9/13	13	2	120	pg/L
Pentachlorophenol	2/02	9/13	24	0.4	8	µg/L
Permethrin	5/09	5/09	1	0.005	0.005	µg/L
Phenanthrene	2/02	9/13	24	0.01	1.5	µg/L
Phenols (Total)	2/02	9/13	24	0.2	8.3	µg/L
Phorate	5/09	5/09	1	0.006	0.006	µg/L
Pyrene	2/02	9/13	24	0.02	1.1	µg/L
Ronnel	5/09	5/09	1	0.002	0.002	µg/L
Tetrachlorvinphos	5/09	5/09	1	0.002	0.002	µg/L
Tokuthion	5/09	5/09	1	0.003	0.003	µg/L

LA River – Reach 3, Above LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Toxaphene	3/02	8/13	24	0.02	0.354	µg/L
Trichloroethylene	8/07	8/13	14	0.08	0.17	µg/L
Trichloronate	5/09	5/09	1	0.001	0.001	µg/L
Vanadium - Dissolved	2/01	2/01	1	5	5	µg/L
Vinyl Chloride	8/07	8/13	14	0.07	0.26	µg/L

LA River – Reach 3, Below LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,1,1-Trichloroethane	8/07	8/13	16	0.05	0.23	µg/L
1,1,2,2-Tetrachloroethane	8/07	8/13	16	0.02	0.19	µg/L
1,1,2-Trichloroethane	8/07	8/13	16	0.05	0.21	µg/L
1,1-Dichloroethane	8/07	8/13	16	0.11	0.16	µg/L
1,2,3,4,6,7,8-HpCDF	8/07	9/13	13	2.3	50	pg/L
1,2,3,4,7,8,9-HpCDF	8/07	9/13	13	0.21	50	pg/L
1,2,3,4,7,8-HxCDD	8/07	9/13	13	0.55	50	pg/L
1,2,3,4,7,8-HxCDF	8/07	9/13	13	0.49	50	pg/L
1,2,3,6,7,8-HxCDD	8/07	9/13	13	0.62	50	pg/L
1,2,3,6,7,8-HxCDF	8/07	9/13	13	0.44	50	pg/L
1,2,3,7,8,9-HxCDD	8/07	9/13	13	0.45	50	pg/L
1,2,3,7,8,9-HxCDF	8/07	9/13	13	0.51	50	pg/L
1,2,3,7,8-PeCDD	8/07	9/13	13	0.66	50	pg/L
1,2,3,7,8-PeCDF	8/07	9/13	13	0.52	50	pg/L
1,2,3-Trichloropropane	8/07	8/13	16	0.13	0.27	µg/L
1,2,4-Trichlorobenzene	2/02	9/13	37	0.08	2	µg/L
1,2-Dichloroethane	8/07	8/13	16	0.03	0.13	µg/L
1,2-Dichloropropane	8/07	8/13	16	0.09	0.13	µg/L
1,3-Dichlorobenzene	2/02	9/13	37	0.05	1.5	µg/L
1,3-trans-Dichloropropene	8/07	8/13	16	0.06	0.15	µg/L

LA River – Reach 3, Below LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,4-Dichlorobenzene	2/02	9/13	37	0.07	1.8	µg/L
2,3,4,6,7,8-HxCDF	8/07	9/13	13	0.47	50	pg/L
2,3,4,7,8-PeCDF	8/07	9/13	13	0.4	50	pg/L
2,3,7,8-TCDF	8/07	9/13	13	0.27	10	pg/L
2,4,5-TP	8/07	9/13	15	0.11	0.34	µg/L
2,4-D	8/07	9/13	15	0.2	0.8	µg/L
2,4-DDE	3/02	2/07	22	0.001	0.004	µg/L
2,4-DDT	3/02	2/07	22	0.002	0.005	µg/L
2,4-Dichlorophenol	2/02	9/13	37	0.09	6.8	µg/L
2,4-Dimethylphenol	2/02	9/13	37	0.17	6.2	µg/L
2,4-Dinitrophenol	2/02	9/13	37	0.21	31	µg/L
2,4-Dinitrotoluene	2/02	9/13	37	0.08	2.3	µg/L
2,6-Dinitrotoluene	2/02	9/13	37	0.022	1.6	µg/L
2-Chloroethylvinyl Ether	8/07	8/13	16	0.13	0.63	µg/L
2-Chloronaphthalene	2/02	9/13	37	0.07	1.5	µg/L
2-Chlorophenol	2/02	9/13	37	0.09	8.1	µg/L
2-Methyl-4,6-Dinitrophenol	2/02	9/13	37	0.4	8.9	µg/L
2-Nitrophenol	2/02	9/13	37	0.09	7.9	µg/L
3,3-Dichlorobenzidine	2/02	9/13	37	0.11	2.78	µg/L
3-Methyl-4-Chlorophenol	2/02	9/13	37	0.18	6	µg/L
4,4-DDD	3/02	9/13	37	0.001	0.006	µg/L
4,4-DDE	3/02	9/13	37	0.001	0.004	µg/L
4,4-DDT	3/02	9/13	37	0.001	0.007	µg/L
4-Bromophenyl Phenyl Ether	2/02	9/13	37	0.07	1.5	µg/L
4-Chlorophenyl Phenyl Ether	2/02	9/13	37	0.04	2	µg/L
4-Nitrophenol	2/02	9/13	37	0.06	5	µg/L
Acenaphthene	2/02	9/13	37	0.04	1.7	µg/L
Acenaphthylene	2/02	9/13	37	0.06	1.7	µg/L
Acrolein	8/07	8/13	16	0.61	1.96	µg/L
Acrylonitrile	8/07	8/13	16	0.08	0.57	µg/L

LA River – Reach 3, Below LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Aldrin	3/02	9/13	37	0.001	0.008	µg/L
Aroclor 1016	3/02	9/13	37	0.022	0.081	µg/L
Aroclor 1221	3/02	9/13	37	0.02	0.49	µg/L
Aroclor 1232	3/02	9/13	37	0.028	0.1	µg/L
Aroclor 1242	3/02	9/13	37	0.024	0.23	µg/L
Aroclor 1248	3/02	9/13	37	0.019	0.121	µg/L
Aroclor 1254	3/02	9/13	37	0.017	0.05	µg/L
Aroclor 1260	3/02	9/13	37	0.029	0.1	µg/L
Azinphos-methyl	8/07	9/13	15	0.007	1.7	µg/L
Azobenzene	2/02	9/13	37	0.06	7	µg/L
Benzene	8/07	8/13	16	0.07	0.22	µg/L
Benzidine	2/02	9/13	37	0.3	47	µg/L
Benzo(a)Pyrene	2/02	9/13	37	0.06	1.6	µg/L
Benzo(b)Fluoranthene	2/02	9/13	37	0.07	1.5	µg/L
Benzo(k)Fluoranthene	2/02	9/13	37	0.11	2.3	µg/L
beta-BHC	3/02	9/13	37	0.0019	0.005	µg/L
Bis(2-chloroethoxy)Methane	2/02	9/13	37	0.05	1.6	µg/L
Bis(2-chloroethyl)Ether	2/02	9/13	37	0.09	1.9	µg/L
Bromoform	8/07	8/13	16	0.04	0.19	µg/L
Butylbenzyl Phthalate	2/02	9/13	37	0.04	3	µg/L
Chlordanes	3/02	9/13	37	0.012	0.06	µg/L
Chlorobenzene	8/07	8/13	16	0.06	0.15	µg/L
Chloroethane	8/07	8/13	16	0.04	0.79	µg/L
cis-1,3-Dichloropropene	8/07	8/13	16	0.04	0.15	µg/L
delta-BHC	3/02	9/13	37	0.0007	0.007	µg/L
Demeton-O	8/07	9/13	15	0.007	0.9	µg/L
Demeton-S	8/07	9/13	15	0.007	1.1	µg/L
Diazinon	4/12	9/13	7	0.006	0.006	µg/L
Dieldrin	3/02	9/13	37	0.0009	0.006	µg/L
Dimethyl Phthalate	2/02	9/13	37	0.08	3	µg/L

LA River – Reach 3, Below LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Endosulfan I	3/02	9/13	37	0.001	0.008	µg/L
Endosulfan II	3/02	9/13	37	0.001	0.007	µg/L
Endosulfan Sulfate	3/02	9/13	37	0.002	0.008	µg/L
Endrin	3/02	9/13	37	0.001	0.007	µg/L
Endrin Aldehyde	3/02	9/13	37	0.001	0.006	µg/L
Ethyl Parathion	8/07	9/13	15	0.085	1.2	µg/L
Ethylbenzene	8/07	8/13	16	0.08	0.17	µg/L
Fluorene	2/02	9/13	37	0.02	1.6	µg/L
Heptachlor Epoxide	3/02	9/13	37	0.001	0.004	µg/L
Hexachlorobenzene	2/02	9/13	37	0.07	1.1	µg/L
Hexachlorobutadiene	2/02	9/13	37	0.07	2	µg/L
Hexachlorocyclopentadiene	2/02	9/13	37	1.3	3.83	µg/L
Hexachloroethane	2/02	9/13	37	0.07	2	µg/L
Malathion	8/07	9/13	15	0.11	1.1	µg/L
Methoxychlor	3/02	9/13	37	0.003	0.38	µg/L
Methyl Bromide	8/07	8/13	16	0.11	1.02	µg/L
Methyl Chloride	8/07	8/13	16	0.13	0.37	µg/L
Methylene Chloride	8/07	8/13	16	0.08	0.14	µg/L
Mirex	3/02	9/13	37	0.002	0.12	µg/L
Naphthalene	2/02	9/13	37	0.028	2	µg/L
Nitrobenzene	2/02	9/13	37	0.05	1.5	µg/L
N-Nitrosodimethylamine	2/02	9/13	37	0.17	100	µg/L
N-Nitrosodi-n-Propylamine	2/02	9/13	75	0.13	4.5	µg/L
N-Nitrosodiphenylamine	2/02	9/13	37	0.09	1.7	µg/L
OCDF	8/07	9/13	13	2.5	100	pg/L
Pentachlorophenol	2/02	9/13	37	0.4	8	µg/L
Phenols (Total)	2/02	9/13	37	0.2	8.3	µg/L
Pyrene	2/02	9/13	37	0.02	1.1	µg/L
Sulfide	3/06	2/08	21	30	30	µg/L
Toxaphene	3/02	9/13	37	0.02	0.354	µg/L

LA River – Reach 3, Below LAG – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Vanadium - Dissolved	2/01	2/01	1	5	5	µg/L
Vinyl Chloride	8/07	8/13	16	0.07	0.26	µg/L

LA River – Reach 4 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,1,1-Trichloroethane	8/07	8/13	16	0.05	0.23	µg/L
1,1,2,2-Tetrachloroethane	8/07	8/13	16	0.02	0.14	µg/L
1,1,2-Trichloroethane	8/07	8/13	16	0.05	0.1	µg/L
1,1-Dichloroethane	8/07	8/13	16	0.11	0.16	µg/L
1,1-Dichloroethylene	8/07	8/13	16	0.12	0.2	µg/L
1,2,3-Trichloropropane	8/07	8/13	16	0.13	0.23	µg/L
1,2,4-Trichlorobenzene	2/02	8/13	38	0.08	2	µg/L
1,2-Dichlorobenzene	2/02	8/13	38	0.06	1.5	µg/L
1,2-Dichloroethane	8/07	8/13	16	0.03	0.1	µg/L
1,2-Dichloropropane	8/07	8/13	16	0.09	0.12	µg/L
1,2-Trans-Dichloroethylene	8/07	8/13	16	0.07	0.2	µg/L
1,3-Dichlorobenzene	2/02	8/13	38	0.05	1.5	µg/L
1,3-trans-Dichloropropene	8/07	8/13	16	0.06	0.15	µg/L
1,4-Dichlorobenzene	2/02	8/13	38	0.07	1.8	µg/L
2,3,7,8-TCDD (Dioxin)	8/07	8/08	3	48	160	pg/L
2,4,5-TP	8/07	9/13	16	0.11	0.11	µg/L
2,4-D	8/07	9/13	16	0.2	0.21	µg/L
2,4-DDD	2/02	2/07	22	0.001	0.01	µg/L
2,4-DDE	2/02	2/07	22	0.001	0.004	µg/L
2,4-DDT	2/02	2/07	22	0.002	0.005	µg/L
2,4-Dichlorophenol	2/02	8/13	38	0.09	6.8	µg/L
2,4-Dimethylphenol	2/02	8/13	38	0.17	6.2	µg/L
2,4-Dinitrophenol	2/02	8/13	38	0.21	31	µg/L

LA River – Reach 4 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
2,4-Dinitrotoluene	2/02	8/13	38	0.08	2.3	µg/L
2,6-Dinitrotoluene	2/02	8/13	38	0.022	1.6	µg/L
2-Chloroethylvinyl Ether	8/07	8/13	16	0.27	0.63	µg/L
2-Chloronaphthalene	2/02	8/13	38	0.07	1.5	µg/L
2-Chlorophenol	2/02	8/13	38	0.09	8.1	µg/L
2-Methyl-4,6-Dinitrophenol	2/02	8/13	38	0.4	8.9	µg/L
2-Nitrophenol	2/02	8/13	38	0.09	7.9	µg/L
3,3-Dichlorobenzidine	2/02	8/13	38	0.11	2.78	µg/L
3-Methyl-4-Chlorophenol	2/02	8/13	38	0.18	6	µg/L
4,4-DDD	2/02	8/13	38	0.001	0.006	µg/L
4,4-DDE	2/02	8/13	38	0.001	0.004	µg/L
4,4-DDT	2/02	8/13	38	0.001	0.007	µg/L
4-Bromophenyl Phenyl Ether	2/02	8/13	38	0.07	1.5	µg/L
4-Chlorophenyl Phenyl Ether	2/02	8/13	38	0.04	2	µg/L
4-Nitrophenol	2/02	8/13	38	0.06	5	µg/L
Acenaphthene	2/02	8/13	38	0.04	1.7	µg/L
Acenaphthylene	2/02	8/13	38	0.06	1.7	µg/L
Acrolein	8/07	8/13	16	0.61	1.96	µg/L
Acrylonitrile	8/07	8/13	16	0.08	0.27	µg/L
Aldrin	2/02	8/13	38	0.001	0.008	µg/L
alpha-BHC	2/02	8/13	38	0.001	0.004	µg/L
Anthracene	2/02	8/13	38	0.06	1.6	µg/L
Aroclor 1016	2/02	8/13	38	0.022	0.081	µg/L
Aroclor 1221	2/02	8/13	38	0.02	0.49	µg/L
Aroclor 1232	2/02	8/13	38	0.028	0.1	µg/L
Aroclor 1242	2/02	8/13	38	0.024	0.23	µg/L
Aroclor 1248	2/02	8/13	38	0.019	0.121	µg/L
Aroclor 1254	2/02	8/13	38	0.017	0.05	µg/L
Aroclor 1260	2/02	8/13	38	0.029	0.1	µg/L
Azinphos-methyl	8/07	9/13	16	0.007	1.7	µg/L

LA River – Reach 4 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Azobenzene	2/02	8/13	38	0.06	7	µg/L
Benzidine	2/02	8/13	38	0.3	47	µg/L
Benzo(a)Anthracene	2/02	8/13	38	0.09	1.2	µg/L
Benzo(a)Pyrene	2/02	8/13	38	0.06	1.6	µg/L
Benzo(b)Fluoranthene	2/02	8/13	38	0.07	1.5	µg/L
Benzo(ghi)Perylene	2/02	8/13	38	0.03	1.7	µg/L
Benzo(k)Fluoranthene	2/02	8/13	38	0.11	2.3	µg/L
beta-BHC	2/02	8/13	38	0.0019	0.005	µg/L
Bifenthrin	6/11	6/11	1	0.001	0.001	µg/L
Bis(2-chloroethoxy)Methane	2/02	8/13	38	0.05	1.6	µg/L
Bis(2-chloroethyl)Ether	2/02	8/13	38	0.09	1.9	µg/L
Bis(2-chloroisopropyl)Ether	2/02	8/13	38	0.05	3	µg/L
Bolstar	6/11	6/11	1	0.002	0.002	µg/L
Butylbenzyl Phthalate	2/02	8/13	38	0.04	3	µg/L
Carbon Tetrachloride	8/07	8/13	16	0.09	0.27	µg/L
Chlordanes	2/02	8/13	38	0.012	0.06	µg/L
Chlorobenzene	8/07	8/13	16	0.06	0.15	µg/L
Chloroethane	8/07	8/13	16	0.04	0.79	µg/L
Chlorpyrifos	6/11	6/11	1	0.001	0.001	µg/L
cis-1,3-Dichloropropene	8/07	8/13	16	0.04	0.15	µg/L
cis-Permethrin	6/11	6/11	1	0.005	0.005	µg/L
Cyfluthrin	6/11	6/11	1	0.001	0.001	µg/L
Cypermethrin	6/11	6/11	1	0.001	0.001	µg/L
delta-BHC	2/02	8/13	38	0.0007	0.007	µg/L
Deltamethrin	6/11	6/11	1	0.005	0.005	µg/L
Demeton-O	8/07	9/13	16	0.007	0.9	µg/L
Demeton-S	8/07	9/13	17	0.001	1.1	µg/L
Dichlorvos	6/11	6/11	1	0.003	0.003	µg/L
Dieldrin	2/02	8/13	38	0.0009	0.006	µg/L
Diethyl Phthalate	2/02	8/13	38	0.06	3	µg/L

LA River – Reach 4 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Dimethyl Phthalate	2/02	8/13	38	0.08	3	µg/L
Disulfoton	6/11	6/11	1	0.001	0.001	µg/L
Endosulfan II	2/02	8/13	38	0.001	0.007	µg/L
Endosulfan Sulfate	2/02	8/13	38	0.002	0.008	µg/L
Endrin Aldehyde	2/02	8/13	38	0.001	0.006	µg/L
Ethoprop	6/11	6/11	1	0.001	0.001	µg/L
Ethyl Parathion	8/07	9/13	16	0.085	1.2	µg/L
Ethylbenzene	8/07	8/13	16	0.08	0.17	µg/L
Fensulfothion	6/11	6/11	1	0.001	0.001	µg/L
Fenthion	6/11	6/11	1	0.002	0.002	µg/L
Fenvalerate	6/11	6/11	2	0.001	0.001	µg/L
Fluoranthene	2/02	8/13	38	0.02	1.3	µg/L
Fluorene	2/02	8/13	38	0.02	1.6	µg/L
Heptachlor	2/02	8/13	38	0.001	0.008	µg/L
Heptachlor Epoxide	2/02	8/13	46	0.001	0.004	µg/L
Hexachlorobenzene	2/02	8/13	38	0.07	1.1	µg/L
Hexachlorobutadiene	2/02	8/13	38	0.07	2	µg/L
Hexachlorocyclopentadiene	2/02	8/13	38	1.3	3.83	µg/L
Hexachloroethane	2/02	8/13	38	0.07	2	µg/L
Indeno(1,2,3-cd)Pyrene	2/02	8/13	38	0.02	1.7	µg/L
L-Cyhalothrin	6/11	6/11	1	0.001	0.001	µg/L
Malathion	8/07	9/13	17	0.003	1.1	µg/L
Methoxychlor	2/02	8/13	38	0.003	0.38	µg/L
Methyl Bromide	8/07	8/13	16	0.11	1.02	µg/L
Methyl Chloride	8/07	8/13	16	0.13	0.37	µg/L
Methyl Parathion	6/11	6/11	1	0.001	0.001	µg/L
Mevinphos	6/11	6/11	1	0.008	0.008	µg/L
Mirex	2/02	8/13	38	0.002	0.12	µg/L
Naphthalene	2/02	8/13	38	0.028	2	µg/L
Nitrobenzene	2/02	8/13	38	0.05	1.5	µg/L

LA River – Reach 4 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
N-Nitrosodimethylamine	2/02	8/13	38	0.17	100	µg/L
N-Nitrosodi-n-Propylamine	2/02	8/13	38	0.13	4.5	µg/L
N-Nitrosodiphenylamine	2/02	8/13	38	0.09	1.7	µg/L
Pentachlorophenol	2/02	8/13	38	0.4	8	µg/L
Phenols (Total)	2/02	8/13	38	0.2	8.3	µg/L
Phorate	6/11	6/11	1	0.006	0.006	µg/L
Pyrene	2/02	8/13	38	0.02	1.1	µg/L
Ronnel	6/11	6/11	1	0.002	0.002	µg/L
Tetrachloroethylene	5/07	8/13	24	0.09	0.22	µg/L
Tetrachlorvinphos	6/11	6/11	1	0.002	0.002	µg/L
Tokuthion	6/11	6/11	1	0.003	0.003	µg/L
Toxaphene	2/02	8/13	38	0.02	0.354	µg/L
trans-Permethrin	6/11	6/11	1	0.005	0.005	µg/L
Trichloroethylene	8/07	8/13	16	0.08	0.17	µg/L
Trichloronate	6/11	6/11	1	0.001	0.001	µg/L
Vanadium - Dissolved	2/01	2/01	2	5	5	µg/L
Vinyl Chloride	8/07	8/13	16	0.07	0.26	µg/L

LA River – Reach 5 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,1,1-Trichloroethane	8/07	8/13	39	0.05	0.23	µg/L
1,1,2,2-Tetrachloroethane	8/07	8/13	39	0.02	0.14	µg/L
1,1,2-Trichloroethane	8/07	8/13	39	0.05	0.1	µg/L
1,1-Dichloroethane	8/07	8/13	39	0.11	0.16	µg/L
1,1-Dichloroethylene	8/07	8/13	39	0.12	0.2	µg/L
1,2,3-Trichloropropane	8/07	8/13	39	0.13	0.23	µg/L
1,2,4-Trichlorobenzene	2/02	8/13	75	0.08	2	µg/L
1,2-Dichloroethane	8/07	8/13	39	0.03	0.1	µg/L

LA River – Reach 5 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,2-Dichloropropane	8/07	8/13	39	0.09	0.12	µg/L
1,2-Trans-Dichloroethylene	8/07	8/13	39	0.07	0.2	µg/L
1,3-Dichlorobenzene	2/02	8/13	75	0.05	1.5	µg/L
1,3-trans-Dichloropropene	8/07	8/13	39	0.06	0.15	µg/L
1,4-Dichlorobenzene	2/02	8/13	75	0.07	1.8	µg/L
2,3,7,8-TCDD (Dioxin)	8/07	9/13	39	0.76	5600	pg/L
2,4,5-TP	8/07	9/13	39	0.11	0.34	µg/L
2,4-D	8/07	9/13	39	0.2	0.8	µg/L
2,4-DDE	2/02	2/07	33	0.001	0.004	µg/L
2,4-Dinitrophenol	2/02	8/13	72	0.21	31	µg/L
2,4-Dinitrotoluene	2/02	8/13	75	0.08	2.3	µg/L
2,6-Dinitrotoluene	2/02	8/13	75	0.022	1.6	µg/L
2-Chloroethylvinyl Ether	8/07	8/13	39	0.27	0.63	µg/L
2-Chloronaphthalene	2/02	8/13	75	0.07	1.5	µg/L
2-Chlorophenol	2/02	8/13	72	0.09	8.1	µg/L
2-Methyl-4,6-Dinitrophenol	2/02	8/13	72	0.4	8.9	µg/L
2-Nitrophenol	2/02	8/13	72	0.09	7.9	µg/L
3,3-Dichlorobenzidine	2/02	8/13	75	0.11	2.78	µg/L
4,4-DDT	2/02	8/13	72	0.001	0.007	µg/L
4-Bromophenyl Phenyl Ether	2/02	8/13	75	0.07	1.5	µg/L
4-Chlorophenyl Phenyl Ether	2/02	8/13	75	0.04	2	µg/L
Acenaphthene	2/02	8/13	75	0.04	1.7	µg/L
Acenaphthylene	2/02	8/13	75	0.06	1.7	µg/L
Acrolein	8/07	8/13	39	0.61	1.96	µg/L
Acrylonitrile	8/07	8/13	39	0.08	0.27	µg/L
Aldrin	2/02	8/13	72	0.001	0.008	µg/L
Anthracene	2/02	8/13	75	0.06	1.6	µg/L
Aroclor 1016	2/02	8/13	72	0.022	0.081	µg/L
Aroclor 1221	2/02	8/13	72	0.02	0.49	µg/L
Aroclor 1232	2/02	8/13	72	0.028	0.1	µg/L

LA River – Reach 5 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Aroclor 1242	2/02	8/13	72	0.024	0.23	µg/L
Aroclor 1248	2/02	8/13	72	0.019	0.121	µg/L
Aroclor 1254	2/02	8/13	72	0.017	0.05	µg/L
Aroclor 1260	2/02	8/13	72	0.029	0.1	µg/L
Azinphos-methyl	8/07	9/13	39	0.007	1.7	µg/L
Azobenzene	2/02	8/13	75	0.06	7	µg/L
Benzidine	2/02	8/13	75	0.3	47	µg/L
Benzo(a)Anthracene	2/02	8/13	75	0.09	1.2	µg/L
Benzo(a)Pyrene	2/02	8/13	75	0.06	1.6	µg/L
Benzo(b)Fluoranthene	2/02	8/13	75	0.07	1.5	µg/L
Benzo(k)Fluoranthene	2/02	8/13	75	0.11	2.3	µg/L
beta-BHC	2/02	8/13	72	0.0019	0.005	µg/L
Bis(2-chloroethoxy)Methane	2/02	8/13	75	0.05	1.6	µg/L
Bis(2-chloroethyl)Ether	2/02	8/13	75	0.09	1.9	µg/L
Carbon Tetrachloride	8/07	8/13	39	0.09	0.27	µg/L
Chlordanes	2/02	8/13	69	0.012	0.06	µg/L
Chlorobenzene	8/07	8/13	39	0.06	0.15	µg/L
Chloroethane	8/07	8/13	39	0.04	0.79	µg/L
Chrysene	2/02	8/13	75	0.05	1.5	µg/L
cis-1,3-Dichloropropene	8/07	8/13	39	0.04	0.15	µg/L
delta-BHC	2/02	8/13	72	0.0007	0.007	µg/L
Demeton-O	8/07	9/13	39	0.007	0.9	µg/L
Demeton-S	8/07	9/13	39	0.007	1.1	µg/L
Dieldrin	2/02	8/13	72	0.0009	0.006	µg/L
Dimethyl Phthalate	2/02	8/13	75	0.08	3	µg/L
Endosulfan II	2/02	8/13	72	0.001	0.007	µg/L
Endosulfan Sulfate	2/02	8/13	72	0.002	0.008	µg/L
Endrin	2/02	8/13	72	0.001	0.007	µg/L
Endrin Aldehyde	2/02	8/13	72	0.001	0.006	µg/L
Ethyl Parathion	8/07	9/13	39	0.085	1.2	µg/L

LA River – Reach 5 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Ethylbenzene	8/07	8/13	39	0.08	0.17	µg/L
Fluoranthene	2/02	8/13	75	0.02	1.3	µg/L
Fluorene	2/02	8/13	75	0.02	1.6	µg/L
Heptachlor Epoxide	2/02	8/13	84	0.001	0.004	µg/L
Hexachlorobenzene	2/02	8/13	75	0.07	1.1	µg/L
Hexachlorobutadiene	2/02	8/13	75	0.07	2	µg/L
Hexachlorocyclopentadiene	2/02	8/13	75	1.3	3.83	µg/L
Hexachloroethane	2/02	8/13	75	0.07	2	µg/L
Malathion	8/07	9/13	39	0.11	1.2	µg/L
Methoxychlor	2/02	8/13	69	0.003	0.38	µg/L
Methyl Bromide	8/07	8/13	39	0.11	1.02	µg/L
Methyl Chloride	8/07	8/13	39	0.13	0.37	µg/L
Mirex	2/02	8/13	69	0.002	0.12	µg/L
Nitrobenzene	2/02	8/13	75	0.05	1.5	µg/L
N-Nitrosodimethylamine	2/02	8/13	75	0.17	100	µg/L
N-Nitrosodi-n-Propylamine	2/02	8/13	75	0.13	4.5	µg/L
N-Nitrosodiphenylamine	2/02	8/13	75	0.09	1.7	µg/L
Phenanthrene	2/02	8/13	75	0.01	1.5	µg/L
Phenols (Total)	2/02	8/13	72	0.2	8.3	µg/L
Pyrene	2/02	8/13	75	0.02	1.1	µg/L
Tetrachloroethylene	5/07	8/13	51	0.09	0.22	µg/L
Toxaphene	2/02	8/13	72	0.02	0.354	µg/L
Vinyl Chloride	8/07	8/13	39	0.07	0.26	µg/L

LA River – Reach 6 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
1,1,1-Trichloroethane	8/07	8/08	3	0.05	0.23	µg/L
1,1,2,2-Tetrachloroethane	8/07	8/08	3	0.11	0.12	µg/L
1,1,2-Trichloroethane	8/07	8/08	3	0.05	0.1	µg/L
1,1-Dichloroethane	8/07	8/08	3	0.11	0.12	µg/L
1,1-Dichloroethylene	3/06	8/08	43	0.12	0.23	µg/L
1,2,3,4,6,7,8-HpCDD	8/07	8/08	3	6.7	56	pg/L
1,2,3,4,6,7,8-HpCDF	8/07	8/08	3	8.8	14	pg/L
1,2,3,4,7,8,9-HpCDF	8/07	8/08	3	0.91	26	pg/L
1,2,3,4,7,8-HxCDD	8/07	8/08	3	0.96	17	pg/L
1,2,3,4,7,8-HxCDF	8/07	8/08	3	0.76	12	pg/L
1,2,3,6,7,8-HxCDD	8/07	8/08	3	0.64	15	pg/L
1,2,3,6,7,8-HxCDF	8/07	8/08	3	0.56	11	pg/L
1,2,3,7,8,9-HxCDD	8/07	8/08	3	1.3	13	pg/L
1,2,3,7,8,9-HxCDF	8/07	8/08	3	0.6	14	pg/L
1,2,3,7,8-PeCDD	8/07	8/08	3	0.96	25	pg/L
1,2,3,7,8-PeCDF	8/07	8/08	3	0.56	16	pg/L
1,2,3-Trichloropropane	8/07	8/08	3	0.23	0.23	µg/L
1,2,4-Trichlorobenzene	2/02	8/08	15	0.08	2	µg/L
1,2-Dichlorobenzene	2/02	8/08	15	0.06	1.5	µg/L
1,2-Dichloroethane	8/07	8/08	3	0.08	0.1	µg/L
1,2-Dichloropropane	8/07	8/08	3	0.1	0.12	µg/L
1,2-Trans-Dichloroethylene	8/07	8/08	3	0.07	0.15	µg/L
1,3-Dichlorobenzene	2/02	8/08	15	0.05	1.5	µg/L
1,3-trans-Dichloropropene	8/07	8/08	3	0.06	0.09	µg/L
1,4-Dichlorobenzene	2/02	8/08	15	0.07	1.8	µg/L
1,4-Dioxane	8/07	8/08	3	0.15	0.19	µg/L
2,3,4,6,7,8-HxCDF	8/07	8/08	3	0.84	11	pg/L
2,3,4,7,8-PeCDF	8/07	8/08	3	0.59	19	pg/L
2,3,7,8-TCDF	8/07	8/08	3	0.4	8.7	pg/L
2,4,5-TP	8/07	8/08	3	0.11	0.11	µg/L
2,4,6-Trichlorophenol	2/02	8/08	14	0.09	6.9	µg/L
2,4-DDD	2/02	2/07	11	0.001	0.01	µg/L
2,4-DDE	2/02	2/07	11	0.001	0.004	µg/L
2,4-DDT	2/02	2/07	11	0.002	0.005	µg/L

LA River – Reach 6 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
2,4-Dichlorophenol	2/02	8/08	14	0.09	6.8	µg/L
2,4-Dimethylphenol	2/02	8/08	14	0.17	6.2	µg/L
2,4-Dinitrophenol	2/02	8/08	14	0.21	31	µg/L
2,4-Dinitrotoluene	2/02	8/08	15	0.08	2.3	µg/L
2,6-Dinitrotoluene	2/02	8/08	15	0.022	1.6	µg/L
2-Chloroethylvinyl Ether	8/07	8/08	3	0.27	0.48	µg/L
2-Chloronaphthalene	2/02	8/08	15	0.07	1.5	µg/L
2-Chlorophenol	2/02	8/08	14	0.09	8.1	µg/L
2-Methyl-4,6-Dinitrophenol	2/02	8/08	14	0.4	8.9	µg/L
2-Nitrophenol	2/02	8/08	14	0.09	7.9	µg/L
3,3-Dichlorobenzidine	2/02	8/08	15	0.11	2.5	µg/L
3-Methyl-4-Chlorophenol	2/02	8/08	14	0.18	6	µg/L
4,4-DDD	2/02	8/08	14	0.001	0.006	µg/L
4,4-DDE	2/02	8/08	14	0.0018	0.004	µg/L
4,4-DDT	2/02	8/08	14	0.002	0.006	µg/L
4-Bromophenyl Phenyl Ether	2/02	8/08	15	0.07	1.5	µg/L
4-Chlorophenyl Phenyl Ether	2/02	8/08	15	0.04	2	µg/L
4-Nitrophenol	2/02	8/08	14	0.06	5	µg/L
Acenaphthene	2/02	8/08	15	0.04	1.7	µg/L
Acenaphthylene	2/02	8/08	15	0.06	1.7	µg/L
Acrolein	8/07	8/08	3	0.61	1.96	µg/L
Acrylonitrile	8/07	8/08	3	0.08	0.17	µg/L
Aldrin	2/02	8/08	14	0.001	0.008	µg/L
alpha-BHC	2/02	8/08	14	0.001	0.003	µg/L
Anthracene	2/02	8/08	15	0.06	1.6	µg/L
Aroclor 1016	2/02	8/08	14	0.03	0.08	µg/L
Aroclor 1221	2/02	8/08	14	0.02	0.49	µg/L
Aroclor 1232	2/02	8/08	14	0.033	0.1	µg/L
Aroclor 1242	2/02	8/08	14	0.031	0.2	µg/L
Aroclor 1248	2/02	8/08	14	0.057	0.121	µg/L
Aroclor 1254	2/02	8/08	14	0.017	0.05	µg/L
Aroclor 1260	2/02	8/08	14	0.03	0.1	µg/L
Azinphos-methyl	8/07	8/08	3	0.17	1.2	µg/L
Azobenzene	2/02	8/08	15	0.06	7	µg/L
Benzene	8/07	8/08	3	0.07	0.09	µg/L

LA River – Reach 6 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Benzidine	2/02	8/08	15	0.3	47	µg/L
Benzo(a)Anthracene	2/02	8/08	15	0.09	1.2	µg/L
Benzo(a)Pyrene	2/02	8/08	15	0.06	1.6	µg/L
Benzo(b)Fluoranthene	2/02	8/08	15	0.07	1.5	µg/L
Benzo(ghi)Perylene	2/02	8/08	15	0.03	1.7	µg/L
Benzo(k)Fluoranthene	2/02	8/08	15	0.11	2.3	µg/L
beta-BHC	2/02	8/08	14	0.0019	0.005	µg/L
Bis(2-chloroethoxy)Methane	2/02	8/08	15	0.05	1.6	µg/L
Bis(2-chloroethyl)Ether	2/02	8/08	15	0.09	1.9	µg/L
Bis(2-chloroisopropyl)Ether	2/02	8/08	15	0.05	3	µg/L
Bolstar	6/10	6/10	1	0.002	0.002	µg/L
Bromoform	8/07	8/08	3	0.07	0.16	µg/L
Butylbenzyl Phthalate	2/02	8/08	15	0.04	3	µg/L
Carbon Tetrachloride	8/07	8/08	3	0.09	0.1	µg/L
Chlordanes	2/02	8/08	14	0.012	0.06	µg/L
Chlorobenzene	8/07	8/08	3	0.06	0.12	µg/L
Chlorodibromomethane	8/07	8/08	3	0.05	0.1	µg/L
Chloroethane	8/07	8/08	3	0.04	0.17	µg/L
Chlorpyrifos	6/10	6/10	1	0.001	0.001	µg/L
cis-1,3-Dichloropropene	8/07	8/08	3	0.09	0.15	µg/L
Cyfluthrin	6/10	6/10	1	0.0005	0.0005	µg/L
Cypermethrin	6/10	6/10	1	0.0005	0.0005	µg/L
Deltamethrin	6/10	6/10	1	0.0005	0.0005	µg/L
Demeton-O	8/07	8/08	3	0.09	0.49	µg/L
Demeton-S	8/07	8/08	3	0.11	0.63	µg/L
Dibenzo(a,h)Anthracene	2/02	8/08	15	0.02	1.9	µg/L
Dichlorobromomethane	8/07	8/08	3	0.06	0.08	µg/L
Dichlorvos	6/10	6/10	1	0.003	0.003	µg/L
Dieldrin	2/02	8/08	14	0.0009	0.006	µg/L
Dimethoate	6/10	6/10	1	0.002	0.002	µg/L
Dimethyl Phthalate	2/02	8/08	15	0.27	3	µg/L
Disulfoton	6/10	6/10	1	0.001	0.001	µg/L
Endosulfan II	2/02	8/08	14	0.001	0.007	µg/L
Endosulfan Sulfate	2/02	8/08	14	0.002	0.005	µg/L
Endrin	2/02	8/08	14	0.004	0.007	µg/L

LA River – Reach 6 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Endrin Aldehyde	2/02	8/08	14	0.002	0.006	µg/L
Esfenvalerate	6/10	6/10	1	0.0005	0.0005	µg/L
Ethoprop	6/10	6/10	1	0.001	0.001	µg/L
Ethyl Parathion	8/07	8/08	3	0.12	1.2	µg/L
Ethylbenzene	8/07	8/08	3	0.08	0.17	µg/L
Fensulfothion	6/10	6/10	1	0.001	0.001	µg/L
Fenthion	6/10	6/10	1	0.002	0.002	µg/L
Fenvalerate	6/10	6/10	1	0.0005	0.0005	µg/L
Fluoranthene	2/02	8/08	15	0.02	1.3	µg/L
Fluorene	2/02	8/08	15	0.02	1.6	µg/L
Heptachlor	2/02	8/08	14	0.001	0.005	µg/L
Heptachlor Epoxide	2/02	11/08	18	0.001	0.004	µg/L
Hexachlorobenzene	2/02	8/08	15	0.07	1.1	µg/L
Hexachlorobutadiene	2/02	8/08	15	0.07	2	µg/L
Hexachlorocyclopentadiene	2/02	8/08	15	1.3	3	µg/L
Hexachloroethane	2/02	8/08	15	0.07	2	µg/L
Indeno(1,2,3-cd)Pyrene	2/02	8/08	15	0.02	1.7	µg/L
L-Cyhalothrin	6/10	6/10	1	0.0005	0.0005	µg/L
Malathion	8/07	6/10	4	0.003	1.1	µg/L
Merphos	6/10	6/10	1	0.001	0.001	µg/L
Methoxychlor	2/02	8/08	14	0.003	0.38	µg/L
Methyl Bromide	8/07	8/08	3	0.21	0.26	µg/L
Methyl Chloride	8/07	8/08	3	0.16	0.16	µg/L
Methyl Parathion	6/10	6/10	1	0.001	0.001	µg/L
Methylene Chloride	8/07	8/08	3	0.09	0.12	µg/L
Mevinphos	6/10	6/10	1	0.008	0.008	µg/L
Mirex	2/02	8/08	14	0.003	0.12	µg/L
Naphthalene	2/02	8/08	15	0.028	2	µg/L
Nitrobenzene	2/02	8/08	15	0.05	1.5	µg/L
N-Nitrosodimethylamine	2/02	8/08	15	0.17	100	µg/L
N-Nitrosodi-n-Propylamine	2/02	8/08	15	0.13	4.5	µg/L
N-Nitrosodiphenylamine	2/02	8/08	15	0.09	1.7	µg/L
OCDF	8/07	8/08	3	8.4	39	pg/L
Oil + Grease	2/02	1/09	44	3	3	mg/L
Pentachlorophenol	2/02	8/08	14	0.4	8	µg/L

LA River – Reach 6 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Permethrin	6/10	6/10	1	0.005	0.005	µg/L
Phenanthrene	2/02	8/08	15	0.01	1.5	µg/L
Phenols (Total)	2/02	8/08	14	0.4	8.3	µg/L
Phorate	6/10	6/10	1	0.006	0.006	µg/L
Pyrene	2/02	8/08	15	0.02	1.1	µg/L
Ronnel	6/10	6/10	1	0.002	0.002	µg/L
Tetrachlorvinphos	6/10	6/10	1	0.002	0.002	µg/L
Tokuthion	6/10	6/10	1	0.003	0.003	µg/L
Toluene	8/07	8/08	3	0.06	0.14	µg/L
Toxaphene	2/02	8/08	14	0.02	0.354	µg/L
Trichloronate	6/10	6/10	1	0.001	0.001	µg/L
Vanadium - Dissolved	2/01	2/01	1	5	5	µg/L
Vanadium - Total	2/01	2/01	1	5	5	µg/L
Vinyl Chloride	8/07	8/08	3	0.07	0.22	µg/L

Rio Hondo – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Beryllium Dissolved	1/05	2/06	13	0.4	0.4	µg/L
Beryllium Total	1/05	2/06	13	0.4	0.4	µg/L
Bolstar	6/09	6/12	4	0.002	0.002	µg/L
Chlorpyrifos	6/09	6/12	4	0.001	0.001	µg/L
cis-Permethrin	6/11	6/12	2	0.005	0.005	µg/L
Deltamethrin	6/09	6/12	4	0.0005	0.005	µg/L
Demeton-S	6/09	6/12	3	0.001	0.001	µg/L
Diazinon	6/09	6/12	4	0.002	0.002	µg/L
Dichlorvos	6/09	6/12	4	0.003	0.003	µg/L
Dimethoate	6/09	7/10	2	0.002	0.003	µg/L
Disulfoton	6/09	6/12	4	0.001	0.001	µg/L
Esfenvalerate	6/09	7/10	2	0.0005	0.0005	µg/L
Ethoprop	6/09	6/12	4	0.001	0.001	µg/L
Fensulfothion	6/09	6/12	4	0.001	0.001	µg/L
Fenthion	6/09	6/12	4	0.002	0.002	µg/L
L-Cyhalothrin	6/09	6/12	4	0.0005	0.001	µg/L
Malathion	6/09	6/12	4	0.003	0.003	µg/L
Merphos	6/09	7/10	2	0.001	0.001	µg/L
Methyl Parathion	6/09	6/12	4	0.001	0.001	µg/L
Mevinphos	6/09	6/12	4	0.008	0.008	µg/L
Nitrite as N	6/09	6/12	4	0.02	0.02	mg/L
Permethrin	6/09	7/10	2	0.005	0.005	µg/L
Phorate	6/09	6/12	4	0.006	0.006	µg/L
Ronnel	6/09	6/12	4	0.002	0.002	µg/L
Tetrachlorvinphos	6/09	6/12	4	0.002	0.002	µg/L
Tokuthion	6/09	6/12	4	0.003	0.003	µg/L
trans-Permethrin	6/11	6/12	2	0.005	0.005	µg/L
Trichloronate	6/09	6/12	4	0.001	0.001	µg/L

Rio Hondo – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,2,4-Trichlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
1,2-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,2-Diphenylhydrazine	10/03	2/04	6	3	3	µg/L
1,3-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,4-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
2,4,5-TP	10/03	2/04	6	1	1	µg/L
2,4,6-Trichlorophenol	10/03	2/04	6	1	1	µg/L
2,4-D	10/03	2/04	6	10	10	µg/L
2,4-Dichlorophenol	10/03	2/04	6	2	2	µg/L
2,4-Dimethylphenol	10/03	2/04	6	2	2	µg/L
2,4-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2,4-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2,6-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2-Chloronaphthalene	10/03	2/04	6	0.1	0.1	µg/L
2-Chlorophenol	10/03	2/04	6	2	2	µg/L
2-Nitrophenol	10/03	2/04	6	3	3	µg/L
3,3-Dichlorobenzidine	10/03	2/04	6	3	3	µg/L
3-Methyl-4-Chlorophenol	10/03	2/04	6	3	3	µg/L
4,4-DDD	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDE	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDT	10/03	2/04	6	0.1	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	2/04	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/03	2/04	6	0.1	0.1	µg/L
4-Nitrophenol	10/03	2/04	6	3	3	µg/L
Acenaphthene	10/03	2/04	6	0.05	0.05	µg/L
Acenaphthylene	10/03	2/04	6	0.05	0.05	µg/L
Aldrin	10/03	2/04	6	0.05	0.05	µg/L
alpha-BHC	10/03	2/04	6	0.05	0.05	µg/L
Aluminum Dissolved	10/03	2/04	6	100	100	µg/L
Anthracene	10/03	2/04	6	0.05	0.05	µg/L

Rio Hondo – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Aroclor 1016	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1221	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1232	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1242	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1248	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1254	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1260	10/03	2/04	6	0.5	0.5	µg/L
Atrazine	10/03	2/04	6	2	2	µg/L
Benzidine	10/03	2/04	6	3	3	µg/L
Benzo(a)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(a)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(k)Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Beryllium Dissolved	10/03	2/04	6	1	1	µg/L
Beryllium Total	10/03	2/04	6	1	1	µg/L
beta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Bis(2-chloroethoxy)Methane	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroethyl)Ether	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroisopropyl)Ether	10/03	2/04	6	1	1	µg/L
Butylbenzyl Phthalate	10/03	2/04	6	0.3	0.3	µg/L
Cadmium Dissolved	10/03	2/04	6	1	1	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chlorpyrifos	10/03	2/04	6	0.05	0.05	µg/L
Chromium (VI) - Dissolved	10/03	2/04	6	10	10	µg/L
Chromium (VI) - Total	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	2/04	6	0.1	0.1	µg/L
Cyanazine	10/03	2/04	6	2	2	µg/L
delta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Dibenzo(a,h)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Dieldrin	10/03	2/04	6	0.1	0.1	µg/L

Rio Hondo – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Dimethyl Phthalate	10/03	2/04	6	0.5	0.5	µg/L
Di-n-Butyl Phthalate	10/03	2/04	6	1	1	µg/L
Di-n-Octyl Phthalate	10/03	2/04	6	1	1	µg/L
Endosulfan I	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan II	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan Sulfate	10/03	2/04	6	0.1	0.1	µg/L
Endrin	10/03	2/04	6	0.1	0.1	µg/L
Endrin Aldehyde	10/03	2/04	6	0.1	0.1	µg/L
Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Fluorene	10/03	2/04	6	0.1	0.1	µg/L
gamma-BHC (Lindane)	10/03	2/04	6	0.05	0.05	µg/L
Glyphosate	10/03	2/04	6	25	25	µg/L
Heptachlor	10/03	2/04	6	0.05	0.05	µg/L
Heptachlor Epoxide	10/03	2/04	6	0.05	0.05	µg/L
Hexachlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
Hexachlorobutadiene	10/03	2/04	6	1	1	µg/L
Hexachlorocyclopentadiene	10/03	2/04	6	3	3	µg/L
Hexachloroethane	10/03	2/04	6	1	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Malathion	10/03	2/04	6	2	2	µg/L
Mercury Dissolved	10/03	2/04	6	1	1	µg/L
Mercury Total	10/03	2/04	6	1	1	µg/L
Naphthalene	10/03	2/04	6	0.05	0.05	µg/L
Nitrobenzene	10/03	2/04	6	0.05	0.05	µg/L
N-Nitrosodimethylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodi-n-Propylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/03	2/04	6	0.3	0.3	µg/L
Pentachlorophenol	10/03	2/04	6	2	2	µg/L
Phenanthrene	10/03	2/04	6	0.05	0.05	µg/L
Phenols (Total)	10/03	2/04	6	1	1	µg/L

Rio Hondo – Reach 2 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Prometryn	10/03	2/04	6	2	2	µg/L
Pyrene	10/03	2/04	6	0.05	0.05	µg/L
Silver - Dissolved	10/03	2/04	6	1	1	µg/L
Simazine	10/03	2/04	6	2	2	µg/L
Thallium - Dissolved	10/03	2/04	6	5	5	µg/L
Thallium - Total	10/03	2/04	6	5	5	µg/L
Toxaphene	10/03	2/04	6	1	1	µg/L

Rio Hondo – Reach 3 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,1,1-Trichloroethane	2/04	8/12	33	0.5	1	µg/L
1,1,2,2-Tetrachloroethane	2/04	8/12	34	0.5	1	µg/L
1,1,2-Trichloroethane	2/04	8/12	34	0.5	1	µg/L
1,1-Dichloroethane	2/04	8/12	34	0.5	1	µg/L
1,1-Dichloroethylene	2/04	8/12	35	0.5	1	µg/L
1,2,3,4,7,8-HxCDD	2/04	8/12	60	1	55	pg/L
1,2,3,7,8,9-HxCDD	2/04	8/12	30	1.1	55	pg/L
1,2,3,7,8,9-HxCDF	2/04	8/12	30	0.75	55	pg/L
1,2,3,7,8-PeCDD	2/04	8/12	30	1.9	55	pg/L
1,2,3,7,8-PeCDF	2/04	8/12	30	0.98	55	pg/L
1,2,3-Trichloropropane	5/05	8/12	24	0.005	0.005	µg/L
1,2,4-Trichlorobenzene	2/04	8/12	33	5	5	µg/L
1,2-Dichlorobenzene	2/04	8/12	40	0.5	2	µg/L
1,2-Dichloroethane	2/04	8/12	34	0.5	0.5	µg/L
1,2-Dichloropropane	2/04	8/12	34	0.5	1	µg/L
1,2-Dimethylbenzene	5/05	12/06	20	0.5	1	µg/L
1,2-Diphenylhydrazine	2/04	8/12	18	1	1	µg/L
1,2-Trans-Dichloroethylene	2/04	8/12	34	0.5	1	µg/L
1,3-Dichlorobenzene	2/04	8/12	40	0.5	1	µg/L
1,3-trans-Dichloropropene	2/04	8/09	28	0.5	0.5	µg/L
1,4-Dichlorobenzene	2/04	8/12	53	0.5	1	µg/L
2,3,4,6,7,8-HxCDF	2/04	8/12	30	0.72	55	pg/L
2,3,4,7,8-PeCDF	2/04	8/12	30	1	55	pg/L
2,3,4-Trichlorophenol	6/05	12/06	18	5	5	µg/L
2,3,6-Trichlorophenol	6/05	12/06	18	5	5	µg/L
2,3,7,8-TCDD (Dioxin)	2/04	8/12	30	0.78	13	pg/L
2,3,7,8-TCDF	2/04	8/12	30	1.4	11	pg/L
2,4,5-TP	2/04	11/12	43	0.25	1.2	µg/L

Rio Hondo – Reach 3 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
2,4,5-Trichlorophenol	6/05	12/06	18	5	5	µg/L
2,4,6-Trichlorophenol	2/04	8/12	39	10	10	µg/L
2,4-DDD	2/04	2/09	11	0.01	0.01	µg/L
2,4-DDE	2/04	2/09	11	0.01	0.01	µg/L
2,4-DDT	2/04	2/09	11	0.01	0.01	µg/L
2,4-Dichlorophenol	2/04	8/12	24	5	5	µg/L
2,4-Dimethylphenol	2/04	8/12	24	2	2	µg/L
2,4-Dinitrophenol	2/04	8/12	18	5	5	µg/L
2,4-Dinitrotoluene	2/04	8/12	18	5	5	µg/L
2,6-Dinitrotoluene	2/04	8/12	18	5	5	µg/L
2-Chloroethylvinyl Ether	2/04	8/12	34	0.5	10	µg/L
2-Chloronaphthalene	2/04	8/12	18	10	10	µg/L
2-Chlorophenol	2/04	8/12	18	5	5	µg/L
2-Methyl-4,6-Dinitrophenol	2/04	8/12	18	5	5	µg/L
2-Nitrophenol	2/04	8/12	18	10	10	µg/L
3,3-Dichlorobenzidine	2/04	8/12	18	5	5	µg/L
3,4,5-Trichlorophenol	6/05	12/06	18	5	5	µg/L
3-Methyl-4-Chlorophenol	2/04	8/12	24	1	1	µg/L
4,4-DDD	2/04	8/12	18	0.01	0.01	µg/L
4,4-DDE	2/04	8/12	35	0.01	0.01	µg/L
4,4-DDT	2/04	8/12	35	0.01	0.01	µg/L
4-Bromophenyl Phenyl Ether	2/04	8/12	18	5	5	µg/L
4-Chlorophenyl Phenyl Ether	2/04	8/12	18	5	5	µg/L
4-Methyl-2-Pentanone	6/05	12/06	19	1	10	µg/L
4-Nitrophenol	2/04	8/12	18	10	10	µg/L
Acenaphthene	2/04	8/12	18	1	1	µg/L
Acenaphthylene	2/04	8/12	18	10	10	µg/L
Acrolein	2/04	8/12	18	2	10	µg/L
Acrylonitrile	2/04	8/12	42	2	5	µg/L
Aldrin	2/04	8/12	33	0.005	0.01	µg/L
alpha-BHC	2/04	8/12	34	0.01	0.01	µg/L
Anthracene	2/04	8/12	18	10	10	µg/L
Aroclor 1016	2/04	8/12	34	0.1	0.1	µg/L
Aroclor 1221	2/04	8/12	34	0.1	0.5	µg/L
Aroclor 1232	2/04	8/12	34	0.1	0.3	µg/L
Aroclor 1242	2/04	8/12	34	0.1	0.1	µg/L
Aroclor 1248	2/04	8/12	34	0.1	0.1	µg/L
Aroclor 1254	2/04	8/12	34	0.05	0.05	µg/L
Aroclor 1260	2/04	8/12	34	0.1	0.1	µg/L
Atrazine	6/05	12/06	19	0.5	0.5	µg/L
Bentazon	2/10	2/10	1	2.5	2.5	µg/L
Benzene	2/04	8/12	42	0.5	0.5	µg/L
Benzidine	2/04	8/12	18	5	5	µg/L
Benzo(a)Anthracene	2/04	8/12	18	5	5	µg/L
Benzo(ghi)Perylene	2/04	8/12	18	5	5	µg/L

Rio Hondo – Reach 3 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Beryllium Dissolved	8/10	11/12	10	0.25	0.25	µg/L
beta-BHC	2/04	8/12	34	0.005	0.01	µg/L
Bis(2-chloroethoxy)Methane	2/04	8/12	18	5	5	µg/L
Bis(2-chloroethyl)Ether	2/04	8/12	18	1	1	µg/L
Bis(2-chloroisopropyl)Ether	2/04	8/12	18	2	2	µg/L
Bromoethane	6/05	12/06	17	1	1	µg/L
Butylbenzyl Phthalate	2/04	8/12	18	10	10	µg/L
Carbon Tetrachloride	2/04	8/12	35	0.5	0.5	µg/L
Chlordane (Technical)	2/04	8/12	18	0.05	0.05	µg/L
Chlorobenzene	2/04	8/12	35	0.5	1	µg/L
Chloroethane	2/04	8/12	34	0.5	1	µg/L
Chlorpyrifos	11/09	2/10	2	0.05	0.05	µg/L
cis-1,3-Dichloropropene	2/04	8/09	28	0.5	0.5	µg/L
Dalapon	2/10	2/10	1	0.5	0.5	µg/L
delta-BHC	2/04	8/12	34	0.005	0.01	µg/L
Dicamba	2/10	2/10	1	0.75	0.75	µg/L
Dichlorodifluoromethane	6/05	12/06	19	0.5	1	µg/L
Dichloroprop	2/10	2/10	1	1	1	µg/L
Dieldrin	2/04	8/12	35	0.01	0.01	µg/L
Diethyl Phthalate	2/04	8/12	29	2	2	µg/L
Dimethyl Phthalate	2/04	8/12	18	2	2	µg/L
Di-n-Butyl Phthalate	2/04	8/12	18	10	10	µg/L
Di-n-Octyl Phthalate	2/04	8/12	18	10	10	µg/L
Dinoseb	2/10	2/10	1	0.5	0.5	µg/L
Endosulfan I	2/04	8/12	18	0.01	0.01	µg/L
Endosulfan II	2/04	8/12	18	0.01	0.01	µg/L
Endosulfan Sulfate	2/04	8/12	18	0.01	0.01	µg/L
Endrin	2/04	8/12	35	0.01	0.01	µg/L
Endrin Aldehyde	2/04	8/12	18	0.01	0.01	µg/L
Ethylbenzene	2/04	8/12	35	0.5	1	µg/L
Fluoranthene	2/04	8/12	33	1	1	µg/L
Fluorene	2/04	8/12	18	10	10	µg/L
Heptachlor	2/04	8/12	34	0.01	0.01	µg/L
Heptachlor Epoxide	2/04	8/12	34	0.01	0.01	µg/L
Hexachlorobenzene	2/04	8/12	18	1	1	µg/L
Hexachlorobutadiene	2/04	8/12	18	1	1	µg/L
Hexachlorocyclopentadiene	2/04	8/12	18	5	5	µg/L
Hexachloroethane	2/04	8/12	18	1	1	µg/L
Isophorone	2/04	8/12	18	1	1	µg/L
M+P-XYLENE	5/05	12/06	20	1	1	µg/L
MCPA	2/10	2/10	1	100	100	µg/L
MCPP	2/10	2/10	1	100	100	µg/L
Methoxychlor	2/04	11/12	42	0.01	0.01	µg/L
Methyl Bromide	2/04	8/12	18	0.5	0.5	µg/L
MTBE	2/04	8/12	32	0.5	1	µg/L

Rio Hondo – Reach 3 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Naphthalene	2/04	8/12	18	1	1	µg/L
Nitrobenzene	2/04	8/12	18	1	1	µg/L
N-Nitrosodi-n-Propylamine	2/04	8/12	18	5	5	µg/L
N-Nitrosodiphenylamine	2/04	8/12	18	1	1	µg/L
Pentachlorophenol	2/04	8/12	39	1	5	µg/L
Phenanthrene	2/04	8/12	33	5	5	µg/L
Phenylacetic Acid	6/05	12/06	18	20	20	µg/L
Picloram	6/05	2/10	20	0.75	2	µg/L
Pyrene	2/04	8/12	18	10	10	µg/L
RESMETHRIN	8/04	8/04	1	10	10	µg/L
Silver Dissolved	8/10	11/12	10	0.2	0.2	µg/L
Simazine	6/05	12/06	19	0.5	1	µg/L
Tetrachloroethylene	2/04	8/12	35	0.5	1	µg/L
Toxaphene	2/04	8/12	35	0.5	0.5	µg/L
Trichloroethylene	2/04	8/12	35	0.5	1	µg/L
Trichlorofluoromethane	6/05	12/06	19	0.5	10	µg/L
Vinyl Chloride	2/04	8/12	34	0.5	0.5	µg/L

Tujunga Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Beryllium Dissolved	1/05	2/06	14	0.4	0.4	µg/L
Bolstar	6/09	6/11	3	0.002	0.002	µg/L
Chlorpyrifos	6/09	6/11	3	0.001	0.001	µg/L
cis-Permethrin	6/11	6/11	1	0.005	0.005	µg/L
Cypermethrin	6/09	6/11	3	0.0005	0.001	µg/L
Deltamethrin	6/09	6/11	3	0.0005	0.005	µg/L
Demeton-S	6/09	6/11	2	0.001	0.001	µg/L
Diazinon	6/09	6/11	3	0.002	0.002	µg/L
Dichlorvos	6/09	6/11	3	0.003	0.003	µg/L
Dimethoate	6/09	7/10	2	0.002	0.003	µg/L
Disulfoton	6/09	6/11	3	0.001	0.001	µg/L
Esfenvalerate	6/09	7/10	2	0.0005	0.0005	µg/L
Ethoprop	6/09	6/11	3	0.001	0.001	µg/L
Fensulfothion	6/09	6/11	3	0.001	0.001	µg/L
Fenthion	6/09	6/11	3	0.002	0.002	µg/L
Fenvalerate	6/09	6/11	4	0.0005	0.001	µg/L
L-Cyhalothrin	6/09	6/11	3	0.0005	0.001	µg/L
Malathion	6/09	6/11	3	0.003	0.003	µg/L
Merphos	6/09	7/10	2	0.001	0.001	µg/L

Tujunga Wash – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limit		Units
				Min	Max	
Methyl Parathion	6/09	6/11	3	0.001	0.001	µg/L
Mevinphos	6/09	6/11	3	0.008	0.008	µg/L
Nitrite as N	6/09	6/11	3	0.02	0.02	mg/L
Permethrin	6/09	7/10	2	0.005	0.005	µg/L
Phorate	6/09	6/11	3	0.006	0.006	µg/L
Ronnel	6/09	6/11	3	0.002	0.002	µg/L
Tetrachlorvinphos	6/09	6/11	3	0.002	0.002	µg/L
Tokuthion	6/09	6/11	3	0.003	0.003	µg/L
trans-Permethrin	6/11	6/11	1	0.005	0.005	µg/L
Trichloronate	6/09	6/11	3	0.001	0.001	µg/L

Verdugo Wash – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
1,2,4-Trichlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
1,2-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,2-Diphenylhydrazine	10/03	2/04	6	3	3	µg/L
1,3-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
1,4-Dichlorobenzene	10/03	2/04	6	0.05	0.05	µg/L
2,4,5-TP	10/03	2/04	6	1	1	µg/L
2,4,6-Trichlorophenol	10/03	2/04	6	1	1	µg/L
2,4-D	10/03	2/04	6	10	10	µg/L
2,4-Dichlorophenol	10/03	2/04	6	2	2	µg/L
2,4-Dimethylphenol	10/03	2/04	6	2	2	µg/L
2,4-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2,4-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2,6-Dinitrotoluene	10/03	2/04	6	0.05	0.05	µg/L
2-Chloronaphthalene	10/03	2/04	6	0.1	0.1	µg/L
2-Chlorophenol	10/03	2/04	6	2	2	µg/L
2-Methyl-4,6-Dinitrophenol	10/03	2/04	6	3	3	µg/L
2-Nitrophenol	10/03	2/04	6	3	3	µg/L
3,3-Dichlorobenzidine	10/03	2/04	6	3	3	µg/L
3-Methyl-4-Chlorophenol	10/03	2/04	6	3	3	µg/L
4,4-DDD	10/03	2/04	6	0.1	0.1	µg/L
4,4-DDE	10/03	2/04	6	0.1	0.1	µg/L

Verdugo Wash – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
4,4-DDT	10/03	2/04	6	0.1	0.1	µg/L
4-Bromophenyl Phenyl Ether	10/03	2/04	6	1	1	µg/L
4-Chlorophenyl Phenyl Ether	10/03	2/04	6	0.1	0.1	µg/L
4-Nitrophenol	10/03	2/04	6	3	3	µg/L
Acenaphthene	10/03	2/04	6	0.05	0.05	µg/L
Acenaphthylene	10/03	2/04	6	0.05	0.05	µg/L
Aldrin	10/03	2/04	6	0.05	0.05	µg/L
alpha-BHC	10/03	2/04	6	0.05	0.05	µg/L
Aluminum Dissolved	10/03	2/04	6	100	100	µg/L
Anthracene	10/03	2/04	6	0.05	0.05	µg/L
Aroclor 1016	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1221	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1232	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1242	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1248	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1254	10/03	2/04	6	0.5	0.5	µg/L
Aroclor 1260	10/03	2/04	6	0.5	0.5	µg/L
Benzidine	10/03	2/04	6	3	3	µg/L
Benzo(a)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(a)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Benzo(k)Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Beryllium Dissolved	10/03	2/06	19	0.4	1	µg/L
Beryllium Total	10/03	2/06	20	0.4	1	µg/L
beta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Bis(2-chloroethoxy)Methane	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroethyl)Ether	10/03	2/04	6	0.1	0.1	µg/L
Bis(2-chloroisopropyl)Ether	10/03	2/04	6	1	1	µg/L
Butylbenzyl Phthalate	10/03	2/04	6	0.3	0.3	µg/L
Chlordane-alpha	10/03	2/04	6	0.05	0.05	µg/L
Chlordane-gamma	10/03	2/04	6	0.05	0.05	µg/L
Chromium (VI) - Dissolved	10/03	2/04	6	10	10	µg/L
Chromium (VI) - Total	10/03	2/04	6	10	10	µg/L
Chrysene	10/03	2/04	6	0.1	0.1	µg/L
delta-BHC	10/03	2/04	6	0.05	0.05	µg/L
Dibenzo(a,h)Anthracene	10/03	2/04	6	0.1	0.1	µg/L
Dieldrin	10/03	2/04	6	0.1	0.1	µg/L

Verdugo Wash – Reach 1 – Constituents that have not been detected in water

Constituent	Date Range of Available Data		N	Detection Limits		Units
				Min	Max	
Dimethyl Phthalate	10/03	2/04	6	0.5	0.5	µg/L
Di-n-Octyl Phthalate	10/03	2/04	6	1	1	µg/L
Endosulfan I	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan II	10/03	2/04	6	0.1	0.1	µg/L
Endosulfan Sulfate	10/03	2/04	6	0.1	0.1	µg/L
Endrin	10/03	2/04	6	0.1	0.1	µg/L
Endrin Aldehyde	10/03	2/04	6	0.1	0.1	µg/L
Fluoranthene	10/03	2/04	6	0.1	0.1	µg/L
Fluorene	10/03	2/04	6	0.1	0.1	µg/L
gamma-BHC (Lindane)	10/03	2/04	6	0.05	0.05	µg/L
Glyphosate	10/03	2/04	6	25	25	µg/L
Heptachlor	10/03	2/04	6	0.05	0.05	µg/L
Heptachlor Epoxide	10/03	2/04	6	0.05	0.05	µg/L
Hexachlorobenzene	10/03	2/04	6	0.5	0.5	µg/L
Hexachlorobutadiene	10/03	2/04	6	1	1	µg/L
Hexachlorocyclopentadiene	10/03	2/04	6	3	3	µg/L
Hexachloroethane	10/03	2/04	6	1	1	µg/L
Indeno(1,2,3-cd)Pyrene	10/03	2/04	6	0.1	0.1	µg/L
Naphthalene	10/03	2/04	6	0.05	0.05	µg/L
Nitrobenzene	10/03	2/04	6	0.05	0.05	µg/L
N-Nitrosodimethylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodi-n-Propylamine	10/03	2/04	6	0.3	0.3	µg/L
N-Nitrosodiphenylamine	10/03	2/04	6	0.3	0.3	µg/L
Oil + Grease	10/03	2/04	6	1	1	mg/L
Pentachlorophenol	10/03	2/04	6	2	2	µg/L
Phenanthrene	10/03	2/04	6	0.05	0.05	µg/L
Phenols (Total)	10/03	2/04	6	1	1	µg/L
Pyrene	10/03	2/04	6	0.05	0.05	µg/L
Toxaphene	10/03	2/04	6	1	1	µg/L
TPH	10/03	2/04	6	1	1	mg/L

Attachment 2. List of Constituents That Have Not Been Detected in Water and Do Not Exceed Water Quality Objectives in Water

Constituents in this attachment either did not exceed a water quality objective or there is no applicable water quality objective for the constituent.

Aliso Canyon Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	10/03	5/09	7	7	mg/L	AD	AD	27.5	356	NA	NA
Aluminum Total	10/03	2/04	6	2	µg/L	100	100	108	659	NA	NA
Ammonia as N	10/03	5/09	7	3	mg/L	0.05	0.1	0.132	0.225	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Antimony Dissolved	10/03	2/06	20	10	µg/L	2	2	0.9	5.17	NA	NA
Antimony Total	10/03	2/06	20	12	µg/L	2	2	0.91	6.38	4300	CTR HH Organism
Arsenic Dissolved	10/03	5/09	49	49	µg/L	AD	AD	0.4	6	150	CTR Chronic
Arsenic Total	10/03	5/09	49	49	µg/L	AD	AD	0.3	7.2	150	CTR Chronic
Barium Dissolved	1/05	8/08	42	42	µg/L	AD	AD	15.2	74.1	NA	NA
Barium Total	1/05	8/08	42	42	µg/L	AD	AD	51.7	145	NA	NA
BOD	10/03	2/04	6	6	mg/L	AD	AD	7.67	56.2	NA	NA
Cadmium Dissolved	10/03	5/09	49	25	µg/L	0.02	1	0.01	1.8	HBC	CTR Chronic
Cadmium Total	10/03	5/09	49	33	µg/L	0.3	1	0.01	2.19	HBC	CTR Chronic
Chloride	10/03	5/09	7	7	mg/L	AD	AD	7.26	119	150	BP SSO
Chromium Dissolved	10/03	5/09	49	45	µg/L	0.1	0.21	0.1	5.04	NA	NA
Chromium Total	10/03	5/09	49	48	µg/L	0.21	0.21	0.3	16.4	NA	NA
Cobalt Dissolved	1/05	2/06	14	10	µg/L	0.2	0.2	0.2	2	NA	NA
Cobalt Total	1/05	2/06	14	11	µg/L	0.2	0.2	0.2	2.2	NA	NA
COD	10/03	2/04	6	6	mg/L	AD	AD	18	167.5	NA	NA
Di-n-Butyl Phthalate	10/03	2/04	6	1	µg/L	1	1	1.4	1.4	12000	CTR HH Organism
Diethyl Phthalate	10/03	2/04	6	1	µg/L	0.5	0.5	2.1	2.1	23000	CTR HH Organism

Aliso Canyon Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Dissolved Organic Carbon	5/09	5/09	1	1	mg/L	AD	AD	6.94	6.94	NA	NA
Dissolved Oxygen	10/03	2/04	6	6	mg/L	AD	AD	8.4	10.98	5	BP Minimum
Enterococcus	1/02	5/09	86	85	MPN/100mL	10	10	10	170000	NA	NA
Fecal Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	200	110000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	5000	170000	NA	NA
Fluoride	10/03	2/04	6	5	mg/L	0.1	0.1	0.11	0.85	NA	NA
Hardness	10/03	5/09	49	49	mg/L	AD	AD	44.8	1150	NA	NA
Iron Dissolved	10/03	5/09	7	5	µg/L	100	100	56	754	NA	NA
Iron Total	10/03	5/09	7	7	µg/L	AD	AD	151	8000	NA	NA
Isophorone	10/03	2/04	6	1	µg/L	0.05	0.05	0.4	0.4	600	CTR HH Organism
MBAS	10/03	2/04	6	4	µg/L	50	50	52	379	NA	NA
Mercury Total	10/03	5/09	21	2	µg/L	0.022	1	0.014	0.034	0.051	CTR HH Organism
Nickel Dissolved	10/03	5/09	48	48	µg/L	AD	AD	0.1	18.3	HBC	CTR Chronic
Nickel Total	10/03	5/09	49	49	µg/L	AD	AD	0.1	32.2	HBC	CTR Chronic
Nitrate as N	10/03	5/09	7	5	mg/L	0.02	0.5	0.296	2.66	8	LAR Nutrient TMDL
Nitrate as NO3	10/03	2/04	6	5	mg/L	0.1	0.1	1.31	11.8	NA	NA
Nitrite as N	10/03	5/09	7	5	mg/L	0.02	0.03	0.043	0.898	1	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	10/03	5/09	7	6	mg/L	0.02	0.02	0.04	3.56	8	LAR Nutrient TMDL
Oil + Grease	10/03	2/04	6	1	mg/L	1	1	2.3	2.3	NA	NA
Ortho Phosphate (as P)	5/09	5/09	1	1	mg/L	AD	AD	0.05	0.05	NA	NA
pH	10/03	2/04	6	6	pH Units	AD	AD	6.67	7.98	6.5	BP Minimum
Phosphate (Total) as P	5/09	5/09	1	1	mg/L	AD	AD	0.35	0.35	NA	NA
Phosphorus	10/03	2/04	12	12	mg/L	AD	AD	0.16	0.694	NA	NA

Aliso Canyon Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Selenium Dissolved	10/03	5/09	49	46	µg/L	5	5	0.36	18.2	NA	NA
Silica	5/09	5/09	1	1	µg/L	AD	AD	28000	28000	NA	NA
Silver Dissolved	10/03	8/08	48	21	µg/L	0.06	1	0.03	0.79	HBC	CTR Chronic
Silver Total	10/03	8/08	48	23	µg/L	0.06	1	0.03	1.42	HBC	CTR Chronic
Thallium Dissolved	10/03	2/06	20	5	µg/L	1	5	1	2	NA	NA
Thallium Total	10/03	2/06	20	2	µg/L	1	5	1	5	6.3	CTR HH Organism
Total Coliform	1/02	5/09	87	87	MPN/100mL	AD	AD	740	500000	NA	NA
Total Kjeldahl Nitrogen	10/03	5/09	7	7	mg/L	AD	AD	0.778	8.16	NA	NA
Total Organic Carbon	10/03	5/09	7	7	mg/L	AD	AD	4.75	56.6	NA	NA
TPH	10/03	2/04	6	1	mg/L	1	1	1	1	NA	NA
TSS	10/03	5/09	7	7	mg/L	AD	AD	5	950	NA	NA
Turbidity	10/03	2/04	6	6	NTU	AD	AD	0.73	124	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	26	137	NA	NA
Zinc Dissolved	10/03	5/09	49	49	µg/L	AD	AD	4.63	106	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Arroyo Seco - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	10/03	6/11	12	12	mg/L	AD	AD	25.3	210	NA	NA
Aluminum Total	10/03	2/04	6	5	µg/L	100	100	103	2860	NA	NA
Ammonia as N	10/03	6/11	12	4	mg/L	0.05	0.1	0.08	2.09	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Antimony Dissolved	10/03	2/06	20	11	µg/L	2	5	0.68	3	NA	NA
Antimony Total	10/03	2/06	20	10	µg/L	2	5	0.69	5.41	4300	CTR HH Organism
Arsenic Dissolved	10/03	6/11	55	54	µg/L	0.4	0.4	0.2	4.44	150	CTR Chronic
Arsenic Total	10/03	6/11	55	54	µg/L	0.4	0.4	0.2	5.53	150	CTR Chronic
Barium Dissolved	1/05	8/08	43	43	µg/L	AD	AD	34	105	NA	NA
Barium Total	1/05	8/08	43	43	µg/L	AD	AD	38	227	NA	NA
BOD	10/03	2/04	6	6	mg/L	AD	AD	4.09	18.6	NA	NA
Cadmium Dissolved	10/03	6/11	55	19	µg/L	0.01	1	0.01	0.94	HBC	CTR Chronic
Cadmium Total	10/03	6/11	55	26	µg/L	0.01	1	0.01	2.29	HBC	CTR Chronic
Chloride	10/03	6/11	12	12	mg/L	AD	AD	4.5	139	150	BP SSO
Chromium Dissolved	10/03	6/11	55	52	µg/L	0.1	0.1	0.1	4.82	NA	NA
Chromium Total	10/03	6/11	55	53	µg/L	0.1	0.1	0.1	17	NA	NA
Cobalt Dissolved	1/05	2/06	14	6	µg/L	0.2	0.2	0.3	0.7	NA	NA
Cobalt Total	1/05	2/06	14	11	µg/L	0.2	0.2	0.2	1.9	NA	NA
COD	10/03	2/04	6	6	mg/L	AD	AD	10.5	73.9	NA	NA
Cyanide	10/03	2/04	6	3	µg/L	10	7	5	18	5.2 and 22	CTR Chronic and Acute
Di-n-Butyl Phthalate	10/03	2/04	6	1	µg/L	1	1	1.7	1.7	12000	CTR HH Organism
Diazinon	10/03	6/11	12	3	µg/L	0.002	0.01	0.036	0.07	0.17	USEPA Acute and Chronic
Diethyl Phthalate	10/03	2/04	6	1	µg/L	0.5	0.5	1.5	1.5	120000	CTR HH Organism

Arroyo Seco - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Dissolved Organic Carbon	5/09	6/11	6	6	mg/L	AD	AD	2.09	5.8	NA	NA
Dissolved Oxygen	10/03	2/04	6	6	mg/L	AD	AD	6.2	10.12	5	BP Minimum
Enterococcus	1/02	5/09	90	87	MPN/100mL	10	10	30	300000	NA	NA
Fecal Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	500	110000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	1700	500000	NA	NA
Fluoride	10/03	2/04	6	5	mg/L	0.1	0.1	0.15	0.29	NA	NA
Hardness	10/03	6/11	55	55	mg/L	AD	AD	40	475	NA	NA
Iron Dissolved	10/03	6/11	12	8	µg/L	100	100	11	928	NA	NA
Iron Total	10/03	6/11	12	12	µg/L	AD	AD	51	24400	NA	NA
Isophorone	10/03	2/04	6	1	µg/L	0.05	0.05	0.3	0.3	600	CTR HH Organism
MBAS	10/03	2/04	6	4	µg/L	50	50	65	190	NA	NA
Mercury Dissolved	10/03	6/11	26	1	µg/L	0.0036	1	0.0052	0.0052	NA	NA
Nickel Dissolved	10/03	6/11	55	54	µg/L	1	1	1	8.06	HBC	CTR Chronic
Nickel Total	10/03	6/11	55	55	µg/L	AD	AD	1	18.6	HBC	CTR Chronic
Nitrate as N	10/03	6/11	12	11	mg/L	0.5	0.5	0.25	4.8	8	LAR Nutrient TMDL
Nitrate as NO3	10/03	2/04	6	6	mg/L	AD	AD	0.1	16.3	NA	NA
Nitrogen (NO3-N+NO2-N) (Calc)	10/03	6/11	12	12	mg/L	AD	AD	0.12	6.16	8	LAR Nutrient TMDL
Oil + Grease	10/03	2/04	6	1	mg/L	1	1	2.5	2.5	NA	NA
Ortho Phosphate (as P)	5/09	6/11	6	5	mg/L	0.05	0.05	0.05	0.19	NA	NA
pH	10/03	2/04	6	6	pH Units	AD	AD	6.78	8.07	6.5	BP Minimum
Phosphate (Total) as P	5/09	6/11	6	6	mg/L	AD	AD	0.07	0.24	NA	NA
Phosphorus	10/03	2/04	12	8	mg/L	0.05	0.05	0.292	0.893	NA	NA
Selenium Dissolved	10/03	6/11	55	49	µg/L	0.2	5	0.24	2.4	NA	NA

Arroyo Seco - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Silica	5/09	6/11	6	6	µg/L	AD	AD	23500	73800	NA	NA
Silver Dissolved	10/03	8/08	49	22	µg/L	0.06	1	0.03	2	HBC	CTR Chronic
Silver Total	10/03	8/08	49	21	µg/L	0.06	1	0.03	0.71	HBC	CTR Chronic
Sulfate	10/03	6/11	12	12	mg/L	AD	AD	6.22	191	350	BP SSO
TDS	10/03	6/09	9	9	mg/L	AD	AD	70	734	1500	BP SSO
Thallium Dissolved	10/03	2/06	20	3	µg/L	1	5	1	2	NA	NA
Thallium Total	10/03	2/06	20	1	µg/L	1	5	1	1	6.3	CTR HH Organism
Total Coliform	1/02	5/09	91	89	MPN/100mL	100	100	1700	240000	NA	NA
Total Kjeldahl Nitrogen	10/03	6/11	12	12	mg/L	AD	AD	0.2	34	NA	NA
Total Organic Carbon	10/03	6/11	12	12	mg/L	AD	AD	2.12	24.6	NA	NA
TSS	10/03	6/11	11	11	mg/L	AD	AD	1.2	2169	NA	NA
Turbidity	10/03	2/04	6	6	NTU	AD	AD	0.39	359	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	10	469	NA	NA
Zinc Dissolved	10/03	4/12	56	53	µg/L	4	4	1.25	73	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Bull Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	10/03	6/10	8	8	mg/L	AD	AD	30	154	NA	NA
Aluminum Total	10/03	2/04	6	3	µg/L	100	100	338	3850	NA	NA
Ammonia as N	10/03	6/10	8	1	mg/L	0.05	0.1	1.19	1.19	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Antimony Dissolved	10/03	2/06	20	11	µg/L	2	2	0.61	4	NA	NA
Antimony Total	10/03	2/06	20	9	µg/L	2	2	0.66	3.9	4300	CTR HH Organism
Arsenic Dissolved	10/03	6/10	51	49	µg/L	5	5	0.8	8.2	150	CTR Chronic
Arsenic Total	10/03	6/10	51	49	µg/L	5	5	1.56	12.7	150	CTR Chronic
Barium Dissolved	1/05	8/08	43	43	µg/L	AD	AD	14.4	52.6	NA	NA
Barium Total	1/05	8/08	43	43	µg/L	AD	AD	22.4	341	NA	NA
Bifenthrin	6/10	6/10	2	1	µg/L	0.0005	0.0005	0.0025	0.0025	NA	NA
BOD	10/03	2/04	6	6	mg/L	AD	AD	6.48	57.6	NA	NA
Cadmium Dissolved	10/03	6/10	51	21	µg/L	0.02	1	0.01	1.53	HBC	CTR Chronic
Chloride	10/03	6/10	8	8	mg/L	AD	AD	4.99	141	150	BP SSO
Chromium Dissolved	10/03	6/10	51	47	µg/L	0.1	0.21	0.045	5.05	NA	NA
Chromium Total	10/03	6/10	51	49	µg/L	0.1	0.21	0.23	67.7	NA	NA
Cobalt Dissolved	1/05	2/06	14	12	µg/L	0.2	0.2	0.2	1.7	NA	NA
Cobalt Total	1/05	2/06	14	11	µg/L	0.2	0.2	0.3	2.2	NA	NA
COD	10/03	2/04	6	6	mg/L	AD	AD	12.8	92.6	NA	NA
Di-n-Butyl Phthalate	10/03	2/04	6	2	µg/L	1	1	1.1	1.1	12000	CTR HH Organism
Diazinon	10/03	6/10	8	2	µg/L	0.002	0.01	0.045	0.047	0.17	USEPA Acute and Chronic
Diethyl Phthalate	10/03	2/04	6	2	µg/L	0.5	0.5	1.4	1.4	120000	CTR HH Organism
Dissolved Organic Carbon	6/10	6/10	2	2	mg/L	AD	AD	8.4	9.5	NA	NA

Bull Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Dissolved Oxygen	10/03	2/04	6	6	mg/L	AD	AD	6.6	10.08	5	BP Minimum
Enterococcus	1/02	5/09	90	90	MPN/100mL	AD	AD	10	240000	NA	NA
Fecal Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	1300	50000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	8000	240000	NA	NA
Fluoride	10/03	2/04	6	6	mg/L	AD	AD	0.12	1.03	NA	NA
Hardness	10/03	6/10	51	51	mg/L	AD	AD	96	1060	NA	NA
Iron Dissolved	10/03	6/10	8	4	µg/L	5	100	8	965	NA	NA
Iron Total	10/03	6/10	8	7	µg/L	5	5	130	58000	NA	NA
Lead Dissolved	10/03	6/10	49	24	µg/L	0.11	5	0.055	8.1	HBC	CTR Chronic
MBAS	10/03	2/04	6	4	µg/L	50	50	50	304	NA	NA
Mercury Dissolved	10/03	6/10	22	3	µg/L	0.022	1	0.025	0.0468	NA	NA
Mercury Total	10/03	6/10	22	3	µg/L	0.022	1	0.031	0.0492	0.051	CTR HH Organism
Nickel Dissolved	10/03	6/10	51	51	µg/L	AD	AD	0.1	18	HBC	CTR Chronic
Nickel Total	10/03	6/10	51	50	µg/L	0.34	0.34	0.1	72	HBC	CTR Chronic
Nitrate as N	10/03	6/10	8	5	mg/L	0.5	0.5	0.07	1.27	8	LAR Nutrient TMDL
Nitrate as NO3	10/03	2/04	6	3	mg/L	0.1	0.1	3.1	5.62	NA	NA
Nitrite as N	10/03	6/10	8	4	mg/L	0.02	0.03	0.049	0.581	1	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	5/09	6/11	12	7	mg/L	0.02	0.02	0.04	0.14	8	LAR Nutrient TMDL
Oil + Grease	10/03	2/04	6	1	mg/L	1	1	1.2	1.2	NA	NA
Ortho Phosphate (as P)	6/10	6/10	2	2	mg/L	AD	AD	0.08	0.08	NA	NA
pH	10/03	2/04	6	6	pH Units	AD	AD	6.54	7.48	6.5	BP Minimum
Phosphate (Total) as P	6/10	6/10	2	2	mg/L	AD	AD	0.25	0.41	NA	NA
Phosphorus	10/03	2/04	12	10	mg/L	0.05	0.05	0.063	0.608	NA	NA

Bull Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Selenium Dissolved	10/03	6/10	51	48	µg/L	5	5	0.2	7.1	NA	NA
Selenium Total	10/03	6/10	43	43	µg/L	0.10	0.20	0.3	7.9	5	CTR Chronic (NA during wet weather)
Silica	6/10	6/10	2	2	µg/L	AD	AD	6800	6900	NA	NA
Silver Dissolved	10/03	8/08	48	22	µg/L	0.06	1	0.03	0.71	HBC	CTR Chronic
Silver Total	10/03	8/08	49	22	µg/L	0.06	1	0.03	0.65	HBC	CTR Chronic
Sulfate	10/03	6/10	8	8	mg/L	AD	AD	11.4	200	300	BP SSO LAR and tributaries, upstream SFCB
TDS	10/03	2/04	6	6	mg/L	AD	AD	172	632	950	BP SSO LAR and tributaries, upstream SFCB
Thallium Dissolved	10/03	2/06	20	1	µg/L	1	5	1	1	NA	NA
Total Coliform	1/02	5/09	91	91	MPN/100mL	AD	AD	970	280000	NA	NA
Total Kjeldahl Nitrogen	10/03	6/10	8	8	mg/L	AD	AD	0.17	11.6	NA	NA
Total Organic Carbon	10/03	6/10	8	8	mg/L	AD	AD	4.79	30.4	NA	NA
TSS	10/03	2/04	6	6	mg/L	AD	AD	360	14004	NA	NA
Turbidity	10/03	2/04	6	6	NTU	AD	AD	1.55	4920	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	82	528	NA	NA
Zinc Dissolved	10/03	6/10	50	46	µg/L	4	4	0.76	70	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,2,3,4,6,7,8-HpCDD	2/07	8/13	33	29	pg/L	1.32	3.51	1.08	32.3	NA	NA
1,2,3,4,6,7,8-HpCDF	2/07	8/13	33	4	pg/L	0.562	6.1	2.65	19.3	NA	NA
1,2,3,4,7,8-HxCDD	2/07	8/13	33	2	pg/L	0.263	3.43	0.873	1.11	NA	NA
1,2,3,4,7,8-HxCDF	2/07	8/13	33	5	pg/L	0.143	1.78	0.611	0.898	NA	NA
1,2,3,6,7,8-HxCDD	2/07	8/13	33	3	pg/L	0.352	3.66	0.701	3.25	NA	NA
1,2,3,6,7,8-HxCDF	2/07	8/13	33	4	pg/L	0.0819	7.87	0.559	0.983	NA	NA
1,2,3,7,8-PeCDD	2/07	8/13	33	4	pg/L	0.171	3.17	0.625	1.34	NA	NA
1,2,3,7,8-PeCDF	2/07	8/13	33	4	pg/L	0.207	2.95	0.65	0.803	NA	NA
1,2,3,7,8,9-HxCDD	2/07	8/13	33	6	pg/L	0.304	4.12	0.568	3.19	NA	NA
1,4-Dichlorobenzene	10/03	10/13	237	1	µg/L	0.05	0.5	0.1	0.1	2600	CTR HH Organism
1,4-Dioxane	2/07	8/13	33	26	µg/L	0.04	0.19	0.14	2.6	NA	NA
2,3,4,6,7,8-HxCDF	2/07	8/13	33	5	pg/L	0.0909	1.87	0.576	1.18	NA	NA
2,3,4,7,8-PeCDF	2/07	8/13	33	11	pg/L	0.22	5.41	0.718	2.06	NA	NA
2,3,7,8-TCDF	2/07	8/13	33	10	pg/L	0.119	1.49	0.64	1.66	NA	NA
2,4-D	10/03	8/12	31	1	µg/L	0.12	10	3.8	3.8	NA	NA
2,4,6-Trichlorophenol	10/03	8/13	141	2	µg/L	0.22	8.8	0.41	0.5	6.5	CTR HH Organism
2,6-Dinitrotoluene	10/03	8/13	141	10	µg/L	0.05	5	0.25	0.88	NA	NA
3-Methyl-4-Chlorophenol	10/03	8/13	141	2	µg/L	0.23	5	0.52	0.76	NA	NA
4-Chlorophenyl Phenyl Ether	10/03	8/13	141	1	µg/L	0.1	5	0.33	0.33	NA	NA
4-Nitrophenol	10/03	8/13	141	1	µg/L	0.45	67	2.5	2.5	NA	NA
Alkalinity	10/03	2/04	6	6	mg/L	AD	AD	30	152	NA	NA
Aluminum Total	10/03	9/11	22	17	µg/L	100	100	30	880	NA	NA

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Ammonia as N	10/03	10/13	879	849	mg/L	0.0032	0.1	0.1	2.43	pH and Temp Dependent	BP 30-Day Average (Dry)
Ammonia as N	10/03	2/12	14	11	mg/L	0.1	0.1	0.11	1.26		BP 4-Day Average (Wet)
Antimony Dissolved	10/03	2/06	32	15	µg/L	2	2	0.6	5	NA	NA
Antimony Total	10/03	8/13	99	87	µg/L	2	2	0.32	21	4300	CTR HH Organism
Arsenic Dissolved	10/03	8/08	60	58	µg/L	0.4	5	0.2	25.7	150	CTR Chronic
Arsenic Total	10/03	8/13	184	175	µg/L	0.07	5	0.23	50.5	150	CTR Chronic
Barium Dissolved	1/05	8/08	55	55	µg/L	AD	AD	23	81	NA	NA
Barium Total	1/05	8/13	125	125	µg/L	AD	AD	26	301	NA	NA
Beryllium Total	10/03	8/13	71	1	µg/L	0.022	1	0.11	0.11	NA	NA
Bis(2-chloroethoxy)Methane	10/03	8/13	141	1	µg/L	0.1	5	2	2	NA	NA
BOD	10/03	8/13	160	98	mg/L	2	3	3	23	NA	NA
Boron	1/07	8/13	115	115	mg/L	AD	AD	0.1	0.7	NA	NA
Bromide	1/08	5/11	33	13	µg/L	5	40	210	19400	NA	NA
Bromoform	2/04	10/13	231	104	µg/L	0.08	0.31	0.31	59	360	CTR HH Organism
Butylbenzyl Phthalate	10/03	8/13	141	22	µg/L	0.29	5	0.29	5.2	5200	CTR HH Organism
Cadmium Dissolved	10/03	10/13	129	98	µg/L	0.02	1	0.01	2	HBC	CTR Chronic
Calcium	1/04	6/13	39	39	µg/L	AD	AD	52000	89000	NA	NA
Chlorobenzene	2/04	10/13	231	1	µg/L	0.064	0.5	1.4	1.4	21000	CTR HH Organism
Chloroform	2/04	10/13	231	145	µg/L	0.055	0.5	0.49	20	NA	NA
Chromium (III) Total	1/07	8/13	168	168	µg/L	AD	AD	0.15	9.96	HBC	CTR Chronic

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Chromium Dissolved	10/03	8/08	61	61	µg/L	AD	AD	0.2	5.76	NA	NA
Chromium Total	10/03	8/13	276	273	µg/L	0.1	0.2	0.48	22.4	NA	NA
Chromium (VI) Total	10/03	8/13	177	158	µg/L	0.0059	10	0.068	8	11.43	CTR Chronic
Cobalt Dissolved	1/05	2/06	26	20	µg/L	0.2	0.2	0.2	1.2	NA	NA
Cobalt Total	1/05	8/06	29	25	µg/L	0.2	0.2	0.2	14.3	NA	NA
COD	10/03	8/13	123	121	mg/L	1.4	1.4	6.4	320	NA	NA
CTAS	1/07	8/13	141	49	mg/L	0.023	0.1	0.037	0.95	NA	NA
Di-n-Butyl Phthalate	10/03	8/13	141	11	µg/L	0.24	5.3	0.27	21	12000	CTR HH Organism
Di-n-Octyl Phthalate	10/03	8/13	141	3	µg/L	0.19	5	0.64	1	NA	NA
Diazinon	10/03	8/13	45	1	µg/L	0.006	0.58	0.02	0.02	0.17	USEPA Acute and Chronic
Dichlorobromomethane	2/04	10/13	231	142	µg/L	0.05	0.50	0.22	35.00	46	CTR HH Organism
Diethyl Phthalate	10/03	8/13	141	18	µg/L	0.15	2.3	0.15	2.5	120000	CTR HH Organism
Dimethyl Phthalate	10/03	8/13	141	1	µg/L	0.18	2.6	0.29	0.29	2900000	CTR HH Organism
Dissolved Organic Carbon	1/04	4/08	36	36	mg/L	AD	AD	5.6	49	NA	NA
Dissolved Oxygen	10/03	10/13	823	823	mg/L	AD	AD	5.15	15.7	5	BP Minimum
Endosulfan Sulfate	10/03	8/13	135	2	µg/L	0.0011	0.1	0.032	0.036	240	CTR HH Organism
Enterococcus	1/02	5/09	101	91	MPN/100mL	10	10	10	170000	NA	NA
Fecal Coliform	10/03	7/09	99	98	MPN/100mL	2	2	23	160000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	20	170000	NA	NA
Fluoranthene	10/03	8/13	141	1	µg/L	0.1	5	0.22	0.22	370	CTR HH Organism
Fluorene	10/03	8/13	141	1	µg/L	0.1	5	0.63	0.63	14000	CTR HH Organism
Fluoride	10/03	8/13	164	162	mg/L	0.1	0.1	0.1	1.6	NA	NA

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
gamma-BHC (Lindane)	10/03	8/13	135	1	µg/L	0.0009	0.05	0.0055	0.0055	0.063	CTR HH Organism
Glyphosate	10/03	3/07	10	1	µg/L	1.7	25	3.9	3.9	NA	NA
Hardness	10/03	10/13	363	362	mg/L	0.82	0.82	23	460	NA	NA
Iron Dissolved	10/03	2/04	6	1	µg/L	100	100	143	143	NA	NA
Iron Total	10/03	8/13	151	151	µg/L	AD	AD	28	1200	NA	NA
Lead Dissolved	10/03	10/13	160	133	µg/L	0.03	1.1	0.04	5	HBC	CTR Chronic
Magnesium	1/04	6/13	39	39	µg/L	AD	AD	18000	42000	NA	NA
Manganese Total	5/06	8/13	40	40	µg/L	AD	AD	1.3	49.6	NA	NA
MBAS	10/03	8/13	158	130	µg/L	19	100	42	2,300	NA	NA
Methyl Bromide	2/04	10/13	231	1	µg/L	0.12	1	1	1	4000	CTR HH Organism
Methylene Chloride	2/04	10/13	231	7	µg/L	0.17	1	0.17	1	1600	CTR HH Organism
Molybdenum Total	8/06	8/06	3	3	µg/L	AD	AD	15.4	21.9	NA	NA
N-Nitrosodimethylamine	10/03	8/13	141	1	µg/L	0.14	5	0.5	0.5	8.1	CTR HH Organism
Nickel Dissolved	10/03	8/08	61	61	µg/L	AD	AD	1	11	HBC	CTR Chronic
Nickel Total	10/03	8/13	177	177	µg/L	AD	AD	1.4	32	HBC	CTR Chronic
Nitrate as NO3	10/03	2/04	6	6	mg/L	AD	AD	0.83	18.2	NA	NA
Nitrogen (NO3-N+NO2-N) (Calc)	10/03	10/13	397	397	mg/L	AD	AD	0.03	14.44	8	LAR Nutrient TMDL
OCDD	2/07	8/13	33	32	pg/L	6.6	6.6	3.58	148	NA	NA
OCDF	2/07	8/13	33	24	pg/L	1.03	2.29	0.539	12.7	NA	NA
Oil + Grease	10/03	8/13	172	3	mg/L	0.88	5	1.6	3.5	NA	NA

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Organic Nitrogen	11/03	10/13	868	866	mg/L	0.5	0.5	0.02	13	NA	NA
Ortho Phosphate (as P)	1/07	8/13	133	133	mg/L	AD	AD	0.13	11	NA	NA
Pentachlorophenol	10/03	8/13	141	4	µg/L	0.19	0.95	0.95	2.1	8.2	CTR HH Organism
Perchlorate	2/07	8/13	33	3	µg/L	0.30	8.20	1.00	8.50	NA	NA
Phosphate (Total)	11/03	8/13	178	176	mg/L	0.1	0.1	0.09	12	NA	NA
Phosphorus	10/03	2/04	12	12	mg/L	AD	AD	0.229	1.99	NA	NA
Potassium	6/10	6/10	2	2	µg/L	AD	AD	10000	17000	NA	NA
Selenium Dissolved	10/03	8/08	61	58	µg/L	5	5	0.2	9	NA	NA
Silver Dissolved	10/03	8/08	60	29	µg/L	0.06	1	0.03	1.6	HBC	CTR Chronic
Silver Total	10/03	8/13	140	98	µg/L	0.027	1	0.03	2.2	HBC	CTR Chronic
Sodium	6/10	6/10	2	2	µg/L	AD	AD	98000	110000	NA	NA
Sulfate	10/03	8/13	226	226	mg/L	AD	AD	5.43	211	300	BP SSO
Temperature	10/03	10/13	842	842	°C	AD	AD	8.888889	31	NA	NA
Tetrachloroethylene	2/04	10/13	231	1	µg/L	0.11	0.93	0.93	0.93	8.85	CTR HH Organism
Thallium Dissolved	10/03	2/06	31	8	µg/L	1	5	1	14	NA	NA
THM	2/04	10/13	269	168	µg/L	1	1.2	0.4	150	NA	NA
Toluene	2/04	10/13	231	6	µg/L	0.069	0.5	0.09	0.87	200000	CTR HH Organism
Total Coliform	1/02	9/11	759	733	MPN/100mL	2	100	2	1600000	NA	NA
Total Kjeldahl Nitrogen	10/03	10/13	879	874	mg/L	0.019	0.5	0.29	13.3	NA	NA
Total Organic Carbon	10/03	8/13	79	79	mg/L	AD	AD	0.45	49	NA	NA

Burbank Western Channel - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Total Settleable Solids	1/07	8/13	171	16	mL/L	0.1	0.1	0.1	10	NA	NA
TSS	10/03	8/13	212	192	mg/L	0.1	1	1	3744	NA	NA
Turbidity	10/03	10/13	253	253	NTU	AD	AD	0.32	138	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	5	89	NA	NA

NA - No Available adopted water quality objective
HBC - Hardness Based Criteria, as defined by CTR
AD - All values reported detected, no detection limit provided
BP – Basin Plan
SSO – Site Specific Objective

Caballero Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Antimony Dissolved	1/05	2/06	14	7	µg/L	2	2	2	4	NA	NA
Antimony Total	1/05	2/06	14	5	µg/L	2	2	2	5	4300	CTR HH Organism
Arsenic Dissolved	1/05	8/08	45	45	µg/L	AD	AD	0.4	7.2	150	CTR Chronic
Arsenic Total	1/05	8/08	45	45	µg/L	AD	AD	0.7	59.8	150	CTR Chronic
Barium Dissolved	1/05	8/08	45	45	µg/L	AD	AD	14.8	50.2	NA	NA
Barium Total	1/05	8/08	45	45	µg/L	AD	AD	16	707	NA	NA
Cadmium Dissolved	1/05	8/08	45	29	µg/L	0.02	0.33	0.01	1.36	HBC	CTR Chronic
Chromium Dissolved	1/05	8/08	45	36	µg/L	0.1	0.21	0.045	3.25	NA	NA
Chromium Total	1/05	8/08	45	41	µg/L	0.1	0.21	0.045	44	NA	NA
Cobalt Dissolved	1/05	2/06	14	11	µg/L	0.2	0.2	0.2	0.9	NA	NA
Cobalt Total	1/05	2/06	14	12	µg/L	0.2	0.2	0.2	0.9	NA	NA
Enterococcus	7/04	5/09	54	54	MPN/100mL	AD	AD	20	24000	NA	NA
Hardness	1/05	8/08	45	45	mg/L	AD	AD	154	1120	NA	NA

Caballero Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Lead Dissolved	1/05	8/08	44	24	µg/L	1	1.1	0.055	9.8	HBC	CTR Chronic
Mercury Dissolved	1/05	2/06	13	1	µg/L	0.022	0.022	0.023	0.023	NA	NA
Nickel Dissolved	1/05	8/08	45	45	µg/L	AD	AD	5.81	28.7	HBC	CTR Chronic
Selenium Dissolved	1/05	8/08	45	45	µg/L	AD	AD	1	14.2	NA	NA
Silver Dissolved	1/05	8/08	45	25	µg/L	0.06	0.2	0.03	1.04	HBC	CTR Chronic
Silver Total	1/05	8/08	45	25	µg/L	0.06	0.2	0.03	2.68	HBC	CTR Chronic
Thallium Dissolved	1/05	2/06	14	2	µg/L	1	1	1	2	NA	NA
Thallium Total	1/05	2/06	14	2	µg/L	1	1	1	2	6.3	CTR HH Organism
Total Coliform	7/04	5/09	54	54	MPN/100mL	AD	AD	860	240000	NA	NA
Zinc Dissolved	1/05	8/08	44	39	µg/L	4	4	3.6	28.7	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Compton Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	6/09	6/11	4	4	mg/L	AD	AD	136	200	NA	NA
Ammonia as N	6/09	6/11	4	1	mg/L	0.05	0.05	0.05	0.05	pH and Temp Dependent	BP Not COLD or MIGR
Antimony Dissolved	2/05	2/06	13	9	µg/L	2	2	2	7	NA	NA
Antimony Total	1/05	2/06	14	10	µg/L	2	2	2	6	4300	CTR HH Organism
Arsenic Dissolved	1/05	6/11	47	47	µg/L	AD	AD	0.6	5.16	150	CTR Chronic
Arsenic Total	1/05	6/11	47	47	µg/L	AD	AD	0.6	4.22	150	CTR Chronic
Barium Dissolved	1/05	8/08	43	43	µg/L	AD	AD	15.7	98.5	NA	NA
Barium Total	1/05	8/08	43	43	µg/L	AD	AD	21.2	134	NA	NA
Beryllium Dissolved	1/05	2/06	14	1	µg/L	0.4	0.4	0.9	0.9	NA	NA
Beryllium Total	1/05	2/06	14	1	µg/L	0.4	0.4	1	1	NA	NA
Bifenthrin	6/09	6/11	4	1	µg/L	0.0005	0.001	0.005	0.005	NA	NA
Cadmium Dissolved	1/05	6/11	47	20	µg/L	0.01	0.33	0.01	0.94	HBC	CTR Chronic
Cadmium Total	1/05	6/11	47	25	µg/L	0.01	0.33	0.01	0.95	HBC	CTR Chronic
Chromium Dissolved	2/05	6/11	46	43	µg/L	0.1	0.1	0.2	4.67	NA	NA
Chromium Total	1/05	6/11	47	46	µg/L	0.1	0.1	0.2	5.97	NA	NA
Cobalt Dissolved	1/05	2/06	14	7	µg/L	0.2	0.2	0.2	0.9	NA	NA
Cobalt Total	1/05	2/06	14	11	µg/L	0.2	0.2	0.2	1.2	NA	NA
Dissolved Organic Carbon	6/09	6/11	4	4	mg/L	AD	AD	8.35	26.9	NA	NA
Enterococcus	1/02	5/09	84	79	MPN/100mL	10	10	10	24000	NA	NA
Hardness	1/05	6/13	78	78	mg/L	AD	AD	32.4	300	NA	NA
Iron Dissolved	6/09	6/11	4	4	µg/L	AD	AD	57.3	311	NA	NA
Iron Total	6/09	6/11	4	4	µg/L	AD	AD	428	1050	NA	NA

Compton Creek - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Mercury Dissolved	1/05	6/11	18	1	µg/L	0.0036	0.022	0.034	0.034	NA	NA
Nickel Dissolved	1/05	6/11	47	47	µg/L	AD	AD	1.76	15.3	HBC	CTR Chronic
Nickel Total	1/05	6/11	47	47	µg/L	AD	AD	2	18.6	HBC	CTR Chronic
Nitrogen (NO3-N+NO2-N) (Calc)	10/03	10/13	881	880	mg/L	0.02	0.02	0.03	15.00	8	LAR Nutrient TMDL
Ortho Phosphate (as P)	6/09	6/11	4	4	mg/L	AD	AD	0.17	0.59	NA	NA
Phosphate (Total) as P	6/09	6/11	4	4	mg/L	AD	AD	0.36	0.6	NA	NA
Selenium Dissolved	1/05	6/11	47	44	µg/L	0.2	0.2	0.1	1.1	NA	NA
Silica	6/09	6/11	4	4	µg/L	AD	AD	18400	53900	NA	NA
Silver Dissolved	2/05	8/08	42	23	µg/L	0.06	0.2	0.03	3	HBC	CTR Chronic
Silver Total	1/05	8/08	43	22	µg/L	0.06	0.2	0.03	9.7	HBC	CTR Chronic
Sulfate	6/09	6/11	4	4	mg/L	AD	AD	96.8	160	350	BP SSO
TDS	6/09	6/09	1	1	mg/L	AD	AD	772	772	1500	BP SSO
Thallium Dissolved	1/05	2/06	14	2	µg/L	1	1	1	5	NA	NA
Thallium Total	1/05	2/06	14	2	µg/L	1	1	1	4	6.3	CTR HH Organism
Total Coliform	1/02	5/09	85	85	MPN/100mL	AD	AD	1300	240000	NA	NA
Total Kjeldahl Nitrogen	6/09	6/11	4	4	mg/L	AD	AD	0.51	2.68	NA	NA
Total Organic Carbon	6/09	6/11	4	4	mg/L	AD	AD	8.7	27.8	NA	NA
TSS	6/09	6/11	3	3	mg/L	AD	AD	4.9	84	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Echo Park Lake - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Ammonia as N	5/03	11/10	90	53	mg/L	0.05	0.1	0.05	0.93	pH and Temp Dependent	BP 30-Day Average
Antimony Dissolved	5/03	11/10	92	46	µg/L	1.1	2	0.86	7	NA	NA
Antimony Total	5/03	11/10	93	52	µg/L	1.1	2	0.85	7	4300	CTR HH Organism
Arsenic Dissolved	5/03	11/10	93	93	µg/L	AD	AD	1.1	7.43	150	CTR Chronic
Arsenic Total	5/03	11/10	93	93	µg/L	AD	AD	1.2	8.23	150	CTR Chronic
Barium Dissolved	5/03	11/10	92	92	µg/L	AD	AD	19.8	156	NA	NA
Barium Total	5/03	11/10	93	93	µg/L	AD	AD	20.1	385	NA	NA
Beryllium Dissolved	5/03	11/10	93	15	µg/L	0.006	0.5	0.008	0.4	NA	NA
Beryllium Total	5/03	11/10	93	17	µg/L	0.006	0.5	0.007	0.2	NA	NA
BOD	5/03	11/10	93	44	mg/L	3	4	3	18	NA	NA
Cadmium Dissolved	5/03	11/10	92	31	µg/L	0.01	0.5	0.08	0.7	HBC	CTR Chronic
Chromium Dissolved	5/03	11/10	90	78	µg/L	0.1	1	0.1	4.26	NA	NA
Chromium Total	5/03	11/10	90	82	µg/L	0.1	1	0.36	3.89	NA	NA

Echo Park Lake - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Cobalt Dissolved	5/03	11/10	89	29	µg/L	0.2	0.5	0.1	0.97	NA	NA
Cobalt Total	5/03	11/10	93	47	µg/L	0.2	0.5	0.05	4	NA	NA
Dissolved Oxygen	11/02	5/11	342	342	mg/L	AD	AD	5.62	15.9	5	BP Minimum
Enterococcus	10/02	11/10	616	549	MPN/100mL	10	100	10	24000	NA	NA
Hardness	11/04	11/10	75	75	mg/L	AD	AD	104	364	NA	NA
Mercury Dissolved	5/03	11/10	93	13	µg/L	0.004	0.022	0.004	0.148	NA	NA
Nickel Dissolved	5/03	11/10	90	86	µg/L	0.24	1	1	8.8	HBC	CTR Chronic
Nickel Total	5/03	11/10	90	87	µg/L	1	1	1.32	8.8	HBC	CTR Chronic
Nitrate as N	5/03	11/10	96	48	mg/L	0.02	0.02	0.02	1.21	10	BP MUN
Nitrite as N	5/03	11/10	96	9	mg/L	0.02	0.1	0.02	0.2	1	BP MUN
Organic Nitrogen	5/03	11/10	96	93	mg/L	0.1	0.1	0.18	3.14	NA	NA
Phosphate (Total)	5/03	11/10	96	92	mg/L	0.05	0.05	0.06	0.51	NA	NA
Selenium Dissolved	5/03	11/10	93	87	µg/L	0.2	0.2	0.1	4.5	NA	NA
Selenium Total	5/03	11/10	93	88	µg/L	0.2	0.2	0.2	4.8	5	CTR Chronic

Echo Park Lake - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Silver Dissolved	5/03	11/10	90	13	µg/L	0.02	0.5	0.02	0.63	HBC	CTR Chronic
Silver Total	5/03	11/10	90	15	µg/L	0.02	0.5	0.02	0.63	HBC	CTR Chronic
Temperature	11/02	5/11	341	341	°C	AD	AD	12.1	27.6	NA	NA
Thallium Dissolved	5/03	11/10	86	31	µg/L	0.5	9	0.03	4	NA	NA
Thallium Total	5/03	11/10	89	34	µg/L	0.5	9	0.02	4.4	6.3	CTR HH Organism
Total Coliform	10/02	11/10	624	623	MPN/100mL	100	100	100	240000	NA	NA
TSS	5/03	11/10	93	93	mg/L	AD	AD	3	31	NA	NA
Turbidity	8/04	5/11	324	324	NTU	AD	AD	1.7	1346.6	NA	NA
Zinc Dissolved	5/03	11/10	89	70	µg/L	4	4	1.88	36.6	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
2-Methyl-4,6-Dinitrophenol	10/02	7/13	76	7	µg/L	1	5	3	5.2	765	CTR HH Organism
4-Methylphenol	10/04	3/05	6	1	µg/L	3	3	3	3	NA	NA
Alkalinity	10/02	7/13	109	107	mg/L	2	2	6	213	NA	NA
Aluminum Dissolved	10/02	7/13	76	28	µg/L	50	100	52.6	4750	NA	NA
Aluminum Total	10/02	7/13	76	61	µg/L	50	100	50.3	23900	NA	NA
Ammonia	10/04	7/13	58	50	mg/L	0.1	0.121	0.114	4.89	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Ammonia as N	10/02	7/13	77	61	mg/L	0.05	0.1	0.1	4.879		BP MIGR
Antimony Dissolved	2/01	7/13	137	84	µg/L	0.2	18	0.56	5	NA	NA
Antimony Total	2/01	7/13	137	90	µg/L	0.2	18	0.59	9.26	4300	CTR HH Organism
Arsenic Dissolved	2/01	7/13	167	148	µg/L	0.2	10	0.3	5	150	CTR Chronic
Arsenic Total	2/01	7/13	167	152	µg/L	0.2	10	0.8	7.99	150	CTR Chronic
Barium Dissolved	2/01	7/13	153	147	µg/L	1	1	1.05	189	NA	NA
Barium Total	2/01	7/13	154	151	µg/L	1	1	2.08	544	NA	NA
Beryllium Dissolved	2/01	7/13	137	16	µg/L	0.006	1	0.01	1	NA	NA
Beryllium Total	2/01	7/13	137	20	µg/L	0.006	1	0.019	2.4	NA	NA
Bicarbonate	10/04	12/04	4	4	µg/L	AD	AD	37600	163700	NA	NA
BOD	10/02	7/13	76	74	mg/L	1	1	2.09	198	NA	NA
Boron	10/04	3/05	12	9	mg/L	0.1	0.1	0.1	1.59	NA	NA
Cadmium Dissolved	2/01	7/13	189	72	µg/L	0.01	1	0.01	2.03	HBC	CTR Chronic
Calcium	10/04	2/08	28	28	µg/L	AD	AD	12000	94300	NA	NA
Carbonate	10/04	3/05	6	1	µg/L	2000	2000	66000	66000	NA	NA
Chloride	10/02	7/13	99	97	mg/L	1	1	6.28	161	190	BP SSO

LA River – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Chromium Dissolved	2/01	7/13	167	132	µg/L	0.5	10	0.1	13.1	NA	NA
Chromium Total	2/01	7/13	167	147	µg/L	0.21	10	0.7	47.4	NA	NA
Chromium (VI) Dissolved	10/02	7/13	76	18	µg/L	0.25	10	0.26	10	11	CTR Chronic
Chromium (VI) Total	10/02	7/13	76	15	µg/L	0.25	10	0.25	8.54	11.43	CTR Chronic
Cobalt Dissolved	2/01	2/06	58	28	µg/L	0.2	20	0.2	1.3	NA	NA
Cobalt Total	2/01	2/06	58	34	µg/L	0.24	20	0.2	24.9	NA	NA
COD	10/02	7/13	76	73	mg/L	10	10	19.4	578	NA	NA
Cyanide	10/02	7/13	73	58	µg/L	5.00	10.00	5.00	1,200.00	5.2 and 22	CTR Chronic and Acute
Di-n-Butyl Phthalate	10/02	7/13	69	1	µg/L	1	10	1	4.7	12000	CTR HH Organism
Diethyl Phthalate	10/02	7/13	76	1	µg/L	0.5	2	0.5	0.9	120000	CTR HH Organism
Dimethyl Phthalate	10/02	7/13	76	1	µg/L	0.5	2	0.5	1.6	2900000	CTR HH Organism
Dissolved Organic Carbon	3/06	6/10	23	23	mg/L	AD	AD	6.2	12.57	NA	NA
Enterococcus	2/01	7/13	354	348	MPN/100mL	10	100	10	9000000	NA	NA
Fecal Coliform	10/02	7/13	73	71	MPN/100mL	20	20	20	24000000	NA	NA
Fecal Streptococcus	10/02	7/13	73	71	MPN/100mL	20	20	20	9000000	NA	NA
Fluoranthene	10/02	7/13	76	1	µg/L	0.017	0.1	0.1	0.503	370	CTR HH Organism
Fluoride	10/02	7/13	76	70	mg/L	0.1	0.1	0.1	0.892	NA	NA
Hardness	10/02	7/13	188	187	mg/L	2	2	5	434	NA	NA
Iron Dissolved	10/02	7/13	77	49	µg/L	50	100	18	3830	NA	NA
Iron Total	10/02	7/13	77	76	µg/L	100	100	51.9	33200	NA	NA
Magnesium	10/04	2/08	28	28	µg/L	AD	AD	2430	38400	NA	NA
Manganese Total	10/04	3/05	6	4	µg/L	30	30	30.4	228	NA	NA
MBAS	10/02	7/13	76	72	µg/L	10.00	50.00	16.00	2180	NA	NA
Mercury Dissolved	6/01	7/13	133	22	µg/L	0.0036	1	0.006	1	NA	NA

LA River – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
MTBE	10/05	7/13	56	4	µg/L	0.33	1	1	1	NA	NA
Nickel Dissolved	2/01	7/13	167	139	µg/L	0.5	20	1	31	HBC	CTR Chronic
Nickel Total	2/01	6/10	114	96	µg/L	5	20	3.1	49	HBC	CTR Chronic
Nitrate as N	10/02	7/13	77	64	mg/L	0.03	0.5	0.23	6.75	8	LAR Nutrient TMDL
Nitrate as N	10/02	7/13	77	64	mg/L	0.03	0.5	0.23	6.75	8	LAR Nutrient TMDL
Nitrate as NO3	10/02	7/13	76	63	mg/L	0.1	0.1	0.24	29.9	NA	NA
Nitrogen (NO3-N+NO2-N) (Calc)	5/03	11/10	96	48	mg/L	0.02	0.02	0.02	1.21	5/03	LAR Nutrient TMDL
Oil + Grease	10/02	7/13	73	39	mg/L	0.4	1.44	0.8	11.9	NA	NA
Ortho Phosphate (as P)	6/10	6/10	1	1	mg/L	AD	AD	0.15	0.15	NA	NA
Phenols (Total)	10/02	7/13	126	13	µg/L	0.33	100	1	120	4600000	CTR HH Organism
Phosphate (Total) as P	6/10	6/10	1	1	mg/L	AD	AD	0.34	0.34	NA	NA
Phosphorus	10/02	7/13	151	143	mg/L	0.05	0.05	0.057	8.24	NA	NA
Potassium	10/04	2/08	28	28	µg/L	AD	AD	1960	28300	NA	NA
Pyrene	10/02	7/13	76	1	µg/L	0.017	0.05	0.05	0.413	11000	CTR HH Organism
Selenium Dissolved	2/01	7/13	167	126	µg/L	0.2	30	0.2	6.85	NA	NA
Silica	6/10	6/10	1	1	µg/L	AD	AD	19700	19700	NA	NA
Silver Dissolved	11/02	7/13	164	22	µg/L	0.06	5	0.03	10.8	HBC	CTR Chronic
Silver Total	3/01	7/13	164	57	µg/L	0.06	5	0.03	10.9	HBC	CTR Chronic
Sodium	10/04	2/08	28	28	µg/L	AD	AD	12300	130000	NA	NA
Sulfate	10/02	7/13	99	98	mg/L	0.1	0.1	0.42	265	350	BP SSO
Sulfide	3/06	2/08	22	2	µg/L	30	30	40	40	NA	NA
TDS	10/02	7/13	76	74	mg/L	1	1	70	780	1500	BP SSO
Temperature	3/06	2/08	22	22	°C	AD	AD	12	31	NA	NA

LA River – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Thallium Dissolved	2/01	7/13	137	15	µg/L	0.1	25	0.9	17	NA	NA
Total Coliform	2/01	7/13	418	418	MPN/100mL	AD	AD	20	90000000	NA	NA
Total Kjeldahl Nitrogen	10/02	7/13	77	77	mg/L	AD	AD	0.12	30.68	NA	NA
Total Organic Carbon	10/02	7/13	77	75	mg/L	0.4	0.5	1.56	57.1	NA	NA
TPH	10/02	7/13	73	26	mg/L	0.4	5	0.62	4.75	NA	NA
TSS	10/02	7/13	143	141	mg/L	1	1	1	2280	NA	NA
Turbidity	10/02	7/13	76	76	NTU	AD	AD	0.15	211	NA	NA
Vanadium Total	2/01	2/01	1	1	µg/L	AD	AD	6.2	6.2	NA	NA
Volatile Suspended Solids	10/02	7/13	76	74	mg/L	1	1	3	608	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	3/06	6/10	46	46	mg/L	AD	AD	50	212	NA	NA
Antimony Dissolved	1/01	2/06	123	31	µg/L	1.1	18	1.1	13.8	NA	NA
Antimony Total	1/01	2/06	123	37	µg/L	1.1	18	1.2	7.1	4300	CTR HH Organism
Arsenic Dissolved	2/01	6/10	181	163	µg/L	0.4	10	0.6	8.4	150	CTR Chronic
Arsenic Total	2/01	6/10	182	165	µg/L	0.4	10	0.6	9.5	150	CTR Chronic
Barium Dissolved	2/01	8/08	178	178	µg/L	AD	AD	12.4	123	NA	NA
Barium Total	2/01	8/08	178	178	µg/L	AD	AD	13.9	375	NA	NA
Beryllium Dissolved	1/01	2/06	123	14	µg/L	0.006	1	0.02	0.85	NA	NA
Beryllium Total	1/01	2/06	123	16	µg/L	0.006	1	0.02	1.2	NA	NA
Bifenthrin	6/09	6/10	2	2	µg/L	AD	AD	0.0035	0.0051	NA	NA
Cadmium Dissolved	1/01	6/10	183	61	µg/L	0.02	1	0.01	1.6	HBC	CTR Chronic
Calcium	3/06	2/08	44	44	µg/L	AD	AD	32000	95500	NA	NA
Chloride	3/06	6/10	46	46	mg/L	AD	AD	23.6	145	190	BP SSO
Chromium Dissolved	1/01	6/10	183	140	µg/L	0.7	10	0.1	11.5	NA	NA
Chromium Total	1/01	6/10	183	154	µg/L	0.7	10	0.4	53.9	NA	NA
Cobalt Dissolved	1/01	2/06	117	53	µg/L	0.2	20	0.2	2.2	NA	NA
Cobalt Total	1/01	2/06	117	58	µg/L	0.2	20	0.2	24.7	NA	NA
Cypermethrin	6/09	6/10	2	1	µg/L	0.0005	0.0005	0.0071	0.0071	NA	NA
Dissolved Organic Carbon	3/06	6/10	46	46	mg/L	AD	AD	5.55	15	NA	NA
Enterococcus	1/01	5/09	563	540	MPN/100mL	10	100	10	24000	NA	NA
Hardness	1/04	6/13	230	230	mg/L	AD	AD	38.3	456	NA	NA
Iron Dissolved	6/09	6/10	2	2	µg/L	AD	AD	18	61	NA	NA
Iron Total	6/09	6/10	2	2	µg/L	AD	AD	439	772	NA	NA
Magnesium	3/06	2/08	44	44	µg/L	AD	AD	11700	39700	NA	NA

LA River – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Mercury Dissolved	1/01	6/10	117	30	µg/L	0.0036	0.3	0.006	0.19	NA	NA
Nickel Dissolved	1/01	6/10	182	144	µg/L	5	20	1	30.1	HBC	CTR Chronic
Nickel Total	1/01	6/10	183	153	µg/L	5	20	2	58.5	HBC	CTR Chronic
Nitrate as N	6/09	6/10	2	2	mg/L	AD	AD	2.37	3.93	8	LAR Nutrient TMDL
Nitrite as N	6/09	6/10	2	1	mg/L	0.02	0.02	0.11	0.11	1	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	10/02	7/13	77	72	mg/L	0.03	0.50	0.03	6.75	8	LAR Nutrient TMDL
Ortho Phosphate (as P)	6/09	6/10	2	2	mg/L	AD	AD	0.19	0.48	NA	NA
Phosphate (Total) as P	6/09	6/10	2	2	mg/L	AD	AD	0.34	0.61	NA	NA
Potassium	3/06	2/08	44	44	µg/L	AD	AD	6180	24600	NA	NA
Selenium Dissolved	1/01	6/10	183	172	µg/L	1	30	0.2	4.19	NA	NA
Selenium Total	1/01	6/10	183	172	µg/L	1	30	0.2	4.45	5	CTR Chronic
Silica	6/09	6/10	2	2	µg/L	AD	AD	16300	16300	NA	NA
Silver Dissolved	1/01	8/08	175	48	µg/L	0.06	5	0.03	2.5	HBC	CTR Chronic
Silver Total	1/01	8/08	177	51	µg/L	0.06	5	0.03	5	HBC	CTR Chronic
Sodium	3/06	2/08	44	44	µg/L	AD	AD	25000	124000	NA	NA
Sulfate	3/06	6/10	46	46	mg/L	AD	AD	65.3	264	350	BP SSO
Sulfide	3/06	2/08	43	2	µg/L	30	30	30	40	NA	NA
TDS	6/09	6/09	1	1	mg/L	AD	AD	626	626	1500	BP SSO
Temperature	3/06	2/08	44	44	°C	AD	AD	11.1	28.7	NA	NA
Thallium Dissolved	1/01	2/06	123	10	µg/L	0.5	25	0.8	7.8	NA	NA
Total Coliform	1/01	9/11	629	629	MPN/100mL	AD	AD	520	240000	NA	NA
Total Kjeldahl Nitrogen	6/09	6/10	2	2	mg/L	AD	AD	2.21	2.4	NA	NA
Total Organic Carbon	6/09	6/10	2	2	mg/L	AD	AD	6.48	7.85	NA	NA

LA River – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
TSS	3/06	6/09	45	45	mg/L	AD	AD	6	162	NA	NA
Vanadium Total	2/01	2/01	2	1	µg/L	5	5	8.6	8.6	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 3, Above LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,2-Dichlorobenzene	2/02	9/13	24	3	µg/L	0.06	1.5	0.16	0.2	17000	CTR HH Organism
1,2,3,4,6,7,8-HpCDD	8/07	9/13	13	1	pg/L	4.5	57	230	230	NA	NA
1,4-Dioxane	8/07	9/13	13	13	µg/L	AD	AD	0.28	1	NA	NA
2,4-DDD	3/02	2/07	11	1	µg/L	0.001	0.01	0.003	0.003	NA	NA
2,4,6-Trichlorophenol	2/02	9/13	24	1	µg/L	0.09	6.9	0.16	0.16	6.5	CTR HH Organism
Alkalinity	3/06	5/09	23	23	mg/L	AD	AD	62	418	NA	NA
Antimony Dissolved	1/01	2/06	73	23	µg/L	1.1	18	1.2	6	NA	NA
Antimony Total	1/01	8/13	99	51	µg/L	1.1	18	0.42	7	4300	CTR HH Organism
Arsenic Dissolved	2/01	5/09	102	94	µg/L	0.4	10	0.8	40.1	150	CTR Chronic
Arsenic Total	2/01	8/13	149	140	µg/L	0.06	10	0.9	5.6	150	CTR Chronic
Barium Dissolved	2/01	8/08	100	100	µg/L	AD	AD	0.69	103.03	NA	NA

LA River – Reach 3, Above LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Barium Total	2/01	8/08	100	100	µg/L	AD	AD	7.83	168	NA	NA
Benzo(ghi)Perylene	2/02	9/13	24	1	µg/L	0.03	1.7	0.09	0.09	NA	NA
Beryllium Dissolved	1/01	2/06	73	9	µg/L	0.006	1	0.008	0.831	NA	NA
Beryllium Total	1/01	8/13	99	15	µg/L	0.006	1	0.01	9	NA	NA
Bis(2-chloroisopropyl)Ether	2/02	9/13	24	1	µg/L	0.05	3	0.21	0.21	170000	CTR HH Organism
BOD	2/02	11/13	48	45	mg/L	3	3	3	51	NA	NA
Boron	5/07	8/13	27	27	mg/L	AD	AD	0.249	0.8	NA	NA
Butylbenzyl Phthalate	2/02	9/13	24	1	µg/L	0.04	3	0.1	0.1	5200	CTR HH Organism
Cadmium Dissolved	1/01	5/09	103	34	µg/L	0.02	1	0.01	1.08	HBC	CTR Chronic
Cadmium Total	1/01	8/13	167	75	µg/L	0.02	1	0.002	4.56	HBC	CTR Chronic
Calcium	3/06	2/08	22	22	µg/L	AD	AD	43700	107000	NA	NA
Chloride	2/02	11/13	72	72	mg/L	AD	AD	35.9	169.52	190	BP SSO
Chlorodibromomethane	8/07	8/13	14	1	µg/L	0.05	0.18	0.12	0.12	34	CTR HH Organism
Chloroform	8/07	8/13	14	10	µg/L	0.06	0.13	0.13	0.95	NA	NA
Chromium (III) Total	5/11	8/13	10	10	µg/L	AD	AD	0.2	2.61	HBC	CTR Chronic
Chromium Dissolved	1/01	5/09	103	67	µg/L	0.1	10	0.1	6.2	NA	NA
Chromium Total	1/01	8/13	151	130	µg/L	0.1	10	0.2	142	NA	NA
Chromium (VI) Total	5/07	11/13	27	3	µg/L	0.5	2	0.5	0.8	11.43	CTR Chronic
Cobalt Dissolved	1/01	2/06	70	33	µg/L	0.2	20	0.2	3.22	NA	NA
Cobalt Total	1/01	2/06	70	39	µg/L	0.2	20	0.2	6.8	NA	NA
COD	5/07	11/13	27	26	mg/L	10	10	12	49	NA	NA

LA River – Reach 3, Above LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
CTAS	5/07	9/13	26	13	mg/L	0.02	0.1	0.047	0.45	NA	NA
Di-n-Butyl Phthalate	2/02	9/13	24	9	µg/L	0.07	3	0.12	0.56	12000	CTR HH Organism
Dichlorobromomethane	8/07	8/13	14	5	µg/L	0.06	0.12	0.08	0.21	46	CTR HH Organism
Diethyl Phthalate	2/02	9/13	24	2	µg/L	0.06	3	0.12	0.18	120000	CTR HH Organism
Dissolved Organic Carbon	3/06	5/09	23	23	mg/L	AD	AD	6.58	11.8	NA	NA
Dissolved Oxygen	1/02	11/13	575	575	mg/L	AD	AD	5.04	16.6	5	BP Minimum
Endosulfan I	3/02	8/13	24	1	µg/L	0.001	0.008	0.002	0.002	0.056	CTR Chronic
Enterococcus	1/01	5/09	287	285	MPN/100mL	10	100	10	24000	NA	NA
Fecal Coliform	1/02	7/12	503	501	MPN/100mL	9	9	9	53000	NA	NA
Fluoride	5/07	11/13	28	27	mg/L	0.02	0.02	0.32	0.88	NA	NA
gamma-BHC (Lindane)	3/02	8/13	24	2	µg/L	0.001	0.017	0.003	0.007	0.063	CTR HH Organism
Hardness	2/02	8/13	146	146	mg/L	AD	AD	141	448	NA	NA
Iron Dissolved	5/09	5/09	1	1	µg/L	AD	AD	56	56	NA	NA
Iron Total	5/09	5/09	1	1	µg/L	AD	AD	1510	1510	NA	NA
Isophorone	2/02	9/13	24	4	µg/L	0.07	4	0.1	0.21	600	CTR HH Organism
Magnesium	3/06	2/08	22	22	µg/L	AD	AD	21900	46200	NA	NA
MBAS	2/02	11/13	48	48	µg/L	AD	AD	40	350	NA	NA
Mercury Dissolved	1/01	5/09	69	14	µg/L	0.004	0.3	0.006	0.176	NA	NA
MTBE	2/02	8/13	34	4	µg/L	0.08	0.2	0.44	1.28	NA	NA
Nickel Dissolved	1/01	5/09	103	85	µg/L	5	20	1.02	107	HBC	CTR Chronic
Nitrate as N	2/02	11/13	345	345	mg/L	AD	AD	0.97	5.86	8	LAR Nutrient TMDL

LA River – Reach 3, Above LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Nitrogen (NO3-N+NO2-N) (Calc)	6/09	6/10	2	2	mg/L	AD	AD	2.37	4.04	8	LAR Nutrient TMDL
OCDD	8/07	9/13	13	2	pg/L	26	120	150	1400	NA	NA
Oil + Grease	2/02	11/13	48	6	mg/L	3	3	3	6	NA	NA
Organic Nitrogen	2/02	11/13	342	341	mg/L	0.1	0.1	0.12	5.09	NA	NA
Ortho Phosphate (as P)	5/07	11/13	28	28	mg/L	AD	AD	0.07	0.75	NA	NA
Perchlorate	8/07	9/13	13	1	µg/L	0.2	1.6	0.62	0.62	NA	NA
Phosphate (Total) as P	5/09	5/09	1	1	mg/L	AD	AD	0.35	0.35	NA	NA
Phosphorus	2/02	11/13	48	48	mg/L	AD	AD	0.15	2.19	NA	NA
Potassium	3/06	2/08	22	22	µg/L	AD	AD	11800	16800	NA	NA
Selenium Dissolved	1/01	5/09	103	97	µg/L	1	30	0.3	5	NA	NA
Silica	5/09	5/09	1	1	µg/L	AD	AD	13800	13800	NA	NA
Silver Dissolved	1/01	8/08	100	23	µg/L	0.06	5	0.03	0.8	HBC	CTR Chronic
Silver Total	1/01	8/13	126	52	µg/L	0.06	5	0.02	4	HBC	CTR Chronic
Sodium	3/06	2/08	22	22	µg/L	AD	AD	34800	128000	NA	NA
Sulfide	3/06	2/08	22	2	µg/L	30	30	30	40	NA	NA
TDS	2/02	8/13	49	49	mg/L	AD	AD	434	910	950	BP SSO
Temperature	1/02	11/13	597	597	°C	AD	AD	4.444444	26.11111	NA	NA
Tetrachloroethylene	3/07	11/13	39	1	µg/L	0.09	1.3	1.3	1.3	8.85	CTR HH Organism
Thallium Dissolved	1/01	2/06	71	8	µg/L	0.5	25	0.9	6	NA	NA

LA River – Reach 3, Above LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Toluene	8/07	8/13	14	6	µg/L	0.06	0.15	0.31	0.5	200000	CTR HH Organism
Total Coliform	1/01	9/12	864	863	MPN/100mL	100	100	180	240000	NA	NA
Total Kjeldahl Nitrogen	5/09	5/09	1	1	mg/L	AD	AD	2.8	2.8	NA	NA
Total Organic Carbon	2/02	11/13	49	49	mg/L	AD	AD	5.56	18	NA	NA
Total Settleable Solids	5/07	11/13	26	6	mL/L	0.1	0.1	0.1	0.9	NA	NA
TSS	3/06	11/13	50	50	mg/L	AD	AD	1.6	378	NA	NA
Turbidity	2/02	9/13	47	47	NTU	AD	AD	0.4	16.9	NA	NA
Vanadium Total	2/01	2/01	1	1	µg/L	AD	AD	9.1	9.1	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 3, Below LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,1-Dichloroethylene	8/07	8/13	16	9	µg/L	AD	AD	0.3	0.79	3.2	CTR HH Organism
1,2-Dichlorobenzene	2/02	9/13	37	3	µg/L	0.06	1.5	0.18	0.29	17000	CTR HH Organism
1,2-Trans-Dichloroethylene	8/07	8/13	16	2	µg/L	0.07	0.2	0.2	0.26	140000	CTR HH Organism
1,2,3,4,6,7,8-HpCDD	8/07	9/13	13	1	pg/L	3.9	50	85	85	NA	NA

LA River – Reach 3, Below LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,4-Dioxane	8/07	9/13	15	15	µg/L	AD	AD	0.2	1.216	NA	NA
2,4-DDD	3/02	2/07	22	1	µg/L	0.001	0.01	0.003	0.003	NA	NA
2,4,6-Trichlorophenol	2/02	9/13	37	3	µg/L	0.09	6.9	0.12	0.18	6.5	CTR HH Organism
Alkalinity	3/06	2/08	22	22	mg/L	AD	AD	58	220	NA	NA
alpha-BHC	3/02	9/13	37	1	µg/L	0.001	0.004	0.003	0.003	0.013	CTR HH Organism
Anthracene	2/02	9/13	37	1	µg/L	0.06	1.6	0.13	0.13	110000	CTR HH Organism
Antimony Dissolved	1/01	2/06	62	16	µg/L	1.1	18	2	5	NA	NA
Antimony Total	1/01	8/13	93	48	µg/L	1.1	18	0.37	5.3	4300	CTR HH Organism
Arsenic Dissolved	2/01	8/08	90	81	µg/L	0.4	10	0.7	5.4	150	CTR Chronic
Arsenic Total	2/01	8/13	163	151	µg/L	0.06	10	0.41	5.4	150	CTR Chronic
Barium Dissolved	2/01	8/08	88	88	µg/L	AD	AD	9.92	50	NA	NA
Barium Total	2/01	8/08	89	89	µg/L	AD	AD	12.3	362	NA	NA
Benzo(ghi)Perylene	2/02	9/13	37	2	µg/L	0.03	1.7	0.06	0.07	NA	NA
Beryllium Dissolved	1/01	2/06	62	8	µg/L	0.006	1	0.006	0.817	NA	NA
Beryllium Total	1/01	8/13	93	12	µg/L	0.006	1	0.011	1.4	NA	NA
Bis(2-chloroisopropyl)Ether	2/02	9/13	37	1	µg/L	0.05	3	0.2	0.2	170000	CTR HH Organism
BOD	2/02	11/13	74	69	mg/L	3	3	3	41	NA	NA
Boron	5/07	8/13	32	32	mg/L	AD	AD	0.252	0.706	NA	NA
Cadmium Dissolved	1/01	8/08	91	31	µg/L	0.02	1	0.01	1.2	HBC	CTR Chronic
Calcium	3/06	2/08	22	22	µg/L	AD	AD	37600	95800	NA	NA
Carbon Tetrachloride	8/07	8/13	16	1	µg/L	0.09	0.27	0.23	0.23	4.4	CTR HH Organism
Chloride	2/02	11/13	97	97	mg/L	AD	AD	29.5	164	190	BP SSO

LA River – Reach 3, Below LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Chlorodibromomethane	8/07	8/13	16	9	µg/L	AD	AD	0.13	0.74	34	CTR HH Organism
Chloroform	8/07	8/13	16	15	µg/L	0.06	0.06	0.3	3.53	NA	NA
Chromium (III) Total	2/10	8/13	14	14	µg/L	AD	AD	0.1	2.5	HBC	CTR Chronic
Chromium Dissolved	1/01	8/08	91	61	µg/L	0.1	10	0.2	5.6	NA	NA
Chromium Total	1/01	8/13	165	142	µg/L	0.7	10	0.4	29.2	NA	NA
Chromium (VI) Total	5/07	11/13	32	22	µg/L	0.5	2	0.5	1.9	11.43	CTR Chronic
Cobalt Dissolved	1/01	2/06	59	25	µg/L	0.2	20	0.2	1.4	NA	NA
Cobalt Total	1/01	2/06	59	31	µg/L	0.2	20	0.2	24.2	NA	NA
COD	5/07	11/13	32	31	mg/L	10	10	12	34	NA	NA
CTAS	5/07	9/13	31	12	mg/L	0.02	0.1	0.072	0.34	NA	NA
Di-n-Butyl Phthalate	2/02	9/13	37	16	µg/L	0.07	3	0.15	0.69	12000	CTR HH Organism
Di-n-Octyl Phthalate	2/02	9/13	37	1	µg/L	0.15	2.5	0.15	0.15	NA	NA
Diethyl Phthalate	2/02	9/13	37	2	µg/L	0.06	3	0.24	0.94	120000	CTR HH Organism
Dissolved Organic Carbon	3/06	2/08	22	22	mg/L	AD	AD	6.89	15.8	NA	NA
Enterococcus	1/01	5/09	282	275	MPN/100mL	10	100	10	24000	NA	NA
Fecal Coliform	1/02	7/12	824	821	MPN/100mL	9	9	9	80000	NA	NA
Fluoranthene	2/02	9/13	37	1	µg/L	0.02	1.3	0.17	0.17	370	CTR HH Organism
Fluoride	5/07	11/13	33	32	mg/L	0.02	0.02	0.23	0.84	NA	NA
gamma-BHC (Lindane)	3/02	9/13	37	3	µg/L	0.001	0.017	0.004	0.005	0.063	CTR HH Organism
Hardness	2/02	8/13	184	184	mg/L	AD	AD	43.2	443	NA	NA
Isophorone	2/02	9/13	37	5	µg/L	0.07	4	0.13	0.35	600	CTR HH Organism
Magnesium	3/06	2/08	22	22	µg/L	AD	AD	14300	39800	NA	NA

LA River – Reach 3, Below LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
MBAS	2/02	11/13	73	73	µg/L	AD	AD	20	360	NA	NA
Mercury Dissolved	1/01	2/06	58	13	µg/L	0.02	0.3	0.02	0.22	NA	NA
MTBE	2/02	8/13	58	8	µg/L	0.08	0.2	0.33	4.167	NA	NA
Nickel Dissolved	1/01	8/08	91	71	µg/L	5	20	3	44.7	HBC	CTR Chronic
Nickel Total	1/01	8/13	164	141	µg/L	5	20	2	56.4	HBC	CTR Chronic
Nitrate as N	2/02	11/13	438	438	mg/L	AD	AD	0.99	6.22	8	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	2/02	11/13	345	345	mg/L	AD	AD	1.23	5.98	8	LAR Nutrient TMDL
OCDD	8/07	9/13	13	3	pg/L	21	120	140	1100	NA	NA
Oil + Grease	5/02	11/13	67	3	mg/L	3	3	3	8	NA	NA
Organic Nitrogen	2/02	11/13	436	435	mg/L	0.1	0.1	0.28	4.3	NA	NA
Ortho Phosphate (as P)	5/07	11/13	32	32	mg/L	AD	AD	0.07	1.12	NA	NA
Perchlorate	8/07	9/13	15	1	µg/L	0.2	1.6	2.7	2.7	NA	NA
Phenanthrene	2/02	9/13	37	1	µg/L	0.01	1.5	0.18	0.18	NA	NA
Phosphorus	2/02	11/13	74	74	mg/L	AD	AD	0.15	2.48	NA	NA
Potassium	3/06	2/08	22	22	µg/L	AD	AD	7720	24100	NA	NA
Selenium Dissolved	1/01	8/08	90	84	µg/L	1	30	0.4	4.74	NA	NA
Selenium Total	1/01	8/13	121	115	µg/L	1	30	0.4	4.66	5	CTR Chronic
Silver Dissolved	1/01	8/08	88	21	µg/L	0.06	5	0.03	0.57	HBC	CTR Chronic
Silver Total	1/01	8/13	120	48	µg/L	0.06	5	0.02	3	HBC	CTR Chronic

LA River – Reach 3, Below LAG - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Sodium	3/06	2/08	22	22	µg/L	AD	AD	30600	129000	NA	NA
Sulfate	2/02	11/13	97	97	mg/L	AD	AD	69.8	274	300	BP SSO
TDS	2/02	8/13	75	75	mg/L	AD	AD	496	944	950	BP SSO
Temperature	1/02	11/13	920	920	°C	AD	AD	7.222222	27.77778	NA	NA
Tetrachloroethylene	3/07	11/13	57	34	µg/L	0.09	0.36	0.36	1.92	8.85	CTR HH Organism
Thallium Dissolved	1/01	2/06	62	3	µg/L	0.5	25	1	1	NA	NA
Toluene	8/07	8/13	16	5	µg/L	0.06	0.15	0.18	0.28	200000	CTR HH Organism
Total Coliform	1/01	9/12	1181	1181	MPN/100mL	AD	AD	63	240000	NA	NA
Total Organic Carbon	2/02	11/13	74	74	mg/L	AD	AD	4.8	15	NA	NA
Total Settleable Solids	5/07	11/13	30	5	mL/L	0.1	0.1	0.1	0.4	NA	NA
Trichloroethylene	8/07	8/13	16	13	µg/L	AD	AD	6.81	16.6	81	CTR HH Organism
TSS	3/06	11/13	54	54	mg/L	AD	AD	1.8	157	NA	NA
Turbidity	2/02	9/13	73	73	NTU	AD	AD	0.6	10	NA	NA
Vanadium Total	2/01	2/01	1	1	µg/L	AD	AD	8.9	8.9	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 4 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,4-Dioxane	8/07	8/13	16	13	µg/L	0.15	0.19	0.36	1.28	NA	NA
2,4,6-Trichlorophenol	2/02	8/13	38	1	µg/L	0.09	6.9	0.16	0.16	6.5	CTR HH Organism
Alkalinity	3/06	6/11	38	38	mg/L	AD	AD	66	248	NA	NA
Antimony Dissolved	1/01	2/06	124	31	µg/L	1.1	18	1.2	12.7	NA	NA
Antimony Total	1/01	8/13	140	54	µg/L	1.1	18	0.4	11.2	4300	CTR HH Organism
Arsenic Dissolved	2/01	6/11	172	157	µg/L	0.4	10	0.1	31.6	150	CTR Chronic
Arsenic Total	2/01	8/13	230	213	µg/L	0.4	10	0.1	54.1	150	CTR Chronic
Barium Dissolved	2/01	8/08	169	168	µg/L	0.4	0.4	2.04	58	NA	NA
Barium Total	2/01	8/08	169	168	µg/L	0.4	0.4	5	500	NA	NA
Benzene	8/07	8/13	16	1	µg/L	0.07	0.22	0.24	0.24	71	CTR HH Organism
Beryllium Dissolved	1/01	2/06	124	15	µg/L	0.006	1	0.045	0.9	NA	NA
Beryllium Total	1/01	8/13	140	19	µg/L	0.006	1	0.02	2.1	NA	NA
Bis(2-ethylhexyl)Phthalate	2/02	8/13	46	17	µg/L	0.30	1.90	0.31	4.06	5.9	CTR HH Organism
BOD	2/02	11/13	76	76	mg/L	AD	AD	3	225	NA	NA
Boron Total	5/07	8/13	36	36	mg/L	AD	AD	0.293	0.829	NA	NA
Bromoform	8/07	8/13	16	1	µg/L	0.04	0.19	0.26	0.26	360	CTR HH Organism
Cadmium Dissolved	1/01	6/11	174	61	µg/L	0.02	1	0.01	2.12	HBC	CTR Chronic
Calcium	3/06	2/08	37	37	µg/L	AD	AD	39000	108000	NA	NA
Chloride	2/02	11/13	114	114	mg/L	AD	AD	30.7	166	190	BP SSO
Chlorodibromomethane	8/07	8/13	16	13	µg/L	0.11	0.22	0.22	1.15	34	CTR HH Organism
Chloroform	8/07	8/13	16	15	µg/L	0.13	0.13	1.16	9.53	NA	NA
Chromium Dissolved	1/01	6/11	174	115	µg/L	0.1	10	0.105	3.35	NA	NA

LA River – Reach 4 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Chromium Total	1/01	8/13	232	199	µg/L	0.21	10	0.4	42	NA	NA
Cobalt Dissolved	1/01	2/06	118	45	µg/L	0.2	20	0.2	1.4	NA	NA
Cobalt Total	1/01	2/06	118	54	µg/L	0.2	20	0.2	23.9	NA	NA
COD	2/02	11/13	60	60	mg/L	AD	AD	10	382	NA	NA
CTAS	6/07	9/13	33	12	mg/L	0.02	0.1	0.034	0.32	NA	NA
Di-n-Butyl Phthalate	2/02	8/13	38	15	µg/L	0.07	3	0.12	0.63	12000	CTR HH Organism
Di-n-Octyl Phthalate	2/02	8/13	38	3	µg/L	0.15	2.5	0.16	7.44	NA	NA
Dibenzo(a,h)Anthracene	2/02	8/13	38	1	µg/L	0.02	1.90	0.02	0.02	0.049	CTR HH Organism
Dichlorobromomethane	8/07	8/13	16	16	µg/L	AD	AD	0.27	3.32	46	CTR HH Organism
Dissolved Organic Carbon	3/06	6/11	38	38	mg/L	AD	AD	6.48	15	NA	NA
Endosulfan I	2/02	8/13	38	1	µg/L	0.001	0.008	0.002	0.002	0.056	CTR Chronic
Enterococcus	1/01	5/13	633	624	MPN/100mL	10	100	10	87000	NA	NA
Fecal Coliform	1/02	7/12	850	844	MPN/100mL	7	200	17	40000	NA	NA
Fluoride	5/07	8/13	31	31	mg/L	AD	AD	0.36	0.92	NA	NA
gamma-BHC (Lindane)	2/02	8/13	46	7	µg/L	0.001	0.017	0.002	0.014	0.063	CTR HH Organism
Hardness	2/02	11/13	268	268	mg/L	AD	AD	54.7	708	NA	NA
Iron Dissolved	6/11	6/11	1	1	µg/L	AD	AD	24	24	NA	NA
Iron Total	6/11	6/11	1	1	µg/L	AD	AD	3260	3260	NA	NA
Isophorone	2/02	8/13	38	8	µg/L	0.07	4	0.13	0.38	600	CTR HH Organism
Magnesium	3/06	2/08	37	37	µg/L	AD	AD	12700	45200	NA	NA
MBAS	2/02	11/13	76	76	µg/L	AD	AD	20	410	NA	NA
Mercury Dissolved	1/01	6/11	119	32	µg/L	0.004	0.3	0.02	0.2	NA	NA

LA River – Reach 4 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Methylene Chloride	8/07	8/13	16	1	µg/L	0.08	0.14	0.12	0.12	1600	CTR HH Organism
MTBE	2/02	8/13	57	17	µg/L	0.08	0.2	0.23	3.64	NA	NA
Nickel Dissolved	1/01	6/11	172	138	µg/L	5	20	0.1	103	HBC	CTR Chronic
Nickel Total	1/01	8/13	232	200	µg/L	5	20	1.35	103	HBC	CTR Chronic
Nitrate as N	2/02	11/13	453	453	mg/L	AD	AD	0.08	7.28	8	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	2/02	11/13	438	438	mg/L	AD	AD	1.40	7.35	8	LAR Nutrient TMDL
Oil + Grease	2/02	11/13	144	10	mg/L	3	3	3	14	NA	NA
Organic Nitrogen	2/02	11/13	452	451	mg/L	0.1	0.1	0.75	11	NA	NA
Ortho Phosphate (as P)	5/07	11/13	35	30	mg/L	0.05	0.05	0.05	0.87	NA	NA
Perchlorate	8/07	9/13	16	4	µg/L	0.2	1.6	0.74	4.1	NA	NA
pH	1/02	11/13	958	958	pH Units	AD	AD	7.02	8.9	6.5	BP Minimum
Phenanthrene	2/02	8/13	38	1	µg/L	0.01	1.5	0.01	0.01	NA	NA
Phosphate	2/02	11/13	76	76	mg/L	AD	AD	0.09	4.94	NA	NA
Phosphate (Total) as P	6/11	6/11	1	1	mg/L	AD	AD	0.36	0.36	NA	NA
Potassium	3/06	2/08	37	37	µg/L	AD	AD	6840	19500	NA	NA
Selenium Dissolved	1/01	6/11	173	155	µg/L	0.2	30	0.2	8.3	NA	NA
Silica	6/11	6/11	1	1	µg/L	AD	AD	44500	44500	NA	NA
Silver Dissolved	1/01	8/08	169	49	µg/L	0.06	5	0.03	12	HBC	CTR Chronic
Silver Total	1/01	8/13	187	67	µg/L	0.02	5	0.01	12	HBC	CTR Chronic

LA River – Reach 4 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Sodium	3/06	2/08	37	37	µg/L	AD	AD	35300	135000	NA	NA
Sulfide	3/06	2/08	37	9	µg/L	30	30	30	70.00001	NA	NA
Temperature	1/02	11/13	958	958	°C	AD	AD	11.11111	30	NA	NA
Thallium Dissolved	1/01	2/06	124	10	µg/L	0.5	25	0.5	7.1	NA	NA
Toluene	8/07	8/13	16	2	µg/L	0.06	0.15	0.41	0.94	200000	CTR HH Organism
Total Coliform	1/01	10/13	1489	1488	MPN/100mL	20	20	91	1600000	NA	NA
Total Kjeldahl Nitrogen	6/11	6/11	1	1	mg/L	AD	AD	2.2	2.2	NA	NA
Total Organic Carbon	2/02	11/13	77	77	mg/L	AD	AD	5.1	21	NA	NA
Total Settleable Solids	5/07	8/13	33	16	mL/L	0.1	0.1	0.1	3.5	NA	NA
TSS	3/06	11/13	106	106	mg/L	AD	AD	1.8	600	NA	NA
Turbidity	2/02	8/13	75	75	NTU	AD	AD	2.12	32.4	NA	NA
Vanadium Total	2/01	2/01	2	2	µg/L	AD	AD	5.2	7.8	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 5 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,2-Dichlorobenzene	2/02	8/13	75	6	µg/L	0.06	1.5	0.18	0.24	17000	CTR HH Organism
1,4-Dioxane	8/07	8/13	39	26	µg/L	0.15	0.19	0.4	1.89	NA	NA
2,4-DDD	2/02	2/07	33	1	µg/L	0.001	0.01	0.006	0.006	NA	NA
2,4-DDT	2/02	2/07	33	2	µg/L	0.002	0.005	0.005	0.007	NA	NA
2,4-Dichlorophenol	2/02	8/13	72	1	µg/L	0.09	6.8	0.22	0.22	790	CTR HH Organism
2,4-Dimethylphenol	2/02	8/13	72	1	µg/L	0.17	6.2	0.28	0.28	2300	CTR HH Organism
2,4,6-Trichlorophenol	2/02	8/13	72	4	µg/L	0.09	6.9	0.11	0.2	6.5	CTR HH Organism
3-Methyl-4-Chlorophenol	2/02	8/13	72	2	µg/L	0.18	6	0.32	0.98	NA	NA
4-Nitrophenol	2/02	8/13	72	2	µg/L	0.06	5	0.67	2.36	NA	NA
alpha-BHC	2/02	8/13	72	1	µg/L	0.00	0.00	0.01	0.01	0.013	CTR HH Organism
Antimony Total	8/07	8/13	39	39	µg/L	AD	AD	0.36	2.24	4300	CTR HH Organism
Arsenic Total	2/02	8/13	72	69	µg/L	0.4	0.4	1.2	5.5	150	CTR Chronic
Benzene	8/07	8/13	39	2	µg/L	0.07	0.22	0.24	0.27	71	CTR HH Organism
Benzo(ghi)Perylene	2/02	8/13	75	1	µg/L	0.03	1.7	0.66	0.66	NA	NA
Beryllium Total	8/07	8/13	39	4	µg/L	0.02	0.2	0.02	0.5	NA	NA
Bis(2-chloroisopropyl)Ether	2/02	8/13	75	2	µg/L	0.05	3	0.27	0.34	170000	CTR HH Organism
BOD	2/02	11/13	144	137	mg/L	3	3	3	162	NA	NA
Boron	5/07	8/13	81	81	mg/L	AD	AD	0.274	0.9	NA	NA
Bromoform	8/07	8/13	39	7	µg/L	0.04	0.19	0.16	0.45	360	CTR HH Organism
Butylbenzyl Phthalate	2/02	8/13	75	1	µg/L	0.04	3	0.15	0.15	5200	CTR HH Organism
Chlorodibromomethane	8/07	8/13	39	23	µg/L	0.05	0.16	0.14	3.97	34	CTR HH Organism
Chloroform	8/07	8/13	39	33	µg/L	0.06	0.13	0.12	33.2	NA	NA
Chromium Total	2/02	8/13	72	63	µg/L	0.7	10	0.29	4.38	NA	NA

LA River – Reach 5 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
COD	2/02	11/13	141	137	mg/L	2	30	10	101	NA	NA
Copper Total	2/02	8/13	111	111	µg/L	AD	AD	5	89.2	HBC	CTR Chronic
CTAS	8/07	9/13	39	22	mg/L	0.02	0.1	0.025	0.66	NA	NA
Di-n-Butyl Phthalate	2/02	8/13	75	37	µg/L	0.07	3	0.11	1.22	12000	CTR HH Organism
Di-n-Octyl Phthalate	2/02	8/13	75	3	µg/L	0.15	2.5	0.5	7.17	NA	NA
Dichlorobromomethane	8/07	8/13	39	26	µg/L	0.06	0.34	0.34	11.5	46	CTR HH Organism
Diethyl Phthalate	2/02	8/13	75	8	µg/L	0.06	3	0.1	0.19	120000	CTR HH Organism
Endosulfan I	2/02	8/13	72	1	µg/L	0.001	0.008	0.002	0.002	0.056	CTR Chronic
Fecal Coliform	3/07	7/12	750	740	MPN/100mL	28	200	10	15400	NA	NA
Fluoride	5/07	8/13	72	71	mg/L	0.02	0.02	0.18	0.96	NA	NA
gamma-BHC (Lindane)	2/02	8/13	84	7	µg/L	0.001	0.017	0.002	0.004	0.063	CTR HH Organism
Hardness	5/07	11/13	81	81	mg/L	AD	AD	140	922	NA	NA
Isophorone	2/02	8/13	75	25	µg/L	0.07	4	0.11	0.63	600	CTR HH Organism
Lead Total	2/02	8/13	111	53	µg/L	1	5	0.08	8.9	HBC	CTR Chronic
MBAS	2/02	11/13	144	141	µg/L	5	20	10	500	NA	NA
Methylene Chloride	8/07	8/13	39	5	µg/L	0.08	0.14	0.1	0.57	1600	CTR HH Organism
MTBE	8/07	8/13	39	3	µg/L	0.08	0.16	0.28	0.5	NA	NA
Naphthalene	2/02	8/13	75	1	µg/L	0.028	2	0.14	0.14	NA	NA
Nitrogen (NO3-N+NO2-N) (Calc)	2/02	11/13	453	453	mg/L	AD	AD	0.08	8.49	8	LAR Nutrient TMDL
Oil + Grease	2/02	11/13	309	17	mg/L	3	3	3	17	NA	NA
Organic Nitrogen	2/02	11/13	1015	1015	mg/L	AD	AD	0.29	6.8	NA	NA
Ortho Phosphate (as P)	5/07	11/13	81	65	mg/L	0.05	0.05	0.05	1	NA	NA

LA River – Reach 5 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Pentachlorophenol	2/02	8/13	72	2	µg/L	0.4	0.72	0.72	2.82	8.2	CTR HH Organism
Perchlorate	8/07	9/13	39	9	µg/L	0.2	4.1	0.74	3.4	NA	NA
Phosphate	2/02	11/13	144	140	mg/L	0.05	0.05	0.05	2.56	NA	NA
Silver Total	8/07	8/13	39	26	µg/L	0.02	0.08	0.01	0.61	HBC	CTR Chronic
Temperature	1/02	11/13	1719	1719	°C	AD	AD	5.555556	28.33333	NA	NA
Thallium Total	8/07	8/13	39	31	µg/L	0.01	0.01	0.01	1.37	6.3	CTR HH Organism
Toluene	8/07	8/13	39	2	µg/L	0.06	0.15	0.09	0.19	200000	CTR HH Organism
Total Coliform	1/02	10/13	1522	1513	MPN/100mL	10	1000	10	270000	NA	NA
Total Settleable Solids	5/07	8/13	78	23	mL/L	0.1	0.1	0.1	0.6	NA	NA
Trichloroethylene	8/07	8/13	39	1	µg/L	0.08	0.17	0.26	0.26	81	CTR HH Organism
TSS	5/07	11/13	81	81	mg/L	AD	AD	1.2	77.6	NA	NA
Turbidity	5/07	8/13	78	78	NTU	AD	AD	0.9	37	NA	NA
Zinc Total	2/02	8/13	81	80	µg/L	17.2	17.2	4	85	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 6 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
2,4-D	8/07	8/08	3	1	µg/L	0.2	0.2	0.6	0.6	NA	NA
Alkalinity	3/06	6/10	23	23	mg/L	AD	AD	66	324	NA	NA
Ammonia as N	2/02	6/10	137	44	mg/L	0.05	0.2	0.05	0.45	pH and Temp Dependent	BP 30-Day Average
Antimony Dissolved	1/01	2/06	76	27	µg/L	1.1	18	1.1	17	NA	NA
Antimony Total	1/01	8/08	79	28	µg/L	1.1	18	0.58	9	4300	CTR HH Organism
Arsenic Dissolved	2/01	6/10	134	124	µg/L	0.4	10	0.2	4.7	150	CTR Chronic
Arsenic Total	2/01	6/10	158	147	µg/L	0.4	10	0.3	7.4	150	CTR Chronic
Barium Dissolved	2/01	8/08	131	131	µg/L	AD	AD	2.5	68.2	NA	NA
Barium Total	2/01	8/08	132	132	µg/L	AD	AD	2.5	214	NA	NA
Beryllium Dissolved	1/01	2/06	76	7	µg/L	0.006	1	0.077	0.839	NA	NA
Beryllium Total	1/01	8/08	79	8	µg/L	0.006	1	0.037	2.8	NA	NA
Bifenthrin	6/10	6/10	1	1	µg/L	AD	AD	0.0027	0.0027	NA	NA
Bis(2-ethylhexyl)Phthalate	2/02	11/08	19	10	µg/L	AD	AD	0.3	3.9	5.9	CTR HH Organism
BOD	2/02	11/08	28	23	mg/L	2	3	3	29	NA	NA
Boron	5/07	11/08	8	8	mg/L	AD	AD	0.516	0.9	NA	NA
Cadmium Dissolved	1/01	6/10	135	68	µg/L	0.02	1	0.01	2.12	HBC	CTR Chronic
Calcium	3/06	2/08	22	22	µg/L	AD	AD	40200	264000	NA	NA
Chloroform	8/07	8/08	3	1	µg/L	0.06	0.06	0.13	0.13	NA	NA
Chromium Dissolved	1/01	6/10	134	98	µg/L	0.1	10	0.045	24	NA	NA
Chromium Total	1/01	6/10	159	133	µg/L	0.21	10	0.045	43	NA	NA

LA River – Reach 6 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Cobalt Dissolved	1/01	2/06	73	33	µg/L	0.2	20	0.2	1.8	NA	NA
Cobalt Total	1/01	2/06	73	40	µg/L	0.2	20	0.2	10.9	NA	NA
COD	2/02	11/08	20	19	mg/L	30	30	11	58	NA	NA
CTAS	6/07	11/08	7	2	mg/L	0.02	0.1	0.08	0.2	NA	NA
delta-BHC	2/02	8/08	14	1	µg/L	0.0007	0.007	0.001	0.001	NA	NA
Di-n-Butyl Phthalate	2/02	8/08	15	7	µg/L	0.07	3	0.18	1.09	12000	CTR HH Organism
Di-n-Octyl Phthalate	2/02	8/08	15	2	µg/L	0.15	2.5	6.59	16.5	NA	NA
Diazinon	6/10	6/10	1	1	µg/L	AD	AD	0.0116	0.0116	0.17	USEPA Acute and Chronic
Diethyl Phthalate	2/02	8/08	15	1	µg/L	0.06	3	0.16	0.16	120000	CTR HH Organism
Dissolved Organic Carbon	3/06	6/10	23	23	mg/L	AD	AD	4.98	14.4	NA	NA
Endosulfan I	2/02	8/08	14	1	µg/L	0.001	0.008	0.005	0.005	0.056	CTR Chronic
Enterococcus	1/01	5/09	365	362	MPN/100mL	10	100	10	69000	NA	NA
Fecal Coliform	1/02	1/09	346	345	MPN/100mL	33.3	33.3	33	160000	NA	NA
Fluoride	5/07	11/08	7	7	mg/L	AD	AD	0.39	0.65	NA	NA
gamma-BHC (Lindane)	2/02	11/08	18	1	µg/L	0.001	0.017	0.004	0.004	0.063	CTR HH Organism
Hardness	2/02	6/13	181	181	mg/L	AD	AD	45.4	1220	NA	NA
Iron Dissolved	6/10	6/10	1	1	µg/L	AD	AD	11	11	NA	NA
Iron Total	6/10	6/10	1	1	µg/L	AD	AD	257	257	NA	NA
Isophorone	2/02	8/08	15	3	µg/L	0.07	4	0.12	0.33	600	CTR HH Organism
Lead Dissolved	1/01	6/13	187	94	µg/L	0.11	26	0.01	7.2	HBC	CTR Chronic
Magnesium	3/06	2/08	22	22	µg/L	AD	AD	11600	92600	NA	NA

LA River – Reach 6 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
MBAS	2/02	11/08	28	28	µg/L	AD	AD	10	300	NA	NA
Mercury Dissolved	1/01	6/10	74	15	µg/L	0.0036	0.3	0.022	0.177	NA	NA
MTBE	2/02	8/08	24	17	µg/L	0.08	0.13	0.45	4.67	NA	NA
Nickel Dissolved	1/01	6/10	134	119	µg/L	5	20	1	73	HBC	CTR Chronic
Nickel Total	1/01	6/10	159	144	µg/L	5	20	4.2	73	HBC	CTR Chronic
Nitrate as N	2/02	6/10	115	115	mg/L	AD	AD	2.39	7.15	8	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	2/02	11/13	1016	1016	mg/L	AD	AD	0.36	11.12	8	LAR Nutrient TMDL
OCDD	8/07	8/08	3	2	pg/L	30	30	210	250	NA	NA
Organic Nitrogen	2/02	1/09	114	114	mg/L	AD	AD	0.45	9.6	NA	NA
Ortho Phosphate (as P)	5/07	6/10	8	7	mg/L	0.05	0.05	0.06	0.64	NA	NA
Perchlorate	8/07	8/08	3	1	µg/L	0.3	0.45	1.3	1.3	NA	NA
pH	1/02	1/09	371	371	pH Units	AD	AD	7.1	9	6.5	BP Minimum
Phosphate	2/02	11/08	28	24	mg/L	0.05	0.05	0.05	0.79	NA	NA
Phosphate (Total) as P	6/10	6/10	1	1	mg/L	AD	AD	0.17	0.17	NA	NA
Potassium	3/06	2/08	22	22	µg/L	AD	AD	4190	13400	NA	NA
Selenium Dissolved	1/01	4/13	150	142	µg/L	1	30	0.3	22.2	NA	NA
Silica	6/10	6/10	1	1	µg/L	AD	AD	35400	35400	NA	NA
Silver Dissolved	1/01	8/08	132	47	µg/L	0.06	5	0.03	7.4	HBC	CTR Chronic
Silver Total	1/01	8/08	136	46	µg/L	0.02	5	0.03	10.4	HBC	CTR Chronic
Sodium	3/06	2/08	22	22	µg/L	AD	AD	27000	165000	NA	NA
Sulfide	3/06	2/08	22	4	µg/L	30	30	30	59.9	NA	NA
Temperature	1/02	1/09	371	371	°C	AD	AD	6.11	31.7	NA	NA

LA River – Reach 6 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Tetrachloroethylene	3/06	11/08	47	9	µg/L	0.1	0.22	0.25	0.48	8.85	CTR HH Organism
Thallium Dissolved	1/01	2/06	76	27	µg/L	0.5	25	0.9	29	NA	NA
Total Coliform	1/01	5/09	716	716	MPN/100mL	AD	AD	830	800000	NA	NA
Total Kjeldahl Nitrogen	6/10	6/10	1	1	mg/L	AD	AD	3.65	3.65	NA	NA
Total Organic Carbon	2/02	6/10	29	29	mg/L	AD	AD	4.22	26.9	NA	NA
Total Settleable Solids	5/07	11/08	7	5	mL/L	0.1	0.1	0.1	1	NA	NA
Trichloroethylene	3/06	8/08	43	9	µg/L	0.08	0.17	0.19	0.42	81	CTR HH Organism
TSS	3/06	11/08	29	29	mg/L	AD	AD	3	138	NA	NA
Turbidity	2/02	11/08	28	28	NTU	AD	AD	0.82	8.13	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Rio Hondo – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	6/09	6/12	4	4	mg/L	AD	AD	48	84	NA	NA
Ammonia as N	6/09	6/12	4	1	mg/L	0.05	0.05	0.15	0.15	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Antimony Dissolved	1/05	2/06	13	9	µg/L	2	2	2	4	NA	NA
Antimony Total	1/05	2/06	13	8	µg/L	2	2	2	3	4300	CTR HH Organism
Arsenic Dissolved	1/05	6/12	43	43	µg/L	AD	AD	0.3	5.7	150	CTR Chronic
Arsenic Total	1/05	6/12	43	43	µg/L	AD	AD	1.3	9.6	150	CTR Chronic
Barium Dissolved	1/05	8/08	39	39	µg/L	AD	AD	22.2	132	NA	NA
Barium Total	1/05	8/08	39	39	µg/L	AD	AD	28	158	NA	NA
Bifenthrin	6/09	6/12	4	2	µg/L	0.0005	0.001	0.002	0.0185	NA	NA
Cadmium Dissolved	1/05	6/12	43	26	µg/L	0.01	0.33	0.01	1	HBC	CTR Chronic
Cadmium Total	1/05	6/12	43	31	µg/L	0.3	0.33	0.01	1.51	HBC	CTR Chronic
Chloride	6/09	6/12	4	4	mg/L	AD	AD	68.6	188	190	BP SSO
Chromium Dissolved	1/05	6/12	43	39	µg/L	0.09	0.1	0.3	4.75	NA	NA
Chromium Total	1/05	6/12	43	42	µg/L	0.1	0.1	0.2	6.16	NA	NA
Cobalt Dissolved	1/05	2/06	13	7	µg/L	0.2	0.2	0.2	5.2	NA	NA
Cobalt Total	1/05	2/06	13	11	µg/L	0.2	0.2	0.3	5.5	NA	NA
Cyfluthrin	6/09	6/12	4	1	µg/L	0.0005	0.001	0.028	0.028	NA	NA
Cypermethrin	6/09	6/12	4	1	µg/L	0.0005	0.001	0.013	0.013	NA	NA
Dissolved Organic Carbon	6/09	6/12	4	4	mg/L	AD	AD	3.89	32.9	NA	NA
Enterococcus	1/02	3/09	75	74	MPN/100mL	10	10	10	24000	NA	NA
Fenvalerate	6/09	6/12	6	1	µg/L	0.0005	0.001	0.0007	0.0007	NA	NA
Hardness	1/05	4/13	54	54	mg/L	AD	AD	57	485	NA	NA

Rio Hondo – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Iron Dissolved	6/09	6/12	4	4	µg/L	AD	AD	11.4	47.8	NA	NA
Iron Total	6/09	6/12	4	4	µg/L	AD	AD	267	3160	NA	NA
Mercury Dissolved	1/05	6/12	17	1	µg/L	0.0036	0.022	0.005	0.005	NA	NA
Mercury Total	1/05	6/12	17	4	µg/L	0.004	0.022	0.0138	0.043	0.051	CTR HH Organism
Nickel Dissolved	1/05	6/12	43	42	µg/L	1	1	1	16.1	HBC	CTR Chronic
Nickel Total	1/05	6/12	43	42	µg/L	1	1	2	21.1	HBC	CTR Chronic
Nitrate as N	6/09	6/12	4	2	mg/L	0.02	0.02	0.07	0.09	8	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	6/09	6/09	1	0	mg/L	0.02	0.02	ND	ND	8	LAR Nutrient TMDL
Ortho Phosphate (as P)	6/09	6/12	4	4	mg/L	AD	AD	0.05	0.13	NA	NA
Phosphate (Total) as P	6/09	6/12	4	4	mg/L	AD	AD	0.16	0.91	NA	NA
Selenium Dissolved	1/05	6/12	43	42	µg/L	0.2	0.2	0.1	1.9	NA	NA
Selenium Total	1/05	6/12	43	42	µg/L	0.2	0.2	0.1	2	5	CTR Chronic
Silica	6/09	6/12	4	4	µg/L	AD	AD	13000	58000	NA	NA
Silver Dissolved	1/05	8/08	39	19	µg/L	0.06	0.2	0.03	0.52	HBC	CTR Chronic
Silver Total	1/05	8/08	39	19	µg/L	0.06	0.2	0.03	0.7	HBC	CTR Chronic
Sulfate	6/09	6/12	4	4	mg/L	AD	AD	75.7	295	350	BP SSO
TDS	6/09	6/09	1	1	mg/L	AD	AD	546	546	1500	BP SSO
Thallium Dissolved	1/05	2/06	13	1	µg/L	1	1	1	1	NA	NA
Thallium Total	1/05	2/06	13	2	µg/L	1	1	1	1	6.3	CTR HH Organism
Total Coliform	1/02	3/09	76	76	MPN/100mL	AD	AD	440	240000	NA	NA
Total Kjeldahl Nitrogen	6/09	6/12	4	4	mg/L	AD	AD	0.83	5	NA	NA
Total Organic Carbon	6/09	6/12	4	4	mg/L	AD	AD	4.94	35.5	NA	NA
TSS	6/09	6/12	3	3	mg/L	AD	AD	29	282	NA	NA

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Rio Hondo – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
2-Methyl-4,6-Dinitrophenol	10/03	2/04	6	1	µg/L	3	3	4.3	4.3	765	CTR HH Organism
Alkalinity	10/03	2/04	6	6	mg/L	AD	AD	31.9	116	NA	NA
Aluminum Total	10/03	2/04	6	2	µg/L	100	100	107	750	NA	NA
Ammonia as N	10/03	2/04	6	3	mg/L	0.1	0.1	0.109	3.66	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average
Antimony Dissolved	10/03	2/04	6	6	µg/L	AD	AD	1.05	1.78	NA	NA
Antimony Total	10/03	2/04	6	6	µg/L	AD	AD	1.08	4.81	4300	CTR HH Organism
Arsenic Dissolved	10/03	2/04	6	6	µg/L	AD	AD	1.01	1.83	150	CTR Chronic
Arsenic Total	10/03	2/04	6	6	µg/L	AD	AD	1.36	4.29	150	CTR Chronic
BOD	10/03	2/04	6	6	mg/L	AD	AD	8.6	79.9	NA	NA
Cadmium Total	10/03	2/04	6	1	µg/L	1	1	1.42	1.42	HBC	CTR Chronic
Chloride	10/03	2/04	6	6	mg/L	AD	AD	6.68	80.1	180	BP SSO
Chromium Dissolved	10/03	2/04	6	6	µg/L	AD	AD	1.28	3.33	NA	NA
Chromium Total	10/03	2/04	6	6	µg/L	AD	AD	1.9	15.5	NA	NA
COD	10/03	2/04	6	6	mg/L	AD	AD	23.4	88.2	NA	NA
Diethyl Phthalate	10/03	2/04	6	4	µg/L	0.5	0.5	0.9	1.4	120000	CTR HH Organism
Dissolved Oxygen	10/03	2/04	6	6	mg/L	AD	AD	7.97	10.7	5	BP Minimum

Rio Hondo – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Enterococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	230	300000	NA	NA
Fecal Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	1300	500000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	230	500000	NA	NA
Fluoride	10/03	2/04	6	5	mg/L	0.1	0.1	0.1	0.21	NA	NA
Hardness	10/03	2/04	6	6	mg/L	AD	AD	48	175	NA	NA
Iron Dissolved	10/03	2/04	6	1	µg/L	100	100	394	394	NA	NA
Isophorone	10/03	2/04	6	1	µg/L	0.05	0.05	0.3	0.3	600	CTR HH Organism
Lead Dissolved	10/03	2/04	6	6	µg/L	AD	AD	0.76	1.85	HBC	CTR Chronic
MBAS	10/03	2/04	6	6	µg/L	AD	AD	78	195	NA	NA
Nickel Dissolved	10/03	2/04	6	6	µg/L	AD	AD	2.26	9.77	HBC	CTR Chronic
Nickel Total	10/03	2/04	6	6	µg/L	AD	AD	2.58	21.8	HBC	CTR Chronic
Nitrate as N	10/03	2/04	6	5	mg/L	0.5	0.5	0.917	5.26	8	LAR Nutrient TMDL
Nitrate as NO3	10/03	2/04	6	5	mg/L	0.1	0.1	4.06	23.3	NA	NA
Nitrite as N	10/03	2/04	6	4	mg/L	0.03	0.03	0.043	0.304	1	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	6/09	6/12	4	2	mg/L	0.02	0.02	0.07	0.09	8	LAR Nutrient TMDL
Oil + Grease	10/03	2/04	6	2	mg/L	1	1	1.9	2	NA	NA
Phosphorus	10/03	2/04	12	12	mg/L	AD	AD	0.311	1.03	NA	NA
Silver Total	10/03	2/04	6	1	µg/L	1	1	0.808	0.808	HBC	CTR Chronic
Sulfate	10/03	2/04	6	6	mg/L	AD	AD	7.81	86.7	300	BP SSO
TDS	10/03	2/04	6	6	mg/L	AD	AD	80	418	750	BP SSO
Total Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	3000	500000	NA	NA
Total Kjeldahl Nitrogen	10/03	2/04	6	6	mg/L	AD	AD	1.554	12.8	NA	NA
Total Organic Carbon	10/03	2/04	6	6	mg/L	AD	AD	7.03	14.4	NA	NA

Rio Hondo – Reach 2 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
TPH	10/03	2/04	6	2	mg/L	1	1	1.1	2.5	NA	NA
TSS	10/03	2/04	6	6	mg/L	AD	AD	91	1186	NA	NA
Turbidity	10/03	2/04	6	6	NTU	AD	AD	0.75	102	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	23	342	NA	NA
Zinc Dissolved	10/03	2/04	6	6	µg/L	AD	AD	8.97	84	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
1,2,3,4,6,7,8-HpCDD	2/04	8/12	30	5	pg/L	2.7	55	1.7	38.1	NA	NA
1,2,3,4,6,7,8-HpCDF	2/04	8/12	30	3	pg/L	1.6	55	0.46	7.2	NA	NA
1,2,3,4,7,8,9-HpCDF	2/04	8/12	30	1	pg/L	0.88	55	5.5	5.5	NA	NA
1,2,3,4,7,8-HxCDF	2/04	8/12	60	1	pg/L	0.83	55	3.6	3.6	NA	NA
1,4-Dioxane	5/05	8/12	24	2	µg/L	0.4	0.5	1	1.2	NA	NA
2,4-D	2/04	11/12	43	2	µg/L	0.49	2.5	0.11	0.61	NA	NA
2-Butanone	6/05	12/06	19	2	µg/L	1	10	0.8	0.8	NA	NA

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	2/04	12/12	177	177	mg/L	AD	AD	67	220	NA	NA
Aluminum Total	5/05	12/06	20	20	µg/L	AD	AD	20	670	NA	NA
Ammonia as N	1/04	7/09	175	138	µg/L	0.1	1	0.1	1.9	10.1	LAR Nutrient TMDL
Antimony Total	2/04	11/12	49	47	µg/L	0.5	0.5	0.4	3.85	4300	CTR HH Organism
Arsenic Dissolved	8/10	11/12	10	10	µg/L	AD	AD	1.46	4.67	150	CTR Chronic
Arsenic Total	2/04	11/12	49	49	µg/L	AD	AD	0.8	5.5	150	CTR Chronic
Barium Total	2/04	11/12	42	42	µg/L	AD	AD	19	104	NA	NA
Barium Dissolved	8/10	11/12	10	10	µg/L	AD	AD	58.2	97.1	NA	NA
Benzo(b)Fluoranthene	2/04	812	30	5	µg/L	0.02	0.02	0.008	0.038	0.049	CTR Human Health Organism
Beryllium Total	2/04	11/12	49	5	µg/L	0.25	2.5	0.01	0.1	NA	NA
Bicarbonate	5/05	12/06	20	20	µg/L	AD	AD	127000	212000	NA	NA
Bis(2-ethylhexyl)Phthalate	2/04	8/12	33	3	µg/L	2	2	0.4	0.41	5.9	CTR HH Organism
BOD	1/04	12/12	105	72	mg/L	2	3	2	12	NA	NA
Boron	1/04	12/12	105	99	mg/L	0.2	0.2	0.04	0.46	NA	NA
Bromoform	2/04	8/12	42	2	µg/L	0.5	1	0.3	0.6	360	CTR HH Organism

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Cadmium Total	2/04	12/12	74	48	µg/L	0.2	2.5	0.01	0.2	HBC	CTR Chronic
Cadmium Dissolved	7/10	12/12	30	22	µg/L	0.2	0.2	0.02	0.087	HBC	CTR Chronic
Calcium	5/05	12/06	20	20	µg/L	AD	AD	39800	81400	NA	NA
Carbon Disulfide	5/05	12/06	20	10	µg/L	1	10	0.07	0.3	NA	NA
Chlorate	5/05	12/06	20	17	µg/L	10	10	47	1300	NA	NA
Chlorine (Total Residual)	1/04	12/12	210	5	µg/L	50	50	50	50	NA	NA
Chlorodibromomethane	2/04	8/12	42	9	µg/L	0.5	1	0.1	0.8	34	CTR HH Organism
Chloroform	2/04	8/12	42	25	µg/L	0.5	1	0.05	1	NA	NA
Chlorophyll	1/04	9/06	135	135	mg/L	AD	AD	0.0004	0.059	NA	NA
Chromium Total	2/04	11/12	63	55	µg/L	0.5	50	0.27	3.7	NA	NA
Chromium Dissolved	8/10	11/12	10	10	µg/L	AD	AD	0.12	1.64	NA	NA
Chromium (VI) Total	2/04	11/12	49	27	µg/L	10	10	0.02	4	11.4345	CTR Chronic
cis-1,2-Dichloroethylene	6/05	8/12	25	1	µg/L	0.5	1	0.1	0.1	NA	NA
COD	1/04	7/09	66	59	mg/L	5	10	7.1	77.8	NA	NA
Color	5/05	12/06	20	20	N/A	AD	AD	8	56	NA	NA
Copper Dissolved	7/10	12/12	30	30	µg/L	AD	AD	1.17	14.1	HBC	CTR Chronic

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Cyanide	1/04	11/12	80	25	µg/L	5	5	1	2.3	5.2	CTR Chronic
Dichlorobromomethane	2/04	8/12	42	13	µg/L	0.5	1	0.06	0.5	46	CTR HH Organism
Fecal Coliform	1/04	12/12	208	208	MPN/100mL	AD	AD	17	300000	NA	NA
Fluoride	1/04	8/12	73	73	mg/L	AD	AD	0.271	0.943	NA	NA
Formaldehyde	5/05	12/06	20	5	µg/L	5	5	8	21	NA	NA
gamma-BHC (Lindane)	2/04	8/12	42	4	µg/L	0.01	0.01	0.003	0.006	0.063	CTR HH Organism
Hardness	1/04	12/12	402	402	mg/L	AD	AD	65	4600	NA	NA
Iron Total	2/04	8/12	42	38	µg/L	10	550	73	1880	NA	NA
Iron Dissolved	8/10	8/12	5	5	µg/L	AD	AD	23	253	NA	NA
Lead Dissolved	7/10	12/12	30	30	µg/L	AD	AD	0.04	1.89	HBC	CTR Chronic
Lead Total	1/04	12/12	105	105	µg/L	AD	AD	0.41	9	HBC	CTR Chronic
Magnesium	5/05	12/06	20	20	µg/L	AD	AD	9800	25600	NA	NA
Manganese	5/05	12/06	20	20	µg/L	AD	AD	12	253	NA	NA
MBAS	1/04	12/12	106	41	µg/L	50	100	50	520	NA	NA
Mercury Dissolved	7/10	12/12	30	23	µg/L	0.04	0.04	0.01	0.12	NA	NA
Methyl Chloride	2/04	8/12	29	6	µg/L	0.5	0.5	0.07	0.6	NA	NA
Methylene Chloride	2/04	8/12	42	11	µg/L	0.5	10	0.05	0.1	1600	CTR HH Organism

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Nickel Dissolved	8/10	11/12	10	8	µg/L	1	1	0.44	1.62	HBC	CTR Chronic
Nickel Total	2/04	11/12	49	40	µg/L	0.25	20	0.37	4	HBC	CTR Chronic
NID	1/04	12/12	106	3	mg/L	0.1	0.2	0.1	0.2	NA	NA
Nitrate as N	1/04	10/11	180	152	mg/L	0.05	0.2	0.06	5.06	8	LAR Nutrient TMDL
Nitrate as N + Nitrite as N	1/04	10/11	180	152	mg/L	0.05	0.02	0.03	5.58	8	LAR Nutrient TMDL
Nitrite as N	1/04	10/11	180	150	mg/L	0.02	0.1	0.03	0.612	1	LAR Nutrient TMDL
Nitrogen	1/04	12/12	246	246	mg/L	AD	AD	0.1	8.1	NA	NA
N-Nitrosodimethylamine	2/04	8/12	51	15	µg/L	0.002	5	0.0006	0.0045	8.1	CTR HH Organism
OCDD	2/04	8/12	30	15	pg/L	11	120	13	337	NA	NA
OCDF	2/04	8/12	30	3	pg/L	3	110	1.4	10	NA	NA
Oil + Grease	1/04	12/12	105	1	mg/L	4	6.3	12	12	NA	NA
Organic Nitrogen	1/04	7/09	168	165	mg/L	0.1	0.1	0.1	3.36	NA	NA
Ortho Phosphate (as PO4)	1/04	3/10	175	99	mg/L	0.05	1	0.144	1.4	NA	NA
Perchlorate	5/05	8/12	24	4	µg/L	2	10	0.19	2	NA	NA
Phenol	2/04	8/12	33	4	µg/L	1	1	0.57	1.7	4600000	CTR HH Organism
Phosphate (Total)	1/04	12/12	208	156	mg/L	0.15	0.5	0.041	3	NA	NA
Potassium	5/05	12/06	20	19	µg/L	5000	5000	3100	8700	NA	NA

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Selenium Total	2/04	11/12	49	48	µg/L	1	1	0.1	1.06	5	CTR Chronic
Selenium Dissolved	8/10	11/12	10	10	µg/L	AD	AD	0.12	0.7	NA	NA
Silver Total	1/04	11/12	80	18	µg/L	0.2	2.5	0.01	0.26	HBC	CTR Chronic
Sodium	5/05	12/06	20	20	µg/L	AD	AD	8800	92400	NA	NA
Sulfate	1/04	12/12	110	110	mg/L	AD	AD	8.9	300	350	Basin Plan SSO
TDS	1/04	12/12	105	105	mg/L	AD	AD	127	692	1500	Basin Plan SSO
TEQ	2/10	2/10	1	1	pg/L	AD	AD	0.014	0.014	NA	NA
Thallium Total	2/04	11/12	36	1	µg/L	0.25	1	0.14	0.14	6.3	CTR HH Organism
Thallium Dissolved	8/10	11/12	10	1	µg/L	0.25	0.25	0.016	0.016	NA	NA
Toluene	2/04	8/12	42	23	µg/L	0.5	1	0.07	1	200000	CTR HH Organism
Total Coliform	1/04	12/12	208	208	MPN/100mL	AD	AD	280	1600000	NA	NA
Total Kjeldahl Nitrogen	1/04	12/12	208	205	mg/L	0.1	0.1	0.1	4.6	NA	NA
Total Organic Carbon	5/05	12/06	20	20	mg/L	AD	AD	1.84	10.7	NA	NA
Total Settleable Solids	1/04	12/12	105	5	mL/L	0.1	0.1	0.1	0.2	NA	NA
TSS	1/04	12/12	105	75	mg/L	2.5	10	1	27	NA	NA

Rio Hondo – Reach 3 – Constituents that have been detected but do not exceed relevant water quality objectives

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Turbidity	1/04	12/12	105	105	NTU	AD	AD	0.74	12	NA	NA
Vanadium Total	5/05	12/06	20	19	µg/L	10	10	2	13.2	NA	NA
Zinc Dissolved	7/10	12/12	30	30	µg/L	AD	AD	1.58	27.8	HBC	CTR Chronic
Zinc Total	1/04	12/12	105	104	µg/L	50	50	1	68	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Tujunga Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	6/09	6/11	3	3	mg/L	AD	AD	0.1	276	NA	NA
Antimony Dissolved	1/05	2/06	14	7	µg/L	2	2	2	3	NA	NA
Antimony Total	1/05	2/06	14	6	µg/L	2	2	2	3	4300	CTR HH Organism
Arsenic Dissolved	1/05	6/11	40	40	µg/L	AD	AD	0.5	10.1	150	CTR Chronic
Arsenic Total	1/05	6/11	40	40	µg/L	AD	AD	0.6	20.5	150	CTR Chronic
Barium Dissolved	1/05	8/08	38	38	µg/L	AD	AD	22	101	NA	NA

Tujunga Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Barium Total	1/05	8/08	38	38	µg/L	AD	AD	32	1150	NA	NA
Beryllium Total	1/05	2/06	14	1	µg/L	0.4	0.4	1.5	1.5	NA	NA
Bifenthrin	6/09	6/11	3	1	µg/L	0.0005	0.0005	0.002	0.002	NA	NA
Cadmium Dissolved	1/05	6/11	41	19	µg/L	0.01	0.33	0.01	1.69	HBC	CTR Chronic
Chromium Dissolved	1/05	6/11	41	38	µg/L	0.1	0.21	0.1	4.94	NA	NA
Chromium Total	1/05	6/11	41	40	µg/L	0.21	0.21	0.2	72.4	NA	NA
Cobalt Dissolved	1/05	2/06	14	9	µg/L	0.2	0.2	0.2	1	NA	NA
Cobalt Total	1/05	2/06	14	11	µg/L	0.2	0.2	0.2	46.8	NA	NA
Cyfluthrin	6/09	6/11	3	1	µg/L	0.0005	0.001	0.0152	0.0152	NA	NA
Dissolved Organic Carbon	6/09	6/11	3	3	mg/L	AD	AD	28.6	82.7	NA	NA
Enterococcus	1/02	5/09	78	77	MPN/100mL	10	10	10	24000	NA	NA
Hardness	1/05	6/13	73	73	mg/L	AD	AD	65.2	414	NA	NA
Iron Dissolved	6/09	6/11	3	3	µg/L	AD	AD	61.9	108	NA	NA
Iron Total	6/09	6/11	3	3	µg/L	AD	AD	2000	6900	NA	NA
Mercury Dissolved	1/05	6/11	17	4	µg/L	0.022	0.022	0.005	0.052	NA	NA
Nickel Dissolved	1/05	6/11	41	41	µg/L	AD	AD	0.1	9.19	HBC	CTR Chronic
Nickel Total	1/05	6/11	41	41	µg/L	AD	AD	0.1	54	HBC	CTR Chronic
Nitrate as N	6/09	6/11	3	1	mg/L	0.02	0.02	0.9	0.9	8	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	6/11	6/11	4	4	mg/L	AD	AD	0.48	0.54	8	LAR Nutrient TMDL
Ortho Phosphate (as P)	6/09	6/11	3	3	mg/L	AD	AD	0.08	0.53	NA	NA
Phosphate (Total) as P	6/09	6/11	3	3	mg/L	AD	AD	0.43	1.01	NA	NA
Selenium Dissolved	1/05	6/11	40	39	µg/L	0.2	0.2	0.1	0.81	NA	NA
Selenium Total	1/05	6/11	40	40	µg/L	AD	AD	0.1	2.4	5	CTR Chronic

Tujunga Wash - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Silica	6/09	6/11	3	3	µg/L	AD	AD	31300	70300	NA	NA
Silver Dissolved	1/05	8/08	38	17	µg/L	0.06	0.2	0.03	0.66	HBC	CTR Chronic
Silver Total	1/05	8/08	38	18	µg/L	0.06	0.2	0.03	0.62	HBC	CTR Chronic
Sulfate	6/09	6/11	3	3	mg/L	AD	AD	91.1	172	300	BP SSO
Thallium Dissolved	1/05	2/06	14	2	µg/L	1	1	1	2	NA	NA
Thallium Total	1/05	2/06	14	2	µg/L	1	1	1	2	6.3	CTR HH Organism
Total Coliform	1/02	9/11	143	143	MPN/100mL	AD	AD	200	240000	NA	NA
Total Kjeldahl Nitrogen	6/09	6/11	3	3	mg/L	AD	AD	5.8	10.1	NA	NA
Total Organic Carbon	6/09	6/11	3	3	mg/L	AD	AD	31	96.5	NA	NA
TSS	6/09	6/11	2	2	mg/L	AD	AD	48	188	NA	NA
Zinc Dissolved	1/05	6/13	71	68	µg/L	0.4	4	0.45	63	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Verdugo Wash – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Alkalinity	10/03	2/04	6	6	mg/L	AD	AD	17.6	241	NA	NA
Aluminum Total	10/03	2/04	6	5	µg/L	100	100	115	5420	NA	NA
Ammonia as N	10/03	2/04	6	3	mg/L	0.1	0.1	0.1	0.28556	pH and Temp Dependent	BP Not SPWN Inland 4-Day Average

Verdugo Wash – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Antimony Dissolved	10/03	2/06	20	12	µg/L	2	5	0.58	3	NA	NA
Antimony Total	10/03	2/06	20	9	µg/L	2	5	0.62	4	4300	CTR HH Organism
Arsenic - Dissolved	10/03	8/08	49	44	µg/L	0.4	5	0.2	6.8	150	CTR Chronic
Arsenic Total	10/03	8/08	49	44	µg/L	0.4	5	0.4	6.8	150	CTR Chronic
Atrazine	10/03	2/04	6	1	µg/L	2.00	2.00	2.00	2.00	NA	NA
Barium Dissolved	1/05	8/08	43	43	µg/L	AD	AD	53.7	108	NA	NA
Barium Total	1/05	8/08	43	43	µg/L	AD	AD	68.9	138	NA	NA
BOD	10/03	2/04	6	6	mg/L	AD	AD	4.15	17.7	NA	NA
Cadmium Dissolved	10/03	8/08	49	16	µg/L	0.02	1	0.01	0.76	HBC	CTR Chronic
Chloride	10/03	2/04	6	6	mg/L	AD	AD	2	139	150	BP SSO
Chlorpyrifos	10/03	2/04	6	1	µg/L	0.05	0.05	0.05	0.05	0.041 and 0.083	USEPA Acute and Chronic
Chromium Dissolved	10/03	8/08	49	45	µg/L	0.1	0.21	0.1	4.76	NA	NA
Chromium Total	10/03	8/08	49	45	µg/L	0.1	0.1	0.2	10.9	NA	NA
Cobalt Dissolved	1/05	2/06	14	8	µg/L	0.2	0.2	0.2	0.8	NA	NA
Cobalt Total	1/05	2/06	14	10	µg/L	0.2	0.2	0.3	2.5	NA	NA
COD	10/03	2/04	6	6	mg/L	AD	AD	13.6	56.9	NA	NA
Cyanazine	10/03	2/04	6	1	µg/L	2	2	2	2	NA	NA
Cyanide	10/03	2/04	6	2	µg/L	10	8	8	10	5.2 and 22	CTR Chronic and Acute
Di-n-Butyl Phthalate	10/03	2/04	6	1	µg/L	1	1	1.1	1.1	12000	CTR HH Organism
Diazinon	10/03	2/04	6	4	µg/L	0.01	0.01	0.01	0.088	0.17	USEPA Acute and Chronic
Diethyl Phthalate	10/03	2/04	6	2	µg/L	0.5	0.5	0.9	2.5	120000	CTR HH Organism
Dissolved Oxygen	10/03	2/04	6	6	mg/L	AD	AD	7.3	11.52	5	BP Minimum

Verdugo Wash – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Enterococcus	1/02	5/09	90	89	MPN/100mL	10	10	72	300000	NA	NA
Fecal Coliform	10/03	2/04	6	6	MPN/100mL	AD	AD	80	500000	NA	NA
Fecal Streptococcus	10/03	2/04	6	6	MPN/100mL	AD	AD	1700	800000	NA	NA
Fluoride	10/03	2/04	6	5	mg/L	0.1	0.1	0.1	0.26	NA	NA
Hardness	10/03	4/12	50	50	mg/L	AD	AD	19.5	420	NA	NA
Iron Dissolved	10/03	2/04	6	2	µg/L	100	100	138	203	NA	NA
Iron Total	10/03	2/04	6	5	µg/L	100	100	195	13100	NA	NA
Isophorone	10/03	2/04	6	1	µg/L	0.05	0.05	0.2	0.2	600	CTR HH Organism
Lead - Dissolved	10/03	4/12	49	24	µg/L	1	5	0.18	3.7	HBC	CTR Chronic
Malathion	10/03	2/04	6	1	µg/L	2.000	2.0	2	2	NA	NA
MBAS	10/03	2/04	6	2	µg/L	50	50	68	113	NA	NA
Mercury Dissolved	10/03	2/06	20	2	µg/L	0.022	1	0.032	1	NA	NA
Nickel Dissolved	10/03	8/08	49	48	µg/L	1	1	0.84	8.55	HBC	CTR Chronic
Nickel Total	10/03	8/08	49	49	µg/L	AD	AD	1	12.2	HBC	CTR Chronic
Nitrate as N	10/03	2/04	6	6	mg/L	AD	AD	0.5	2.27	8	LAR Nutrient TMDL
Nitrate as NO3	10/03	2/04	6	6	mg/L	AD	AD	0.1	10.5	NA	NA
Nitrite as N	10/03	2/04	6	5	mg/L	0.03	0.03	0.03	0.724	1	LAR Nutrient TMDL
Nitrogen (NO3-N+NO2-N) (Calc)	6/09	6/11	3	1	mg/L	0.02	0.02	0.90	0.90	8	LAR Nutrient TMDL
pH	10/03	2/04	6	6	pH Units	AD	AD	6.65	8.24	6.5	BP Minimum
Phosphorus	10/03	2/04	12	12	mg/L	AD	AD	0.093	0.463	NA	NA
Prometryn	10/03	2/04	6	1	µg/L	2	2	2	2	NA	NA
Selenium Dissolved	10/03	8/08	49	43	µg/L	0.2	5	0.2	1.16	NA	NA
Selenium Total	10/03	8/08	49	44	µg/L	0.2	5	0.2	1.16	5	CTR Chronic

Verdugo Wash – Reach 1 - Constituents that have been detected but do not exceed relevant water quality objective

Constituent	Range of Available Data		N	N detects	Units	Detection Limits		Detected Values		WQO	Source of Lowest Water Quality Objective (WQO) Value
						Min	Max	Min	Max		
Silver Dissolved	10/03	8/08	49	23	µg/L	0.06	1	0.03	4.7	HBC	CTR Chronic
Silver Total	10/03	8/08	49	24	µg/L	0.06	1	0.089	3	HBC	CTR Chronic
Simazine	10/03	2/04	6	1	µg/L	2	2	2	2	NA	NA
Sulfate	10/03	2/04	6	6	mg/L	AD	AD	0.1	134	300	BP SSO
TDS	10/03	2/04	6	6	mg/L	AD	AD	60	746	950	BP SSO
Thallium Dissolved	10/03	2/06	20	7	µg/L	1	5	1	2	NA	NA
Thallium Total	10/03	2/06	20	4	µg/L	1	5	1	2	6.3	CTR HH Organism
Total Coliform	1/02	5/09	91	90	MPN/100mL	100	100	500	900000	NA	NA
Total Kjeldahl Nitrogen	10/03	2/04	6	6	mg/L	AD	AD	0.1	9.02	NA	NA
Total Organic Carbon	10/03	2/04	6	6	mg/L	AD	AD	4.26	16.4	NA	NA
TSS	10/03	2/04	6	6	mg/L	AD	AD	18	614	NA	NA
Turbidity	10/03	2/04	6	6	NTU	AD	AD	0.57	238	NA	NA
Volatile Suspended Solids	10/03	2/04	6	6	mg/L	AD	AD	9	104	NA	NA
Zinc Dissolved	10/03	4/12	50	50	µg/L	AD	AD	2	38	HBC	CTR Chronic

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Attachment 3. Water Quality Data Analysis Summary Tables for Constituents That Have Exceeded Water Quality Objectives.

Constituents in this attachment exceeded a water quality objective but not at a frequency that meets the 303(d) Listing requirements.

Aliso Canyon Wash – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/03	1/04	2	2	µg/L	AD	AD	17.2	18.5	Too Few Samples		2	100%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
	Wet	10/03	2/04	4	3	µg/L	1	1	44.3	83.8	49.5	46.1	3	75%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Copper Dissolved	Dry	10/03	5/09	40	38	µg/L	4	4	3.38	24	13.0	12.7	0	0%	No	1	1	0	0%	HBC	CTR Chronic
													0	0%	No	1	1	0	0%	29	LAR Metals TMDL
	Wet	10/03	12/07	8	8	µg/L	AD	AD	7.52	23.1	10.6	8.92	2	25%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													1	13%	No	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	10/03	5/09	41	41	µg/L	AD	AD	4.00	99	23.5	17.4	15	37%	Yes	1	1	0	0%	HBC	CTR Chronic
													11	27%	Yes	1	1	0	0%	30	LAR Metals TMDL
	Wet	10/03	12/07	8	8	µg/L	AD	AD	7.00	72.8	21.9	13.8	4	50%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													3	38%	Yes	NS	NS	NS	NS	17	LAR Metals TMDL
Cyanide	Dry	10/03	1/04	2	0	µg/L	10	10	ND	ND			0	0%	No	NS	NS	NS	NS	5.2	CTR Chronic
	Wet	10/03	2/04	4	1	µg/L	10	10	22	22			1	25%	No	NS	NS	NS	NS	22	CTR Acute
Diazinon	Dry	10/03	5/09	3	1	µg/L	0.002	0.01	0.117	0.117			0	0%	No	1	0	0	0%	0.17	USEPA Chronic
	Wet	10/03	2/04	4	1	µg/L	0.01	0.01	0.503	0.503			1	25%	No	NS	NS	NS	NS	0.17	USEPA Acute
E. Coli	Dry	1/02	5/09	74	68	MPN/100mL	100	100	100	33000	2912	1040	67	91%	Yes	4	2	2	50%	126	BP REC1 30-Day
	Wet	12/02	1/09	7	7	MPN/100mL	AD	AD	100	6500	2839	2300	6	86%	Yes	1	1	0	0%	126	BP REC1 30-Day
Lead Dissolved	Dry	10/03	5/09	41	22	µg/L	0.11	5	0.19	10.4			1	2%	No	1	0	0	0%	HBC	CTR Chronic
													0	0%	No	1	0	0	0%	11	LAR Metals TMDL
	Wet	10/03	12/07	8	5	µg/L	1	1	0.6	1.38			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	51	LAR Metals TMDL
Lead Total	Dry	10/03	5/09	41	25	µg/L	1	1.1	0.51	19.6			3	7%	No	1	1	0	0%	HBC	CTR Chronic
													1	2%	No	1	1	0	0%	19	LAR Metals TMDL
	Wet	10/03	12/07	8	5	µg/L	1	1	1.1	19			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Selenium Total	Dry	10/03	5/09	41	41	µg/L	AD	AD	1.11	8.00	4.35	4.30	11	27%	Yes	1	1	0	0%	5	CTR Chronic
	Wet	10/03	12/07	8	5	µg/L	5	5	0.80	21.3	6.07	3.4	0	0%	No	NS	NS	NS	NS	NA	NA
Sulfate	Dry	10/03	5/09	3	3	mg/L	AD	AD	141	375			1	33%	No	1	1	1	100%	300	BP SSO
	Wet	10/03	2/04	4	4	mg/L	AD	AD	5.98	73.9			0	0%	No	NS	NS	NS	NS	300	BP SSO
TDS	Dry	10/03	5/09	3	3	mg/L	AD	AD	592	2490			1	33%	No	1	1	1	100%	950	BP SSO
	Wet	10/03	2/04	4	4	mg/L	AD	AD	114	344			0	0%	No	NS	NS	NS	NS	950	BP SSO
Zinc Dissolved	Dry	10/03	5/09	41	41	µg/L	AD	AD	4.63	46			0	0%	No	1	1	0	0%	HBC	CTR Chronic
	Wet	10/03	12/07	8	8	µg/L	AD	AD	5	106			1	13%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	13%	No	NS	NS	NS	NS	97	LAR Metals TMDL

Aliso Canyon Wash – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Zinc Total	Dry	10/03	5/09	41	41	µg/L	AD	AD	6.51	159			0	0%	No	1	1	0	0%	HBC	CTR Chronic
													0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
	Wet	10/03	12/07	8	8	µg/L	AD	AD	12	289			1	13%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Arroyo Seco – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/03	1/04	2	1	µg/L	1	1	17.4	17.4	Too Few Samples		1	50%	No	NS	NS	NS	NS	5.9	CTR HH Organism
	Wet	10/03	2/04	4	3	µg/L	1	1	47	50	47.8	48.2	3	75%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Copper Dissolved	Dry	10/03	6/11	47	41	µg/L	0.08	4	2	17			0	0%	No	6	5	0	0%	HBC	CTR Chronic
													0	0%	No	6	5	0	0%	21	LAR Metals TMDL
	Wet	10/03	4/12	9	9	µg/L	AD	AD	3.11	12.9			0	0%	No	1	1	0	0%	HBC	CTR Acute
													1	11%	No	1	1	0	0%	11	LAR Metals TMDL
Copper Total	Dry	10/03	6/11	47	46	µg/L	4	4	0.2	29	Too Few Samples		1	2%	No	6	6	0	0%	HBC	CTR Chronic
													1	2%	No	6	6	0	0%	22	LAR Metals TMDL
	Wet	10/03	4/12	9	9	µg/L	AD	AD	4.33	91.6	Too Few Samples		2	22%	Yes	1	1	0	0%	HBC	CTR Acute
													2	22%	Yes	1	1	0	0%	17	LAR Metals TMDL
E. Coli	Dry	1/02	5/09	77	64	MPN/100mL	100	100	100	240000	1566	465	59	77%	Yes	4	4	4	100%	126	BP REC1 30-Day
E. Coli	Wet	12/02	1/09	8	8	MPN/100mL	AD	AD	100	25000	6528	3955	6	75%	Yes	1	1	0	0%	126	BP REC1 30-Day
Lead Dissolved	Dry	10/03	6/11	47	28	µg/L	0.11	5	0.055	8.2			0	0%	No	6	5	0	0%	HBC	CTR Chronic
													2	4%	No	6	5	0	0%	7.3	LAR Metals TMDL
	Wet	10/03	4/12	9	7	µg/L	1	1	0.32	1.77			0	0%	No	1	1	0	0%	HBC	CTR Acute
													0	0%	No	1	1	0	0%	51	LAR Metals TMDL
Lead Total	Dry	10/03	6/11	47	36	µg/L	0.11	1.1	0.055	32.8	4.96	1.57	4	9%	Yes	6	5	0	0%	HBC	CTR Chronic
													8	17%	Yes	6	5	0	0%	11	LAR Metals TMDL

Arroyo Seco – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Mercury Total	Wet	10/03	4/12	9	9	µg/L	AD	AD	1.00	292	34.6	2.00	1	11%	No	1	1	0	0%	HBC	CTR Acute
													1	11%	No	1	1	0	0%	62	LAR Metals TMDL
	Dry	10/03	6/11	20	3	µg/L	0.004	1	0.0132	0.0178			0	0%	No	6	3	0	0%	0.051	CTR HH Organism
	Wet	10/03	3/05	6	1	µg/L	0.022	1	0.153	0.153			1	17%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Nitrite as N	Dry	10/03	6/11	8	3	mg/L	0.02	0.02	0.353	1.36			1	13%	No	6	1	1	17%	1	LAR Nutrient TMDL
	Wet	10/03	2/04	4	4	mg/L	AD	AD	0.061	0.222			0	0%	No	NS	NS	NS	NS	1	LAR Nutrient TMDL
Zinc Total	Dry	10/03	6/11	47	47	µg/L	AD	AD	2.74	351			0	0%	No	6	6	0	0%	HBC	CTR Chronic
	Wet	10/03	4/12	9	9	µg/L	AD	AD	7	926			1	11%	No	1	1	0	0%	HBC	CTR Acute
													1	11%	No	1	1	0	0%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Bull Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/03	1/04	2	2	µg/L	AD	AD	13.0	13.0	Too Few Samples		2	100%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
	Wet	10/03	2/04	4	2	µg/L	1	1	17.3	78.3	Too Few Samples		2	50%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Cadmium Total	Dry	10/03	6/10	43	27	µg/L	0.02	0.33	0.01	1.42			0	0%	No	2	0	0	0%	HBC	CTR Chronic
	Wet	10/03	12/07	8	5	µg/L	1	1	0.3	3.24			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	13%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Copper Dissolved	Dry	10/03	6/10	41	39	µg/L	4	4	5.00	21	11.5	11.0	1	2%	No	2	2	0	0%	HBC	CTR Chronic
													0	0%	No	2	2	0	0%	29	LAR Metals TMDL
	Wet	10/03	12/07	8	8	µg/L	AD	AD	3.52	17	8.30	6.90	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													2	25%	Yes	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	10/03	6/10	43	42	µg/L	1	1	6.00	38	15.9	14.0	7	16%	Yes	2	2	0	0%	HBC	CTR Chronic

Bull Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
													3	7%	No	2	2	0	0%	30	LAR Metals TMDL
	Wet	10/03	12/07	8	8	µg/L	AD	AD	5.00	77.6	27.0	15.3	3	38%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													3	38%	Yes	NS	NS	NS	NS	17	LAR Metals TMDL
Cyanide	Dry	10/03	1/04	2	0	µg/L	10	10	ND	ND			0	0%	No	NS	NS	NS	NS	5.2	CTR Chronic
	Wet	10/03	2/04	4	2	µg/L	10	10	9	23			1	25%	No	NS	NS	NS	NS	22	CTR Acute
E. Coli	Dry	1/02	5/09	77	68	MPN/100mL	100	100	100	8600	1199	520	64	83%	Yes	4	4	4	100%	126	BP REC1 30-Day
	Wet	12/02	1/09	8	7	MPN/100mL	100	100	200	37000	8034	3050	7	88%	Yes	1	1	1	100%	126	BP REC1 30-Day
Lead Total	Dry	10/03	6/10	43	34	µg/L	1	1.1	0.35	26			1	2%	No	2	2	0	0%	HBC	CTR Chronic
													1	2%	No	2	2	0	0%	19	LAR Metals TMDL
	Wet	10/03	12/07	8	5	µg/L	1	1	1.17	203			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	13%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Zinc Total	Dry	10/03	6/10	43	43	µg/L	AD	AD	6.00	77	24.7	19.0	0	0%	No	2	2	0	0%	HBC	CTR Chronic
													1	13%	No	NS	NS	NS	NS	HBC	CTR Acute
	Wet	10/03	12/07	8	8	µg/L	AD	AD	16	324	105	35.0	2	25%	Yes	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Burbank Western Channel – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
2,3,7,8-TCDD (Dioxin)	Dry	2/07	8/13	64	32	pg/L	0.134	2.3	0.001	2.44	7.37	1.34	28	44%	Yes	40	20	17	43%	0.014	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.014	CTR HH Organism
Benzo(a)Pyrene	Dry	10/03	8/13	137	2	µg/L	0.1	5	0.32	0.41			2	1%	No	45	1	1	2%	0.049	CTR HH Organism
	Wet	10/03	2/04	4	0	µg/L	0.1	0.1	ND	ND			0	0%	No	NS	NS	NS	NS	0.049	CTR HH Organism
Benzo(b) Fluoranthene	Dry	2/04	8/13	135	5	µg/L	0.14	5	0.18	0.32	< 20% Detects		5	4%	No	45	2	2	4%	0.049	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.049	CTR HH Organism

Burbank Western Channel – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
beta-BHC	Dry	10/03	8/13	131	2	µg/L	0.0011	0.08	0.037	0.047			1	1%	No	39	0	0	0%	0.046	CTR HH Organism
	Wet	10/03	2/04	4	0	µg/L	0.05	0.05	ND	ND			0	0%	No	NS	NS	NS	NS	0.046	CTR HH Organism
Bis(2-ethylhexyl) Phthalate	Dry	10/03	8/13	137	73	µg/L	0.21	5	0.36	96	0.270	0.070	35	26%	Yes	45	11	8	18%	5.9	CTR HH Organism
	Wet	10/03	2/04	4	3	µg/L	1	1	9.40	77.1	26.4	13.6	3	75%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Cadmium Total	Dry	10/03	10/13	298	256	µg/L	0.02	1	0.01	4.4			1	0%	No	123	121	0	0%	HBC	CTR Chronic
	Wet	10/03	1/08	9	4	µg/L	0.3	1	0.245	0.465			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Chloride	Dry	10/03	8/13	239	239	mg/L	NA	NA	36	489			8	3%	No	125	125	4	3%	190	BP SSO
	Wet	10/03	2/04	4	4	mg/L	NA	NA	5.24	117			0	0%	No	NS	NS	NS	NS	190	BP SSO
Chlorine (Total)	Dry	10/03	10/13	1299	59	µg/L	10	100	100	2000	< 20% Detects		59	5%	No	526	18	18	3%	100	BP Aquatic Life Objective
	Wet	2/04	2/12	42	5	µg/L	10	100	100	600	< 20% Detects		5	12%	Yes	7	0	0	0%	100	BP Aquatic Life Objective
Chloro-dibromomethane	Dry	2/04	10/13	231	130	µg/L	0.063	0.5	0.13	69	8.91	1.16	27	12%	Yes	123	56	1	1%	34	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	34	CTR HH Organism
Copper Dissolved	Dry	10/03	10/13	166	165	µg/L	0.16	0.16	3.90	57	17.6	14.0	60	36%	Yes	97	96	3	3%	HBC	CTR Chronic
													60	36%	Yes	97	96	3	3%	18	LAR Metals TMDL
	Wet	10/03	1/08	16	16	µg/L	AD	AD	7.50	40.3	19.6	16.7	11	69%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													12	75%	Yes	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	10/03	10/13	336	336	µg/L	AD	AD	1.20	177	21.8	17.2	145	43%	Yes	152	152	21	14%	HBC	CTR Chronic
													148	44%	Yes	152	152	28	18%	19	LAR Metals TMDL
	Wet	10/03	1/08	16	16	µg/L	AD	AD	11.2	139	39.2	30.2	11	69%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													13	81%	Yes	NS	NS	NS	NS	17	LAR Metals TMDL
Cyanide	Dry	10/03	10/13	206	70	µg/L	0.48	10	0.33	14			15	7%	No	93	24	1	1%	5.2	CTR Chronic
	Wet	10/03	2/04	4	1	µg/L	10	10	12	12			0	0%	No	NS	NS	NS	NS	22	CTR Acute
E. Coli	Dry	1/02	10/13	371	345	MPN/100mL	1	100	3.00	240000	2429	626	306	82%	Yes	215	214	199	93%	126	BP REC1 30-Day
	Wet	12/02	1/09	8	5	MPN/100mL	100	100	100	11000	2362	200	3	38%	No	1	1	0	0%	126	BP REC1 30-Day
Heptachlor	Dry	10/03	8/13	131	1	µg/L	0.0006	0.05	0.0081	0.0081			1	1%	No	39	0	0	0%	0.00021	CTR HH Organism
	Wet	10/03	2/04	4	0	µg/L	0.05	0.05	ND	ND			0	0%	No	NS	NS	NS	NS	0.52	CTR HH Acute
Lead Total	Dry	10/03	10/13	321	304	µg/L	0.031	1.1	0.12	55			6	2%	No	152	149	0	0%	HBC	CTR Chronic
													6	2%	No	152	149	0	0%	9.1	LAR Metals TMDL
	Wet	10/03	1/08	9	9	µg/L	AD	AD	0.98	2.85			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute

Burbank Western Channel – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Mercury Total	Dry	10/03	8/13	244	178	µg/L	0.0001	1	0.0002	0.43			17	7%	No	99	97	1	1%	0.051	CTR HH Organism
	Wet	10/03	3/05	7	1	µg/L	0.022	1	0.242	0.242			1	14%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Nitrate as N	Dry	10/03	10/13	865	863	mg/L	0.02	0.022	0.03	15			0	0%	No	523	522	0	0%	8	LAR Nutrient TMDL
	Wet	10/03	10/12	14	14	mg/L	AD	AD	0.187	4.54			0	0%	No	1/09	10/12	0	0%	8	LAR Nutrient TMDL
Nitrite as N	Dry	10/03	10/13	865	228	mg/L	0.002	0.1	0.025	3.1			8	1%	No	523	178	0	0%	1	LAR Nutrient TMDL
	Wet	10/03	10/12	14	3	mg/L	0.01	0.03	0.07	0.353			0	0%	No	1/09	10/12	0	0%	1	LAR Nutrient TMDL
pH	Dry	10/03	10/13	805	805	pH Units	AD	AD	6.06	9.9			12	1%	No	249	249	0	0%	6.5	BP Minimum
	Wet	10/03	1/08	41	41	pH Units	AD	AD	5.38	8.6			4	10%	No	NS	NS	NS	NS	6.5	BP Minimum
Selenium Total	Dry	10/03	8/13	235	215	µg/L	0.13	0.28	0.2	15.3			15	6%	No	99	95	0	0%	5	CTR Chronic
	Wet	10/03	1/08	9	6	µg/L	0.1	5	0.3	3.56			0	0%	No	NS	NS	NS	NS	NA	NA
TDS	Dry	10/03	8/13	170	170	mg/L	AD	AD	380	1480			2	1%	No	55	55	1	2%	950	BP SSO
	Wet	10/03	2/04	4	4	mg/L	AD	AD	78	520			0	0%	No	NS	NS	NS	NS	950	BP SSO
Thallium Total	Dry	10/03	8/13	61	16	µg/L	0.02	5	0.02	15			1	2%	No	21	1	0	0%	6.3	CTR HH Organism
	Wet	10/03	3/05	7	0	µg/L	1	5	ND	ND			0	0%	No	NS	NS	NS	NS	6.3	CTR HH Organism
Zinc Dissolved	Dry	10/03	10/13	152	151	µg/L	0.13	0.13	1.30	152	52.0	58.0	0	0%	No	97	96	0	0%	HBC	CTR Chronic
	Wet	10/03	1/08	9	9	µg/L	AD	AD	51	109	71.5	60.9	2	22%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													2	22%	Yes	NS	NS	NS	NS	97	LAR Metals TMDL
Zinc Total	Dry	10/03	10/13	321	321	µg/L	AD	AD	5.50	738			2	1%	No	152	152	0	0%	HBC	CTR Chronic
	Wet	10/03	1/08	9	9	µg/L	AD	AD	55	130			1	11%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Caballero Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Cadmium Total	Dry	2/05	8/08	41	28	µg/L	0.3	0.33	0.01	24.9			2	5%	No	NS	NS	NS	NS	HBC	CTR Chronic

Caballero Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
	Wet	1/05	12/07	4	3	µg/L	0.02	0.02	0.4	1			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Copper Dissolved	Dry	2/05	8/08	40	38	µg/L	1	4	3	17			0	0%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	1/05	12/07	4	4	µg/L	AD	AD	5	12.4			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	25%	No	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	2/05	8/08	41	40	µg/L	4	4	4.00	1120	51.1	11.4	4	10%	Yes	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	1/05	12/07	4	4	µg/L	AD	AD	6.00	15.6	9.40	8.00	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	17	LAR Metals TMDL
E. Coli	Dry	7/04	5/09	48	42	MPN/100mL	100	100	100	49000	3000	850	38	79%	Yes	4	2	1	25%	126	BP REC1 30-Day
	Wet	10/04	1/09	6	5	MPN/100mL	100	100	300	15000	3463	580	5	83%	Yes	1	1	1	100%	126	BP REC1 30-Day
Lead Total	Dry	2/05	8/08	41	29	µg/L	1	1.1	0.29	162			2	5%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	1/05	12/07	4	2	µg/L	1	1	1	2.02			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Mercury Total	Dry	2/05	2/06	12	1	µg/L	0.022	0.022	0.108	0.108			1	8%	No	NS	NS	NS	NS	0.051	CTR HH Organism
	Wet	1/05	3/05	2	1	µg/L	0.022	0.022	0.027	0.027			0	0%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Nickel Total	Dry	2/05	8/08	41	41	µg/L	AD	AD	5.96	418			1	2%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	1/05	12/07	4	4	µg/L	AD	AD	12	17			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
Selenium Total	Dry	2/05	8/08	41	41	µg/L	AD	AD	1.10	14.5	3.51	2.80	6	15%	Yes	NS	NS	NS	NS	5	CTR Chronic
	Wet	1/05	12/07	4	4	µg/L	AD	AD	1.30	12.4	5.42	4.75	0	0%	No	NS	NS	NS	NS	NA	NA
Zinc Total	Dry	2/05	8/08	41	41	µg/L	AD	AD	5	2280			2	5%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	1/05	12/07	4	4	µg/L	AD	AD	11	36.1			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Compton Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Chloride	Dry	6/09	6/11	4	4	mg/L	AD	AD	74	175			2	50%	No	4	4	2	50%	150	BP SSO

Compton Creek – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	150	BP SSO
Chlorpyrifos	Dry	6/09	6/11	4	1	µg/L	0.001	0.001	0.122	0.122			1	25%	No	4	1	1	25%	0.041	USEPA Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.083	USEPA Acute
Copper Dissolved	Dry	2/05	6/13	73	69	µg/L	4	4	0.88	19	5.70	4	6	8%	No	32	32	0	0%	HBC	CTR Chronic
													2	3%	No	32	32	0	0%	18	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	8.00	11.8	1.79	8.20	2	50%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													1	25%	No	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	2/05	6/13	74	74	µg/L	AD	AD	1.30	28	8.43	6.73	11	15%	Yes	32	32	2	6%	HBC	CTR Chronic
													7	9%	Yes	32	32	1	3%	19	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	13	21.1	3.71	17.3	2	50%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													2	50%	Yes	NS	NS	NS	NS	17	LAR Metals TMDL
E. Coli	Dry	1/02	5/09	77	50	MPN/100mL	100	100	100	170000	6082	305	35	45%	Yes	4	2	1	25%	126	BP REC1 30-Day
	Wet	12/02	1/09	8	8	MPN/100mL	AD	AD	100	240000	44145	13500	7	88%	Yes	1	1	1	100%	126	BP REC1 30-Day
Lead Dissolved	Dry	2/05	6/13	74	71	µg/L	0.11	1.1	0.11	7			3	4%	No	32	32	0	0%	HBC	CTR Chronic
													2	3%	No	32	32	0	0%	6	LAR Metals TMDL
	Wet	1/05	1/08	4	3	µg/L	1	1	1	2.09			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
	Wet	1/05	1/08	4	3	µg/L	1	1	1	2.09			0	0%	No	NS	NS	NS	NS	51	LAR Metals TMDL
Lead Total	Dry	2/05	6/13	74	73	µg/L	1	1	1.17	21.9	4.91	3.87	11	15%	Yes	32	32	2	6%	HBC	CTR Chronic
													7	9%	Yes	32	32	2	6%	8.9	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	3.00	14.8	5.82	8.80	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Mercury Total	Dry	2/05	6/11	16	4	µg/L	0.0036	0.022	0.01	0.434			1	6%	No	4	2	0	0%	0.051	CTR HH Organism
	Wet	1/05	3/05	2	1	µg/L	0.022	0.022	0.27	0.27			1	50%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Zinc Dissolved	Dry	2/05	6/13	74	74	µg/L	AD	AD	2.46	110			0	0%	No	32	32	0	0%	HBC	CTR Chronic
	Wet	1/05	1/08	4	4	µg/L	AD	AD	19	66.9			1	25%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	97	LAR Metals TMDL
Zinc Total	Dry	2/05	6/13	74	74	µg/L	AD	AD	5.67	195	33.6	26.5	0	0%	No	32	32	0	0%	HBC	CTR Chronic
	Wet	1/05	1/08	4	4	µg/L	AD	AD	39	143	48.8	83.0	2	50%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Echo Park Lake – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Cadmium Total	Dry	5/03	11/10	87	18	µg/L	0.01	0.5	0.01	4.02			1	1%	No	24	2	0	0%	HBC	CTR Chronic
	Wet	2/04	2/05	6	3	µg/L	0.3	0.3	0.11	0.21			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
Copper Dissolved	Dry	5/03	11/10	87	78	µg/L	1	4	2.00	28	6.69	5.04	12	14%	Yes	24	24	0	0%	HBC	CTR Chronic
	Wet	2/04	2/05	6	6	µg/L	AD	AD	6.00	13	2.54	9.00	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
Copper Total	Dry	5/03	11/10	87	87	µg/L	AD	AD	5.70	54	17.3	15.2	38	44%	Yes	24	24	4	17%	HBC	CTR Chronic
	Wet	2/04	2/05	6	6	µg/L	AD	AD	8.80	27	7.14	14.4	1	17%	No	NS	NS	NS	NS	HBC	CTR Acute
E. Coli	Dry	10/02	11/10	582	389	MPN/100mL	100	100	52	15000	536	200	264	45%	Yes	114	85	57	50%	126	BP REC1 30-Day
	Wet	2/03	12/08	42	36	MPN/100mL	100	100	100	17000	1154	250	27	64%	Yes	NS	NS	NS	NS	126	BP REC1 30-Day
Lead Dissolved	Dry	5/03	11/10	86	51	µg/L	0.1	3	0.16	8.00	1.58	0.800	9	10%	Yes	24	17	0	0%	HBC	CTR Chronic
	Wet	2/04	2/05	6	3	µg/L	3	3	2.00	4.00	3.00	3	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
Lead Total	Dry	5/03	11/10	87	82	µg/L	2	3	1.54	15	5.25	4.68	20	23%	Yes	24	21	1	4%	HBC	CTR Chronic
	Wet	2/04	2/05	6	4	µg/L	3	3	2.00	7.00	4.25	4	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
Mercury Total	Dry	5/03	11/10	87	23	µg/L	0.004	0.022	0.004	0.084	0.006	0.002	3	3%	No	24	10	0	0%	0.051	CTR HH Organism
	Wet	2/04	2/05	6	3	µg/L	0.022	0.022	0.133	0.143	0.131	0.078	3	50%	Yes	NS	NS	NS	NS	0.051	CTR HH Organism
pH	Dry	11/02	5/11	326	326	pH Units	AD	AD	6.64	9.83	8.34	8.30	77	24%	Yes	126	126	28	22%	8.5	BP Maximum
	Wet	2/03	2/05	16	16	pH Units	AD	AD	4.30	8.63	7.65	8.29	3	19%	No	NS	NS	NS	NS	8.5	BP Maximum
Zinc Total	Dry	5/03	11/10	84	84	µg/L	AD	AD	3.87	296			2	2%	No	21	21	0	0%	HBC	CTR Chronic
	Wet	2/04	2/05	6	6	µg/L	AD	AD	4	13.9			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 1 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/02	7/13	29	3	µg/L	1	5	9.90	50.9	< 20% Detects		3	10%	Yes	17	1	1	6%	5.9	CTR HH Organism
	Wet	11/02	5/13	49	4	µg/L	1	5	8.86	62	< 20% Detects		4	8%	No	23	1	1	4%	5.9	CTR HH Organism
Cadmium Total	Dry	3/01	7/13	112	52	µg/L	0.08	1	0.002	1.60			0	0%	No	17	12	0	0%	HBC	CTR Chronic
	Wet	2/01	5/13	78	64	µg/L	0.1	1	0.168	5.17			0	0%	No	46	42	0	0%	HBC	CTR Acute
													6	8%	No	46	42	1	2%	3.1	LAR Metals TMDL
Copper Dissolved	Dry	3/01	7/13	143	128	µg/L	0.5	20	3.29	20	9.87	8.40	3	2%	No	46	42	0	0%	HBC	CTR Chronic
													0	0%	No	46	42	0	0%	22	LAR Metals TMDL
	Wet	2/01	5/13	80	75	µg/L	0.5	10	3.25	77.2	11.4	9.60	38	48%	Yes	48	44	30	63%	HBC	CTR Acute
													28	35%	Yes	48	44	22	46%	11	LAR Metals TMDL
Copper Total	Dry	3/01	7/13	144	134	µg/L	0.5	20	1.74	48.6	15.6	12.2	16	11%	Yes	46	45	3	7%	HBC	CTR Chronic
													6	4%	No	46	45	0	0%	23	LAR Metals TMDL
	Wet	2/01	5/13	80	77	µg/L	0.5	10	9.56	424	60.8	39.4	68	85%	Yes	48	46	45	94%	HBC	CTR Acute
													68	85%	Yes	48	46	46	96%	17	LAR Metals TMDL
Cyanide	Dry	10/02	7/13	24	21	µg/L	5	10	6	109	29.5	20.3	21	88%	Yes	13	11	11	85%	5.2	CTR Chronic
	Wet	10/02	1/13	49	37	µg/L	5	10	5	1200	39.8	10.1	10	20%	Yes	24	18	2	8%	22	CTR Acute
Diazinon	Dry	10/02	7/13	36	3	µg/L	0.002	0.01	0.037	0.155			0	0%	No	24	0	0	0%	0.17	USEPA Chronic
	Wet	11/02	5/13	41	5	µg/L	0.003	0.01	0.03	0.179			1	2%	No	16	0	0	0%	0.17	USEPA Acute
Dissolved Oxygen	Dry	10/02	7/13	31	31	mg/L	AD	AD	5.04	22.3			0	0%	No	20	20	0	0%	5	BP Minimum
	Wet	11/02	5/13	41	41	mg/L	AD	AD	2.50	14.2			1	2%	No	17	17	0	0%	5	BP Minimum
E. Coli	Dry	2/01	7/13	342	324	MPN/100mL	100	1000	30	140000	4155	1093	302	88%	Yes	91	90	80	88%	126	BP REC1 30-Day
	Wet	2/01	5/13	36	35	MPN/100mL	100	100	100	240000	17118	5600	34	94%	Yes	6	6	6	100%	126	BP REC1 30-Day
Lead Dissolved	Dry	3/01	7/13	144	78	µg/L	0.11	26	0.16	17			4	3%	No	46	39	0	0%	HBC	CTR Chronic
													4	3%	No	46	39	0	0%	7.6	LAR Metals TMDL
	Wet	2/01	5/13	80	71	µg/L	0.5	5	0.09	82			3	4%	No	48	48	3	6%	HBC	CTR Acute
													3	4%	No	48	48	3	6%	51	LAR Metals TMDL
Lead Total	Dry	3/01	7/13	144	106	µg/L	0.2	26	0.21	37	5.66	2.06	9	6%	No	46	45	2	4%	HBC	CTR Chronic
													6	4%	No	46	45	0	0%	12	LAR Metals TMDL
	Wet	2/01	5/13	80	78	µg/L	1	5	1.57	1070	69.8	26.6	25	31%	Yes	48	48	18	38%	HBC	CTR Acute
													15	19%	Yes	48	48	9	19%	62	LAR Metals TMDL
Nitrite as N	Dry	10/02	7/13	29	26	mg/L	0.03	0.50	0.04	1.60	0.43	0.19	6	21%	Yes	17	14	0	0%	1	LAR Nutrient TMDL
	Wet	11/02	1/13	48	29	mg/L	0.03	0.50	0.01	0.63	0.08	0.03	0	0%	No	23	13	0	0%	1	LAR Nutrient TMDL
Mercury Total	Dry	6/01	7/13	81	17	µg/L	0.0036	1	0.006	0.182	< 20% Detects		11	14%	Yes	17	0	0	0%	0.051	CTR HH Organism
	Wet	11/02	5/13	52	2	µg/L	0.022	1	0.17	0.447	< 20% Detects		2	4%	No	23	0	0	0%	0.051	CTR HH Organism

LA River – Reach 1 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
pH	Dry	10/02	7/13	48	48	pH Units	AD	AD	7.05	9.87	8.78	8.93	32	67%	Yes	16	16	12	75%	8.5	BP Maximum
	Wet	11/02	1/13	50	50	pH Units	AD	AD	6.16	9.04	7.17	7.07	2	4%	No	23	23	0	0%	8.5	BP Maximum
Selenium Total	Dry	3/01	7/13	119	107	µg/L	0.5	30	0.2	7.16			2	2%	No	24	18	1	4%	5	CTR Chronic
	Wet	2/01	5/13	48	24	µg/L	0.5	30	0.2	4.73			0	0%	No	16	8	0	0%	NA	NA
Thallium Total	Dry	3/01	7/13	91	11	µg/L	0.1	25	0.108	19			3	3%	No	23	2	0	0%	6.3	CTR HH Organism
	Wet	2/01	5/13	46	3	µg/L	0.1	25	0.114	0.205			0	0%	No	16	3	0	0%	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	7/13	143	140	µg/L	1	17.2	4.15	97	43.2	31.8	1	1%	No	46	45	1	2%	HBC	CTR Chronic
	Wet	2/01	5/13	80	80	µg/L	AD	AD	4.00	665	82.6	55.9	23	29%	Yes	48	48	19	40%	HBC	CTR Acute
													16	20%	Yes	48	48	14	29%	97	LAR Metals TMDL
Zinc Total	Dry	3/01	7/13	144	142	µg/L	10	17.2	14.5	143	71.6	52.3	2	1%	No	46	46	2	4%	HBC	CTR Chronic
	Wet	2/01	5/13	80	80	µg/L	AD	AD	12	2590	326	185	56	70%	Yes	48	48	43	90%	HBC	CTR Acute
													48	60%	Yes	48	48	34	71%	159	LAR Metals TMDL

NA - No Available adopted water quality objective
AD - All values reported detected, no detection limit provided
HBC - Hardness Based Criteria, as defined by CTR
BP – Basin Plan
SSO – Site Specific Objective

LA River – Reach 2 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Cadmium Total	Dry	3/01	6/10	168	60	µg/L	0.02	1	0.002	2.34	0.210	0.060	0	0%	No	2	2	0	0%	HBC	CTR Chronic
	Wet	1/01	1/08	15	9	µg/L	0.08	1	0.2	5.00	0.990	0.440	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													2	13%	Yes	NS	NS	NS	NS	3.1	LAR Metals TMDL
Copper Dissolved	Dry	3/01	6/13	261	240	µg/L	4	20	2.26	25	8.80	7.80	8	3%	No	89	89	0	0%	HBC	CTR Chronic
													3	1%	No	89	89	0	0%	21	LAR Metals TMDL
	Wet	1/01	4/12	38	36	µg/L	10	10	1.92	26	9.54	8	4	11%	Yes	23	23	4	17%	HBC	CTR Acute
													9	24%	Yes	23	23	3	13%	11	LAR Metals TMDL
Copper Total	Dry	3/01	6/13	263	247	µg/L	4	20	3.75	39	13.4	11.0	23	9%	Yes	89	89	0	0%	HBC	CTR Chronic
													16	6%	No	89	89	0	0%	22	LAR Metals TMDL
	Wet	1/01	4/12	38	37	µg/L	10	10	9.00	129	39.2	24.8	23	61%	Yes	23	23	21	91%	HBC	CTR Acute
													30	79%	Yes	23	23	23	100%	17	LAR Metals TMDL
E. Coli	Dry	2/01	9/12	591	568	MPN/100mL	100	100	41	120000	2670	960	564	95%	Yes	94	93	93	99%	126	BP REC1 30-Day
	Wet	1/01	1/09	59	57	MPN/100mL	100	100	100	77000	11649	5500	56	95%	Yes	2	2	1	50%	126	BP REC1 30-Day

LA River – Reach 2 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Lead Dissolved	Dry	3/01	6/13	263	146	µg/L	0.11	26	0.1	31			4	2%	No	89	83	0	0%	HBC	CTR Chronic
													4	2%	No	89	83	0	0%	7.3	LAR Metals TMDL
	Wet	1/01	4/12	38	29	µg/L	1	5	0.02	16			0	0%	No	23	23	0	0%	HBC	CTR Acute
													0	0%	No	23	23	0	0%	51	LAR Metals TMDL
Lead Total	Dry	3/01	6/13	264	184	µg/L	1	26	0.11	57.1	4.17	1.54	11	4%	No	89	89	0	0%	HBC	CTR Chronic
													10	4%	No	89	89	0	0%	11	LAR Metals TMDL
	Wet	1/01	4/12	38	35	µg/L	1	3	1.28	119	23.4	13.1	7	18%	Yes	23	23	7	30%	HBC	CTR Acute
													4	11%	Yes	23	23	4	17%	62	LAR Metals TMDL
Mercury Total	Dry	4/01	6/10	108	32	µg/L	0.004	0.3	0.0044	0.19	0.040	0.018	21	19%	Yes	2	1	0	0%	0.051	CTR HH Organism
	Wet	1/01	3/05	9	3	µg/L	0.022	0.3	0.023	0.2	0.046	0.007	2	22%	Yes	NS	NS	NS	NS	0.051	CTR HH Organism
pH	Dry	3/06	2/08	40	40	pH Units	AD	AD	7.47	9.55	8.77	8.75	30	75%	Yes	NS	NS	NS	NS	8.5	BP Maximum
	Wet	12/07	1/08	4	4	pH Units	AD	AD	7.91	8.85	8.42	8.46	2	50%	No	NS	NS	NS	NS	8.5	BP Maximum
Thallium Total	Dry	3/01	2/06	112	8	µg/L	0.5	25	0.8	10.8			2	2%	No	NS	NS	NS	NS	6.3	CTR HH Organism
	Wet	1/01	3/05	11	1	µg/L	0.5	25	1	1			0	0%	No	NS	NS	NS	NS	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	6/13	262	258	µg/L	10	17.2	11.90	74.5	33.2	31.1	0	0%	No	89	89	0	0%	HBC	CTR Chronic
	Wet	1/01	4/12	38	38	µg/L	AD	AD	4.00	249	64.2	37.0	6	16%	Yes	23	23	6	26%	HBC	CTR Acute
													7	18%	Yes	23	23	5	22%	97	LAR Metals TMDL
Zinc Total	Dry	3/01	6/13	264	260	µg/L	10	17.2	17.7	97	54.4	44.6	0	0%	No	89	89	0	0%	HBC	CTR Chronic
	Wet	1/01	4/12	38	38	µg/L	AD	AD	19	667	203	78.5	21	55%	Yes	23	23	20	87%	HBC	CTR Acute
													23	61%	Yes	23	23	21	91%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 3, Above LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
2,3,7,8-TCDD (Dioxin)	Dry	8/07	9/13	13	1	pg/L	0.48	12	0.015	0.015			1	8%	No	9	0	0	0%	0.014	CTR HH Organism
	Wet	2/10	2/10	2	1	pg/L	0.95	0.95	2.44	2.44			1	50%	No	2	1	1	50%	0.014	CTR HH Organism
Ammonia as N	Dry	2/02	11/13	359	284	mg/L	0.05	0.05	0.05	15.2	1.57	0.190	53	15%	Yes	231	168	0	0%	Ammonia	BP 30-Day Average

LA River – Reach 3, Above LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
	Wet	2/04	2/12	8	7	mg/L	0.05	0.05	0.12	9.40	1.42	0.295	1	13%	No	4	0	0	0%	Ammonia	BP 30-Day Average
Bis(2-ethylhexyl) Phthalate	Dry	2/02	9/13	44	10	µg/L	0.3	1.9	0.3	6.88			1	2%	No	14	1	0	0%	5.9	CTR HH Organism
	Wet	2/04	2/10	3	1	µg/L	0.3	1	0.9	0.9			0	0%	No	1	0	0	0%	5.9	CTR HH Organism
Chlorine (Total)	Dry	1/02	11/13	562	2	µg/L	50	100	100	130			2	0%	No	231	0	0	0%	100	BP Aquatic Life Objective
	Wet	11/03	2/12	13	0	µg/L	50	100	ND	ND			0	0%	No	4	0	0	0%	100	BP Aquatic Life Objective
Copper Dissolved	Dry	3/01	6/13	127	120	µg/L	10	20	3.02	30	11.1	10.7	9	7%	No	30	30	0	0%	HBC	CTR Chronic
													5	4%	No	30	30	0	0%	22	LAR Metals TMDL
	Wet	1/01	1/08	8	7	µg/L	10	10	5.00	43.7	14.5	10.6	1	13%	No	NS	NS	NS	NS	HBC	CTR Acute
													4	50%	Yes	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	3/01	8/13	189	186	µg/L	10	10	4.97	38	14.5	13.0	33	17%	Yes	50	50	1	2%	HBC	CTR Chronic
													21	11%	Yes	50	50	0	0%	23	LAR Metals TMDL
	Wet	1/01	2/10	10	9	µg/L	10	10	6.00	78.4	20.8	15.5	1	10%	No	1	1	0	0%	HBC	CTR Acute
													5	50%	Yes	1	1	0	0%	17	LAR Metals TMDL
Cyanide	Dry	2/02	11/13	64	8	µg/L	2	4	2.2	17			5	8%	No	22	0	0	0%	5.2	CTR Chronic
	Wet	2/04	2/10	2	0	µg/L	4	4	ND	ND			0	0%	No	1	0	0	0%	22	CTR Acute
Dibenzo(a,h) Anthracene	Dry	2/02	9/13	47	5	µg/L	0.0082	1.9	0.02	0.13	< 20% Detects		2	4%	No	15	1	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	2	0	µg/L	0.02	0.05	ND	ND	ND	ND	0	0%	No	1	0	0	0%	0.049	CTR HH Organism
E. Coli	Dry	2/01	11/13	665	649	MPN/100mL	1	100	52	87000	1555	514	642	97%	Yes	320	314	309	97%	126	BP REC1 GEo
	Wet	1/01	2/12	32	32	MPN/100mL	AD	AD	240	58000	7731	3200	32	100%	Yes	5	5	5	100%	126	BP REC1 30-Day
Indeno (1,2,3-cd)Pyrene	Dry	2/02	9/13	22	1	µg/L	0.02	1.7	0.12	0.12			1	5%	No	9	0	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	2	0	µg/L	0.02	0.07	ND	ND			0	0%	No	1	0	0	0%	0.049	CTR HH Organism
Lead Dissolved	Dry	3/01	6/13	125	68	µg/L	0.11	26	0.17	36			4	3%	No	30	26	0	0%	HBC	CTR Chronic
													4	3%	No	30	26	0	0%	7.6	LAR Metals TMDL
	Wet	1/01	1/08	8	3	µg/L	1	5	0.58	11			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	51	LAR Metals TMDL
Lead Total	Dry	3/01	8/13	189	114	µg/L	1	26	0.11	114			9	5%	No	50	41	1	2%	HBC	CTR Chronic
													8	4%	No	50	41	1	2%	12	LAR Metals TMDL
	Wet	1/01	2/10	10	6	µg/L	1	3	1.54	23.6			0	0%	No	1	1	0	0%	HBC	CTR Acute
													0	0%	No	1	1	0	0%	62	LAR Metals TMDL
Mercury Total	Dry	5/01	11/13	129	32	µg/L	0.004	0.3	0.004	0.176	0.015	0.002	11	9%	Yes	23	5	0	0%	0.051	CTR HH Organism
	Wet	1/01	2/10	7	2	µg/L	0.022	0.3	0.022	0.2			1	14%	No	1	1	0	0%	0.051	CTR HH Organism
Nickel Total	Dry	3/01	8/13	140	126	µg/L	5	20	2.8	121			2	1%	No	19	19	0	0%	HBC	CTR Chronic

LA River – Reach 3, Above LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
	Wet	1/01	2/10	10	9	µg/L	20	20	3	40.2			0	0%	No	1	1	0	0%	HBC	CTR Acute
Nitrite as N	Dry	2/02	11/13	339	262	mg/L	0.02	0.02	0.03	2.45			25	7%	No	231	183	0	0%	1	LAR Nutrient TMDL
	Wet	2/04	2/12	6	4	mg/L	0.02	0.02	0.06	1.26			1	17%	No	4	2	0	0%	1	LAR Nutrient TMDL
pH	Dry	1/02	11/13	583	583	pH Units	AD	AD	6.1	8.9			11	2%	No	232	232	11	5%	6.5	BP Minimum
	Wet	11/03	2/12	14	14	pH Units	AD	AD	7.1	8.5			0	0%	No	4	4	0	0%	6.5	BP Minimum
Selenium Total	Dry	3/01	8/13	120	116	µg/L	30	30	0.3	5.76			2	2%	No	19	19	0	0%	5	CTR Chronic
	Wet	1/01	2/10	9	7	µg/L	1	30	1	9			0	0%	No	1	1	0	0%	NA	NA
Sulfate	Dry	2/02	11/13	68	68	mg/L	AD	AD	120	307			1	1%	No	21	21	0	0%	300	BP SSO
	Wet	2/04	2/10	4	4	mg/L	AD	AD	99.7	239			0	0%	No	1	1	0	0%	300	BP SSO
Thallium Total	Dry	3/01	8/13	91	32	µg/L	0.01	25	0.01	11.5			2	2%	No	18	16	0	0%	6.3	CTR HH Organism
	Wet	1/01	2/10	7	0	µg/L	0.01	25	ND	ND			0	0%	No	1	0	0	0%	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	6/13	127	125	µg/L	10	17.2	4.40	80.9	40.1	37.9	0	0%	No	30	30	0	0%	HBC	CTR Chronic
	Wet	1/01	1/08	8	8	µg/L	AD	AD	10	131	50.4	32.6	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													2	25%	Yes	NS	NS	NS	NS	97	LAR Metals TMDL
Zinc Total	Dry	3/01	8/13	189	187	µg/L	10	17.2	16.9	91.8			0	0%	No	50	50	0	0%	HBC	CTR Chronic
	Wet	1/01	2/10	10	10	µg/L	AD	AD	15	272			0	0%	No	1	1	0	0%	HBC	CTR Acute
													1	10%	No	1	1	0	0%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 3, Below LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
2,3,7,8-TCDD (Dioxin)	Dry	8/07	9/13	14	2	pg/L	0.72	10	0.025	0.96	< 20% Detects		2	14%	Yes	11	2	2	18%	0.014	CTR HH Organism
	Wet	2/10	2/10	2	1	pg/L	0.39	0.39	0.014	0.014	Too Few Samples		1	50%	No	2	1	1	50%	0.014	CTR HH Organism
Ammonia as N	Dry	2/02	11/13	471	464	mg/L	0.05	0.05	0.05	19.4	2.40	0.350	52	11%	Yes	233	230	0	0%	Ammonia	BP 30-Day Average
	Wet	2/04	2/12	11	11	mg/L	AD	AD	0.11	11.2	3.35	1.47	2	18%	Yes	4	4	0	0%	Ammonia	BP 30-Day Average

LA River – Reach 3, Below LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Benzo(a) Anthracene	Dry	2/02	9/13	75	1	µg/L	0.0048	1.2	0.19	0.19			1	1%	No	16	0	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	3	0	µg/L	0.09	0.14	ND	ND			0	0%	No	1	0	0	0%	0.049	CTR HH Organism
Bis(2-ethylhexyl) Phthalate	Dry	2/02	9/13	70	15	µg/L	0.3	3	0.3	28.169			1	1%	No	15	2	0	0%	5.9	CTR HH Organism
	Wet	2/04	2/10	5	2	µg/L	0.3	1	0.5	1.2			0	0%	No	1	0	0	0%	5.9	CTR HH Organism
Cadmium Total	Dry	3/01	8/13	183	71	µg/L	0.02	1	0.002	1.65			0	0%	No	21	14	0	0%	HBC	CTR Chronic
	Wet	1/01	2/10	11	8	µg/L	0.3	1	0.14	4.9			0	0%	No	1	1	0	0%	HBC	CTR Acute
													1	9%	No	1	1	0	0%	3.1	LAR Metals TMDL
Chlorine (Total)	Dry	1/02	11/13	741	3	µg/L	100	100	120	600			3	0%	No	231	0	0	0%	100	BP Aquatic Life Objective
	Wet	11/03	2/12	21	0	µg/L	100	100	ND	ND			0	0%	No	4	0	0	0%	100	BP Aquatic Life Objective
Chrysene	Dry	2/02	9/13	75	1	µg/L	0.004	1.5	0.16	0.16			1	1%	No	16	0	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	3	0	µg/L	0.05	0.12	ND	ND			0	0%	No	1	0	0	0%	0.049	CTR HH Organism
Copper Dissolved	Dry	3/01	4/13	113	104	µg/L	4	20	1.91	23	9.06	7.90	12	11%	Yes	28	28	1	4%	HBC	CTR Chronic
													1	1%	No	28	28	0	0%	21	LAR Metals TMDL
	Wet	1/01	4/12	33	32	µg/L	10	10	2.16	18	8.05	7	1	3%	No	25	25	1	4%	HBC	CTR Acute
													6	18%	Yes	25	25	0	0%	11	LAR Metals TMDL
Copper Total	Dry	3/01	8/13	214	207	µg/L	10	20	3.35	33	14.0	11.8	9	4%	No	49	49	0	0%	HBC	CTR Chronic
													5	2%	No	49	49	0	0%	26	LAR Metals TMDL
	Wet	1/01	4/12	36	35	µg/L	10	10	8.00	118	33.0	30.7	22	61%	Yes	26	26	21	81%	HBC	CTR Acute
													29	81%	Yes	26	26	24	92%	17	LAR Metals TMDL
Cyanide	Dry	2/02	11/13	102	12	µg/L	2	4	2.3	23			6	6%	No	23	0	0	0%	5.2	CTR Chronic
	Wet	2/04	2/10	3	0	µg/L	4	4	ND	ND			0	0%	No	1	0	0	0%	22	CTR Acute
Dibenzo(a,h) Anthracene	Dry	2/02	9/13	75	8	µg/L	0.0082	1.9	0.02	0.4			6	8%	No	16	2	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	3	0	µg/L	0.02	0.05	ND	ND			0	0%	No	1	0	0	0%	0.049	CTR HH Organism
Dichloro-bromomethane	Dry	8/07	8/13	15	12	µg/L	0.06	0.08	0.31	1.91			0	0%	No	10	9	0	0%	46	CTR HH Organism
	Wet	2/10	2/10	1	1	µg/L	AD	AD	1.00	1.00	Too Few Samples		1	100%	No	1	1	0	0%	46	CTR HH Organism
Dissolved Oxygen	Dry	1/02	11/13	879	879	mg/L	AD	AD	2.12	15.3			17	2%	No	235	235	0	0%	5	BP Minimum
	Wet	11/03	2/12	19	19	mg/L	AD	AD	7.23	11.2			0	0%	No	4	4	0	0%	5	BP Minimum
E. Coli	Dry	2/01	11/13	739	640	MPN/100mL	100	1000	30	61000	764	199	534	72%	Yes	325	315	249	77%	126	BP REC1 30-Day
	Wet	1/01	2/12	36	34	MPN/100mL	100	100	100	61000	7406	3450	33	92%	Yes	5	4	3	60%	126	BP REC1 30-Day
Heptachlor	Dry	3/02	9/13	34	0	µg/L	0.001	0.008	ND	ND			0	0%	No	9	0	0	0%	0.0038	CTR Chronic
	Wet	2/04	2/10	3	1	µg/L	0.002	0.003	0.008	0.008			0	0%	No	1	0	0	0%	0.52	CTR HH Acute

LA River – Reach 3, Below LAG – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Indeno (1,2,3-cd)Pyrene	Dry	2/02	9/13	34	3	µg/L	0.02	1.7	0.02	0.09			2	6%	No	9	1	0	0%	0.049	CTR HH Organism
	Wet	2/04	2/10	3	0	µg/L	0.02	0.07	ND	ND			0	0%	No	1	0	0	0%	0.049	CTR HH Organism
Lead Dissolved	Dry	3/01	4/13	113	60	µg/L	0.11	26	0.14	16.2			3	3%	No	28	24	0	0%	HBC	CTR Chronic
													3	3%	No	28	24	0	0%	7.5	LAR Metals TMDL
	Wet	1/01	4/12	32	27	µg/L	1	5	0.12	12			0	0%	No	24	24	0	0%	HBC	CTR Acute
													0	0%	No	24	24	0	0%	51	LAR Metals TMDL
Lead Total	Dry	3/01	8/13	214	122	µg/L	1	26	0.12	31.8			6	3%	No	49	38	0	0%	HBC	CTR Chronic
													6	3%	No	49	38	0	0%	12	LAR Metals TMDL
	Wet	1/01	4/12	36	32	µg/L	1	3	2.03	60.6			0	0%	No	26	26	0	0%	HBC	CTR Acute
													0	0%	No	26	26	0	0%	62	LAR Metals TMDL
Mercury Total	Dry	4/01	11/13	156	43	µg/L	0.0036	0.3	0.004	0.265	0.017	0.002	17	11%	Yes	23	6	0	0%	0.051	CTR HH Organism
	Wet	1/01	2/10	8	2	µg/l	0.022	0.3	0.0085	0.22	< 20% detects		1	13%	No	1	1	0	0%	0.051	Ctr hh organism
Nitrite as N	Dry	2/02	11/13	431	318	mg/L	0.02	0.02	0.02	2.5			31	7%	No	233	178	1	0%	1	LAR Nutrient TMDL
	Wet	2/04	2/12	7	5	mg/L	0.02	0.02	0.06	0.96			0	0%	No	4	2	0	0%	1	LAR Nutrient TMDL
pH	Dry	1/02	11/13	899	899	pH Units	AD	AD	6.4	8.6			1	0%	No	235	235	1	0%	6.5	BP Minimum
	Wet	11/03	2/12	21	21	pH Units	AD	AD	7	8.1			0	0%	No	4	4	0	0%	6.5	BP Minimum
Thallium Total	Dry	3/01	8/13	86	33	µg/L	0.01	25	0.02	10.7			2	2%	No	18	16	0	0%	6.3	CTR HH Organism
	Wet	1/01	2/10	7	1	µg/L	0.5	25	0.08	0.08			0	0%	No	1	1	0	0%	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	4/13	112	110	µg/L	10	17.2	13.5	79			0	0%	No	28	28	0	0%	HBC	CTR Chronic
	Wet	1/01	4/12	33	32	µg/L	4	4	11	136			0	0%	No	25	25	0	0%	HBC	CTR Acute
													1	3%	No	25	25	0	0%	97	LAR Metals TMDL
Zinc Total	Dry	3/01	8/13	226	224	µg/L	10	17.2	18.7	470	53.8	47.8	7	3%	No	61	61	7	11%	HBC	CTR Chronic
	Wet	1/01	4/12	24	24	µg/L	AD	AD	16	293	137	131	11	46%	Yes	14	14	11	79%	HBC	CTR Acute
													14	58%	Yes	14	14	14	100%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River Reach 4 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Ammonia as N	Dry	2/02	11/13	486	403	mg/L	0.05	0.05	0.05	18.2	2.34	0.215	105	22%	Yes	228	161	0	0%	Ammonia	BP 30-Day Average
	Wet	1/05	4/11	13	10	mg/L	0.05	0.05	0.22	8.87	2.32	0.330	3	23%	Yes	5	3	0	0%	Ammonia	BP 30-Day Average
Cadmium Total	Dry	3/01	8/13	222	107	µg/L	0.08	1	0.002	2.95	0.350	0.140	0	0%	No	14	11	0	0%	HBC	CTR Chronic
	Wet	1/01	12/07	15	11	µg/L	0.08	1	0.08	5.30	1.25	0.660	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													2	13%	Yes	NS	NS	NS	NS	3.1	LAR Metals TMDL
Chlorine (Total)	Dry	1/02	11/13	865	3	µg/L	100	100	100	300			3	0%	No	227	0	0	0%	100	BP Aquatic Life Objective
	Wet	11/03	4/11	21	0	µg/L	100	100	ND	ND			0	0%	No	5	0	0	0%	100	BP Aquatic Life Objective
Chrysene	Dry	2/02	8/13	38	1	µg/L	0.05	1.5	0.11	0.11			1	3%	No	10	0	0	0%	0.049	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.049	CTR HH Organism
Copper Dissolved	Dry	3/01	6/13	223	207	µg/L	1	20	2.00	35.8	12.3	10.9	45	20%	Yes	59	59	1	2%	HBC	CTR Chronic
													28	13%	Yes	59	59	0	0%	19	LAR Metals TMDL
	Wet	1/01	4/12	42	40	µg/L	10	10	2.86	49.9	12.9	9.97	4	10%	Yes	27	27	2	7%	HBC	CTR Acute
													14	33%	Yes	27	27	5	19%	11	LAR Metals TMDL
Copper Total	Dry	3/01	8/13	330	322	µg/L	4	20	4.00	306	19.1	15.5	102	31%	Yes	80	80	3	4%	HBC	CTR Chronic
													35	11%	Yes	80	80	0	0%	26	LAR Metals TMDL
	Wet	1/01	5/13	42	41	µg/L	10	10	16.8	140	42.3	38.3	25	60%	Yes	27	27	22	81%	HBC	CTR Acute
													39	93%	Yes	27	27	17	63%	17	LAR Metals TMDL
Cyanide	Dry	2/02	11/13	123	10	µg/L	2	4	2	17			7	6%	No	37	2	1	3%	5.2	CTR Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	NS	CTR Acute
Diazinon	Dry	6/11	9/13	7	1	µg/L	0.002	0.006	0.63	0.63			1	14%	No	7	1	1	14%	0.17	CTR Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.17	USEPA Acute
Dissolved Oxygen	Dry	1/02	11/13	901	901	mg/L	AD	AD	2.8	21.2			8	1%	No	227	227	0	0%	5	BP Minimum
	Wet	11/03	4/11	21	21	mg/L	AD	AD	6.1	13.4			0	0%	No	NS	NS	NS	NS	5	BP Minimum
E. Coli	Dry	2/01	11/13	934	789	MPN/100mL	100	1000	20	220000	1735	274	721	77%	Yes	291	284	259	89%	126	BP REC1 30-Day
	Wet	1/01	1/13	108	106	MPN/100mL	100	100	100	41000	4887	3150	104	96%	Yes	49	48	46	94%	126	BP REC1 30-Day
Lead Dissolved	Dry	3/01	6/13	219	115	µg/L	0.11	26	0.11	24			9	4%	No	59	52	0	0%	HBC	CTR Chronic
													8	4%	No	59	52	0	0%	6.6	LAR Metals TMDL
	Wet	1/01	5/13	41	29	µg/L	0.11	5	0.11	8.30			0	0%	No	26	25	0	0%	HBC	CTR Acute
													0	0%	No	26	25	0	0%	51	LAR Metals TMDL
Lead Total	Dry	3/01	8/13	330	196	µg/L	1	26	0.17	99.5			27	8%	No	80	69	0	0%	HBC	CTR Chronic
													23	7%	No	80	69	0	0%	10	LAR Metals TMDL
	Wet	1/01	5/13	42	36	µg/L	1	5	5.00	47.6			0	0%	No	27	27	0	0%	HBC	CTR Acute
													0	0%	No	27	27	0	0%	62	LAR Metals TMDL

LA River Reach 4 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Mercury Total	Dry	4/01	11/13	231	81	µg/L	0.0036	0.3	0.0037	0.24	0.025	0.005	32	14%	Yes	37	9	0	0%	0.051	CTR HH Organism
	Wet	1/01	3/05	10	2	µg/L	0.022	0.3	0.17	0.2	< 20% Detects		2	20%	Yes	NS	NS	NS	NS	0.051	CTR HH Organism
Nitrite as N	Dry	2/02	11/13	446	321	mg/L	0.02	0.02	0.02	3.14	0.302	0.090	57	13%	No	228	173	0	0%	1	LAR Nutrient TMDL
	Wet	11/08	4/11	7	6	mg/L	0.02	0.02	0.04	0.11	0.061	0.060	0	0%	No	5	4	0	0%	1	LAR Nutrient TMDL
Selenium Total	Dry	3/01	10/13	237	225	µg/L	1	30	0.3	7.1			7	3%	No	36	36	0	0%	5	CTR Chronic
	Wet	1/01	12/07	15	11	µg/L	1	30	0.5	9.8			0	0%	No	NS	NS	NS	NS	NA	NA
Sulfate	Dry	2/02	11/13	111	111	mg/L	AD	AD	84	636			10	9%	No	21	21	1	5%	300	BP SSO
	Wet	3/06	12/07	3	3	mg/L	AD	AD	119	134			0	0%	No	NS	NS	NS	NS	300	BP SSO
TDS	Dry	2/02	8/13	75	75	mg/L	AD	AD	400	1320			6	8%	No	19	19	0	0%	950	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	950	BP SSO
Thallium Total	Dry	3/01	8/13	128	23	µg/L	0.01	25	0.02	10.2			2	2%	No	10	8	0	0%	6.3	CTR HH Organism
	Wet	1/01	3/05	12	1	µg/L	0.5	25	1.7	1.7			0	0%	No	NS	NS	NS	NS	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	6/13	220	216	µg/L	10	17.2	0.4	135			0	0%	No	59	59	0	0%	HBC	CTR Chronic
	Wet	1/01	4/12	42	42	µg/L	AD	AD	4.00	117			0	0%	No	27	27	0	0%	HBC	CTR Acute
													3	7%	No	27	27	1	4%	97	LAR Metals TMDL
Zinc Total	Dry	3/01	8/13	284	280	µg/L	10	17.2	14.4	344	62.3	55.3	1	0%	No	72	72	0	0%	HBC	CTR Chronic
	Wet	1/01	4/12	42	42	µg/L	AD	AD	44.8	518	148	120	13	31%	Yes	27	27	13	48%	HBC	CTR Acute
													17	40%	Yes	27	27	15	56%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River Reach 5 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
4,4-DDD	Dry	2/02	8/13	72	2	µg/L	0.001	0.006	0.002	0.004	< 20% Detects		2	3%	No	30	1	1	3%	0.00084	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.00084	CTR HH Organism
4,4-DDE	Dry	2/02	8/13	72	4	µg/L	0.001	0.004	0.002	0.007	< 20% Detects		4	6%	No	30	2	2	7%	0.00059	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.00059	CTR HH Organism
Ammonia as N	Dry	2/02	11/13	1021	853	mg/L	0.05	0.1	0.05	25.2			76	7%	No	674	547	0	0%	pH and Temp Dependent	BP 30-Day Average
	Wet	1/05	4/11	18	13	mg/L	0.05	0.1	0.05	0.69			0	0%	No	12	10	0	0%		BP 30-Day Average
Bis(2-ethylhexyl) Phthalate	Dry	2/02	8/13	84	27	µg/L	0.3	3	0.3	26.027			1	1%	No	30	2	0	0%	5.9	CTR HH Organism
	Wet	3/05	3/05	3	1	µg/L	0.3	0.3	0.7	0.7			0	0%	No	NS	NS	NS	NS	5.9	CTR HH Organism
Cadmium Total	Dry	2/02	8/13	81	47	µg/L	0.08	1	0.07	1.84			0	0%	No	39	31	0	0%	HBC	CTR Chronic
Chloride	Dry	5/07	11/13	81	81	mg/L	AD	AD	90.5	186	138	139	23	28%	Yes	60	60	17	28%	150	BP SSO LAR and tributaries, upstream SFCB
Chlorine (Total)	Dry	1/02	11/13	1634	7	µg/L	100	100	100	500	< 20% Detects		7	0%	No	674	0	0	0%	100	BP Aquatic Life Objective
	Wet	11/03	4/11	36	0	µg/L	100	100	ND	ND	ND	ND	0	0%	No	12	0	0	0%	100	BP Aquatic Life Objective
Copper Total	Dry	2/02	8/13	111	111	µg/L	AD	AD	5.00	89.2	13.8	11.2	13	12%	Yes	57	57	6	11%	HBC	CTR Chronic
	Dry	2/02	8/13	111	111	µg/L	AD	AD	5.00	89.2	13.8	11.2	8	7%	No	57	57	3	5%	30	LAR Metals TMDL
Cyanide	Dry	2/02	11/13	156	8	µg/L	2	4	2	21			4	3%	No	102	1	1	1%	5.2	CTR Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	22	CTR Acute
Diazinon	Dry	5/12	9/13	18	2	µg/L	0.006	0.03	0.53	0.59	< 20% Detects		2	11%	Yes	18	2	2	11%	0.17	USEPA Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.17	USEPA Acute
Dibenzo(a,h) Anthracene	Dry	2/02	8/13	75	1	µg/L	0.02	1.9	0.57	0.57			1	1%	No	30	1	1	3%	0.049	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.049	CTR HH Organism
Dissolved Oxygen	Dry	1/02	11/13	1684	1684	mg/L	AD	AD	0.46	16.98			128	8%	No	674	674	24	4%	5	BP Minimum
	Wet	11/03	4/11	36	36	mg/L	AD	AD	6.10	11.3			0	0%	No	12	12	0	0%	5	BP Minimum
E. Coli	Dry	3/07	11/13	932	843	MPN/100mL	10	100	10	24200	356	146	537	58%	Yes	668	647	363	54%	126	BP REC1 30-Day
	Wet	11/08	4/11	15	15	MPN/100mL	AD	AD	52	1780	499	457	12	80%	Yes	12	12	9	75%	126	BP REC1 30-Day
Heptachlor	Dry	2/02	8/13	72	2	µg/L	0.001	0.008	0.003	0.007			2	3%	No	30	0	0	0%	0.00021	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.52	CTR HH Acute
Indeno(1,2,3-cd) Pyrene	Dry	2/02	8/13	75	1	µg/L	0.02	1.7	0.45	0.45			1	1%	No	30	1	1	3%	0.049	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.049	CTR HH Organism
Mercury Total	Dry	2/02	11/13	156	46	µg/L	0.0036	0.3	0.0036	0.586			6	4%	No	102	22	0	0%	0.051	CTR HH Organism
Nickel Total	Dry	2/02	8/13	72	66	µg/L	5	20	3.4	138			1	1%	No	30	30	1	3%	HBC	CTR Chronic
Nitrite as N	Dry	2/02	11/13	1001	625	mg/L	0.02	0.02	0.02	5.69			27	3%	No	674	444	0	0%	1	LAR Nutrient TMDL
	Wet	11/08	4/11	15	9	mg/L	0.02	0.02	0.04	0.15			0	0%	No	12	7	0	0%	1	LAR Nutrient TMDL

LA River Reach 5 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Nitrate as N	Dry	2/02	11/13	1001	1001	mg/L	AD	AD	0.34	8.94			2	0.2%	No	674	674	0	0%	8	LAR Nutrient TMDL
	Wet	11/08	4/11	15	15	mg/L	AD	AD	2.85	5.43			0	0%	No	12	12	0	0%	8	LAR Nutrient TMDL
pH	Dry	1/02	11/13	1684	1684	pH Units	AD	AD	5.5	9			4	0%	No	674	674	1	0%	6.5	BP Minimum
	Wet	11/03	4/11	36	36	pH Units	AD	AD	7.6	8.7			0	0%	No	12	12	0	0%	6.5	BP Minimum
Selenium Total	Dry	5/07	10/13	120	118	µg/L	0.11	0.11	0.26	12.6	3.78	1.88	39	33%	Yes	99	97	32	32%	5	CTR Chronic
Sulfate	Dry	5/07	11/13	81	81	mg/L	AD	AD	91.5	727	281	176	29	36%	Yes	60	60	22	37%	300	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	300	BP SSO
TDS	Dry	5/07	8/13	78	78	mg/L	AD	AD	468	1660	854	672	25	32%	Yes	57	57	18	32%	950	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	950	BP SSO

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

LA River – Reach 6 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
2,3,7,8-TCDD (Dioxin)	Dry	8/07	8/08	4	1	pg/L	0.46	9.6	0.021	0.021			1	25%	No	NS	NS	NS	NS	0.014	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.014	CTR HH Organism
Cadmium Total	Dry	3/01	6/10	148	87	µg/L	0.02	1	0.002	4.66			0	0%	No	1	0	0	0%	HBC	CTR Chronic
	Wet	1/01	12/07	12	10	µg/L	0.3	1	0.11	5			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	8%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Chloride	Dry	2/02	6/10	49	49	mg/L	AD	AD	35.8	219	145	146	21	43%	Yes	1	1	1	100%	150	BP SSO
	Wet	3/06	12/07	2	2	mg/L	AD	AD	26.1	60.9	Too Few Samples		0	0%	No	NS	NS	NS	NS	150	BP SSO
Chlorine (Total)	Dry	1/02	1/09	321	2	µg/L	100	100	100	100			2	1%	No	3	0	0	0%	100	BP Objective
	Wet	11/03	1/09	8	0	µg/L	100	100	ND	ND			0	0%	No	1	0	0	0%	100	BP Objective
Chrysene	Dry	2/02	8/08	15	1	µg/L	0.05	1.5	0.11	0.11			1	7%	No	NS	NS	NS	NS	0.049	CTR HH Organism
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	0.049	CTR HH Organism
	Dry	3/01	6/13	153	137	µg/L	1	20	1.70	57	8.88	7.63	2	1%	No	30	30	0	0%	HBC	CTR Chronic

LA River – Reach 6 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Copper Dissolved													2	1%	No	38	38	0	0%	29	LAR Metals TMDL
	Wet	1/01	4/12	35	34	µg/L	10	10	4.00	23.2	10.6	9.09	4	11%	Yes	23	23	4	17%	HBC	CTR Acute
													13	37%	Yes	23	23	9	39%	11	LAR Metals TMDL
Copper Total	Dry	3/01	6/13	198	191	µg/L	4	20	1.70	126	15.1	11.9	14	7%	No	31	31	1	3%	HBC	CTR Chronic
													14	7%	No	31	31	1	3%	30	LAR Metals TMDL
	Wet	1/01	3/13	35	34	µg/L	10	10	4.00	82.7	30.7	27.0	17	49%	Yes	23	23	16	70%	HBC	CTR Acute
													25	71%	Yes	23	23	17	74%	17	LAR Metals TMDL
Cyanide	Dry	2/02	1/09	44	3	µg/L	2	4	2.7	16			1	2%	No	1	0	0	0%	5.2	CTR Chronic
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	22	CTR Acute
Dissolved Oxygen	Dry	1/02	1/09	340	340	mg/L	AD	AD	2.6	30.4			1	0%	No	3	3	0	0%	5	BP Minimum
	Wet	11/03	1/09	9	9	mg/L	AD	AD	10.5	23.4			0	0%	No	1	1	0	0%	5	BP Minimum
E. Coli	Dry	2/01	5/09	420	409	MPN/100mL	100	1000	100	240000	2015	969	401	95%	Yes	11	11	9	82%	126	BP REC1 30-Day
	Wet	1/01	1/09	40	39	MPN/100mL	100	100	200	100000	8492	3050	39	98%	Yes	3	2	2	67%	126	BP REC1 30-Day
Lead Total	Dry	3/01	6/13	199	112	µg/L	0.11	26	0.14	39			5	3%	No	31	27	0	0%	HBC	CTR Chronic
													3	2%	No	31	27	0	0%	19	LAR Metals TMDL
	Wet	1/01	3/13	35	29	µg/L	1	5	1.45	26.8			0	0%	No	23	23	0	0%	HBC	CTR Acute
													0	0%	No	23	23	0	0%	62	LAR Metals TMDL
Mercury Total	Dry	4/01	6/10	111	36	µg/L	0.0036	0.3	0.004	0.213	0.023	0.005	13	12%	Yes	2	1	0	0%	0.051	CTR HH Organism
	Wet	1/01	3/05	7	1	µg/L	0.022	0.3	0.15	0.15	< 20% Detects		1	14%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Nitrite as N	Dry	2/02	6/10	112	35	mg/L	0.02	0.04	0.03	1.41			2	2%	No	4	3	0	0%	1	LAR Nutrient TMDL
	Wet	11/08	1/09	2	0	mg/L	0.02	0.02	ND	ND			0	0%	No	1	0	0	0%	1	LAR Nutrient TMDL
Selenium Total	Dry	3/01	6/13	183	177	µg/L	1	30	0.3	18.6	7.98	7.47	163	89%	Yes	37	37	34	92%	5	CTR Chronic
	Wet	1/01	12/07	12	10	µg/L	1	30	0.9	23.7	7.17	4.26	0	0%	No	NS	NS	NS	NS	NA	NA
Sulfate	Dry	2/02	6/10	49	49	mg/L	AD	AD	123	743	517	517	48	98%	Yes	1	1	1	100%	300	BP SSO
	Wet	3/06	12/07	2	2	mg/L	AD	AD	65.9	274	Too Few Samples		0	0%	No	NS	NS	NS	NS	300	BP SSO
TDS	Dry	2/02	11/08	28	28	mg/L	AD	AD	988	1732	1300	1304	28	100%	Yes	NS	NS	NS	NS	950	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	950	BP SSO
Thallium Total	Dry	3/01	8/08	71	28	µg/L	0.5	25	0.02	29	2.29	0.570	6	8%	Yes	NS	NS	NS	NS	6.3	CTR HH Organism
	Wet	1/01	3/05	8	2	µg/L	1	25	2.60	3.50	< 20% Detects		0	0%	No	NS	NS	NS	NS	6.3	CTR HH Organism
Zinc Dissolved	Dry	3/01	6/13	154	145	µg/L	0.4	17.2	0.4	163	14.3	10.2	0	0%	No	30	28	0	0%	HBC	CTR Chronic
	Wet	1/01	3/13	35	34	µg/L	4	4	4.00	143	34.1	20.9	0	0%	No	23	23	0	0%	HBC	CTR Acute
													4	11%	Yes	23	23	3	13%	97	LAR Metals TMDL

LA River – Reach 6 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Zinc Total	Dry	3/01	6/13	179	170	µg/L	6	17.2	1.30	248	35.5	21.1	0	0%	No	30	30	0	0%	HBC	CTR Chronic
	Wet	1/01	3/13	35	35	µg/L	AD	AD	11	656	111	108	8	23%	Yes	23	23	8	35%	HBC	CTR Acute
													11	31%	Yes	23	23	11	48%	159	LAR Metals TMDL

NA - No Available adopted water quality objective
HBC - Hardness Based Criteria, as defined by CTR
AD - All values reported detected, no detection limit provided
BP – Basin Plan
SSO – Site Specific Objective

Rio Hondo – Reach 1 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Copper Dissolved	Dry	2/05	4/13	51	51	µg/L	AD	AD	0.08	68.9	18.6	16.0	14	27%	Yes	14	14	0	0%	HBC	CTR Chronic
													35	69%	Yes	14	14	5	36%	12	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	6.00	12.9	8.99	8.54	1	25%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	25%	No	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	2/05	4/13	52	52	µg/L	AD	AD	0.08	85.5	25.6	22.8	29	56%	Yes	14	14	3	21%	HBC	CTR Chronic
													44	85%	Yes	14	14	9	64%	13	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	7.33	18.1	5.03	11.5	1	25%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	25%	No	NS	NS	NS	NS	17	LAR Metals TMDL
E. Coli	Dry	1/02	3/09	69	66	MPN/100mL	100	100	100	240000	11627	1500	62	90%	Yes	2	2	2	100%	126	BP REC1 30-Day
	Wet	12/02	1/08	7	5	MPN/100mL	100	100	860	160000	26153	3000	5	71%	Yes	NS	NS	NS	NS	126	BP REC1 30-Day
Lead Dissolved	Dry	2/05	4/13	52	42	µg/L	1	1.1	0.06	15.2	2.27	1.19	4	8%	No	14	14	0	0%	HBC	CTR Chronic
													5	10%	Yes	14	14	1	7%	3.7	LAR Metals TMDL
	Wet	1/05	1/08	4	2	µg/L	1	1	0.52	1.94	Too Few Samples		0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	51	LAR Metals TMDL
Lead Total	Dry	2/05	4/13	52	49	µg/L	1	1.1	0.06	70.2	7.47	3.61	12	23%	Yes	14	14	4	29%	HBC	CTR Chronic
													23	44%	Yes	14	14	6	43%	5	LAR Metals TMDL
	Wet	1/05	1/08	4	3	µg/L	1	1	1.31	9.77	3.31	1.66	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Zinc Dissolved	Dry	2/05	4/13	51	51	µg/L	AD	AD	0.2	259			0	0%	No	14	14	0	0%	HBC	CTR Chronic
													1	2%	No	14	14	0	0%	128	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	4.00	34.7			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	97	LAR Metals TMDL
Zinc Total	Dry	2/05	4/13	52	52	µg/L	AD	AD	0.2	501			1	2%	No	14	14	1	7%	HBC	CTR Chronic
													4	8%	No	14	14	1	7%	131	LAR Metals TMDL
	Wet	1/05	1/08	4	4	µg/L	AD	AD	8.00	65.4			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Rio Hondo – Reach 2 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/03	1/04	2	2	µg/L	AD	AD	29.5	35.6	Too Few Samples		2	100%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
	Wet	10/03	2/04	4	3	µg/L	1	1	20.8	48.2	28.6	28.2	3	75%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Copper Dissolved	Dry	10/03	1/04	2	2	µg/L	AD	AD	8.20	12.1	Too Few Samples		1	50%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	10/03	2/04	4	4	µg/L	AD	AD	6.63	12.1	9.53	9.70	3	75%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													2	50%	Yes	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	10/03	1/04	2	2	µg/L	AD	AD	21.2	23.9	Too Few Samples		2	100%	Yes	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	10/03	2/04	4	4	µg/L	AD	AD	12.4	123	42.7	17.6	4	100%	Yes	NS	NS	NS	NS	HBC	CTR Acute
													2	50%	Yes	NS	NS	NS	NS	17	LAR Metals TMDL
Cyanide	Dry	10/03	1/04	2	2	µg/L	AD	AD	5	25	Too Few Samples		1	50%	No	NS	NS	NS	NS	5.2	CTR Aquatic Life Chronic
	Wet	10/03	2/04	4	2	µg/L	10	10	10	10	Too Few Samples		0	0%	No	NS	NS	NS	NS	22	CTR Aquatic Life Acute
Diazinon	Dry	10/03	1/04	2	0	µg/L	0.01	0.01	ND	ND			0	0%	No	NS	NS	NS	NS	0.17	USEPA Chronic
	Wet	10/03	2/04	4	1	µg/L	0.01	0.01	0.202	0.202			1	25%	No	NS	NS	NS	NS	0.17	USEPA Acute
Lead Total	Dry	10/03	1/04	2	2	µg/L	AD	AD	2.09	2.12			1	50%	No	NS	NS	NS	NS	HBC	CTR Chronic
													0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
	Wet	10/03	2/04	4	4	µg/L	AD	AD	2.06	71.1			1	25%	No	NS	NS	NS	NS	62	LAR Metals TMDL
pH	Dry	10/03	1/04	2	2	pH Units	AD	AD	6.49	7.72			1	50%	No	NS	NS	NS	NS	6.5	BP Minimum
	Wet	10/03	2/04	4	4	pH Units	AD	AD	6.49	7.01			1	25%	No	NS	NS	NS	NS	6.5	BP Minimum
Zinc Total	Dry	10/03	1/04	2	2	µg/L	AD	AD	68	87			0	0%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	10/03	2/04	4	4	µg/L	AD	AD	50	395			1	25%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	25%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Rio Hondo – Reach 3 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituents	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Max	Min	Max	Min						N	N Detect	N Exceed	% Exceed		
Benzo(a)Pyrene	Dry	2/11	8/6	43	2	µg/L	0.02	0.02	0.011	0.11			1	2%	No	9	2	1	50%	0.049	CTR HH Organism
Benzo(k) Fluoranthene	Dry	2/11	8/6	43	3	µg/L	0.02	0.02	0.022	0.21			1	2%	No	9	2	1	50%	0.049	CTR HH Organism
Chloride	Dry	1/6	12/17	111	110	mg/L	10	10	1.8	430			1	1%	No	52	51	0	0%	190	BP SSO
Chrysene	Dry	2/11	8/6	43	3	µg/L	0.02	0.02	0.013	0.18			1	2%	No	9	2	1	50%	0.049	CTR HH Organism
Copper Total	Dry	1/6	12/17	105	103	µg/L	100	100	2.41	2500	93.3	5.56	25	24%	Yes	46	46	3	7%	HBC	CTR Chronic
Diazinon	Dry	2/9	11/5	60	3	µg/L	0.05	0.05	0.18	0.75	2.95	1.56	3	5%	No	17	2	2	100%	0.17	CTR Acute
Dibenzo(a,h) Anthracene	Dry	2/11	8/6	43	8	µg/L	0.02	0.02	0.01	0.54	< 20% Detects		2	5%	No	9	7	2	29%	0.049	CTR HH Organism
Dissolved Oxygen	Dry	1/7	12/17	210	210	mg/L	AD	AD	1.5	12.5	5.76	5.6	75	75%	Yes	46	46	19	41%	5	BP Minimum
E. Coli	Dry	12/17	12/17	59	59	MPN/100mL	AD	AD	11	79000	2536	300	43	73%	Yes	46	46	32	70%	126	BP REC1 30-Day
Indeno(1,2,3-cd) Pyrene	Dry	2/11	8/6	36	6	µg/L	0.02	0.02	0.01	0.16			1	3%	No	8	6	1	17%	0.049	CTR HH Organism
Mercury	Dry	2/11	12/17	74	42	µg/L	0.04	0.04	0.01	0.15	0.022	0.01	2	3%	No	41	32	1	3%	0.051	CTR HH Organism
pH	Dry	1/7	12/17	210	210	pH Units	AD	AD	6.84	9.24	8.16	8.09	44	21%	Yes	46	46	5	11%	8.5	BP Maximum

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Tujunga Wash – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Ammonia as N	Dry	6/09	6/11	3	2	mg/L	0.05	0.05	1.2	93			1	33%	No	3	2	1	33%	10.7	LAR Nutrient TMDL
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	NA	NA
Cadmium Total	Dry	2/05	6/11	38	27	µg/L	0.01	0.33	0.01	10.6			1	3%	No	3	1	0	0%	HBC	CTR Chronic
	Wet	1/05	3/06	3	0	µg/L	0.3	0.3	ND	ND			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Chloride	Dry	6/09	6/11	3	3	mg/L	AD	AD	338	432	372	346	3	100%	Yes	3	3	3	100%	150	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	150	BP SSO
Copper Dissolved	Dry	2/05	6/13	69	67	µg/L	4	4	1.79	305	27.1	22.7	52	75%	Yes	31	31	21	68%	HBC	CTR Chronic
													43	62%	Yes	31	31	22	71%	19	LAR Metals TMDL
	Wet	1/05	3/06	3	3	µg/L	AD	AD	4.00	6.00	Too Few Samples		0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	11	LAR Metals TMDL
Copper Total	Dry	2/05	6/13	70	69	µg/L	4	4	2.27	327	39.0	28.2	60	86%	Yes	32	32	26	81%	HBC	CTR Chronic
													50	71%	Yes	32	32	25	78%	20	LAR Metals TMDL
	Wet	1/05	3/06	3	3	µg/L	AD	AD	4.00	10	7.33	8.00	0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	17	LAR Metals TMDL
E. Coli	Dry	1/02	9/12	159	151	MPN/100mL	100	100	100	73000	3305	1700	148	93%	Yes	90	90	89	99%	126	BP REC1 30-Day
	Wet	12/02	1/09	7	4	MPN/100mL	100	100	100	92000	41775	37500	3	43%	No	1	1	0	0%	126	BP REC1 30-Day
Lead Dissolved	Dry	2/05	6/13	68	56	µg/L	0.11	1.1	0.06	8.4	1.36	0.83	6	9%	No	31	30	1	3%	HBC	CTR Chronic
													2	3%	No	31	30	0	0%	6.6	LAR Metals TMDL
	Wet	1/05	3/06	3	0	µg/L	1	1	ND	ND	Too Few Samples		0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	51	LAR Metals TMDL
Lead Total	Dry	2/05	6/13	70	64	µg/L	0.11	1.1	0.19	671	16.9	2.17	12	17%	Yes	32	32	4	13%	HBC	CTR Chronic
													7	10%	Yes	32	32	2	6%	10	LAR Metals TMDL
	Wet	1/05	3/06	3	2	µg/L	1	1	2.00	2.00	Too Few Samples		0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	62	LAR Metals TMDL
Mercury Total	Dry	2/05	6/11	15	7	µg/L	0.022	0.022	0.01	0.059			1	7%	No	3	3	0	0%	0.051	CTR HH Organism
	Wet	1/05	3/05	2	0	µg/L	0.022	0.022	ND	ND			0	0%	No	NS	NS	NS	NS	0.051	CTR HH Organism
TDS	Dry	6/09	6/09	1	1	mg/L	AD	AD	1130	1130			1	100%	No	1	1	1	100%	950	BP SSO
	Wet	NS	NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	NS	NS	NS	950	BP SSO
Zinc Total	Dry	2/05	6/13	70	70	µg/L	AD	AD	1.96	868			4	6%	No	32	32	1	3%	HBC	CTR Chronic
	Wet	1/05	3/06	3	3	µg/L	AD	AD	5	26			0	0%	No	NS	NS	NS	NS	HBC	CTR Acute
													0	0%	No	NS	NS	NS	NS	159	LAR Metals TMDL

NA - No Available adopted water quality objective

HBC - Hardness Based Criteria, as defined by CTR

AD - All values reported detected, no detection limit provided

BP – Basin Plan

SSO – Site Specific Objective

Verdugo Wash – Reach 1 – Constituents that have been detected and have exceeded relevant water quality objectives

Constituent	W/D	Date Range of Available Data		N	N Detects	Units	Detection Limits		Detected Values		Average	Median	N Exceed	% Exceed	Meets Listing Criteria	In Past 5 Years				WQO	Source of Lowest Water Quality Objective (WQO) Utilized
							Min	Max	Min	Max						N	N Detects	N Exceed	% Exceed		
Bis(2-ethylhexyl) Phthalate	Dry	10/03	1/04	2	2	µg/L	AD	AD	4.60	27	Too Few Samples		2	100%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
	Wet	10/03	2/04	4	3	µg/L	1	1	44.4	86.7	55.5	55.4	3	75%	Yes	NS	NS	NS	NS	5.9	CTR HH Organism
Cadmium Total	Dry	10/03	8/08	41	17	µg/L	0.02	1	0.01	1.42			0	0%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	10/03	1/08	8	3	µg/L	0.3	1	0.129	142			1	13%	No	NS	NS	NS	NS	HBC	CTR Acute
													1	13%	No	NS	NS	NS	NS	3.1	LAR Metals TMDL
Copper Dissolved	Dry	10/03	8/08	41	35	µg/L	4	4	2.47	23	7.91	8.00	0	0%	No	NS	NS	NS	NS	HBC	CTR Chronic
													1	2%	No	NS	NS	NS	NS	22	LAR Metals TMDL
	Wet	10/03	4/12	9	9	µg/L	AD	AD	4.75	13.3	7.31	7.07	2	22%	Yes	1	1	1	100%	HBC	CTR Acute
													1	11%	No	1	1	0	0%	11	LAR Metals TMDL
Copper Total	Dry	10/03	8/08	41	40	µg/L	4	4	4.00	108	14.0	10.5	1	2%	No	NS	NS	NS	NS	HBC	CTR Chronic
													3	7%	No	NS	NS	NS	NS	20	LAR Metals TMDL
	Wet	10/03	4/12	9	9	µg/L	AD	AD	7.84	62	18.6	12.8	4	44%	Yes	1	1	1	100%	HBC	CTR Acute
													2	22%	Yes	1	1	1	100%	17	LAR Metals TMDL
E. Coli	Dry	1/02	5/09	77	75	MPN/100mL	100	100	100	52000	3436	1800	74	96%	Yes	4	4	4	100%	126	BP REC1 30-Day
	Wet	12/02	1/09	8	8	MPN/100mL	AD	AD	200	69000	13578	3550	8	100%	Yes	1	1	1	100%	126	BP REC1 30-Day
Lead Total	Dry	10/03	8/08	41	29	µg/L	1	1.1	0.58	23.3			1	2%	No	NS	NS	NS	NS	HBC	CTR Chronic
													1	2%	No	NS	NS	NS	NS	12	LAR Metals TMDL
	Wet	10/03	4/12	9	9	µg/L	AD	AD	0.98	30.4			1	11%	No	1	1	1	100%	HBC	CTR Acute
													0	0%	No	1	1	0	0%	62	LAR Metals TMDL
Mercury Total	Dry	10/03	2/06	14	1	µg/L	0.022	1	0.038	0.038			0	0%	No	NS	NS	NS	NS	0.051	CTR HH Organism
	Wet	10/03	3/05	6	2	µg/L	0.022	1	0.023	1			1	17%	No	NS	NS	NS	NS	0.051	CTR HH Organism
Zinc Total	Dry	10/03	8/08	41	41	µg/L	AD	AD	5.00	318	33.0	21.0	1	2%	No	NS	NS	NS	NS	HBC	CTR Chronic
	Wet	10/03	4/12	9	9	µg/L	AD	AD	21.2	223	72.6	50.0	2	22%	Yes	1	1	1	100%	HBC	CTR Acute
													1	11%	No	1	1	0	0%	159	LAR Metals TMDL

NA - No Available adopted water quality objective

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Appendix 2.B
Supporting Information for Discharge Quality

Appendix 2.B Discharge Data Analysis

Per Part VI.C.5.a.i (pg 58) of the Permit, each EWMP shall include a characterization of stormwater and non-stormwater discharges from the MS4. A characterization was conducted on stormwater and non-stormwater discharges from the MS4 associated with constituents identified in a TMDL, a 303(d) listing, or through the receiving water data analysis described above. The following sources of discharge characterization data were reviewed:

- TMDL Staff Reports for TMDLs identified in **Table 3**.
- Los Angeles River Bacteria Source Identification Study (BSI Study) completed by the Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) group in 2008.
- Data collected as part of the 2007 Southern California Coastal Water Research Project (SCCWRP) Technical Report 510 titled "*Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA*."
- Land Use data collected as part of previous MS4 Permit monitoring and presented in the 2000 report titled "*Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report*."

Utilizing the sources above, several tables of summary information were generated. *E. coli* and fecal coliform summary statistics utilized in the LA River Bacteria TMDL for dry weather discharges are presented in **Table 1**. **Table 2** and **Table 3** present the available average concentration of TMDL, 303(d) listed, and other constituents of interest in stormwater runoff from various land uses collected as part of County of Los Angeles stormwater program (between 1996 and 2000) and SCCWRP Technical Report 510 (collected between 2000 and 2005), respectively. Note that the land use data are not specific to the LA River watershed per se; however, they are considered generally representative. Complete summary statistics for these two sources, including all measured constituents, are presented in **Table 4.**

Table 1. Indicator Bacteria Concentrations in Dry Weather Storm Drain Discharges in the Los Angeles River Watershed[1]

		Concentration (MPN or CFU per 100mL)			
Indicator Bacteria	N	Median	Min	Max	% SSM WQO Exceedance[2]
Fecal coliform	85	2,300	ND	5,000,000	80%
E. coli	610	970	ND	73,000,000	80%

1 – Table 33 from the CREST Los Angeles River Bacteria TMDL Source Assessment Appendix.

2 – The SSM WQOs for *E. coli* and fecal coliform are 235 and 400 MPN/100mL, respectively.

Table 2. Summary of Mean Concentrations of Constituents in Stormwater Runoff for Relevant Constituents by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "*Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report*"

Constituents	Units	Commercial	Vacant	High Density Single Family Residential	Transportation	Light Industrial	Educational	Multifamily Residential	Mixed Residential
Ammonia	mg/L	1.26	0.13	0.41	0.29	0.59	0.33	0.47	0.67
NH3-N		1.04	0.11	0.34	0.24	0.48	0.28	0.39	0.56
Nitrate		2.6	5.2	3.9	2.9	4.1	2.6	5.3	6.8
Nitrate-N		0.48	1.05	0.86	0.7	0.87	0.51	1.1	0.55
Nitrite-N		0.16	0.05	0.1	0.09	0.09	0.09	0.1	0.12
Cyanide		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chloride		50	6.6	5	5.6	12	34	13	3.5
Sulfate		35	17	6.9	9.5	12.6	17.3	15	7.4
Total Dissolved Solids		226	237	58	62	95	147	105	53
pH	pH Units	7	8.1	6.5	6.7	6.8	7	6.9	6.5
Benzo(a) anthracene	ug/L	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Benzo(a)pyrene		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Denzo(b) fluoranthene		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Bis(2-ethylhexyl) phthalate		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Diazinon		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chrysene		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0.62
Dibenz(a,h) anthracene		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Indeno (1,2,3-cd)pyrene		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dissolved Cadmium		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Cadmium		0.73	S.I.D.	S.I.D.	1.1	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dissolved Copper		14	S.I.D.	8.5	33	20	13	6.9	12
Total Copper		39	15	15	56	32	24	12	19

Table 2. Summary of Mean Concentrations of Constituents in Stormwater Runoff for Relevant Constituents by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "*Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report*"

Constituents	Units	Commercial	Vacant	High Density Single Family Residential	Transportation	Light Industrial	Educational	Multifamily Residential	Mixed Residential
Dissolved Lead		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Lead	ug/L	18	S.I.D.	10	10	17	4.9	5.8	11
Dissolved Mercury		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Mercury		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dissolved Nickel		S.I.D.	S.I.D.	S.I.D.	3.9	5	S.I.D.	S.I.D.	S.I.D.
Total Nickel		15	S.I.D.	S.I.D.	6	9.8	4.7	S.I.D.	S.I.D.
Dissolved Zinc		152	S.I.D.	44	192	407	66	83	133
Total Zinc		241	46	79	291	639	138	146	203
Total Selenium		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Thallium		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Oil and Grease		3.3	S.I.D.	1.3	3.1	1.7	S.I.D.	S.I.D.	S.I.D.
Organochlorine Pesticides & PCBs		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Coliform	MPN/ 100ml	528750	1397	933333	328750	338220	S.I.D.	S.I.D.	S.I.D.
Fecal Enterococcus		86250	679	610000	32000	98200	S.I.D.	S.I.D.	S.I.D.
Total Coliform		1140000	9187	1366667	692500	454000	S.I.D.	S.I.D.	S.I.D.

S.I.D. = Statistically Invalid Data, not enough data above detection limit collected.

Table 3. Summary of Mean Concentrations of Constituents in Runoff for Relevant Constituents by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "*Sources, patterns and mechanisms of stormwater pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA*."

Constituents	Units	High Density Residential	Low Density Residential	Commercial	Industrial	Recreation	Transportation
Ammonia as N	mg/L	0.56	0.33	1.07	0.76	1.07	0.69
Nitrate + Nitrite as N		0.52	0.25	0.35	0.32	1.05	0.25
Nitrate as N		0.32	0.13	S.I.D.	S.I.D.	0.99	S.I.D.
Nitrite as N		0.36	0.04	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Phosphorus as P		0.78	0.71	0.99	3.36	S.I.D.	0.71
Cadmium	ug/L	0.68	0.61	1.15	1.80	0.63	0.55
Copper		24.4	32.3	41.7	72.4	32.9	20.0
Lead		17.2	7.38	23.3	24.5	13.3	4.56
Mercury		1.01	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Nickel		5.68	5.75	12.29	14.92	16.19	6.31
Selenium		0.55	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Zinc		173	88	372	597	128	162
Benz(a)anthracene		0.15	0.03	0.06	0.05	0.09	0.02
Benzo(a)pyrene		0.160	0.051	0.141	0.063	0.031	0.028
Benzo(b)fluoranthene		0.233	0.042	0.115	0.070	0.064	0.036
Chlordane, alpha-		0.05	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chlordane, gamma-		0.04	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chrysene		0.206	0.060	0.141	0.135	0.066	0.054
Diazinon		0.14	0.15	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dibenz(a,h)anthracene		0.061	0.036	0.069	0.106	0.019	S.I.D
DDD(o,p')		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
DDD(p,p')		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
DDE(o,p')		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
DDE(p,p')		0.15	0.07	S.I.D.	S.I.D.	S.I.D.	S.I.D.
DDT(o,p')		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
DDT(p,p')		S.I.D.	0.0025	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dieldrin		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Heptachlor		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Indeno(1,2,3-c,d)pyrene		0.146	0.102	0.164	0.132	0.032	0.025

Table 3. Summary of Mean Concentrations of Constituents in Runoff for Relevant Constituents by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "*Sources, patterns and mechanisms of stormwater pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA*."

Constituents	Units	High Density Residential	Low Density Residential	Commercial	Industrial	Recreation	Transportation
PCB AROCLOR 1016	ug/L	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1221		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1232		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1242		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1248		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1254		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
PCB AROCLOR 1260		S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
E. coli	MPN/ 100ml	5615	S.I.D.	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Enterococcus		24086	11963	115880	26074	110115	9022
Fecal Coliforms		12651	16968	17704	4214	387629	3091
Total Coliforms		329379	115960	528034	185664	1206826	157852

S.I.D. = Statistically Invalid Data, not enough data above detection limit collected.

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."

		High Density Residential							Low Density Residential						
Parameter Code	**Result Units**	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Acenaphthene	ug/L	42	8	19%	0.04	0.03	0.09	0.02	27	6	22%	0.02	0.01	0.04	0.01
Acenaphthylene	ug/L	42	11	26%	0.02	0.02	0.04	0.01	27	4	15%	0.01	0.01	0.03	0.01
Aldrin	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Aluminum	ug/L	21	21	100%	720.04	237.00	2940.00	108.00	NA	NA	NA	NA	NA	NA	NA
Ammonia as N	mg/L	62	57	92%	0.56	0.49	1.34	0.09	37	29	78%	0.33	0.34	0.57	0.07
Anthracene	ug/L	42	22	52%	0.06	0.03	0.20	0.01	27	10	37%	0.02	0.02	0.05	0.00
Antimony	ug/L	21	12	57%	0.94	0.83	1.48	0.63	NA	NA	NA	NA	NA	NA	NA
Arsenic	ug/L	66	62	94%	1.79	1.40	3.27	0.93	37	30	81%	2.75	2.25	3.82	1.55
Barium	ug/L	21	21	100%	64.61	11.50	140.00	7.35	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	ug/L	42	30	71%	0.15	0.06	0.57	0.01	27	15	56%	0.03	0.01	0.12	0.00
Benzo(a)pyrene	ug/L	42	30	71%	0.16	0.08	0.56	0.01	27	13	48%	0.05	0.02	0.19	0.01
Benzo(b)fluoranthene	ug/L	42	32	76%	0.23	0.13	0.72	0.01	27	18	67%	0.04	0.02	0.14	0.01
Benzo(e)pyrene	ug/L	42	31	74%	0.18	0.11	0.65	0.02	27	16	59%	0.06	0.02	0.27	0.01
Benzo(g,h,i)perylene	ug/L	42	22	52%	0.27	0.22	0.70	0.03	27	15	56%	0.07	0.02	0.28	0.01
Benzo(k)fluoranthene	ug/L	42	30	71%	0.14	0.08	0.53	0.02	27	17	63%	0.04	0.01	0.15	0.00
Beryllium	ug/L	21	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl	ug/L	42	20	48%	0.03	0.02	0.05	0.01	27	8	30%	0.03	0.01	0.12	0.01
Bolstar	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	ug/L	66	27	41%	0.68	0.50	1.51	0.20	37	14	38%	0.61	0.40	1.49	0.20
Chlordane, alpha-	ug/L	33	2	6%	0.05	0.05	NA	NA	16	0	0%	NA	NA	NA	NA
Chlordane, gamma-	ug/L	33	2	6%	0.04	0.04	NA	NA	16	0	0%	NA	NA	NA	NA
Chlorpyrifos	ug/L	26	0	0%	NA	NA	NA	NA	7	0	0%	NA	NA	NA	NA
Chromium	ug/L	66	56	85%	5.17	3.51	14.55	1.40	37	24	65%	8.27	5.00	19.48	2.31
Chrysene	ug/L	42	39	93%	0.21	0.06	0.78	0.01	27	21	78%	0.06	0.03	0.15	0.01
Cobalt	ug/L	21	8	38%	1.90	1.58	4.12	0.54	NA	NA	NA	NA	NA	NA	NA
Copper	ug/L	66	66	100%	24.43	15.85	60.07	5.35	37	37	100%	32.34	20.00	77.26	8.82
DDD(o,p')	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
DDD(p,p')	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
DDE(o,p')	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
DDE(p,p')	ug/L	33	4	12%	0.15	0.16	0.18	0.10	16	1	6%	0.07	0.07	NA	NA
DDT(o,p')	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
DDT(p,p')	ug/L	33	0	0%	NA	NA	NA	NA	16	1	6%	0.00	0.00	NA	NA
Demeton-S	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diazinon	ug/L	26	7	27%	0.14	0.14	0.17	0.10	7	4	57%	0.15	0.16	0.24	0.06
Dibenz(a,h)anthracene	ug/L	42	16	38%	0.06	0.06	0.13	0.01	27	5	19%	0.04	0.01	0.09	0.01
Dibenzothiophene	ug/L	19	10	53%	0.02	0.01	0.06	0.01	NA	NA	NA	NA	NA	NA	NA
Dichlorvos	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Dimethoate	ug/L	26	0	0%	NA	NA	NA	NA	6	1	17%	0.05	0.05	NA	NA
Dimethylnaphthalene, 2,6-	ug/L	42	13	31%	0.03	0.02	0.06	0.01	27	5	19%	0.02	0.02	0.05	0.01
Disulfoton	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E Coli	mpn/100mL	24	24	100%	5614.58	3210.00	23744.00	698.50	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Endosulfan II	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Endosulfan Sulfate	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Endrin	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."

		High Density Residential							Low Density Residential						
Parameter Code	**Result Units**	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Endrin Aldehyde	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Endrin Ketone	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Enterococcus	mpn/100mL	72	72	100%	24086.48	8527.00	43019.00	1107.30	42	42	100%	11962.52	6394.00	33414.60	3597.00
Ethoprop	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fecal Coliforms	mpn/100mL	47	47	100%	12650.56	3654.00	33017.51	158.20	42	42	100%	16967.71	2120.00	29433.50	558.70
Fenchlorphos	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fensulfothion	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fenthion	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	42	42	100%	0.34	0.09	1.04	0.02	27	26	96%	0.09	0.04	0.28	0.02
Fluorene	ug/L	42	11	26%	0.03	0.03	0.08	0.01	27	8	30%	0.02	0.02	0.03	0.01
HCH, alpha	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
HCH, beta	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
HCH, delta	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
HCH, gamma	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Heptachlor	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Heptachlor Epoxide	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Hexachlorobenzene	ug/L	7	0	0%	NA	NA	NA	NA	10	2	20%	0.03	0.03	NA	NA
Indeno(1,2,3-c,d)pyrene	ug/L	42	24	57%	0.15	0.10	0.50	0.01	27	8	30%	0.10	0.04	0.40	0.01
Iron	ug/L	66	64	97%	1271.94	430.00	5269.00	120.00	37	37	100%	1996.38	1060.00	4562.00	332.00
Lead	ug/L	66	66	100%	17.16	6.85	64.63	1.60	37	37	100%	7.38	3.40	15.44	1.46
Malathion	ug/L	26	3	12%	0.12	0.11	0.15	0.10	7	4	57%	0.09	0.08	0.14	0.06
Manganese	ug/L	21	20	95%	49.85	17.05	166.15	5.01	NA	NA	NA	NA	NA	NA	NA
Mercury	ug/L	21	1	5%	1.01	1.01	NA	NA	NA	NA	NA	NA	NA	NA	NA
Merphos	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Methylnaphthalene, 1-	ug/L	42	19	45%	0.04	0.02	0.10	0.01	27	14	52%	0.01	0.01	0.03	0.00
Methylnaphthalene, 2-	ug/L	42	24	57%	0.04	0.03	0.11	0.01	27	14	52%	0.02	0.01	0.06	0.00
Methylphenanthrene, 1-	ug/L	42	19	45%	0.03	0.02	0.10	0.01	27	8	30%	0.03	0.01	0.08	0.01
Mevinphos	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mirex	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Molybdenum	ug/L	21	21	100%	1.25	1.13	2.30	0.72	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	42	19	45%	0.04	0.04	0.10	0.01	27	18	67%	0.02	0.01	0.06	0.01
Nickel	ug/L	66	51	77%	5.68	5.40	12.95	1.13	37	18	49%	5.75	5.65	8.58	3.03
Nitrate + Nitrite as N	mg/L	29	29	100%	0.52	0.45	1.12	0.07	22	22	100%	0.25	0.24	0.33	0.19
Nitrate as N	MG/L	38	35	92%	0.32	0.27	0.68	0.07	17	16	94%	0.13	0.11	0.24	0.07
Nitrite as N	mg/L	26	7	27%	0.36	0.06	1.38	0.04	7	2	29%	0.04	0.04	NA	NA
Nitrogen, Total Kjeldahl	mg/L	62	62	100%	2.36	1.70	6.00	0.70	37	37	100%	1.86	1.00	4.56	0.30
Nonachlor, trans-	ug/L	33	4	12%	0.05	0.05	0.06	0.03	16	0	0%	NA	NA	NA	NA
Oxychlordane	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Parathion, methyl	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 018	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 028	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 031	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 033	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 037	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 044	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA

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		High Density Residential							Low Density Residential						
Parameter Code	**Result Units**	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
PCB 049	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 052	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 066	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 070	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 074	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 077	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 081	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 087	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 095	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 097	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 099	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 101	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 105	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 110	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 114	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 118	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 119	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 123	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 126	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 128	ug/L	7	0	0%	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB 128/167	ug/L	26	0	0%	NA	NA	NA	NA	4	0	0%	NA	NA	NA	NA
PCB 132/168	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 138	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 141	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 149	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 151	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 153	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 156	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 157	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 158	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 167	ug/L	7	0	0%	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB 169	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 170	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 177	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 180	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 183	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 187	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 189	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 194	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 200	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 201	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB 206	ug/L	33	0	0%	NA	NA	NA	NA	14	0	0%	NA	NA	NA	NA
PCB AROCLOR 1016	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1221	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1232	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1242	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Parameter Code	Result Units	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
PCB AROCLOR 1248	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1254	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1260	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perylene	ug/L	42	17	40%	0.08	0.04	0.25	0.01	27	6	22%	0.02	0.02	0.04	0.01
Phenanthrene	ug/L	42	40	95%	0.27	0.08	0.57	0.02	27	27	100%	0.07	0.04	0.17	0.02
Phorate	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P	MG/L	40	32	80%	0.19	0.13	0.43	0.06	22	21	95%	0.09	0.09	0.11	0.06
Phosphorus as P	mg/l	35	17	49%	0.78	0.55	2.22	0.30	17	10	59%	0.71	0.64	0.99	0.57
Pyrene	ug/L	42	41	98%	0.33	0.08	0.98	0.02	27	27	100%	0.09	0.04	0.27	0.01
Selenium	ug/L	21	4	19%	0.55	0.54	0.62	0.50	NA	NA	NA	NA	NA	NA	NA
Silver	ug/L	66	16	24%	3.08	0.70	11.25	0.24	37	7	19%	1.63	1.20	3.75	0.25
Strontium	ug/L	21	21	100%	43.62	30.00	81.60	24.70	NA	NA	NA	NA	NA	NA	NA
Tetrachlorvinphos	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	ug/L	21	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin	ug/L	21	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Titanium	ug/L	21	21	100%	33.61	11.50	141.00	5.39	NA	NA	NA	NA	NA	NA	NA
Tokuthion	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Coliforms	mpn/100mL	72	72	100%	329379	79305	1299700	10860	42	42	100%	115960	50660	594240	15815
Total Suspended Solids	mg/L	62	60	97%	46.56	18.00	162.05	3.96	38	38	100%	95.16	36.00	220.65	7.51
Toxaphene	ug/L	33	0	0%	NA	NA	NA	NA	16	0	0%	NA	NA	NA	NA
Trichloronate	ug/L	19	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trimethylnaphthalene, 1,6,7-	ug/L	19	11	58%	0.04	0.03	0.06	0.01	NA	NA	NA	NA	NA	NA	NA
Trimethylnapthalene, 2,3,5-	ug/L	23	3	13%	0.04	0.03	0.06	0.03	27	12	44%	0.04	0.03	0.08	0.01
Vanadium	ug/L	21	21	100%	4.56	2.65	11.60	2.05	NA	NA	NA	NA	NA	NA	NA
Zinc	ug/L	66	66	100%	173.22	149.50	580.00	23.77	37	37	100%	88.27	66.00	155.40	31.20

		Commercial							Industrial						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Acenaphthene	ug/L	38	2	5%	0.03	0.03	NA	NA	39	4	10%	0.06	0.06	0.09	0.02
Acenaphthylene	ug/L	38	2	5%	0.03	0.03	NA	NA	39	14	36%	0.04	0.03	0.09	0.01
Aldrin	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Aluminum	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia as N	mg/L	47	44	94%	1.07	0.58	4.72	0.25	55	55	100%	0.76	0.45	2.15	0.23
Anthracene	ug/L	39	14	36%	0.03	0.02	0.07	0.01	39	20	51%	0.03	0.02	0.11	0.00
Antimony	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	ug/L	47	34	72%	2.14	1.80	5.18	1.00	55	50	91%	2.91	2.05	4.80	1.05
Barium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	ug/L	39	23	59%	0.06	0.01	0.25	0.00	39	28	72%	0.05	0.01	0.26	0.01
Benzo(a)pyrene	ug/L	38	14	37%	0.14	0.10	0.46	0.01	39	16	41%	0.06	0.03	0.21	0.01
Benzo(b)fluoranthene	ug/L	38	19	50%	0.11	0.06	0.40	0.01	39	18	46%	0.07	0.02	0.26	0.01
Benzo(e)pyrene	ug/L	39	21	54%	0.14	0.04	0.52	0.01	39	18	46%	0.08	0.03	0.28	0.01
Benzo(g,h,i)perylene	ug/L	38	21	55%	0.19	0.08	0.78	0.02	39	21	54%	0.11	0.05	0.29	0.02
Benzo(k)fluoranthene	ug/L	38	16	42%	0.14	0.11	0.43	0.01	39	18	46%	0.04	0.02	0.21	0.01
Beryllium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."

		Commercial							Industrial						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Biphenyl	ug/L	38	15	39%	0.06	0.04	0.15	0.02	39	16	41%	0.04	0.04	0.08	0.00
Bolstar	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	ug/L	47	29	62%	1.15	0.90	3.92	0.24	55	49	89%	1.80	2.10	4.50	0.30
Chlordane, alpha-	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Chlordane, gamma-	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Chlorpyrifos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	ug/L	47	26	55%	6.40	3.50	26.00	1.92	55	55	100%	6.54	5.15	14.30	2.27
Chrysene	ug/L	39	28	72%	0.14	0.05	0.51	0.01	39	33	85%	0.13	0.07	0.57	0.02
Cobalt	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	ug/L	47	47	100%	41.70	18.00	165.20	7.46	55	55	100%	72.41	40.50	243.00	7.90
DDD(o,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
DDD(p,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
DDE(o,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
DDE(p,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
DDT(o,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
DDT(p,p')	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Demeton-S	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diazinon	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	38	5	13%	0.07	0.04	0.15	0.02	39	4	10%	0.11	0.11	0.18	0.03
Dibenzothiophene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorvos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Dimethoate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethylnaphthalene, 2,6-	ug/L	38	10	26%	0.20	0.05	0.70	0.03	39	9	23%	0.05	0.04	0.12	0.02
Disulfoton	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E Coli	mpn/100mL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Endosulfan II	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Endosulfan Sulfate	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Endrin	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Endrin Aldehyde	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Endrin Ketone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Enterococcus	mpn/100mL	51	51	100%	115880.26	8600.00	479150.00	59.80	66	65	98%	26073.52	5200.00	74420.00	736.00
Ethoprop	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fecal Coliforms	mpn/100mL	51	44	86%	17703.84	5298.50	94920.00	12.35	66	65	98%	4213.98	1733.00	15500.00	321.60
Fenchlorphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fensulfothion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fenthion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	45	40	89%	0.13	0.03	0.50	0.01	39	34	87%	0.17	0.07	0.62	0.02
Fluorene	ug/L	38	7	18%	0.09	0.06	0.18	0.03	39	9	23%	0.04	0.03	0.12	0.01
HCH, alpha	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
HCH, beta	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
HCH, delta	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
HCH, gamma	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Heptachlor	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Heptachlor Epoxide	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA

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		Commercial							Industrial						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Hexachlorobenzene	ug/L	6	0	0%	NA	NA	NA	NA	9	0	0%	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	ug/L	38	12	32%	0.16	0.11	0.54	0.02	39	3	8%	0.13	0.16	0.17	0.08
Iron	ug/L	47	47	100%	1316.38	390.00	7682.00	70.00	55	55	100%	2586.55	1320.00	8044.00	401.00
Lead	ug/L	47	47	100%	23.32	4.20	158.90	0.90	55	55	100%	24.48	19.00	62.43	6.91
Malathion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Merphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Methylnaphthalene, 1-	ug/L	38	11	29%	0.10	0.03	0.33	0.01	39	19	49%	0.04	0.03	0.08	0.01
Methylnaphthalene, 2-	ug/L	38	14	37%	0.13	0.05	0.53	0.01	39	19	49%	0.06	0.05	0.14	0.02
Methylphenanthrene, 1-	ug/L	38	11	29%	0.04	0.04	0.07	0.01	39	28	72%	0.06	0.04	0.16	0.01
Mevinphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mirex	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Molybdenum	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	38	6	16%	0.07	0.04	0.18	0.01	39	19	49%	0.07	0.05	0.15	0.03
Nickel	ug/L	47	29	62%	12.29	9.50	39.00	3.22	55	52	95%	14.92	16.00	31.35	3.44
Nitrate + Nitrite as N	mg/L	33	32	97%	0.35	0.24	0.80	0.05	50	49	98%	0.32	0.29	0.84	0.04
Nitrate as N	MG/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite as N	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Total Kjeldahl	mg/L	46	46	100%	2.88	1.71	7.92	0.53	55	55	100%	4.32	1.95	13.49	0.51
Nonachlor, trans-	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Oxychlordane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Parathion, methyl	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 018	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 028	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.07	0.07	NA	NA
PCB 031	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.09	0.09	NA	NA
PCB 033	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.06	0.06	NA	NA
PCB 037	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.03	0.03	NA	NA
PCB 044	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.09	0.09	NA	NA
PCB 049	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.08	0.08	NA	NA
PCB 052	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.08	0.08	NA	NA
PCB 066	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.05	0.05	NA	NA
PCB 070	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.07	0.07	NA	NA
PCB 074	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.03	0.03	NA	NA
PCB 077	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 081	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 087	ug/L	6	0	0%	NA	NA	NA	NA	19	1	5%	0.03	0.03	NA	NA
PCB 095	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.04	0.04	NA	NA
PCB 097	ug/L	6	0	0%	NA	NA	NA	NA	19	1	5%	0.07	0.07	NA	NA
PCB 099	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.02	0.02	NA	NA
PCB 101	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.06	0.06	NA	NA
PCB 105	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 110	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.08	0.08	NA	NA
PCB 114	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 118	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.07	0.07	NA	NA

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		Commercial							Industrial						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
PCB 119	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 123	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 126	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 128	ug/L	6	0	0%	NA	NA	NA	NA	9	0	0%	NA	NA	NA	NA
PCB 128/167	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB 132/168	ug/L	6	0	0%	NA	NA	NA	NA	19	1	5%	0.01	0.01	NA	NA
PCB 138	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.08	0.08	NA	NA
PCB 141	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 149	ug/L	6	0	0%	NA	NA	NA	NA	19	1	5%	0.05	0.05	NA	NA
PCB 151	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 153	ug/L	6	0	0%	NA	NA	NA	NA	19	2	11%	0.03	0.03	NA	NA
PCB 156	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 157	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 158	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 167	ug/L	6	0	0%	NA	NA	NA	NA	9	0	0%	NA	NA	NA	NA
PCB 169	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 170	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 177	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 180	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 183	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 187	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 189	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 194	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 200	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 201	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB 206	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
PCB AROCLOR 1016	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1221	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1232	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1242	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1248	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1254	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
PCB AROCLOR 1260	ug/L	NA	NA	NA	NA	NA	NA	NA	10	0	0%	NA	NA	NA	NA
Perylene	ug/L	39	13	33%	0.06	0.03	0.20	0.01	39	11	28%	0.04	0.03	0.08	0.01
Phenanthrene	ug/L	41	32	78%	0.14	0.04	0.57	0.01	39	29	74%	0.21	0.10	0.75	0.02
Phorate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P	MG/L	20	20	100%	0.08	0.08	0.14	0.05	27	27	100%	0.12	0.09	0.21	0.06
Phosphorus as P	mg/l	27	27	100%	0.99	0.50	2.77	0.22	28	28	100%	3.36	0.77	11.57	0.24
Pyrene	ug/L	42	37	88%	0.18	0.04	0.68	0.01	39	35	90%	0.20	0.10	0.68	0.02
Selenium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	ug/L	47	15	32%	1.30	1.00	3.21	0.20	55	7	13%	1.04	0.70	2.99	0.20
Strontium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachlorvinphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Titanium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Tokuthion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Coliforms	mpn/100mL	51	51	100%	528034	88932	2419200	3558	66	65	98%	185664	88200	876540	4021
Total Suspended Solids	mg/L	47	46	98%	56.87	26.50	275.75	9.00	57	57	100%	89.60	43.00	248.60	12.80
Toxaphene	ug/L	6	0	0%	NA	NA	NA	NA	19	0	0%	NA	NA	NA	NA
Trichloronate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trimethylnaphthalene, 1,6,7-	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trimethylnapthalene, 2,3,5-	ug/L	38	3	8%	0.22	0.20	0.32	0.15	39	7	18%	0.05	0.03	0.12	0.02
Vanadium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	ug/L	47	47	100%	371.98	188.00	1268.00	63.30	55	55	100%	597.47	493.50	1279.00	204.40

		Recreation							Transportation						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Acenaphthene	ug/L	11	1	9%	0.01	0.01	NA	NA	20	1	5%	0.08	0.08	NA	NA
Acenaphthylene	ug/L	11	2	18%	0.01	0.01	NA	NA	20	0	0%	NA	NA	NA	NA
Aldrin	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia as N	mg/L	20	20	100%	1.07	1.06	1.47	0.71	20	20	100%	0.69	0.49	1.02	0.32
Anthracene	ug/L	11	8	73%	0.01	0.01	0.03	0.01	19	7	37%	0.02	0.01	0.05	0.00
Antimony	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	ug/L	20	20	100%	4.44	4.65	5.61	2.86	20	3	15%	3.03	1.20	6.33	1.02
Barium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	ug/L	11	2	18%	0.09	0.09	NA	NA	20	12	60%	0.02	0.02	0.04	0.01
Benzo(a)pyrene	ug/L	11	11	100%	0.03	0.02	0.10	0.01	20	11	55%	0.03	0.02	0.07	0.01
Benzo(b)fluoranthene	ug/L	11	11	100%	0.06	0.04	0.19	0.02	20	11	55%	0.04	0.02	0.09	0.01
Benzo(e)pyrene	ug/L	11	11	100%	0.04	0.02	0.10	0.01	20	12	60%	0.03	0.02	0.05	0.01
Benzo(g,h,i)perylene	ug/L	11	6	55%	0.03	0.02	0.05	0.01	20	12	60%	0.05	0.04	0.10	0.02
Benzo(k)fluoranthene	ug/L	11	11	100%	0.02	0.01	0.06	0.01	20	10	50%	0.03	0.02	0.05	0.01
Beryllium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl	ug/L	11	1	9%	0.01	0.01	NA	NA	20	3	15%	0.02	0.02	0.03	0.01
Bolstar	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	ug/L	20	3	15%	0.63	0.60	0.78	0.51	20	10	50%	0.55	0.25	1.76	0.20
Chlordane, alpha-	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorpyrifos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	ug/L	20	20	100%	15.60	13.50	27.25	8.76	20	13	65%	6.42	2.40	24.60	1.18
Chrysene	ug/L	11	11	100%	0.07	0.04	0.18	0.03	20	16	80%	0.05	0.04	0.15	0.01
Cobalt	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	ug/L	20	20	100%	32.85	32.00	43.75	22.00	20	20	100%	20.03	10.50	37.00	5.96
DDD(o,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDD(p,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDE(o,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDE(p,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDT(o,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDT(p,p')	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."

		Recreation							Transportation						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Demeton-S	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diazinon	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	11	1	9%	0.02	0.02	NA	NA	20	0	0%	NA	NA	NA	NA
Dibenzothiophene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorvos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethoate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethylnaphthalene, 2,6-	ug/L	11	0	0%	NA	NA	NA	NA	20	1	5%	0.05	0.05	NA	NA
Disulfoton	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E Coli	mpn/100mL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Enterococcus	mpn/100mL	24	24	100%	110114.50	54850.00	511055.00	15360.60	23	22	96%	9022.32	6107.00	23975.55	2051.45
Ethoprop	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fecal Coliforms	mpn/100mL	24	24	100%	387629.33	448150.00	920250.00	813.30	23	23	100%	3091.17	1000.00	14525.40	21.00
Fenchlorphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fensulfothion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fenthion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/L	11	11	100%	0.11	0.08	0.25	0.06	20	20	100%	0.06	0.05	0.13	0.02
Fluorene	ug/L	11	5	45%	0.01	0.01	0.01	0.01	20	5	25%	0.03	0.03	0.04	0.02
HCH, alpha	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HCH, beta	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HCH, delta	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HCH, gamma	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	ug/L	11	7	64%	0.03	0.02	0.08	0.01	20	4	20%	0.02	0.02	0.04	0.01
Iron	ug/L	20	20	100%	12666.00	11200.00	20580.00	6651.50	20	17	85%	377.65	310.00	980.00	38.00
Lead	ug/L	20	20	100%	13.29	11.65	21.95	7.81	20	20	100%	4.56	3.25	8.23	1.59
Malathion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Merphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene, 1-	ug/L	11	0	0%	NA	NA	NA	NA	20	1	5%	0.18	0.18	NA	NA
Methylnaphthalene, 2-	ug/L	11	2	18%	0.01	0.01	NA	NA	20	1	5%	0.31	0.31	NA	NA
Methylphenanthrene, 1-	ug/L	11	6	55%	0.01	0.01	0.02	0.01	20	8	40%	0.03	0.02	0.07	0.01
Mevinphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mirex	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/L	11	0	0%	NA	NA	NA	NA	20	2	10%	0.29	0.29	NA	NA

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by the Southern California Coastal Water Research Project (SCCWRP) as Part of Technical Report 510 titled "Sources, patterns and mechanisms of storm water pollutant loading from watersheds and land uses of the greater Los Angeles area, California, USA."

		Recreation							Transportation						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
Nickel	ug/L	20	20	100%	16.19	15.00	25.15	10.94	20	10	50%	6.31	3.25	19.71	2.23
Nitrate + Nitrite as N	mg/L	20	20	100%	1.05	1.00	2.09	0.06	21	18	86%	0.25	0.12	0.64	0.02
Nitrate as N	MG/L	23	23	100%	0.99	0.98	1.74	0.02	NA	NA	NA	NA	NA	NA	NA
Nitrite as N	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Total Kjeldahl	mg/L	20	20	100%	7.11	7.30	9.98	2.37	20	20	100%	2.27	1.20	3.48	0.58
Nonachlor, trans-	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxychlordane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Parathion, methyl	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 018	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 028	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 031	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 033	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 037	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 044	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 049	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 052	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 066	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 070	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 074	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 077	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 081	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 087	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 095	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 097	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 099	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 101	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 105	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 110	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 114	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 118	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 119	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 123	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 126	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 128	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 128/167	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 132/168	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 138	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 141	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 149	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 151	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 153	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 156	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 157	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 158	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 167	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 169	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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		Recreation							Transportation						
ParameterCode	ResultUnits	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile	No. of Samples	No. of Detects	Percent Detects	Mean of Detects	Median of Detects	Upper 95th Percentile	Lower 95th Percentile
PCB 170	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 177	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 180	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 183	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 187	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 189	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 194	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 201	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB 206	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1016	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1221	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1232	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1242	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1248	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1254	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB AROCLOR 1260	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perylene	ug/L	11	6	55%	0.02	0.01	0.03	0.01	20	4	20%	0.02	0.02	0.04	0.01
Phenanthrene	ug/L	11	11	100%	0.05	0.03	0.10	0.02	20	19	95%	0.07	0.05	0.18	0.02
Phorate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P	MG/L	44	44	100%	2.45	0.66	6.84	0.02	10	10	100%	0.03	0.03	0.05	0.02
Phosphorus as P	mg/l	NA	NA	NA	NA	NA	NA	NA	10	10	100%	0.71	0.53	1.78	0.31
Pyrene	ug/L	11	11	100%	0.09	0.06	0.22	0.05	20	20	100%	0.07	0.07	0.20	0.02
Selenium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	ug/L	20	6	30%	2.27	1.80	4.52	0.83	20	2	10%	0.20	0.20	NA	NA
Strontium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachlorvinphos	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Titanium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tokuthion	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Coliforms	mpn/100mL	24	24	100%	1206826	701550	1705900	11188	23	23	100%	157852	25000	685060	4377
Total Suspended Solids	mg/L	17	17	100%	361.29	300.00	1078.80	131.20	20	17	85%	25.29	18.00	69.60	8.40
Toxaphene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloronate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trimethylnaphthalene, 1,6,7-	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trimethylnapthalene, 2,3,5-	ug/L	11	0	0%	NA	NA	NA	NA	20	2	10%	0.03	0.03	NA	NA
Vanadium	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	ug/L	20	20	100%	128.45	125.00	181.55	77.60	20	20	100%	162.30	93.50	311.50	57.45

Notes

NA = Not enough data above detection limit collected to develop summary statistics.

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Commercial						Vacant					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Cyanide	96	0.01	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	15	15	0	S.I.D.	S.I.D.	S.I.D.
TPH	94	1	mg/l	8	2	75	3.1	2.9	0.63	21	19	10	S.I.D.	S.I.D.	S.I.D.
Oil and Grease	94	1	mg/l	8	1	88	3.3	2.9	0.51	21	17	19	S.I.D.	S.I.D.	S.I.D.
Total Phenols	94	0.1	mg/l	8	8	0	S.I.D.	S.I.D.	S.I.D.	21	21	0	S.I.D.	S.I.D.	S.I.D.
Total Coliform	94	20	MPN/100ml	8	0	100	1,140,000	1,250,000	0.71	21	1	95	9,187	2,200	1.25
Fecal Coliform	94	20	MPN/100ml	8	0	100	528,750	90,000	1.35	21	2	90	1,397	500	2.6
Ratio Fecal Coliform/Total Coliform	94			0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	0	100	52%	64%	0.79
Fecal Streptococcus	94	20	MPN/100ml	8	0	100	212,875	150,000	1.37	21	1	95	2,254	800	1.57
Fecal Enterococcus	94	20	MPN/100ml	8	0	100	86,250	40,000	1.18	21	1	95	679	500	0.98
Ammonia	94	0.1	mg/l	33	7	79	1.26	0.3	2.11	41	27	34	0.13	0.05	2.48
Calcium	96	1	mg/l	30	0	100	19	11	0.86	39	0	100	50	50	0.09
Magnesium	96	1	mg/l	30	0	100	6.8	3.9	0.92	39	0	100	15	16	0.26
Potassium	94	1	mg/l	36	0	100	4	2.8	0.81	45	0	100	2.4	2.4	0.22
Sodium	96	1	mg/l	33	0	100	37	19	1.03	45	0	100	13	14	0.2
Bicarbonate	94	2	mg/l	33	0	100	48	21	0.93	42	0	100	175	176	0.15
Carbonate	94	2	mg/l	33	33	0	S.I.D.	S.I.D.	S.I.D.	42	36	14	S.I.D.	S.I.D.	S.I.D.
Chloride	94	2	mg/l	33	0	100	50	15.8	1.28	43	0	100	6.6	6.5	0.26
Fluoride	94	0.1	mg/l	33	18	45	0.13	0.05	0.81	43	0	100	0.37	0.36	0.21
Nitrate	94	0.1	mg/l	33	1	97	2.6	2	0.63	43	0	100	5.2	4.6	0.56
Sulfate	94	0.1	mg/l	33	0	100	35	11	1.18	43	0	100	17	15	0.4
Alkalinity	94	4	mg/l	33	0	100	48	21	0.93	42	0	100	169	174	0.13
Hardness	96	2	mg/l	30	0	100	76	42	0.87	39	0	100	185	190	0.11
COD	97	5	mg/l	24	0	100	98	89	0.8	34	15	56	17	11	1.35
pH	94	0-14		33	0	100	7	6.8	0.07	42	0	100	8.1	8.1	0.03
Specific Conductance	94	1	umhos/cm	31	0	100	356	167	0.99	38	0	100	386	390	0.11
Total Dissolved Solids	96	2	mg/l	29	0	100	226	106	0.93	36	0	100	237	240	0.09
Turbidity	94	0.1	NTU	33	0	100	31	24	0.67	41	0	100	69	5.6	2.3
Total Suspended Solids	96	2	mg/l	29	0	100	66	53	0.65	39	1	97	186	18	3.27
Volatile Suspended Solids	94	1	mg/l/hr	31	0	100	32	29	0.54	41	7	83	36	12	2.48
MBAS	97	0.05	mg/l	22	11	50	0.18	0.04	1.52	30	30	0	S.I.D.	S.I.D.	S.I.D.
Total Organic Carbon	94	1	mg/l	35	0	100	10	7.3	0.74	43	0	100	5.3	3.6	0.84
BOD	94	2	mg/l	26	1	96	27	24	0.58	39	4	90	12	5	1.01
Dissolved Phosphorus	94	0.05	mg/l	33	1	97	0.3	0.19	0.86	37	21	43	0.11	0.03	3.38
Total Phosphorus	94	0.05	mg/l	32	1	97	0.39	0.28	0.77	39	16	59	0.16	0.05	2.63
NH3-N	94	0.1	mg/l	33	8	76	1.04	0.25	2.11	41	30	27	0.11	0.05	2.41
Nitrate-N	96	0.1	mg/l	31	7	77	0.48	0.43	0.82	40	1	98	1.05	0.94	0.53
Nitrite-N	94	0.1	mg/l	34	7	79	0.16	0.07	1.74	43	30	30	0.05	0.05	0.2
TKN	96	0.1	mg/l	32	0	100	3.4	2.2	0.94	40	0	100	0.79	0.68	0.6
Dissolved Aluminum	96	100	ug/L	33	24	27	241	50	3.19	42	29	31	190	50	2.39
Total Aluminum	96	100	ug/L	33	8	76	4055	295	4.87	42	13	69	1681	234	5.25
Dissolved Antimony	97	5	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Antimony	97	5	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Arsenic	97	5	ug/L	24	23	4	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Arsenic	97	5	ug/L	24	22	8	S.I.D.	S.I.D.	S.I.D.	34	32	6	S.I.D.	S.I.D.	S.I.D.
Dissolved Barium	97	10	ug/L	24	2	92	39	33	0.81	34	2	94	57	58	0.41
Total Barium	97	10	ug/L	24	2	92	114	41	2.64	34	2	94	83	62	1.59

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Commercial						Vacant					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Dissolved Beryllium	97	1	ug/L	17	17	0	S.I.D.	S.I.D.	S.I.D.	22	22	0	S.I.D.	S.I.D.	S.I.D.
Total Beryllium	97	1	ug/L	24	23	4	S.I.D.	S.I.D.	S.I.D.	34	33	3	S.I.D.	S.I.D.	S.I.D.
Dissolved Boron	97	100	ug/L	24	3	88	198	188	0.49	32	14	56	121	116	0.65
Total Boron	97	100	ug/L	24	1	96	261	254	0.41	32	8	75	178	170	0.59
Dissolved Cadmium	97	1	ug/L	24	21	13	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Cadmium	97	1	ug/L	24	19	21	0.73	0.5	0.71	34	34	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium	97	5	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Chromium	97	5	ug/L	24	18	25	27	2.5	4.18	34	33	3	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium +6	94	10	ug/L	33	33	0	S.I.D.	S.I.D.	S.I.D.	41	41	0	S.I.D.	S.I.D.	S.I.D.
Total Chromium +6	94	10	ug/L	33	33	0	S.I.D.	S.I.D.	S.I.D.	41	41	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Copper	97	5	ug/L	24	3	88	14	11	0.84	34	31	9	S.I.D.	S.I.D.	S.I.D.
Total Copper	97	5	ug/L	24	0	100	39	22	1.57	34	15	56	15	5.5	3.14
Dissolved Iron	94	100	ug/L	39	17	56	382	106	2.81	45	35	22	202	50	3.27
Total Iron	94	100	ug/L	40	2	95	5319	587	5.24	45	14	69	3003	233	5.23
Dissolved Lead	97	5	ug/L	24	20	17	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Lead	97	5	ug/L	24	15	38	18	2.5	2.8	34	31	9	S.I.D.	S.I.D.	S.I.D.
Dissolved Manganese	98	100	ug/L	14	14	0	S.I.D.	S.I.D.	S.I.D.	18	18	0	S.I.D.	S.I.D.	S.I.D.
Total Manganese	98	100	ug/L	14	13	7	S.I.D.	S.I.D.	S.I.D.	18	14	22	67	50	0.48
Dissolved Mercury	94	1	ug/L	37	35	5	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Total Mercury	94	1	ug/L	37	35	5	S.I.D.	S.I.D.	S.I.D.	43	42	2	S.I.D.	S.I.D.	S.I.D.
Dissolved Nickel	97	5	ug/L	24	21	13	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Nickel	97	5	ug/L	24	16	33	15	2.5	3.69	34	29	15	S.I.D.	S.I.D.	S.I.D.
Dissolved Selenium	94	5	ug/L	40	40	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Selenium	94	5	ug/L	40	35	13	S.I.D.	S.I.D.	S.I.D.	45	44	2	S.I.D.	S.I.D.	S.I.D.
Dissolved Silver	97	1	ug/L	24	23	4	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Silver	97	1	ug/L	24	22	8	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Thallium	97	5	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Thallium	97	5	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Zinc	94	50	ug/L	40	4	90	152	130	0.66	45	43	4	S.I.D.	S.I.D.	S.I.D.
Total Zinc	94	50	ug/L	40	0	100	241	192	0.71	45	33	27	46	25	1.67
Bis(2-ethylhexyl)phthalate	99	1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Acenaphthene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Acenaphthylene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Antracene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(a)anthracene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(a)pyrene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(b)fluoranthene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(k)fluoranthene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Chrysene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Dibenz(a,h)anthracene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Fluoranthene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Fluorene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Indeno (1,2,3-cd)pyrene	99	0.1	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Naphthalene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Phenanthrene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Pyrene	99	0.05	ug/L	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Commercial						Vacant					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
All other SVOCs	94	0.05-5.0	ug/L	23	23	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Organochlorine Pesticides & PCBs	94	0.05-1.0	ug/L	19	19	0	S.I.D.	S.I.D.	S.I.D.	38	38	0	S.I.D.	S.I.D.	S.I.D.
Carbofuran	96	5	ug/L	28	28	0	S.I.D.	S.I.D.	S.I.D.	38	38	0	S.I.D.	S.I.D.	S.I.D.
Glyphosate	98	25	ug/L	14	14	0	S.I.D.	S.I.D.	S.I.D.	18	18	0	S.I.D.	S.I.D.	S.I.D.
Diazinon	96	0.01	ug/L	24	21	13	S.I.D.	S.I.D.	S.I.D.	36	36	0	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos	96	0.05	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	36	36	0	S.I.D.	S.I.D.	S.I.D.
Thiobencarb	96	1	ug/L	24	24	0	S.I.D.	S.I.D.	S.I.D.	36	36	0	S.I.D.	S.I.D.	S.I.D.
All other N- and P- Pesticides	94	1.0-2.0	ug/L	28	28	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
2,4-D	96	10	ug/L	17	17	0	S.I.D.	S.I.D.	S.I.D.	35	35	0	S.I.D.	S.I.D.	S.I.D.
2,4,5-TP	96	1	ug/L	17	17	0	S.I.D.	S.I.D.	S.I.D.	35	35	0	S.I.D.	S.I.D.	S.I.D.
Bentazon	96	2	ug/L	17	17	0	S.I.D.	S.I.D.	S.I.D.	35	35	0	S.I.D.	S.I.D.	S.I.D.

Constituents	Data Included Since[a]	DL	Units	Transportation						Light Industrial					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Cyanide	96	0.01	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
TPH	94	1	mg/l	4	0	100	3.1	2.8	0.47	5	1	80	1.7	1.4	0.68
Oil and Grease	94	1	mg/l	4	0	100	3.1	2.8	0.47	5	1	80	1.7	1.4	0.68
Total Phenols	94	0.1	mg/l	4	4	0	S.I.D.	S.I.D.	S.I.D.	5	5	0	S.I.D.	S.I.D.	S.I.D.
Total Coliform	94	20	MPN/100ml	4	0	100	692,500	600,000	0.82	5	0	100	454,000	160,000	1.42
Fecal Coliform	94	20	MPN/100ml	4	0	100	328,750	205,000	1.22	5	0	100	338,220	30,000	2.09
Ratio Fecal Coliform/Total Coliform	94			0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Streptococcus	94	20	MPN/100ml	4	0	100	176,000	195,000	0.68	5	0	100	253,000	160,000	1.46
Fecal Enterococcus	94	20	MPN/100ml	4	0	100	32,000	32,000	0.65	5	0	100	98,200	130,000	0.73
Ammonia	94	0.1	mg/l	62	16	74	0.29	0.16	1.52	47	7	85	0.59	0.32	1.35
Calcium	96	1	mg/l	61	0	100	8.4	7.7	0.46	40	0	100	12	8.8	1.01
Magnesium	96	1	mg/l	61	4	93	1.6	1.5	0.48	40	0	100	2.3	1.9	1.13
Potassium	94	1	mg/l	63	2	97	2.1	1.7	0.56	50	1	98	2.7	2.2	0.59
Sodium	96	1	mg/l	62	0	100	8.3	6.4	0.81	47	0	100	14	12	0.69
Bicarbonate	94	2	mg/l	63	0	100	20	18	0.57	47	0	100	26	20	0.92
Carbonate	94	2	mg/l	63	63	0	S.I.D.	S.I.D.	S.I.D.	47	47	0	S.I.D.	S.I.D.	S.I.D.
Chloride	94	2	mg/l	64	3	95	5.6	4.4	0.82	47	0	100	12	8.6	0.8
Fluoride	94	0.1	mg/l	64	41	36	0.1	0.05	0.97	47	22	53	0.13	0.11	0.94
Nitrate	94	0.1	mg/l	64	2	97	2.9	1.8	1.27	47	0	100	4.1	2.4	1.09
Sulfate	94	0.1	mg/l	64	0	100	9.5	6.4	1.07	47	0	100	12.6	9.2	1.02
Alkalinity	94	4	mg/l	63	0	100	20	16	0.55	47	0	100	25	19	0.94
Hardness	96	2	mg/l	61	0	100	27	24	0.46	40	0	100	39	30	1.02
COD	97	5	mg/l	52	7	87	50	33	0.99	36	4	89	80	51	0.92
pH	94	0-14		63	0	100	6.7	6.6	0.05	47	0	100	6.8	6.8	0.06
Specific Conductance	94	1	umhos/cm	63	0	100	99	84	0.66	43	0	100	147	119	0.77
Total Dissolved Solids	96	2	mg/l	61	0	100	62	54	0.69	40	0	100	95	77	0.8
Turbidity	94	0.1	NTU	64	0	100	31	22	1.25	47	0	100	76	55	1.59
Total Suspended Solids	96	2	mg/l	61	0	100	78	50	1.3	41	0	100	240	129	1.36
Volatile Suspended Solids	94	1	mg/l/hr	63	1	98	31	20	1.22	43	0	100	57	46	0.79
MBAS	97	0.05	mg/l	51	30	41	2.6	0.025	6.95	32	10	69	0.13	0.11	0.9

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

				Transportation						Light Industrial					
Constituents	Data Included Since[a]	DL	Units	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Total Organic Carbon	94	1	mg/l	63	0	100	8.7	6.8	0.71	47	0	100	11.9	9.8	0.77
BOD	94	2	mg/l	54	0	100	21	19	0.8	37	0	100	20	17	0.67
Dissolved Phosphorus	94	0.05	mg/l	59	3	95	0.34	0.28	0.79	46	4	91	0.27	0.2	1.01
Total Phosphorus	94	0.05	mg/l	59	1	98	0.44	0.32	0.84	45	2	96	0.41	0.3	0.92
NH3-N	94	0.1	mg/l	62	19	69	0.24	0.14	1.51	48	9	81	0.48	0.26	1.36
Nitrate-N	96	0.1	mg/l	61	15	75	0.7	0.4	1.68	43	2	95	0.87	0.52	1.32
Nitrite-N	94	0.1	mg/l	64	10	84	0.09	0.06	0.72	47	9	81	0.09	0.06	0.73
TKN	96	0.1	mg/l	61	0	100	1.9	1.3	0.93	45	0	100	3	2.3	0.72
Dissolved Aluminum	96	100	ug/L	62	29	53	159	107	1.18	47	23	51	460	117	1.96
Total Aluminum	96	100	ug/L	63	10	84	672	354	1.65	47	7	85	1824	470	2.37
Dissolved Antimony	97	5	ug/L	54	53	2	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Total Antimony	97	5	ug/L	54	53	2	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Arsenic	97	5	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Total Arsenic	97	5	ug/L	54	52	4	S.I.D.	S.I.D.	S.I.D.	37	34	8	S.I.D.	S.I.D.	S.I.D.
Dissolved Barium	97	10	ug/L	54	15	72	19	17	0.75	37	6	84	34	26	0.81
Total Barium	97	10	ug/L	54	9	83	34	27	0.88	37	4	89	68	36	1.38
Dissolved Beryllium	97	1	ug/L	40	40	0	S.I.D.	S.I.D.	S.I.D.	34	34	0	S.I.D.	S.I.D.	S.I.D.
Total Beryllium	97	1	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Boron	97	100	ug/L	54	16	70	146	132	0.55	37	18	51	122	102	0.71
Total Boron	97	100	ug/L	54	5	91	219	214	0.5	36	10	72	187	181	0.63
Dissolved Cadmium	97	1	ug/L	54	50	7	S.I.D.	S.I.D.	S.I.D.	37	34	8	S.I.D.	S.I.D.	S.I.D.
Total Cadmium	97	1	ug/L	54	32	41	1.1	0.5	1.04	37	30	19	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium	97	5	ug/L	54	51	6	S.I.D.	S.I.D.	S.I.D.	37	33	11	S.I.D.	S.I.D.	S.I.D.
Total Chromium	97	5	ug/L	54	40	26	4.8	2.5	1.15	37	25	32	6.8	2.5	1.6
Dissolved Chromium +6	94	10	ug/L	63	63	0	S.I.D.	S.I.D.	S.I.D.	47	47	0	S.I.D.	S.I.D.	S.I.D.
Total Chromium +6	94	10	ug/L	63	63	0	S.I.D.	S.I.D.	S.I.D.	47	47	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Copper	97	5	ug/L	54	0	100	33	27	0.63	37	5	86	20	14	1.07
Total Copper	97	5	ug/L	54	0	100	56	39	1.15	37	0	100	32	21	1.03
Dissolved Iron	94	100	ug/L	65	34	48	200	50	1.9	51	25	51	698	104	2.99
Total Iron	94	100	ug/L	65	2	97	1188	512	1.74	51	5	90	6504	600	4.26
Dissolved Lead	97	5	ug/L	54	48	11	S.I.D.	S.I.D.	S.I.D.	37	32	14	S.I.D.	S.I.D.	S.I.D.
Total Lead	97	5	ug/L	54	29	46	10	2.5	1.57	37	18	51	17	5.1	1.88
Dissolved Manganese	98	100	ug/L	27	25	7	S.I.D.	S.I.D.	S.I.D.	26	23	12	S.I.D.	S.I.D.	S.I.D.
Total Manganese	98	100	ug/L	27	25	7	S.I.D.	S.I.D.	S.I.D.	26	23	12	S.I.D.	S.I.D.	S.I.D.
Dissolved Mercury	94	1	ug/L	63	63	0	S.I.D.	S.I.D.	S.I.D.	48	48	0	S.I.D.	S.I.D.	S.I.D.
Total Mercury	94	1	ug/L	63	62	2	S.I.D.	S.I.D.	S.I.D.	48	45	6	S.I.D.	S.I.D.	S.I.D.
Dissolved Nickel	97	5	ug/L	54	41	24	3.9	2.5	0.93	37	23	38	5	2.5	0.9
Total Nickel	97	5	ug/L	54	29	46	6	2.5	1.07	37	15	59	9.8	6	1.47
Dissolved Selenium	94	5	ug/L	65	65	0	S.I.D.	S.I.D.	S.I.D.	51	51	0	S.I.D.	S.I.D.	S.I.D.
Total Selenium	94	5	ug/L	65	61	6	S.I.D.	S.I.D.	S.I.D.	51	48	6	S.I.D.	S.I.D.	S.I.D.
Dissolved Silver	97	1	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Total Silver	97	1	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Thallium	97	5	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Total Thallium	97	5	ug/L	54	54	0	S.I.D.	S.I.D.	S.I.D.	37	37	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Zinc	94	50	ug/L	65	5	92	192	152	0.74	51	3	94	407	303	1.18
Total Zinc	94	50	ug/L	65	0	100	291	218	0.99	51	0	100	639	366	1.53

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Transportation						Light Industrial					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Bis(2-ethylhexyl)phthalate	99	1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Acenaphthene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Acenaphthylene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Antracene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Benzo(a)anthracene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Benzo(a)pyrene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Benzo(b)fluoranthene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Benzo(k)fluoranthene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Chrysene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Dibenz(a,h)anthracene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Fluoranthene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Fluorene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Indeno (1,2,3-cd)pyrene	99	0.1	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Naphthalene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Phenanthrene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Pyrene	99	0.05	ug/L	1	1	0	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
All other SVOCs	94	0.05-5.0	ug/L	40	40	0	S.I.D.	S.I.D.	S.I.D.	24	24	0	S.I.D.	S.I.D.	S.I.D.
Organochlorine Pesticides & PCBs	94	0.05-1.0	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	20	20	0	S.I.D.	S.I.D.	S.I.D.
Carbofuran	96	5	ug/L	60	60	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Glyphosate	98	25	ug/L	27	25	7	S.I.D.	S.I.D.	S.I.D.	26	26	0	S.I.D.	S.I.D.	S.I.D.
Diazinon	96	0.01	ug/L	57	56	2	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos	96	0.05	ug/L	57	57	0	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Thiobencarb	96	1	ug/L	57	57	0	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
All other N- and P- Pesticides	94	1.0-2.0	ug/L	58	58	0	S.I.D.	S.I.D.	S.I.D.	43	43	0	S.I.D.	S.I.D.	S.I.D.
2,4-D	96	10	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	22	22	0	S.I.D.	S.I.D.	S.I.D.
2,4,5-TP	96	1	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	22	22	0	S.I.D.	S.I.D.	S.I.D.
Bentazon	96	2	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	22	22	0	S.I.D.	S.I.D.	S.I.D.

Constituents	Data Included Since[a]	DL	Units	Multifamily Residential						Mixed Residential					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Cyanide	96	0.01	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	0	100	S.I.D.	S.I.D.	S.I.D.
TPH	94	1	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	0	100	S.I.D.	S.I.D.	S.I.D.
Oil and Grease	94	1	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Total Phenols	94	0.1	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	1	0	S.I.D.	S.I.D.	S.I.D.
Total Coliform	94	20	MPN/100ml	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	0	100	S.I.D.	S.I.D.	S.I.D.
Fecal Coliform	94	20	MPN/100ml	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	0	100	S.I.D.	S.I.D.	S.I.D.
Ratio Fecal Coliform/Total Coliform	94			0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Streptococcus	94	20	MPN/100ml	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	1	0	100	S.I.D.	S.I.D.	S.I.D.
Fecal Enterococcus	94	20	MPN/100ml	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Ammonia	94	0.1	mg/l	38	9	76	0.47	0.29	1.44	42	4	90	0.67	0.39	1.13
Calcium	96	1	mg/l	35	0	100	19.3	8	1.2	39	1	97	7.5	6.4	0.7
Magnesium	96	1	mg/l	35	9	74	3.3	1.9	1.24	39	7	82	1.7	1.5	0.82
Potassium	94	1	mg/l	44	4	91	2.3	2.1	0.65	45	6	87	2.2	2.1	0.89

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Multifamily Residential						Mixed Residential					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Sodium	96	1	mg/l	44	1	98	10	5.4	1.2	45	2	96	6.5	4.8	1.31
Bicarbonate	94	2	mg/l	39	0	100	39	17	1.19	40	0	100	17	14	0.82
Carbonate	94	2	mg/l	39	39	0	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Chloride	94	2	mg/l	37	8	78	13	3	1.49	38	10	74	3.5	2.7	0.93
Fluoride	94	0.1	mg/l	37	20	46	0.16	0.05	1.07	38	25	34	0.11	0.05	0.98
Nitrate	94	0.1	mg/l	37	1	97	5.3	3.6	0.87	38	3	92	6.8	2.3	3.74
Sulfate	94	0.1	mg/l	37	0	100	15	4.1	1.52	38	0	100	7.4	5	0.94
Alkalinity	94	4	mg/l	39	0	100	37	17	1.18	40	0	100	16	14	0.73
Hardness	96	2	mg/l	35	0	100	55	26	1.11	39	1	97	25	20	0.75
COD	97	5	mg/l	43	6	86	60	26	2.02	45	8	82	64	34	1.27
pH	94	0-14		39	0	100	6.9	6.6	0.1	40	0	100	6.5	6.4	0.05
Specific Conductance	94	1	umhos/cm	33	0	100	169	61	1.18	40	1	98	85	58	0.85
Total Dissolved Solids	96	2	mg/l	33	0	100	105	42	1.19	40	1	98	53	37	0.88
Turbidity	94	0.1	NTU	39	0	100	23	10	1.55	40	0	100	21	15	1.06
Total Suspended Solids	96	2	mg/l	36	1	97	46	24	1.41	38	0	100	63	40	1.19
Volatile Suspended Solids	94	1	mg/l/hr	36	2	94	19	13	1.01	37	2	95	35	25	1.33
MBAS	97	0.05	mg/l	36	26	28	0.049	0.025	1.13	39	25	36	0.068	0.025	1.86
Total Organic Carbon	94	1	mg/l	37	0	100	6.9	6	0.85	43	0	100	8.8	6.8	0.74
BOD	94	2	mg/l	31	2	94	11	9	0.91	34	0	100	18	14	0.9
Dissolved Phosphorus	94	0.05	mg/l	30	1	97	0.16	0.1	1.04	39	2	95	0.2	0.14	0.87
Total Phosphorus	94	0.05	mg/l	30	1	97	0.19	0.14	1	39	1	97	0.26	0.18	0.99
NH3-N	94	0.1	mg/l	38	9	76	0.39	0.24	1.43	42	5	88	0.56	0.33	1.13
Nitrate-N	96	0.1	mg/l	37	12	68	1.1	0.8	1.01	38	13	66	0.55	0.44	0.91
Nitrite-N	94	0.1	mg/l	37	10	73	0.1	0.05	1.65	38	7	82	0.12	0.06	1.47
TKN	96	0.1	mg/l	41	0	100	2	1.5	1.11	43	1	98	2.5	1.7	0.95
Dissolved Aluminum	96	100	ug/L	45	33	27	115	50	1.58	44	33	25	182	50	2.72
Total Aluminum	96	100	ug/L	45	5	89	387	300	0.91	45	6	87	513	271	1.89
Dissolved Antimony	97	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Antimony	97	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	44	2	S.I.D.	S.I.D.	S.I.D.
Dissolved Arsenic	97	5	ug/L	45	44	2	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Arsenic	97	5	ug/L	45	44	2	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Barium	97	10	ug/L	45	18	60	20	14	0.92	45	19	58	18	14	1.11
Total Barium	97	10	ug/L	45	13	71	25	20	0.81	45	12	73	29	22	1.45
Dissolved Beryllium	97	1	ug/L	31	31	0	S.I.D.	S.I.D.	S.I.D.	31	31	0	S.I.D.	S.I.D.	S.I.D.
Total Beryllium	97	1	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Boron	97	100	ug/L	42	12	71	148	128	0.65	44	21	52	114	111	0.66
Total Boron	97	100	ug/L	43	7	84	202	168	0.58	44	11	75	164	161	0.58
Dissolved Cadmium	97	1	ug/L	45	44	2	S.I.D.	S.I.D.	S.I.D.	45	43	4	S.I.D.	S.I.D.	S.I.D.
Total Cadmium	97	1	ug/L	45	44	2	S.I.D.	S.I.D.	S.I.D.	45	43	4	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium	97	5	ug/L	45	43	4	S.I.D.	S.I.D.	S.I.D.	45	44	2	S.I.D.	S.I.D.	S.I.D.
Total Chromium	97	5	ug/L	45	39	13	S.I.D.	S.I.D.	S.I.D.	45	42	7	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium +6	94	10	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Chromium +6	94	10	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Copper	97	5	ug/L	45	20	56	6.9	5	0.91	45	17	62	12	8	1.42
Total Copper	97	5	ug/L	45	4	91	12	12	0.54	45	1	98	19	13	1.29
Dissolved Iron	94	100	ug/L	45	33	27	194	50	2.4	45	33	27	353	50	3.45

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Since[a]	DL	Units	Multifamily Residential						Mixed Residential					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Total Iron	94	100	ug/L	45	9	80	791	350	2.14	45	10	78	1475	400	2.67
Dissolved Lead	97	5	ug/L	45	41	9	S.I.D.	S.I.D.	S.I.D.	45	40	11	S.I.D.	S.I.D.	S.I.D.
Total Lead	97	5	ug/L	45	31	31	5.8	2.5	1.48	45	23	49	11	2.5	2.6
Dissolved Manganese	98	100	ug/L	21	21	0	S.I.D.	S.I.D.	S.I.D.	20	18	10	S.I.D.	S.I.D.	S.I.D.
Total Manganese	98	100	ug/L	21	20	5	S.I.D.	S.I.D.	S.I.D.	20	18	10	S.I.D.	S.I.D.	S.I.D.
Dissolved Mercury	94	1	ug/L	40	40	0	S.I.D.	S.I.D.	S.I.D.	44	44	0	S.I.D.	S.I.D.	S.I.D.
Total Mercury	94	1	ug/L	40	40	0	S.I.D.	S.I.D.	S.I.D.	44	44	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Nickel	97	5	ug/L	45	44	2	S.I.D.	S.I.D.	S.I.D.	45	42	7	S.I.D.	S.I.D.	S.I.D.
Total Nickel	97	5	ug/L	45	39	13	S.I.D.	S.I.D.	S.I.D.	45	42	7	S.I.D.	S.I.D.	S.I.D.
Dissolved Selenium	94	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Selenium	94	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	44	2	S.I.D.	S.I.D.	S.I.D.
Dissolved Silver	97	1	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Silver	97	1	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Thallium	97	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Total Thallium	97	5	ug/L	45	45	0	S.I.D.	S.I.D.	S.I.D.	45	45	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Zinc	94	50	ug/L	45	21	53	83	53	1.53	45	9	80	133	89	1.33
Total Zinc	94	50	ug/L	45	5	89	146	89	1.37	45	1	98	203	125	1.35
Bis(2-ethylhexyl)phthalate	99	1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Acenaphthene	99	0.05	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Acenaphthylene	99	0.05	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Antracene	99	0.05	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(a)anthracene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	4	43	0.38	0.05	1.7
Benzo(a)pyrene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Benzo(b)fluoranthene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Benzo(k)fluoranthene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	6	14	S.I.D.	S.I.D.	S.I.D.
Chrysene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	2	71	0.62	0.3	1.32
Dibenz(a,h)anthracene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Fluoranthene	99	0.1	ug/L	6	4	33	0.17	0.05	1.54	7	2	71	0.29	0.27	1
Fluorene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Indeno (1,2,3-cd)pyrene	99	0.1	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Naphthalene	99	0.05	ug/L	6	6	0	S.I.D.	S.I.D.	S.I.D.	7	7	0	S.I.D.	S.I.D.	S.I.D.
Phenanthrene	99	0.05	ug/L	6	4	33	0.21	0.025	2.08	7	2	71	0.5	0.24	1.43
Pyrene	99	0.05	ug/L	6	4	33	0.2	0.025	1.95	7	2	71	0.35	0.3	1.03
All other SVOCs	94	0.05-5.0	ug/L	30	30	0	S.I.D.	S.I.D.	S.I.D.	33	33	0	S.I.D.	S.I.D.	S.I.D.
Organochlorine Pesticides & PCBs	94	0.05-1.0	ug/L	36	36	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
Carbofuran	96	5	ug/L	43	43	0	S.I.D.	S.I.D.	S.I.D.	44	44	0	S.I.D.	S.I.D.	S.I.D.
Glyphosate	98	25	ug/L	21	20	5	S.I.D.	S.I.D.	S.I.D.	20	20	0	S.I.D.	S.I.D.	S.I.D.
Diazinon	96	0.01	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	39	33	15	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos	96	0.05	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
Thiobencarb	96	1	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
All other N- and P- Pesticides	94	1.0-2.0	ug/L	37	37	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
2,4-D	96	10	ug/L	33	33	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
2,4,5-TP	96	1	ug/L	33	33	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
Bentazon	96	2	ug/L	33	33	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Sincea	DL	Units	High Density Single Family Residential						Educational					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Cyanide	96	0.01	mg/l	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
TPH	94	1	mg/l	3	0	100	1.3	1.2	0.23	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Oil and Grease	94	1	mg/l	3	0	100	1.3	1.2	0.23	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Phenols	94	0.1	mg/l	3	3	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Total Coliform	94	20	MPN/100ml	3	0	100	1,366,667	1,600,000	0.3	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Coliform	94	20	MPN/100ml	3	0	100	933,333	900,000	0.7	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Ratio Fecal Coliform/Total Coliform	94			0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Streptococcus	94	20	MPN/100ml	3	0	100	1,233,333	1,600,000	0.51	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fecal Enterococcus	94	20	MPN/100ml	3	0	100	610,000	140,000	1.41	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Ammonia	94	0.1	mg/l	34	6	82	0.41	0.3	1.05	40	12	70	0.33	0.18	1.62
Calcium	96	1	mg/l	32	1	97	6.7	5.8	0.55	39	0	100	16	10	0.71
Magnesium	96	1	mg/l	32	8	75	1.5	1.2	0.66	39	8	79	3.2	2.4	0.96
Potassium	94	1	mg/l	38	0	100	3.6	2.9	0.66	41	0	100	3.4	2.7	0.49
Sodium	96	1	mg/l	36	0	100	6.2	5	0.81	41	0	100	26	8	2.21
Bicarbonate	94	2	mg/l	35	0	100	21	13	1.04	40	0	100	39	28	0.76
Carbonate	94	2	mg/l	35	35	0	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Chloride	94	2	mg/l	33	2	94	5	4.2	0.69	40	4	90	34	4.6	2.89
Fluoride	94	0.1	mg/l	33	27	18	S.I.D.	S.I.D.	S.I.D.	40	24	40	0.14	0.05	1.21
Nitrate	94	0.1	mg/l	33	1	97	3.9	2.1	1.38	40	2	95	2.6	2.2	0.73
Sulfate	94	0.1	mg/l	33	0	100	6.9	3.8	1.05	40	0	100	17.3	9.3	1.23
Alkalinity	94	4	mg/l	35	0	100	20	13	0.91	40	0	100	36	26	0.72
Hardness	96	2	mg/l	31	0	100	23	20	0.53	39	0	100	52	40	0.79
COD	97	5	mg/l	32	5	84	89	39	1.87	40	10	75	37	34	0.85
pH	94	0-14		35	0	100	6.5	6.5	0.06	40	0	100	7	6.9	0.07
Specific Conductance	94	1	umhos/cm	33	0	100	90	61	0.77	39	0	100	243	111	1.41
Total Dissolved Solids	96	2	mg/l	32	0	100	58	38	0.8	39	0	100	147	68	1.35
Turbidity	94	0.1	NTU	34	0	100	34	19	1.17	41	0	100	64	36	1.14
Total Suspended Solids	96	2	mg/l	30	0	100	95	61	1.16	39	0	100	95	61	1.05
Volatile Suspended Solids	94	1	mg/l/hr	31	0	100	48	31	0.91	39	0	100	23	21	0.69
MBAS	97	0.05	mg/l	29	26	10	S.I.D.	S.I.D.	S.I.D.	38	33	13	S.I.D.	S.I.D.	S.I.D.
Total Organic Carbon	94	1	mg/l	38	0	100	9.8	7.1	0.76	42	0	100	7.5	6.5	0.5
BOD	94	2	mg/l	27	0	100	16	15	0.68	34	0	100	13	12	0.68
Dissolved Phosphorus	94	0.05	mg/l	32	0	100	0.29	0.25	0.57	37	1	97	0.27	0.2	0.86
Total Phosphorus	94	0.05	mg/l	32	0	100	0.39	0.32	0.77	37	0	100	0.31	0.23	0.65
NH3-N	94	0.1	mg/l	34	7	79	0.34	0.25	1.04	40	12	70	0.28	0.15	1.58
Nitrate-N	96	0.1	mg/l	32	11	66	0.86	0.46	1.51	39	12	69	0.51	0.48	0.86
Nitrite-N	94	0.1	mg/l	33	12	64	0.1	0.05	1.01	39	13	67	0.09	0.05	1.41
TKN	96	0.1	mg/l	35	0	100	2.9	2	1.04	39	0	100	1.6	1.3	0.73
Dissolved Aluminum	96	100	mg/l	36	26	28	105	50	1.03	42	11	74	397	248	1.21
Total Aluminum	96	100	mg/l	36	6	83	599	287	1.08	42	2	95	881	720	0.83
Dissolved Antimony	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Total Antimony	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Arsenic	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	39	7	S.I.D.	S.I.D.	S.I.D.
Total Arsenic	97	5	mg/l	32	29	9	S.I.D.	S.I.D.	S.I.D.	42	39	7	S.I.D.	S.I.D.	S.I.D.
Dissolved Barium	97	10	mg/l	32	17	47	14	5	0.92	42	6	86	28	26	0.72
Total Barium	97	10	mg/l	32	11	66	21	21	0.72	42	6	86	37	33	0.74

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Constituents	Data Included Sincea	DL	Units	High Density Single Family Residential						Educational					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
Dissolved Beryllium	97	1	mg/l	19	19	0	S.I.D.	S.I.D.	S.I.D.	29	29	0	S.I.D.	S.I.D.	S.I.D.
Total Beryllium	97	1	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Boron	97	100	mg/l	32	12	63	126	125	0.58	42	5	88	189	153	0.65
Total Boron	97	100	mg/l	32	5	84	181	171	0.52	42	4	90	254	227	0.58
Dissolved Cadmium	97	1	mg/l	32	31	3	S.I.D.	S.I.D.	S.I.D.	42	40	5	S.I.D.	S.I.D.	S.I.D.
Total Cadmium	97	1	mg/l	32	30	6	S.I.D.	S.I.D.	S.I.D.	42	34	19	S.I.D.	S.I.D.	S.I.D.
Dissolved Chromium	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	41	2	S.I.D.	S.I.D.	S.I.D.
Total Chromium	97	5	mg/l	32	29	9	S.I.D.	S.I.D.	S.I.D.	42	33	21	3.6	2.5	0.74
Dissolved Chromium +6	94	10	mg/l	36	36	0	S.I.D.	S.I.D.	S.I.D.	43	43	0	S.I.D.	S.I.D.	S.I.D.
Total Chromium +6	94	10	mg/l	36	36	0	S.I.D.	S.I.D.	S.I.D.	43	43	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Copper	97	5	mg/l	32	15	53	8.5	6.7	0.95	42	8	81	13	9.9	0.94
Total Copper	97	5	mg/l	32	2	94	15	11	0.57	42	0	100	24	15	1.49
Dissolved Iron	94	100	mg/l	38	27	29	123	50	1.2	42	15	64	454	190	2.3
Total Iron	94	100	mg/l	38	7	82	1117	546	1.36	42	4	90	2705	625	3.32
Dissolved Lead	97	5	mg/l	32	28	13	S.I.D.	S.I.D.	S.I.D.	42	40	5	S.I.D.	S.I.D.	S.I.D.
Total Lead	97	5	mg/l	32	14	56	10	5.4	1.03	42	30	29	4.9	2.5	1.09
Dissolved Manganese	98	100	mg/l	11	10	9	S.I.D.	S.I.D.	S.I.D.	17	17	0	S.I.D.	S.I.D.	S.I.D.
Total Manganese	98	100	mg/l	11	10	9	S.I.D.	S.I.D.	S.I.D.	17	17	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Mercury	94	1	mg/l	35	35	0	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Total Mercury	94	1	mg/l	35	34	3	S.I.D.	S.I.D.	S.I.D.	40	40	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Nickel	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	38	10	S.I.D.	S.I.D.	S.I.D.
Total Nickel	97	5	mg/l	32	27	16	S.I.D.	S.I.D.	S.I.D.	42	26	38	4.7	2.5	0.69
Dissolved Selenium	94	5	mg/l	38	38	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Total Selenium	94	5	mg/l	38	38	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Silver	97	1	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Total Silver	97	1	mg/l	32	31	3	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Thallium	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Total Thallium	97	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	42	42	0	S.I.D.	S.I.D.	S.I.D.
Dissolved Zinc	94	50	mg/l	38	30	21	44	25	1.42	42	19	55	66	56	0.83
Total Zinc	94	50	mg/l	38	13	66	79	66	0.75	42	5	88	138	98	1.73
Bis(2-ethylhexyl)phthalate	99	1	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Acenaphthene	99	0.05	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Acenaphthylene	99	0.05	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Antracene	99	0.05	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Benzo(a)anthracene	99	0.1	mg/l	5	4	20	S.I.D.	S.I.D.	1.24	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Benzo(a)pyrene	99	0.1	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Benzo(b)fluoranthene	99	0.1	mg/l	5	4	20	S.I.D.	S.I.D.	1.29	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Benzo(k)fluoranthene	99	0.1	mg/l	5	4	20	S.I.D.	S.I.D.	1.18	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Chrysene	99	0.1	mg/l	5	4	20	S.I.D.	S.I.D.	1.18	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Dibenz(a,h)anthracene	99	0.1	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fluoranthene	99	0.1	mg/l	5	3	40	0.53	0.05	1.67	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Fluorene	99	0.1	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Indeno (1,2,3-cd)pyrene	99	0.1	mg/l	5	5	0	S.I.D.	S.I.D.	S.I.D.	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Naphthalene	99	0.05	mg/l	5	3	40	0.04	0.025	0.59	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Phenanthrene	99	0.05	mg/l	5	3	40	0.13	0.025	1.66	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.
Pyrene	99	0.05	mg/l	5	1	80	0.83	0.37	1.44	0	0	S.I.D.	S.I.D.	S.I.D.	S.I.D.

Table 4. Summary of Stormwater Runoff by Land Use Categories Sampled by Los Angeles County Department of Public Works and Presented in the 2000 report titled "Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

Constituents	Data Included Sincea	DL	Units	High Density Single Family Residential						Educational					
				No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV	No. of Samples	No. of Non-detects	Percent Detects	Mean	Median	CV
All other SVOCs	94	0.05-5.0	mg/l	26	26	0	S.I.D.	S.I.D.	S.I.D.	23	23	0	S.I.D.	S.I.D.	S.I.D.
Organochlorine Pesticides & PCBs	94	0.05-1.0	mg/l	31	31	0	S.I.D.	S.I.D.	S.I.D.	22	22	0	S.I.D.	S.I.D.	S.I.D.
Carbofuran	96	5	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	43	43	0	S.I.D.	S.I.D.	S.I.D.
Glyphosate	98	25	mg/l	11	11	0	S.I.D.	S.I.D.	S.I.D.	17	15	12	S.I.D.	S.I.D.	S.I.D.
Diazinon	96	0.01	mg/l	30	28	7	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
Chlorpyrifos	96	0.05	mg/l	30	30	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
Thiobencarb	96	1	mg/l	30	30	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
All other N- and P- Pesticides	94	1.0-2.0	mg/l	32	32	0	S.I.D.	S.I.D.	S.I.D.	39	39	0	S.I.D.	S.I.D.	S.I.D.
2,4-D	96	10	mg/l	27	27	0	S.I.D.	S.I.D.	S.I.D.	24	24	0	S.I.D.	S.I.D.	S.I.D.
2,4,5-TP	96	1	mg/l	27	27	0	S.I.D.	S.I.D.	S.I.D.	24	24	0	S.I.D.	S.I.D.	S.I.D.
Bentazon	96	2	mg/l	27	27	0	S.I.D.	S.I.D.	S.I.D.	24	24	0	S.I.D.	S.I.D.	S.I.D.

Notes
CV = Coefficient of variation
DL = Detection Limit
S.I.D. = Statistically Invalid Data, not enough data above detection limit collected
a) Detection limits have changed throughout the monitoring process. Only data matching the current detection limit is displayed in this table. The Data Included Since field indicates the first year of the storm season with the current detection limit.

Appendix 2.C
Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Mainstem Reaches

Table 1. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Mainstem Reaches

Class[1]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
Category 1A: WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years. (I = Interim and F = Final Limits)								
Metals	Cadmium Total	I (Wet)						
Metals	Copper Dissolved	I (Wet)	I (Wet)			I (Wet)	I (Dry)	I (Wet)
Metals	Copper Total	I (Wet)	I (Wet)	I (Wet)		I (Wet)	I (Dry)	
Metals	Lead Dissolved	I (Wet/Dry)	I (Wet/Dry)	I (Wet/Dry)		I (Wet/Dry)		
Metals	Lead Total	I (Wet)	I (Wet)		I (Dry)			
Metals	Zinc Dissolved	I (Wet)	I (Wet)			I (Wet)		I (Wet)
Metals	Zinc Total	I (Wet)	I (Wet)	I (Wet)		I (Wet)		I (Wet)
Trash	Trash	I/F	I/F	I/F	I/F	I/F	I/F	I/F
HO/CO	Sediment: DDTs, PCBs, PAHs[2]	I						
Metals	Sediment: Copper, Lead, Zinc[2]	I						
Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years. (I = Interim and F = Final Limits)								
Bacteria	*E. Coli*	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)
Metals	Cadmium Total	F (Wet)						
Metals	Copper Dissolved	F (Wet)	F (Wet)			F (Wet)	F (Dry)	F (Wet)
Metals	Copper Total	F (Wet)	F (Wet)	F (Wet)		F (Wet)	F (Dry)	
Metals	Lead Dissolved	F (Wet/Dry)	F (Wet/Dry)	F (Wet/Dry)		F (Wet/Dry)		
Metals	Lead Total	F (Wet)	F (Wet)		F (Dry)			
Metals	Zinc Dissolved	F (Wet)	F (Wet)			F (Wet)		F (Wet)
Metals	Zinc Total	F (Wet)	F (Wet)	F (Wet)		F (Wet)		F (Wet)
HO/CO	Sediment: DDTs, PCBs, PAHs[2]	F						
Metals	Sediment: Copper, Lead, Zinc[2]	F						
Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan. (WLA = Waste Load Allocation in EPA TMDL)								
None								
Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years.								
Metals	Cadmium Total		I (Wet NS)	I (Wet)	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)
Metals	Copper Dissolved	I (Dry)	I (Dry)	I (Wet/Dry)	I (Dry/Wet NS)	I (Dry)	I (Wet NS)	I (Dry)
Metals	Copper Total	I (Dry)	I (Dry)	I (Dry)	I (Wet/Dry)	I (Dry)	I (Wet NS)	I (Wet/Dry)

Table 1. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Mainstem Reaches

Class[1]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
Metals	Lead Dissolved				I (Dry/Wet NS)		I (Dry/Wet NS)	I (Wet/Dry)
Metals	Lead Total	I (Dry)	I (Dry)	I (Wet/Dry)	I (Wet)	I (Wet/Dry)	I (Dry/Wet NS)	I (Wet/Dry)
Metals	Zinc Dissolved			I (Wet)	I (Wet NS)		I (Wet NS)	
Metals	Zinc Total				I (Wet)		I (Wet NS)	
Nutrients	Ammonia as N	F (Dry/Wet)	F (Dry/Wet NS)	F (Dry/Wet)	F (Dry/Wet)	F (Dry/Wet)	F (Dry/Wet)	F (Dry/Wet)
Nutrients	Nitrate as N	F	F	F	F	F	F	F
Nutrients	Nitrite as N	F	F	F	F	F	F	F
Nutrients	Nitrogen (NO3-N+NO2-N)	F	F	F	F	F	F	F
Category 2A: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.								
CO	2,3,7,8-TCDD (Dioxin)			Dry				
CO	Bis(2-ethylhexyl)Phthalate	Dry						
CO	Diazinon						Dry	
Metals	Selenium						Dry	Dry
Salts	Chloride						Dry	Dry
Salts	Sulfate						Dry	Dry
Salts	TDS						Dry	
TBD	Cyanide	303 Dry/Wet						
TBD	pH	Dry						
Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[3] (i.e., toxicity) with exceedances in the past 5 years.								
TBD	pH		Dry					
Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.								
Metals	Mercury Total	Dry	Dry/Wet (NS)	Dry	Dry	Dry/Wet (NS)		Dry
Metals	Thallium Total							Dry (NS)
Salts	TDS							Dry (NS)
TBD	Oil		Delist				Delist	
CO	Diazinon	Wet (Delist)						
Category 3A: All other WBPCs with exceedances in the past 5 years.								
CO	2,3,7,8-TCDD (Dioxin)			Wet	Wet			

Table 1. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Mainstem Reaches

Class[1]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
CO	Bis(2-ethylhexyl)Phthalate	Wet						
CO	Diazinon					Dry		
CO	Dibenzo(a,h)Anthracene						Dry	
CO	Indeno(1,2,3-cd)Pyrene						Dry	
HO	4,4-DDD						Dry	
HO	4,4-DDE						Dry	
Metals	Nickel Total						Dry	
Metals	Selenium Total	Dry						
Metals	Zinc Dissolved	Dry						
Metals	Zinc Total	Dry		Dry				
Salts	Sulfate					Dry		
TBD	Cyanide					Dry	Dry	
TBD	Dissolved Oxygen						Dry	
Category 3B: All other WBPCs that are not a "pollutant"[3] (i.e., toxicity) with exceedances in the past 5 years.								
TBD	pH			Dry	Dry		Dry	
Category 3C: All other WBPCs that have exceeded in the past 10 years, but not in past 5 years.								
CO	2,3,7,8-TCDD (Dioxin)				Dry			Dry (NS)
CO	Benzo(a)Anthracene			Dry				
CO	beta-BHC							
CO	Bis(2-ethylhexyl)Phthalate			Dry	Dry		Dry	
CO	Chrysene			Dry		Dry		Dry (NS)
CO	Dibenzo(a,h)Anthracene			Dry	Dry			
CO	Dichlorobromomethane			Wet				
CO	Indeno(1,2,3-cd)Pyrene			Dry	Dry			
HO	Heptachlor			Wet			Dry	
Metals	Mercury Total	Wet		Wet	Wet		Dry	Wet (NS)
Metals	Nickel Total				Dry			
Metals	Selenium Total				Dry	Dry		

Table 1. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Mainstem Reaches

Class[(1)]	Constituents	LA River						
		1	2	3 (below LAG)	3 (above LAG)	4	5	6
Metals	Thallium Total	Dry	Dry (NS)	Dry	Dry	Dry		
Metals	Zinc Total					Dry		
Salts	Sulfate				Dry			
Salts	TDS					Dry		
TBD	Chlorine (Total)			Dry	Dry	Dry	Dry	Dry
TBD	Cyanide			Dry	Dry			Dry
TBD	Dissolved Oxygen	Wet		Dry		Dry		Dry
TBD	pH	Wet	Wet (NS)					
Category 3D: WBPCs identified by the Group Members.								
	None							

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).

2 – Pollutants associated with the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL were identified as applicable to Reach 1 of the LA River as the nearest downstream receiving water segment from the EWMP area.

3 – While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F = Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

NS = Not sampled in the given condition.

303 = WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

Delist = WBPC on the 2010 303(d) List that could now be delisted.

HO = Historical Organics – inclusive of historical pesticides.

CO = Current Organics – inclusive of current use pesticides and other organics such as PAHs.

TBD = To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Table 2. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Major Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash
			1	2	3				
Category 1A: WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years. (I = Interim and F = Final Limits)									
Metals	Copper Dissolved		I (Dry)					I (Dry)	I (Dry)
Metals	Copper Total	I (Dry)	I (Dry)				I (Wet) NS)	I (Dry)	I (Dry)
Metals	Lead Dissolved		I (Dry)			I (Wet/Dry)			
Metals	Lead Total	I (Dry)	I (Dry)						I (Dry)
Metals	Zinc Total		I (Dry)						
Nutrients	Ammonia as N								F (Dry)
Nutrients	Nitrate as N							F (Dry)	
Nutrients	Nitrite as N					F (Dry)		F (Dry)	
Trash	Trash	I/F	I/F	I/F		I/F	I/F	I/F	I/F
Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years. (I = Interim and F = Final Limits)									
Bacteria	*E. Coli*	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)
Metals	Copper Dissolved		F (Dry)					F (Dry)	F (Dry)
Metals	Copper Total	F (Dry)	F (Dry)				F (Wet) NS)	F (Dry)	F (Dry)
Metals	Lead Dissolved		F (Dry)			F (Wet/Dry)			
Metals	Lead Total	F (Dry)	F (Dry)						F (Dry)
Metals	Zinc Dissolved								
Metals	Zinc Total		F (Dry)						
Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan. (WLA = Waste Load Allocation in EPA TMDL)									
	None								
Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years.									
Metals	Cadmium Total	I (Wet NS)	I (Wet NS)	I (Wet NS)		I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)
Metals	Copper Dissolved	I (Dry/Wet NS)	I (Wet NS)	I (NS)		I (Wet/Dry)	I (Wet)/(Dry NS)	I (Wet NS)	I (Wet NS)
Metals	Copper Total	I (Wet NS)	I (Wet NS)	I (NS)		I (Wet/Dry)	I (Dry NS)	I (Wet NS)	I (Wet NS)
Metals	Lead Dissolved	I (Dry/Wet NS)	I (Wet NS)	I (NS)			I (Wet/Dry NS)	I (Dry/Wet NS)	I (Dry)/Wet NS)

Table 2. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Major Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash
			1	2	3				
Metals	Lead Total	I (Wet NS)	I (Wet NS)	I (NS)		I (Wet/Dry)	I (Wet/Dry NS)	I (Dry/Wet NS)	I (Wet NS)
Metals	Zinc Dissolved	I (Wet NS)	I (Dry/Wet NS)	I (Wet NS)		I (Wet)	I (Wet)	I (Wet NS)	I (Wet NS)
Metals	Zinc Total	I (Wet NS)	I (Wet NS)	I (Wet NS)		I (Wet)	I (Wet)	I (Wet NS)	I (Wet NS)
Nutrients	Ammonia as N	F (Dry/Wet NS)	F (Dry/Wet NS)	F (NS)		F (Dry/Wet NS)	F (NS)	F (NS)	F (Wet NS)
Nutrients	Nitrate as N	F	F	F (NS)		F	F (NS)	F (Wet)	F
Nutrients	Nitrite as N	F	F	F (NS)		F (Wet NS)	F (NS)	F (Wet)	F
Nutrients	Nitrogen (NO3-N+NO2-N)	F	F	F (NS)		F	F (NS)	F	F
Category 2A: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.									
CO	2,3,7,8-TCDD (Dioxin)							Dry	
CO	Bis(2-ethylhexyl) Phthalate							Dry	
CO	Chlorodibromomethane							Dry	
Salts	Chloride								Dry
Metals	Copper Total				Dry				
TBD	Cyanide			303 Dry (NS)					
TBD	Dissolved Oxygen				Dry				
TBD	pH				Dry				
Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (i.e., toxicity) with exceedances in the past 5 years.									
TBD	Benthic-Macroinvertebrates	303				303			
Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.									
CO	Bis(2-ethylhexyl) Phthalate			Dry /Wet (NS)		Wet (NS)	Dry/Wet (NS)	Wet (NS)	
Metals	Selenium Total							Delist	
TBD	Chlorine (Total)							Wet	
TBD	Cyanide							Delist	

Table 2. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Major Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash
			1	2	3				
Category 3A: All other WBPCs with exceedances in the past 5 years.									
CO	Benzo(a)Pyrene				Dry			Dry	
CO	Benzo(b)Fluoranthene							Dry	
CO	Benzo(k)Fluoranthene				Dry				
CO	Chrysene				Dry				
CO	Diazinon				Dry				
CO	Dibenzo(a,h)Anthracene				Dry				
CO	Indeno(1,2,3-cd)Pyrene				Dry				
CO	Chlorpyrifos	Dry							
Metals	Mercury Total							Dry	
Metals	Zinc Total								Dry
Salts	Chloride	Dry						Dry	
Salts	TDS							Dry	Dry
TBD	Chlorine (Total)							Dry	
Category 3B: All other WBPCs that are not a "pollutant"[2] (i.e., toxicity) with exceedances in the past 5 years.									
	None								
Category 3C: All other WBPCs that have exceeded in the past 10 years, but not in past 5 years.									
CO	beta-BHC							Dry	
CO	Bis(2-ethylhexyl) Phthalate					Dry (NS)			
CO	Diazinon			Wet (NS)					
HO	Heptachlor							Dry	
Metals	Cadmium Total							Dry	Dry
Metals	Copper Dissolved			Dry (NS)					
Metals	Copper Total			Dry (NS)					
Metals	Lead Total			Dry (NS)					
Metals	Mercury Total	Dry/Wet (NS)			Dry	Wet (NS)	Wet (NS)	Wet (NS)	Dry
Metals	Thallium Total							Dry	
Metals	Zinc Total						Dry (NS)	Dry	
Salts	Chloride				Dry				
TBD	pH			Dry (NS)/Wet (NS)				Dry/Wet (NS)	

Table 2. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for Major Tributaries

Class[1]	Constituents	Compton Creek	Rio Hondo			Arroyo Seco	Verdugo Wash	Burbank Western Channel	Tujunga Wash
			1	2	3				
Category 3D: WBPCs identified by the Group Members.									
	None								

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).

2 – Pollutants associated with the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL were identified as applicable to Reach 1 of the LA River as the nearest downstream receiving water segment from the EWMP area.

3 – While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F = Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

NS = Not sampled in the given condition.

303 = WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

Delist = WBPC on the 2010 303(d) List that could now be delisted.

HO = Historical Organics – inclusive of historical pesticides.

CO = Current Organics – inclusive of current use pesticides and other organics such as PAHs.

TBD = To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Table 3. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for LA River Reach 5 and 6 Tributaries

tClass[1]	Constituents	Bell Creek	Bull Creek	Caballero Creek	Aliso Canyon Wash	McCoy Canyon	Dry Canyon
Category 1A: WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years. (I = Interim and F = Final Limits)							
Trash	Trash	I/F	I/F	I/F	I/F	I/F	I/F
Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years. (F = Final Limits)							
Bacteria	*E. Coli*	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)	I/F (Wet/Dry)
Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan. (WLA = Waste Load Allocation in EPA TMDL)							
	None						
Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years. (I = Interim and F = Final Limits)							
Metals	Cadmium Total	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)
Metals	Copper Dissolved	I (NS)	I (Dry/Wet NS)	I (NS)	I (Dry)/(Wet NS)	I (NS)	I (NS)
Metals	Copper Total	I (NS)	I (Dry/Wet NS)	I (NS)	I (Dry)/(Wet NS)	I (NS)	I (NS)
Metals	Lead Dissolved	I (NS)	I (Dry/Wet NS)	I (NS)	I (Dry/Wet NS)	I (NS)	I (NS)
Metals	Lead Total	I (NS)	I (Dry/Wet NS)	I (NS)	I (Dry/Wet NS)	I (NS)	I (NS)
Metals	Zinc Dissolved	I (Wet NS)	I (Dry/Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)
Metals	Zinc Total	I (Wet NS)	I (Dry)/(Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)	I (Wet NS)
Nutrients	Ammonia as N	F (NS)	F (Dry/Wet NS)	F (NS)	F (Dry/Wet NS)	F (NS)	F (NS)
Nutrients	Nitrate as N	F (NS)	F	F (NS)	F	F (NS)	F (NS)
Nutrients	Nitrite as N	F (NS)	F	F (NS)	F	F (NS)	F (NS)
Nutrients	Nitrogen (NO3-N+NO2-N)	F (NS)	F	F (NS)	F	F (NS)	F (NS)
Category 2A: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.							
	None						
Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (i.e., toxicity) with exceedances in the past 5 years.							
	None						
Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.							
CO	Bis(2-ethylhexyl)Phthalate		Dry (NS)/Wet		Dry (NS)/Wet		
Metals	Selenium Total			Dry (NS)	Dry		
Category 3A: All other WBPCs with exceedances in the past 5 years.							
Salts	Sulfate				Dry		
Salts	TDS				Dry		

Table 3. Detailed Summary of Upper LA River WMA Group Water Body-Pollutant Categories for LA River Reach 5 and 6 Tributaries

tClass[(1)]	Constituents	Bell Creek	Bull Creek	Caballero Creek	Aliso Canyon Wash	McCoy Canyon	Dry Canyon
Category 3B: All other WBPCs that are not a "pollutant"[2] (i.e., toxicity) with exceedances in the past 5 years.							
	None						
Category 3C: All other WBPCs that have exceeded in the past 10 years, but not in past 5 years.							
CO	Diazinon				Wet (NS)		
Metals	Cadmium Total			Dry (NS)			
Metals	Copper Total			Dry (NS)			
Metals	Lead Total			Dry (NS)			
Metals	Mercury Total			Dry (NS)			
Metals	Nickel Total			Dry (NS)			
Metals	Zinc Total			Dry (NS)			
TBD	Cyanide		Wet (NS)		Wet (NS)		
Category 3D: WBPCs identified by the Group Members.							
	None						

1 – Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the EWMP for the TMDL. (Permit pg. 49, footnote 21).

2 – Pollutants associated with the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL were identified as applicable to Reach 1 of the LA River as the nearest downstream receiving water segment from the EWMP area.

3 – While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F = Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

NS = Not sampled in the given condition.

303 = WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

Delist = WBPC on the 2010 303(d) List that could now be delisted.

HO = Historical Organics – inclusive of historical pesticides.

CO = Current Organics – inclusive of current use pesticides and other organics such as PAHs.

TBD = To be determined – used for conditions (pH and dissolved oxygen) that are not pollutants, per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Appendix 2.D
Source Assessment

Appendix 2.D. Source Assessment

The following are common sources of key pollutants identified for the Upper Los Angeles River Watershed Management Area.

Bacteria

Escherichia coli

The sources identified in the LA River Bacteria TMDL source assessment "include, but are not limited to, domestic pets, horses, direct human inputs all contributing to the bacteria in the urban runoff, leaks and overflows from wastewater collection systems, illicit connections, failing septic systems, and sediments" (LARWQCB 2010). Because many of these sources are conveyed through the MS4 and discharged to the LA River, there is a linkage between MS4 discharges and bacteria loadings in the LA River.
The LA River Watershed Bacteria TMDL Source Assessment states "A myriad of bacteria sources are present in the Watershed and can potentially degrade the quality of storm drain discharges, including sewage sources, homeless persons, domestic pets, food waste, trash, horses, wildlife, illicit discharges, sediment, and regrowth". The source assessment for the Long Beach City beaches and LA River Estuary TMDL also identifies MS4 discharges as a significant source of bacteria loading, in addition to Caltrans facilities, vessels covered under the Vessel Discharge Permit, facilities operating under the Statewide General Industrial and Construction Storm Water permits, general NPDES permits, and various nonpoint sources (USEPA 2012).

Bacteria loads associated with MS4 and Caltrans Stormwater Permits, minor and general NPDES permits (Table 2-13 above) are largely unknown due to lack of monitoring for bacteria; however the main contributor of flow and associated bacteria loading is the stormwater conveyance system.

Current and Historical Organics

Urban storm water has been recognized as a substantial source of organic pollutants such as PAHs, PCBs and organochlorine compounds (Suffet and Stenstrom, 1997). This is also reflected in routine storm water monitoring performed by LACDPW under the MS4 permit (LACDPW, 2002).

The predominant source of PAHs in urban storm water in the greater Los Angeles area is from aerial deposition and subsequent wash-off of PAHs associated with combustion byproducts (Stein et. al., 2006). The loadings of pesticides, PCBs and dioxins reflect historic uses in Los Angeles River watershed. Although the uses of these compounds are banned, these legacy pollutants continue to remain elevated in sediments. DDT and PCB loadings appear to have declined over the last 30 years (Stein et al., 2003).

In summary, the major contributor of associated organochlorine compounds, pesticides, PCBs and PAHs loading to Los Angeles River is believed to be wet-weather runoff discharged from the storm water conveyance system (USEPA and CA RWQCB, 2005; USEPA, 2012). In the highly urbanized areas of the watershed, the contribution of stormwater runoff and storm-borne sediment loads from these areas drain to the MS4 system.

Pesticides (DDT, DDE, DDD, Chlorpyrifos, Diazinon and Beta-BHC)

DDT is an organochlorine insecticide that was widely used on agricultural crops and to control disease-carrying insects. In California, DDT was used primarily for agricultural activities. The use of DDT was banned in the U.S. in 1972, except for public health emergencies involving insect diseases and control of body lice. Although DDT is no longer used, it persists in the environment, adhering strongly to soil

particles. Total DDT consists of two isomers (p,p-DDT and o,p-DDT) and several degradation products (p,p-DDE, o,p-DDE, p,p-DDD, and o,p-DDD).

Chlorpyrifos is a broad-spectrum, chlorinated organophosphate (OP) insecticide. Chlorpyrifos was first registered for use in the U.S. in 1965. Chlorpyrifos is used on agricultural food and feed crops, cattle ear tags, golf course turf, industrial plants and vehicles, non-structural wood treatments including processed wood products, fence posts and utility poles, and to control public health pests such as mosquitoes and fire ants (NPIC, 2011).

Diazinon is the common name for a synthetic organophosphate pesticide first registered in the U.S. in 1956. Diazinon is used in agriculture to control soil and foliage insects and pests on a variety of fruit, vegetable, nut and field crops. Diazinon is also used on non-lactating cattle in an insecticidal ear tag. Diazinon was one of the most widely used insecticides for household and agricultural pest control. Prior to the cancellation of all residential uses by 2004, diazinon was used outdoors on lawns and gardens, indoors for fly control and in pet collars designed to control fleas and ticks. Current agricultural uses of diazinon are limited to selected crops, and diazinon products (other than cattle ear tags) are regulated as restricted use pesticides (NPIC, 2011a).

Beta-BHC is a synonym of beta-hexachlorocyclohexane (beta-HCH), which is one of the isomers of hexachlorocyclohexane. It is a byproduct of the production of the insecticide lindane. This pesticide was widely used during the 1960s and 1970s, particularly on cotton plants. Although banned as a pesticide more than 30 years ago, traces of beta-HCH can still be found in water and soil (USEPA, 2013a).

In a previous study by Young et al. (1973), the annual wet weather loads for DDTs from the adjacent Ballona Creek watershed were around 18 kg during 1971-1972 water year, which was a particularly wet year. In the 1987-88 period, wet weather loadings for DDT during a comparable size storm year were around 8 kg (Stein et al., 2003). There were no detectable concentrations of DDT in stormwater samples from 1994 to 2005 (LADPW, 2005). However, the detection limits for DDT used by the Los Angeles County lab are two orders of magnitude greater than the Communities of Practice (COP)'s human health objective.

More recently, Curren et al. (2011) evaluated the contribution of subwatersheds to chlorinated pesticide loading during wet weather flow in Los Angeles area. Fifteen storm drains were sampled during three storms during the 2005 - 2006 winter rainy season. The suspended solids were analyzed for chlorinated pesticides. Curren et al. (2011) found DDT concentrations in stormwater during the 2005-2006 season that ranged from non-detect to 0.4 ng/l. This indicates that DDT concentrations in stormwater may exceed the human health criteria. The total DDT loadings based on the average concentrations from these three storms sampled by Curren et al. (2011) were estimated to be 6.2 g.

Based on approved Santa Monica Bay TMDLs for DDTs and PCBs, the concentrations of DDT in the wastewater effluent are currently at or near the detection limits. From 1947 to 1971 large quantities of DDT were discharged from the Montrose Chemical plant in Los Angeles, which manufactured DDT, to the Los Angeles County Joint Water Pollution Control Plant (JWPCP). The concentrations of DDT in surface sediments have decreased substantially since the early 1970s as much of the contamination has been buried below the active sediment layer or degraded as a result of natural processes (USEPA, 2012).

Both chlorpyrifos and diazinon are man-made pesticides. Agricultural sources of chlorpyrifos and diazinon in the watershed are likely causing exceedance of water quality objectives, based on similarity of agricultural practice in the Lower Salinas River watershed. Based on the agricultural application

location and amount applied using the Pesticide Use Report (PUR) provided by the California Department of Pesticide Regulation (CDPR), applications of currently registered pesticides such as Chlorpyrifos and Diazinon are reported at the section level or square mile level. The pesticide use report allows for fairly accurate identification of sources in time and space. It is estimated that agricultural application could be accounted for over 90% of chlorpyrifos use and diazinon uses. In addition, the various uses of diazinon and chlorpyrifos in an urban setting include landscape applications and pest control. Both pesticides can be transported to surface water via urban storm water conveyance systems (CA SWRCB, 2011).

PCBs

Polychlorinated biphenyls (PCBs) are mixtures of up to 209 individual chlorinated compounds (known as congeners). PCBs were used in a wide variety of applications, including dielectric fluids in transformers and capacitors, heat transfer fluids, and lubricants. In 1976, the manufacture of PCBs was prohibited because of evidence that they build up in the environment and can cause harmful health effects.

PCBs are typically associated with more urban areas. In addition, PCBs were commonly used in a number of household products (e.g., fluorescent light fixtures, paints, waxes, caulking). Although there is little information available to estimate the potential loads from rural areas, rural areas are unlikely to be a major source of PCBs (USEPA, 2012).

Potential pollutants from construction sites include sediment, which may contain historic PCBs from construction materials and the heavy equipment used on construction sites. In addition, in the highly urbanized areas within Los Angeles River watershed re-development of former industrial sites has a higher potential to discharge sediments laden with pollutants such as PCBs. During wet weather, runoff from construction sites has the potential to contribute metals loadings to the creek (USEPA and CA RWRCB, 2005).

In the 1971-1972 water year, the annual wet weather loads for PCBs were around 15 kg (Young et al., 1973). In the 1987-88 water year, the wet weather loadings for PCBs were around 7 kg. LADPW has not indicated detectable levels of PCBs in stormwater since the mid-1990s. However, detection levels for PCBs measured as arochlors were 65 ng/l, which are more than three orders of magnitude greater than the COP human health objective. In 1995-1996 water year, Suffet and Stenstrom (1997) measured PCB congeners and found elevated concentrations of total PCBs (calculated as the sum of the 18 congeners) ranging between 15,100 ng/l to 390,000 ng/l in stormwater runoff.

More recently, Curren et al. (2011) found concentrations of total PCBs that were much lower, ranging from 0.74 ng/l to 16.07 ng/l in the 2005-06 rainy season. These most recent values are all higher than the COP objective. The estimate of PCB loads based on the average concentrations from the three storms sampled by Curren et al. (2011) was 32.9 g. However, a disproportionate mass of PCB loading came from a site which had no obvious sources.

Based on approved TMDL for Calleguas Creek Watershed Organochlorine Pesticides and PCBs, most PCB residues in the watershed are due to past use of PCBs as coolants and lubricants in transformers, capacitors, and other electrical equipment. Atmospheric deposition is also a potential source of PCBs. Urban runoff and publicly owned treatment works (POTWs) are minor sources of PCBs (California RWQCB, 2005).

Furthermore, based on approved Santa Monica Bay TMDLs for DDTs and PCBs, the concentrations of PCBs in the wastewater effluent are currently at or near the detection limits. PCBs entered the JWPCP from several industrial sources in the Los Angeles area. The concentrations of PCBs in surface sediments have decreased substantially since the early 1970s as much of the contamination has been buried below the active sediment layer or degraded as a result of natural processes (USEPA, 2012). The continued presence of high PCBs in sediments also suggest land-based inputs to the storm drain system, although there is limited information to assess the impact of hundreds of individual industrial or construction stormwater projects (USEPA, 2012).

Atmospheric deposition may be a potential nonpoint source of PCBs. There may also be potential losses of PCBs that may occur as a result of volatilization. Sabin et al. (2011) provide limited information on net-gas exchange during dry weather from sites near Ballona Creek Estuary and Los Angeles Harbor. Volatilization may be an important loss term process for PCBs. However, the rates of volatilization are a function of concentrations in both the air and water which can vary greatly over time and space.

PAHs

Polynuclear aromatic hydrocarbons (PAHs) are a group of over 200 different chemicals. They are found in nature in coal and crude oil and in emissions from combustion of fossil fuels, forest fires and volcanoes. Most PAHs entering the environment are formed unintentionally during burning (coal, oil, wood, gasoline, garbage, tobacco and other organic material) or in certain industrial processes. Important sources of PAHs in surface waters include deposition of airborne PAHs, municipal waste water discharge, urban storm water runoff particularly from roads, runoff from coal storage areas, effluents from wood treatment plants and other industries, oil spills, and petroleum pressing (ATSDR, 1995).

The loadings of PAHs are attributable to historical and ongoing activities in the watershed. Atmospheric deposition may be a potential nonpoint source of metals and PAHs to the watershed, through either direct or indirect deposition. PAHs are released to the atmosphere through natural and synthetic sources of emissions. The largest sources of PAHs to the atmosphere are from synthetic sources, including wood burning in homes; automobile and truck emissions; and hazardous waste sites and former manufactured-gas sites (USEPA and CA RWRCB, 2005).

It is believed that the primary source of PAHs to Los Angeles River watershed is urban storm water runoff. Indirect atmospheric deposition reflects the process by which metals and PAHs deposited on the land surface may be washed off during storm events and delivered through storm water runoff to Los Angeles River watershed. Most airborne PAHs are deposited on the land (e.g., through precipitation or indirect atmospheric deposition) and are transported to Los Angeles River through storm water runoff (USEPA and CA RWQCB, 2005).

Stein et. al. (2006) characterized the sources and temporal patterns of PAHs in urban storm water by analyzing PAH concentrations and loads from a range of homogeneous land use sites and in-river mass emission sites throughout the greater Los Angeles region. Samples were collected at 30- to 60-min intervals over the course of a storm during multiple storm events over a four-year period in order to investigate PAH sources and inter- and intra-storm patterns in loading. Polycyclic aromatic hydrocarbon storm fluxes ranged from 1.3 g/km^2 for the largely undeveloped watershed to 223.7 g/km^2 for the highly urbanized watershed, with average storm fluxes being 46 times higher in developed versus undeveloped watersheds (Stein et. al. 2006). Early-season storms repeatedly produced substantially higher loads than comparably sized late season storms. Within individual storms, PAHs exhibited a moderate first flush with between 30 and 60% of the total PAH load being discharged in the

first 20% of the storm volume. The predominant source of PAHs in urban storm water in the greater Los Angeles area is from aerial deposition and subsequent wash-off of PAHs associated with combustion byproducts (Stein et. al., 2006; Sabin and Schiff, 2004; Gunther et. al., 1987).

Dioxin

Dioxin is the name given to a group of persistent, very toxic chemicals. Dioxins can be released into the environment through forest fires, backyard burning of trash, certain industrial activities, and residue from past commercial burning of waste. Dioxins break down very slowly and past releases of dioxins from both man-made and natural sources still exist in the environment.

The most toxic form of dioxin is 2,3,7,8-tetrachlorodibenzo-p-dioxin or TCDD. 2,3,7,8-TCDD is released to the environment in stack emissions from the incineration of municipal refuse and certain chemical wastes, in exhaust from automobiles powered by leaded gasoline, in emissions from wood burning in the presence of chlorine, in accidental fires involving transformers containing PCBs and chlorinated benzenes, and from the improper disposal of certain chlorinated chemical wastes. TCDD has been released to the environment as a low level impurity in various pesticides.

Based on a survey of storm water runoff for Dioxins in the San Francisco Bay area, the California Regional Water Quality Control Board estimated the mass contribution from industrial and municipal wastewater discharges, storm water, and direct atmospheric deposition (California Regional Water Quality Control Board, 1998). It is expected that these are similar Dioxin source categories for Los Angeles River watershed.

For the largest categories of direct deposition and storm water runoff, the California Regional Water Quality Control Board expects air emissions from disperse sources or from "reservoir sources" to be the ultimate source due to uniformity of concentrations throughout the region independent of industrial activity. The current known air sources are on- and off-road mobile sources (e.g., motor vehicles, including diesel), and residential wood burning. Dioxin legacy sources may include medical waste incinerators and other combustion sources that operated historically in the area (USEPA, 2013).

In the municipal water discharge category, the suspected sources are also diffuse, including laundry gray-water, storm water inflow, shower water, human waste, bleached toilet paper, food waste, and industrial sources. Of these, the predominant one appears to be laundry gray-water. Dioxins in gray-water may come from pentachlorophenol-treated cotton from overseas, chloranil-based dyes in the fabric, fabric bleaching, soil and human skin (USEPA, 2013). For example, based on the previous study in San Francisco Bay, current best estimate is that municipal wastewater treatment plants contribute less than 10% of the dioxins delivered to the San Francisco Bay (BACWA, 2008).

For the industrial category, the only documented source of dioxins in the California is expected from petroleum refineries. Within the industrial process, the specific source is the wash waters from catalyst regeneration reformers. Further studies suggest that the dioxins that remain in the discharge are primarily due to storm water runoff from areas surrounding the refineries (USEPA, 2013).

Bis(2-ethylhexyl)Phthalate

Bis-2-ethylhexylpthalate is a plasticizer used in the manufacture of polyvinyl chloride (PVC). It is also is a common contaminant of sample containers, sampling apparatus, and analytical equipment. For example, it has been identified as a common laboratory contaminant during groundwater monitoring data analysis (WI DNR, 2002). Attribution to MS4 discharges is uncertain and can possibly be attributable to lab contamination, which is largely a function of lab design, practices and housekeeping.

Chlorination Byproduct Trihalomethanes (THM)

Trihalomethane compounds chlorodibromomethane and dichlorobromomethane are disinfection byproducts formed from the reactions of chlorine with organic matter in water. These constituents are regulated in the discharges from the WRPs that discharge to the LA River and are likely the primary sources of the Category 3 exceedance level in LA River Reach 3 below the LA-Glendale WRP discharge and the Category 2 exceedance level in the Burbank Western Channel into which the Burbank WRP discharges. As such, these THM exceedances should not be attributed to the MS4 system.

Metals

Under the Los Angeles River Metals TMDL, cadmium, copper, lead, selenium, and zinc have separate dry/wet weather numeric targets and/or load allocations within the watershed. The sources and delivery of metals can vary depending on weather and flow conditions. Wet weather metal loads are typically greater than dry weather loads, with wet weather stormwater runoff shown to be the dominant source of annual metals loading (LACDPW, 2010). During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works that discharge to the river constitute the majority of flow and metals loadings during dry weather. Storm drains also contribute a large percentage of dry weather loadings because although their flows are typically low, concentrations of metals in urban runoff may be quite high (LARWQCB, 2010b).

During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather stormwater flow. On an annual basis, stormwater contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading, the majority of which is permitted through the Los Angeles County MS4 (in addition to the Caltrans stormwater permit, general construction stormwater permit, and general industrial stormwater permit) (LARWQCB, 2010b).

Toxic Organic Chemicals

The fertilizers used for land and landscape maintenance of municipal areas are also a source of metals. Fertilizers, herbicides, and pesticides contain metals such as cadmium, copper, lead, and zinc. Heavy metals in municipal stormwater can also come from car debris, roof shingles, building materials, and plastics (LACDPW, 2012a).

Road Infrastructure

"A California study found that cars are the leading source of metal loads in stormwater, producing over 50 percent of the copper, cadmium, and zinc loads. Wear from brake pads, tires, and engine parts is a significant source of metal pollutants. For example, almost 50 percent of the copper loads in roadway stormwater originates from brake pads, and tire wear accounts for over 50 percent of the total cadmium and zinc loads delivered to the San Francisco Bay each year. Such conditions are expected to be similar for the Los Angeles region. Leaking oil, grease, and coolant also contribute metals and PAHs to the roadway loads." (LACDPW, 2012a). Table 2-14 shows common sources of contaminants in runoff from roads and highways.

Table 2-14 Common Sources of Roadway Pollutants

Source	Cadmium	Copper	Nickel	Lead	Zinc	PAHs	Nutrients	Synthetic Organic Chemicals
Gasoline	●	●		●	●			
Exhaust			●	●		●		●
Motor oil and grease			●	●	●	●		
Antifreeze	●	●		●	●	●		
Undercoating				●	●			
Brake linings		●	●	●	●			
Tires	●	●		●	●	●		
Asphalt	●	●	●		●	●		
Concrete		●	●		●			
Diesel oil	●			●	●			●
Engine wear			●	●	●			
Fertilizers, pesticides, and herbicides	●	●	●		●		●	●

Adapted from LACDPW (2012a)

Silver

According to the TMDL development for the Lower St. Johns River in Florida, silver compounds in soil are released into the environment by rain and may be carried long distances in air and water. Silver is stable and remains in the environment in one form or another until it is taken out again by people. Because silver is an element, it does not break down, but it can change its form by combining with other substances (USEPA, 2004). Silver has also been identified as a component in vehicle fuels (Lee, 1993).

There are limited studies and literature on the sources of silver in the Los Angeles River watershed, but MS4 discharges cannot be eliminated as possible sources of silver. However, it should be noted that over the past five years, there have only been two exceedances of total silver in the watershed out of 70 samples (at Centinela Creek), and no exceedances for dissolved silver. Over the past ten years, there have been seven exceedances of total silver in the watershed out of 168 samples (4%), and four exceedances of dissolved silver out of 128 samples (3%). This low number of exceedances may indicate that silver is not a significant constituent of concern in the watershed.

Mercury

The adopted San Francisco Bay Basin Plan TMDL identified sources of mercury in San Francisco Bay to include bed erosion (about 38%), the Central Valley watershed (about 36%), urban stormwater runoff (about 13%), the Guadalupe River watershed (about 8%), direct atmospheric deposition (about 2%), non-urban stormwater runoff (about 2%), and wastewater discharges (about 1.5%). There was also a potential that mercury may enter the Bay from Bay margin contaminated sites and abandoned mercury mines outside the Guadalupe watershed (SFBRWQCB, 2006).

The organic form of mercury (methylmercury) is toxic and bioavailable. Sources of methylmercury in Delta waters include tributary inputs from upstream watersheds and within-Delta sources such as methylmercury flux from wetland and in-channel sediments, municipal

and industrial wastewater, agricultural drainage, and urban runoff (CVRWQCB, 2010). Various sources of mercury have been identified, including urban stormwater runoff, correlating to a linkage to MS4 discharges.

It should be noted that over the past five years, there have been only two exceedances for mercury in the Los Angeles River watershed out of 276 samples, one each for Burbank Western Channel and Rio Hondo. This indicates that mercury may not be a significant constituent of concern in the watershed.

Mercury is also recognized to be a potential laboratory contaminant. Mercury is found in thermometers, manometers, vacuum pumps, switches, discharge tubes, dental amalgams, and as a component in chemical reactions. Because of its frequent use, it is not unusual for mercury to be spilled, or otherwise contaminate laboratory, storage, or office areas. Contamination of laboratory spaces from historic mercury spills is also common (University of Florida, 2012).

Selenium

Selenium was placed on the 303(d) list of impairments for Burbank Western Channel due to a sufficient number of exceedances of the CTR CCC limit for selenium for freshwater aquatic life protection. Exceedances were shown in receiving water quality monitoring data from the Burbank Water Reclamation Plant Annual Monitoring Reports (2003-2007). (SWRCB, 2010).

The Los Angeles River and Tributaries Metals TMDL (May 2010) states in the source analysis amendment: "The sources of selenium appear to be related to natural levels of selenium in soils in the upper watershed. Separate studies are underway to evaluate whether selenium levels represent a 'natural condition' for this watershed."

Although the upper part of the watershed included in the Metals TMDL source analysis of areas draining to LA River Reach 1 and its tributaries, a similar natural condition may exist in the upper watershed draining to Burbank Western Channel. Further analysis of studies indicating presence of marine shale in the ULAR geology and comparison to the Burbank Western Channel upper watershed geology may be completed in the final version of the WQP memo.

Receiving water monitoring reports indicate that largest source of selenium levels in Burbank Western Channel may be the discharges from the Burbank Water Reclamation Plant, potentially eliminated MS4 discharges as a significant source.

Thallium

Thallium is a highly toxic element that is found mainly in soil, but also present in fossil fuels, alloys, and in electronic utilities. The element has been increasingly used in energy production. Thallium is also found in airborne dust particles from cement production. High concentrations of thallium have been found in the vicinity of cement plants in Poland. About 15 tons of thallium is produced annually in the world, and it is estimated that 2,000 to 5,000 tons are mobilized through industrial processes. In the U.S., about 1,000 tons of thallium is estimated to be released to the environment annually. These amounts are released as dust and vapors (35 tons), bound to non-ferrous metals (60 tons) and in fluids and solid wastes (>500 tons) (Karlsson, 2006).

The presence of thallium in the watershed seems to be a result of industrial and manufacturing facilities, which are regulated by California's statewide General Industrial Stormwater Permit or individual NPDES permits processes. It should be noted that over the past five years, there have been zero exceedances for thallium in the Los Angeles River watershed out of 71 samples. Over the past ten years, thallium

exceeded WQOs in only 19 of 640 samples (3%). This indicates that thallium may not be a significant constituent of concern in the watershed.

Nutrients

Ammonia-N, Nitrate- N, Nitrite-N, Nitrate-N + Nitrite-N

The staff report for TMDL for Nitrogen Compounds and Related Effects for Los Angeles River and Tributaries states "The three largest POTWs (Donald C. Tillman Water Reclamation Plant, Los Angeles-Glendale Water Reclamation Plant, and Burbank Water Treatment Plant) constitute the major sources of nitrogen in the watershed". Urban and residential stormwater runoff presents loadings of nutrients that is smaller than that of POTWs, but still represents a linkage to MS4 discharges (LARWQCB 2003). The nutrient loading for stormwater runoff from the land uses draining to MS4s would typically occur during storm events where runoff will carry pollutants from land uses (for example, fertilizers in residential areas) into the storm drain system.

Pollutant Class To Be Determined

The section includes water quality conditions that are not specific pollutants (i.e., pH and dissolved oxygen), per se, or constituents where the linkage to another type of constituent will be further investigated during EWMP development.

Benthic-Macroinvertebrates

Benthic macroinvertebrates impairment was placed on the 303(d) list of impairments for Compton Creek and Arroyo Seco Reach 1 due to Southern California Index of Biological Integrity (IBI) scores that were very poor in October of 2003 and very poor in October of 2004 indicating impairment of benthic community structure. (SWRCB 2010)

The sources of impairment to benthic-macroinvertebrate communities cannot be quantified at this time because specific pollutants have not been identified with a site-specific study. While specific toxic pollutants may be contributing the impairment indicated by a shift in the benthic-macroinvertebrate communities, it is currently not possible to identify specific pollutants or other stressors. Some of the potential pollutants and water quality data that were considered when evaluating these Benthic macroinvertebrates impairments include coliform bacteria, cyanide, nitrite, metals, trash, dissolved oxygen and pH. (SWRCB 2010)

Due to these unknowns MS4 discharges cannot be eliminated as possible sources of benthic-macroinvertebrate related impairment. Further analysis or site-specific studies will likely be completed during development of a benthic-macroinvertebrates TMDL.

Chlorine

Chlorine is a category 2 pollutant for Burbank Western Channel for wet weather and a Category 3 pollutant for LA River Reached 3 through 6 for dry weather. The Chlorine TMDL for the Santa Fe River in New Mexico identified POTW effluent, agriculture and mining as sources of chlorine (NMEDSWQB 2000). There is no significant runoff from mining or agriculture to MS4s in the LA River watershed, leaving residual chlorine in POTW effluent as the primary source of chlorine in the LA River watershed.

Cyanide

The sources of cyanide are generally anthropogenic in nature, but can also include some natural non-point sources. Point sources of cyanide can include stormwater runoff from industrial facilities, e.g., metal plating and finishing operations may contain cyanide (LACDPW, 2005). Sand and gravel operations, oil and natural gas facilities, transportation, recycling and manufacturing facilities have been

identified as possible industrial sources (LACDPW, 2006). These sources are regulated by California's statewide General Industrial Stormwater Permit or individual NPDES permits.

Non-point sources of cyanide may include pesticide use, which can be transported to storm drains during dry weather flow (e.g., over-irrigation) or wet weather flow. The largest likely source of cyanide in the watershed is air-borne deposition from motor vehicle emissions (LACDPW, 2005). The amount of cyanide that could be released to the environment from natural sources is comparatively low. Natural sources may include incomplete combustion from forest fires, decomposition of plant material and fungi. (LACDPW, 2005).

While some potential sources of cyanide may be attributed to industrial facilities, e.g., metal plating, finishing, and manufacturing operations, the MS4 cannot be eliminated as a significant linkage for cyanide impairment as the MS4 is the conduit for cyanide that comes from some of the most significant sources. The largest likely sources of cyanide in the watershed are linked to MS4 discharges, as both air-borne deposition from motor vehicle emissions and pesticide use are linked to surface runoff in the MS4 and from the MS4 to the LA River.

The low level of cyanide exceedances might also be attributed to laboratory contamination issues. For example, laboratories are noted as a possible source of cyanide in the Commercial and Institutional category in the San Francisco area (BACWA, 2008).

Dissolved Oxygen

Low dissolved oxygen concentration results when there is insufficient aeration of oxygen into water. Slow-moving, stagnant, and pooled water has little opportunity for aeration, resulting in low concentrations of dissolved oxygen. Biologically, oxygen is also removed from the water column during respiration by plants for cell production. The chemical removal of oxygen can occur as ammonia is oxidized to nitrite, and eventually nitrate, thereby removing available oxygen from the water column. The saturation of oxygen in water is lastly a function of temperature and salinity; water with lower temperature and salinity retains more dissolved oxygen, relative to higher temperature and salinity (CCRWQCB, 2006).

A characterization study conducted in Washington found that increased stream temperatures likely heavily influence lower dissolved oxygen levels (SWDE, 2013). An indicator of low dissolved oxygen is benthic algae cover. Benthic algae is a natural plant in most stream systems and is a vital component of the stream food web. Under natural conditions, algal density is kept at levels that do not adversely affect dissolved oxygen. Factors limiting algal growth include (but not limited to): 1) nutrients, 2) light, 3) substrate, 4) flowing water, and 5) temperature. The direct impact of urban storm water runoff on dissolved oxygen conditions in receiving waters is not thought to be substantial. However, the secondary impacts on the dissolved oxygen balance in receiving waters due to nutrient enrichment, eutrophication, and resulting sediment oxygen demand may be important. Therefore, there is still an indirect linkage between the MS4 and low dissolved oxygen.

pH

The receiving water analysis for pH identified exceedances for both the Basin Plan minimum and maximum objectives. Wet weather samples exhibited exceedances for the both minimum/maximum WQOs, while dry weather samples only exhibited exceedances for maximum WQOs. A characterization study conducted in Washington found that increased low pH is likely a result of the combination of large wet-season precipitation events, the acidity of rainfall and shallow groundwater, and the poor buffering capacity of the stream and surrounding landscape (SWDE, 2013). Most pH impacts in urban waters are

caused by runoff of rainwater with low pH levels (acid precipitation). In fact, urban areas tend to have more acidic rainfall than less developed areas (USEPA, 1999).

Higher levels of pH may be caused by the respiration of aquatic plants, e.g. benthic algae. Photosynthesis is accelerated during afternoon hours when peak solar radiation is present. Photosynthesis by algae uses water column carbon dioxide. The reduced carbon dioxide has a net effect of increasing pH. Central Coast Regional Board staff concluded that benthic algae is a source of biologic removal of dissolved oxygen in lower Chorro Creek during afternoon hours, and is a factor causing impairment of low dissolved oxygen and high pH (CCRWQCB, 2006). Higher levels of pH may be attributed to the MS4 by way of nutrient enrichment, which promotes algal growth.

Salts

Salts identified as Category 2 and 3 pollutants for ULAR include chloride, sulfate and total dissolved solids (TDS). The staff report for the Santa Clara River Chloride TMDL and Interim Waste Load Allocations for sulfate and TDS identifies chloride sources as primarily from imported water and chloride added by domestic uses such as self-regenerating water softeners. Both of these sources are linked to POTWs and not MS4 discharges, however could be linked to MS4s for discharges of imported water directly to storm drains (LARWQCB 2008). The Los Angeles River watershed is also heavily dependent on imported water, and may have similar sources of salts to that of the Santa Clara River.

Trash

A numeric target of 0 (zero) trash in the water has been established by the Los Angeles River and Legg Lake TMDLs. According to the TMDL Staff Reports, the major source of trash in Los Angeles River and Legg Lake results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include: (1) storm drains: trash is deposited throughout the watershed and is carried to the various reaches of the river and its tributaries during and after significant rainstorms through storm drains, (2) wind action: trash can also blow into the waterways directly, and (3) direct disposal: direct dumping also occurs. Several studies conclude that urban runoff is the dominant source of trash. The correlation between trash and urban runoff through storm drains can be evidenced by the large amount of trash that accumulates at the base of storm drains (LARWQCB, 2007a, LARWQCB, 2007b). For Legg Lake, based on the land uses in the vicinity of the lake, the observed trash characteristics at the lake, and the fact that only two storm drains discharge to the lake, it is determined that nonpoint sources are the dominant source of trash to Legg Lake. Although the MS4 is not the dominant source of trash at Legg Lake, trash still accumulates at the base of storm drains discharging to the lake and catch basins which collect runoff from surrounding lands (LARWQCB, 2007b).

Appendix 3.A1
BMP Fact Sheets for Regional BMPs

Appendix 3.A1: BMP Fact Sheets for Regional BMPs

BMP Fact Sheets were developed for each subcategory of structural BMPs. Each BMP Fact Sheet further details BMP functions, design variations, and typical design components. A relative performance gauge is used to display the BMP performance functions for each subcategory.

Regional BMPs are constructed structural practices intended to treat runoff from a contributing area of multiple parcels (normally on the order of 10s or 100s of acres or larger). Regional practices include *infiltration facilities* that promote groundwater recharge and *detention facilities* that encourage settling. Infiltration and detention regional BMPs can be either constructed as open-surface basins or subsurface galleries. Regional practices also include *constructed wetlands,* which use engineered wetland environments to encourage pollutant removal; *treatment facilities*, which use conventional wastewater treatment processes to target pollutants of concern; or *low flow diversions,* which route flows to sanitary sewer.

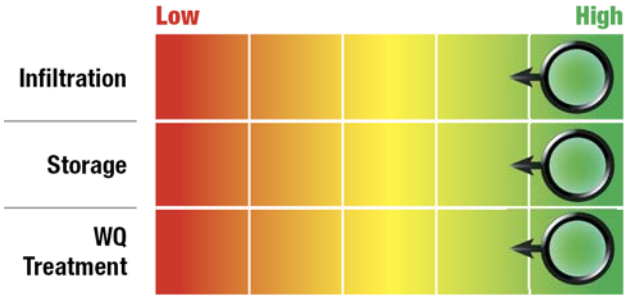
Infiltration Facilities (Regional BMP)

Infiltration facilities are designed to decrease runoff volume through groundwater recharge and improve water quality through filtration and sorption. Facilities can incorporate engineered medias to improve percolation into native soils. Infiltration facilities can be open-surface basins or subsurface galleries.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Surface Infiltration Basins:*** depressions designed to infiltrate stormwater into the subgrade soils. Facilities can be vegetated to encourage evapotranspiration and aesthetics. Also known as spreading grounds.
- ***Subsurface Infiltration Galleries:*** underground storage systems designed to infiltrate stormwater into subgrade soils. Subsurface systems are used when limited area is available for BMP implementation.

Typical Design Components

Figure 3.A1-1 presents a typical design and highlights potential design variations:

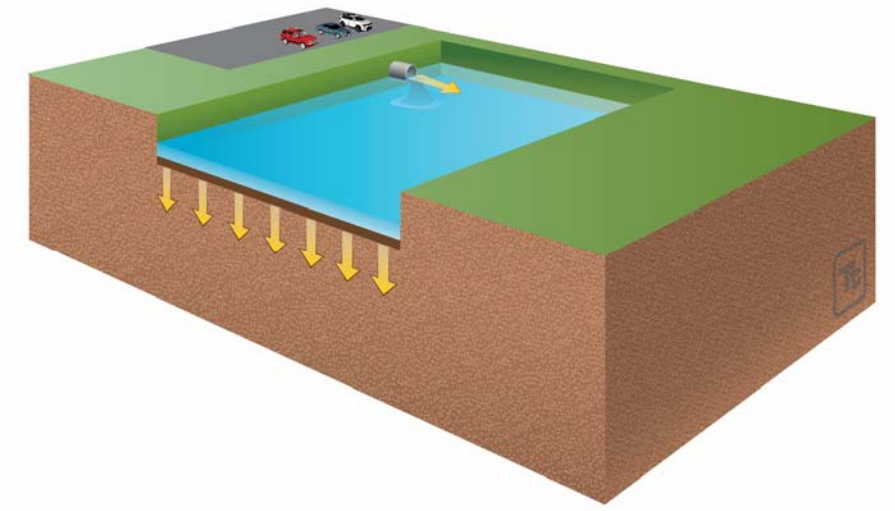
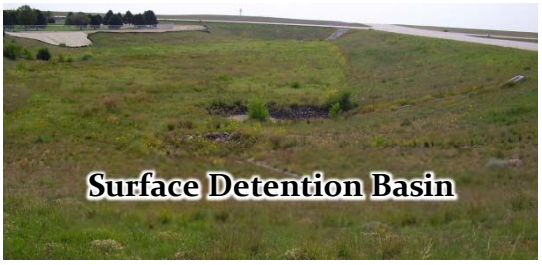


Figure 3.A1-1. Typical regional infiltration facility schematic (arrows indicate water pathways).

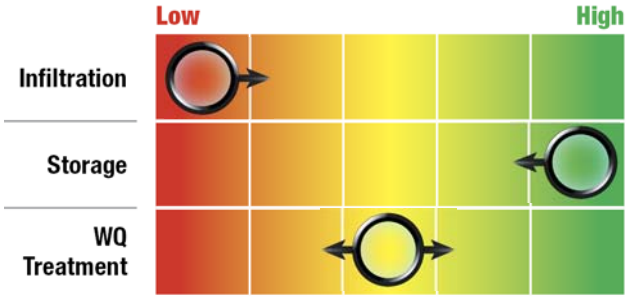
Detention Facilities (Regional BMP)

Detention facilities are designed to detain runoff and improve water quality through pollutant settling. Facilities encourage settling by decreasing runoff flow rates and allowing ponding to occur. Detention facilities can be open-surface practices or subsurface galleries and can be dry during non-rainy seasons or wet year-round.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Surface Detention Basins:*** basins designed to detain stormwater runoff for a specified time to allow sedimentation of particle-bound pollutants. Surface systems can have permanent pools or fully drain between storms.
- ***Subsurface Detention Galleries:*** underground storage systems designed to detain stormwater. Subsurface systems are used when limited area is available for BMP implementation.

Typical Design Components

Figure 3.A1-2 presents a typical design and highlights potential design variations:

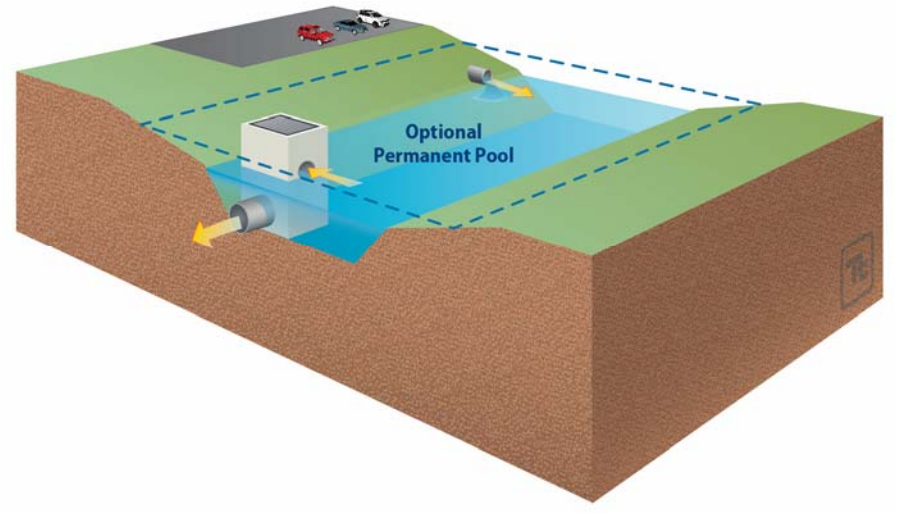
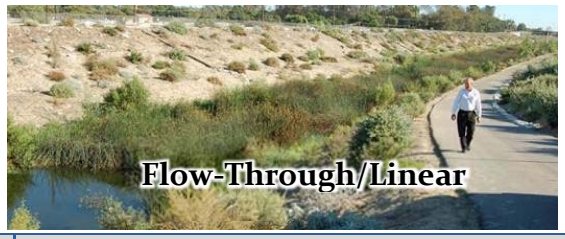


Figure 3.A1-2. Typical regional detention facility schematic (arrows indicate water pathways).

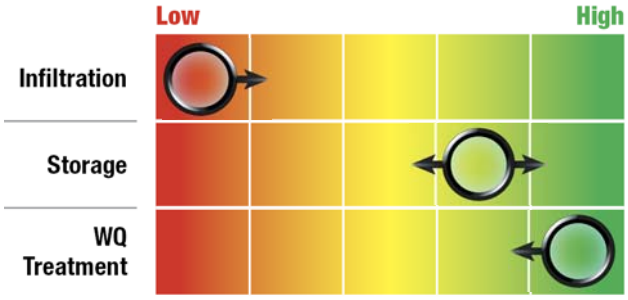
Constructed Wetlands (Regional BMP)

Constructed wetlands are engineered, shallow-marsh systems designed to control and treat stormwater runoff. Particle-bound pollutants are removed through settling, and other pollutants are removed through biogeochemical activity. Constructed wetlands must always maintain a baseflow into the system, which can come from an intersected groundwater or an associated low-flow diversion utilizing dry-weather flows.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Wetland Basins:*** basins with shallow permanent pools and a temporary shallow ponding zone. An outlet control structure typically regulates dewatering of the temporary storage volume.
- ***Flow-through/Linear Wetlands:*** wetlands that provide treatment as water passes through a long flow path. These wetlands are typically constructed parallel to existing channels such that water can be easily diverted.

Typical Design Components

Figure 3.A1-3 presents a typical design and highlights potential design variations:

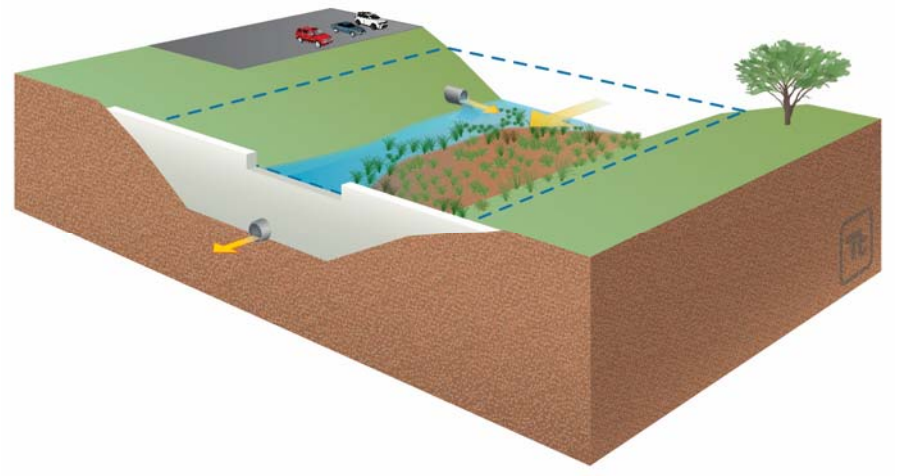


Figure 3.A1-3. Typical regional constructed wetland schematic (arrows indicate water pathways).

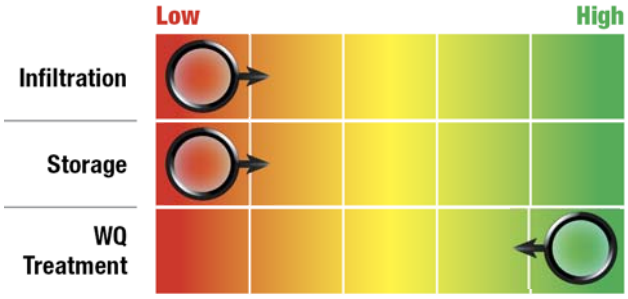
Treatment Facilities and Low Flow Diversions (Regional BMP)

Other regional water quality technology falls into the *treatment facilities* and *low flow diversions* subcategories. These systems typically divert flow from engineered channels to a treatment facility. Water is treated using physical, chemical, or radiological processes and is then returned to the original channel or discharged to the treatment plant outfall.





BMP Performance Functions



Design Variations

Design variations include:

- ***Low Flow Diversion:*** a design flow rate (typically dry weather flow) is diverted from the storm drain to a sanitary sewer for treatment.
- ***Treatment and Return:*** water is pumped or conveyed by gravity from a channel to a small-scale wastewater treatment facility where it is treated and discharged back into the original channel. Sometimes a portion of treated water can be diverted for reuse.

Typical Design Components

Figure 3.A1-4 presents a typical design and highlights potential design variations:

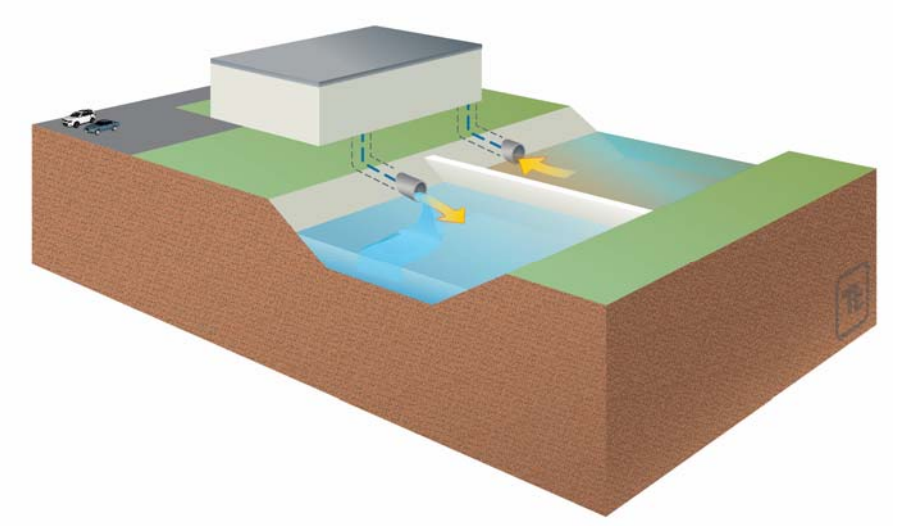


Figure 3.A1-4. Typical regional treatment facility schematic (arrows indicate water pathways; for low flow diversions, water is simply diverted to the nearby sanitary sewer [not returned to channel]).

Appendix 3.A2
BMP Fact Sheets for Distributed BMPs

Appendix 3.A2: BMP Fact Sheets for Distributed BMPs

Distributed BMPs are constructed structural practices intended to treat runoff relatively close to the source and typically implemented at a single- or few-parcel level (normally less than one acre). As described in the following BMP Fact Sheets, distributed BMPs include the following subcategories:

- Site-scale detention facilities
- Green infrastructure
- Flow-through treatment BMPs
- Source control structural BMPs

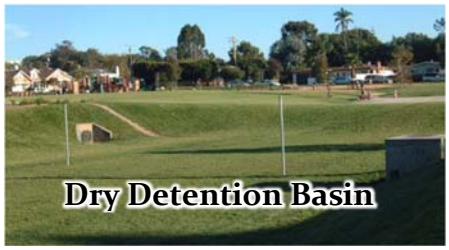
A major subcategory of distributed BMPs is *green infrastructure*. The Permit specifies that EWMPs should "incorporate effective technologies, approaches and practices, including green infrastructure." The primary goal of distributed green infrastructure BMPs is to intercept and treat runoff near its source using resilient natural systems. As opposed to traditional *gray infrastructure,* green infrastructure relies on contact between runoff, soils, and vegetation to accomplish volume and pollutant reduction. Green infrastructure has been to shown to cost-effectively reduce the impacts of wet-weather flows while also reducing BMP maintenance requirements (Kloss et al. 2006). In addition, green infrastructure can provide multiple benefits to the surrounding community, including increased property values, increased enjoyment of surroundings and sense of well-being, increased safety, and reduced crime rate (Ward et al. 2008; Shultz and Schmitz 2008; Wolf 2008; Northeastern Illinois Planning Commission 2004; Hastie 2003; Kuo 2003; Kuo et al. 2001a; Kuo et al. 2001b; Wolf 1998).

Structural BMPs incorporated into the green infrastructure subcategory include the following, as described in the BMP Fact Sheets below:

- Bioretention and biofiltration
- Permeable pavement
- Green streets
- Bioswales
- Infiltration BMPs
- Rainfall harvest (green roofs, cisterns and rain barrels)

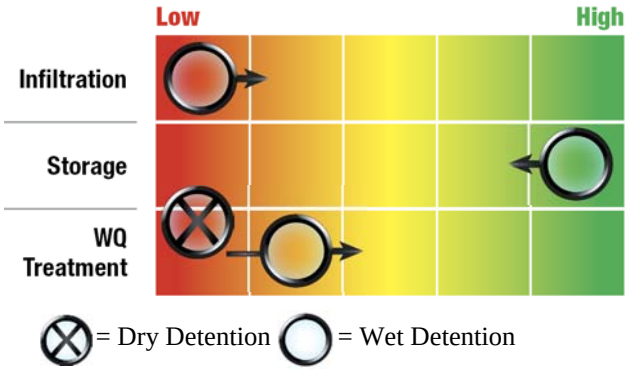
Site-Scale Detention (Distributed BMP)

Site-scale detention facilities are designed to detain runoff from an individual parcel and improve water quality through pollutant settling. Site-scale detention facilities can reduce peak flows and improve water quality by storing water in a basin before slowly draining the water through an orifice to the downstream waterway. Settling of sediment and sediment-bound pollutants is the primary pollutant removal mechanism.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Dry Detention Basins:*** runoff ponds on the basin surface and fully drains between storm events. The drawdown orifice is located at the bottom of the basin.
- ***Wet Detention Pond:*** runoff is captured in a temporary storage zone above a permanent pool. The drawdown orifice sets the depth of the permanent pool.
- ***Detention Chambers:*** subsurface chambers or vaults designed to detain captured runoff.

Typical Design Components

Figure 3.A2-1 presents a typical design and highlights potential design variations:

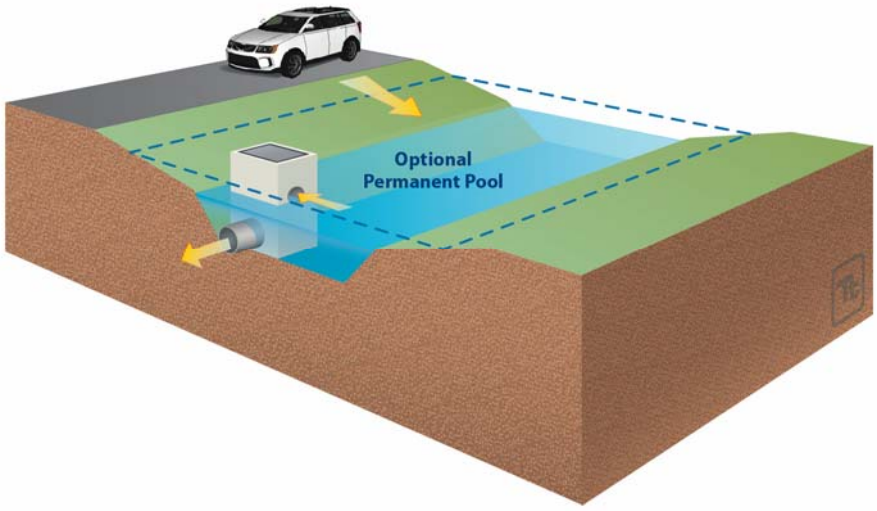
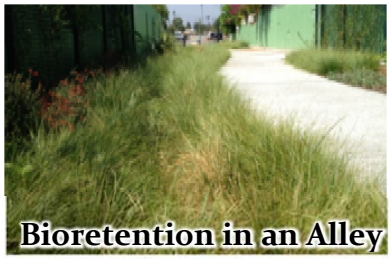


Figure 3.A2-1. Typical distributed site-scale detention schematic (arrows indicate water pathways).

Bioretention and Biofiltration (Green Infrastructure BMP)

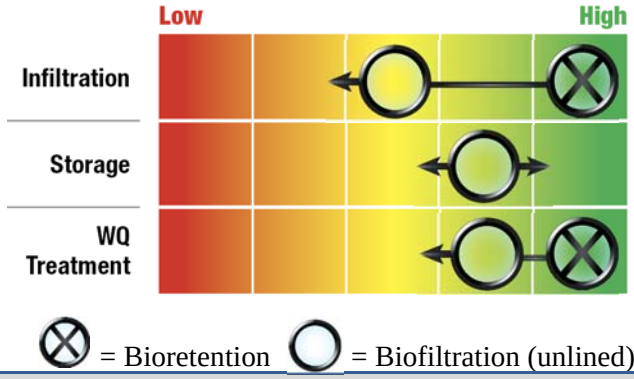
Bioretention and biofiltration are vegetated BMPs designed to capture and filter stormwater runoff through a soil layer. Following filtration, treated runoff infiltrates underlying soils (bioretention), or, if the subgrade has poor permeability, exits through an underdrain to the downstream conveyance network (biofiltration). Vegetation can enhance biological treatment processes.


Residential Bioretention


Bioretention in an Alley


Parking Lot Biofiltration

BMP Performance Functions



= Bioretention = Biofiltration (unlined)

Design Variations

Several design variations include:

- ***Bioretention:*** shallow, depressed, vegetated basins with permeable soil media. Runoff temporarily ponds on the surface before filtering through the soil. Bioretention does not include underdrains.
- ***Biofiltration:*** bioretention areas with underdrains. Infiltration is considered incidental, although substantial infiltration can occur in some unlined systems.

Typical Design Components

Figure 3.A2-2 presents a typical design and highlights potential design variations:

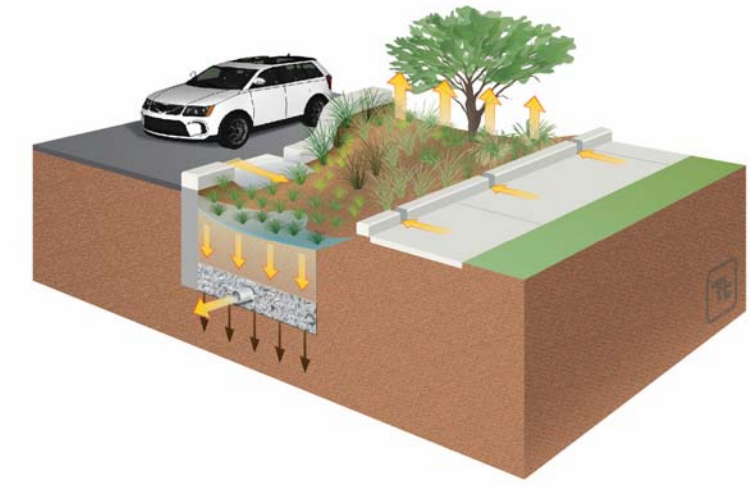


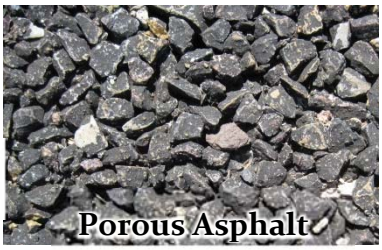
Figure 3.A2-2. Typical distributed bioretention and biofiltration schematic showing underdrain option (arrows indicate water pathways).

Permeable Pavement (Green Infrastructure BMP)

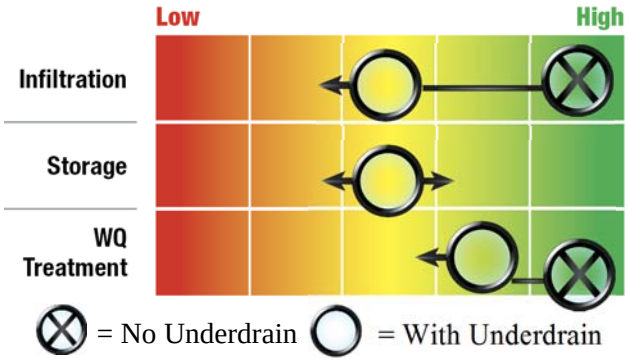
Permeable pavement is a stable load-bearing surface that allows for stormwater infiltration. Beneath the permeable surface is a crushed-rock reservoir that provides structural support while allowing runoff to percolate to the underlying soils. Permeable pavement can be fully infiltrating or can have an underdrain like bioretention and biofiltration practices.







BMP Performance Functions



Design Variations

Several design variations include:

- ***Pervious Concrete:*** fines are excluded from typical concrete aggregate to create permeable void space within the section.
- ***Porous Asphalt:*** fines are excluded from typical hot-mix asphalt to create pores within the section.
- ***Permeable Interlocking Concrete Pavers:*** pavers that allow infiltration of rainwater through joints between the blocks

Typical Design Components

Figure 3.A2-3 presents a typical design and highlights potential design variations:

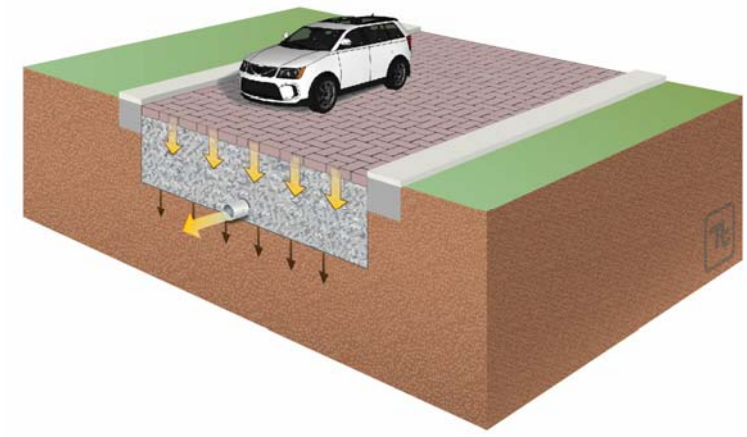


Figure 3.A2-3. Typical distributed permeable pavement schematic showing underdrain option (arrows indicate water pathways).

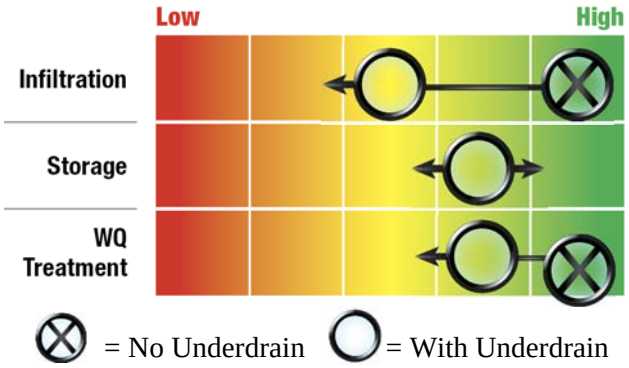
Green Streets (Green Infrastructure BMP)

Green streets are systems of multiple BMPs arranged in a linear fashion within the street right-of-way (as opposed to a parcel-based implementation). Green streets are designed to reduce runoff and improve water quality for the runoff from the roadway and adjacent parcels. Bioretention, biofiltration, and permeable pavement BMPs are commonly used in conjunction and can be hydraulically connected using subsurface stone reservoirs.





BMP Performance Functions



Design Variations

Green streets can feature several design variations. Some common features include:

- ***Linear Bioretention/Biofiltration:*** BMPs can be incorporated as linear systems between the road and parcel to intercept runoff from both roadways and properties.
- ***Curb Extensions:*** bioretention/biofiltration BMP "bumpouts" can intercept gutter flow.
- ***Permeable Parking Lanes:*** street parking can be designed with permeable pavement to intercept roadway runoff.

Typical Design Components

Figure 3.A2-4 presents a typical design and highlights potential design variations:



Figure 3.A2-4. Typical distributed green street schematic (arrows indicate water pathways).

Infiltration BMPs (Green Infrastructure BMP)

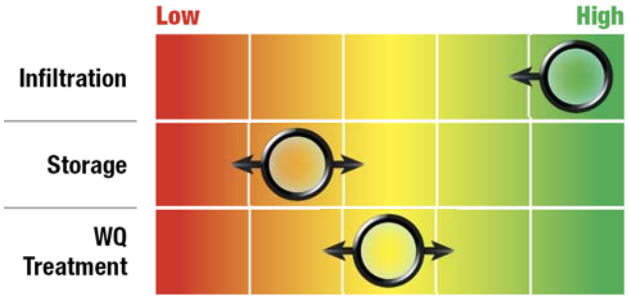
Infiltration BMPs capture and infiltrate runoff into underlying soils. Runoff is typically stored in subsurface trenches or pits filled with engineered soil media, gravel, or concrete chambers. Some infiltration BMPs that inject water into subsurface reservoirs are considered Class V injection wells and must be permitted as such. Infiltration BMPs are unvegetated (see Bioretention for vegetated practices).







BMP Performance Functions



Design Variations

Several design variations include:

- ***Infiltration Trench:*** a media-filled trench that captures runoff in the pore space of gravel or soil prior to infiltration.
- ***Dry/Wet Well:*** a gravel-surrounded vault with perforated walls that receives runoff from a pipe and allows direct infiltration into the ground.
- ***Rock Well:*** a gravel-filled pit that receives runoff from a pipe. This BMP is essentially a dry well without a concrete vault.

Typical Design Components

Figure 3.A2-5 below presents a typical design and highlights potential design variations:

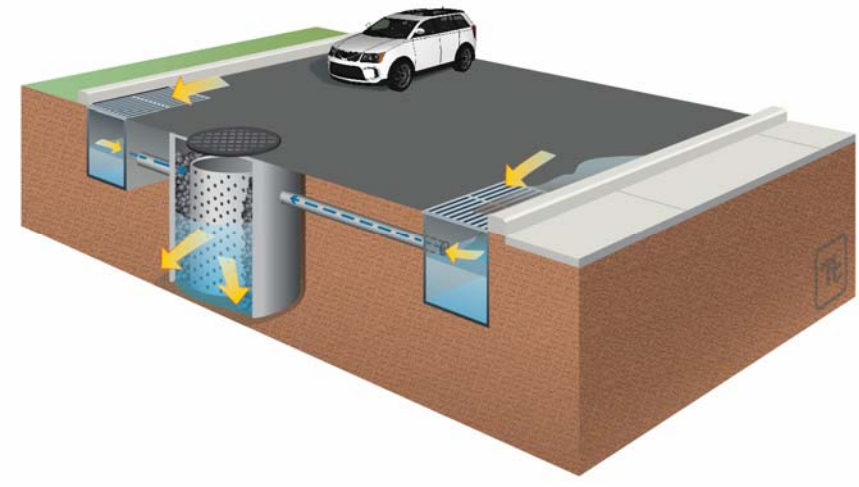


Figure 3.A2-5. Typical distributed infiltration BMP schematic showing perforated concrete dry well variation (arrows indicate water pathways; for infiltration trenches, see Figure 3.A2- and omit vegetation).

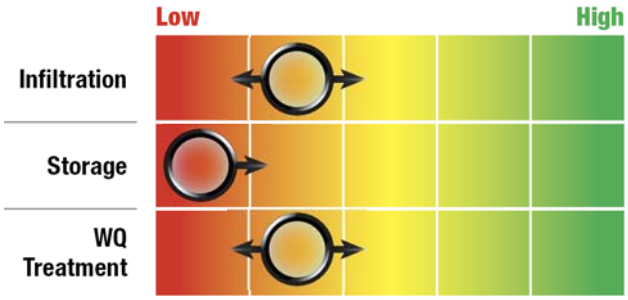
Bioswales (Green Infrastructure BMP)

Bioswales are practices that convey uniform sheet flow through vegetated, shallow depressions to remove sediment-associated pollutants by settling and straining. Infiltration and filtration through soil media are not key components of bioswales; rather, bioswales are typically implemented to act as pretreatment and used to transport runoff to an associated structural BMP.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Vegetated Swale:*** linear, vegetated channels used to convey concentrated flow from the contributing area to a structural BMP. Check dams can be added in areas of steep slopes or to further decrease the flow rates and spread the runoff over a larger area.
- ***Vegetative Filter Strip:*** broad-sloped, vegetated areas used to convey sheet flow from the contributing area to a structural BMP or other conveyance channel.

Typical Design Components

Figure 3.A2-6 presents a typical design and highlights potential design variations:

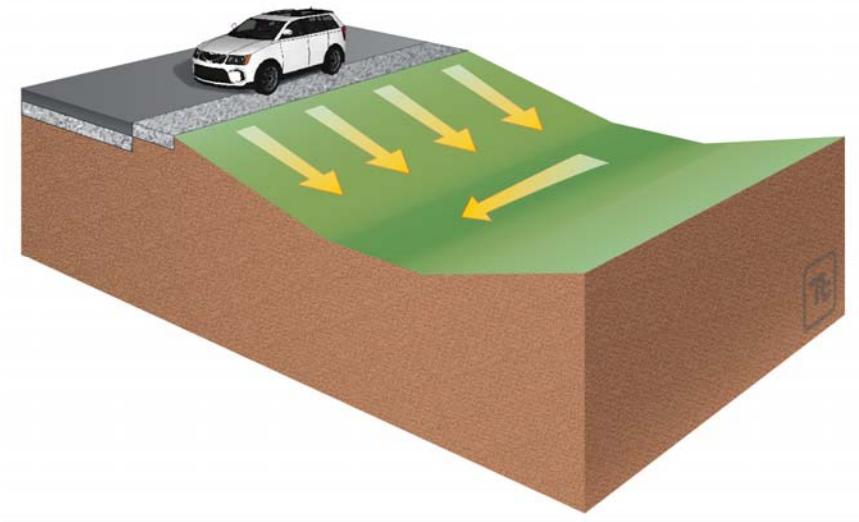


Figure 3.A2-6. Typical distributed bioswale schematic (arrows indicate water pathways).

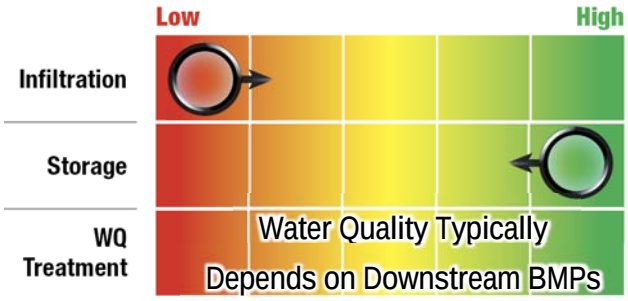
Rainfall Harvest (Green Infrastructure BMP)

The primary goal for rainfall harvest is improving water quality by intercepting rooftop runoff and lowering the overall impervious impact of a developed site. Runoff can be reduced through interception and evapotranspiration on green roofs or used for alternative uses with a cistern or rain barrel.





BMP Performance Functions



Design Variations

Several design variations include:

- ***Green Roof:*** engineered, vegetated roof structures intended to intercept rainfall in a growing medium. Rooftop detention can be incorporated if structures allow.
- ***Cisterns and Rain Barrels:*** storage tanks used to intercept and store rooftop runoff. Captured runoff can be reused to offset non-potable water uses such as irrigation and toilet flushing. Alternatively, stored water can be slowly released to a pervious surface.

Typical Design Components

Figure 3.A2-7 presents a typical design and highlights potential design variations:

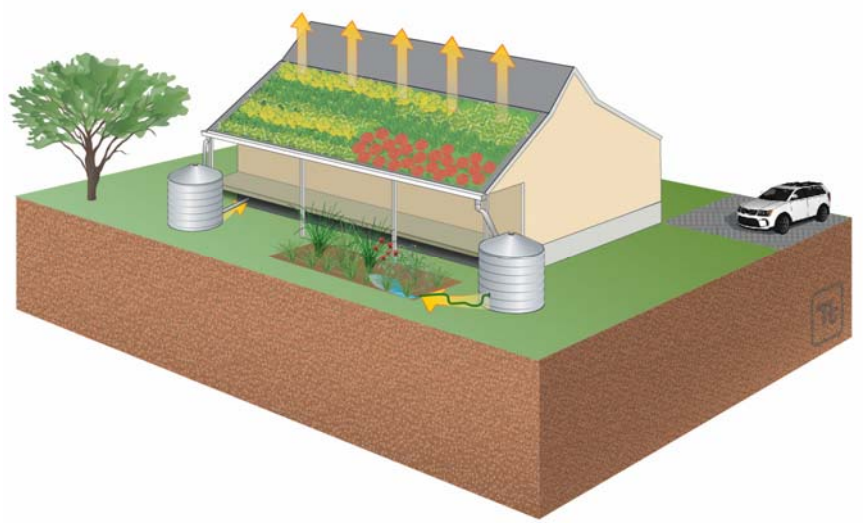


Figure 3.A2-7. Typical distributed rainfall harvest schematic (arrows indicate water pathways).

Flow-Through Treatment BMP (Distributed BMP)

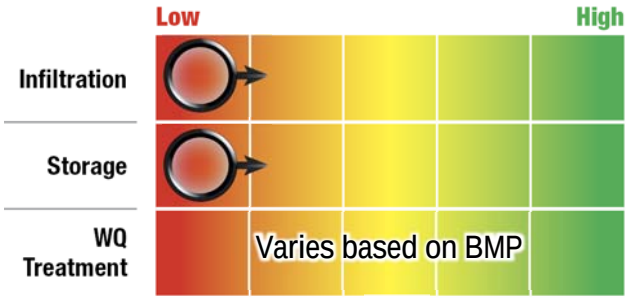
Manufactured flow-through devices are commercial products that aim to provide stormwater treatment using patented, innovative technologies. Typical types of manufactured devices for stormwater management include cartridge filters, media filters, and high-flow biotreatment devices.





(photo source: Jonathan Page, NCSU-BAE)

BMP Performance Functions



Design Variations

Several design variations include:

- ***Media/Cartridge Filters:*** proprietary filtration devices used to remove pollutants.
- ***High-Flow Biotreatment Device:*** modular, vault-type practices containing high-flow media. Typically incorporate vegetation.

Typical Design Components

Figure 3.A2-8 presents a typical design and highlights potential design variations:

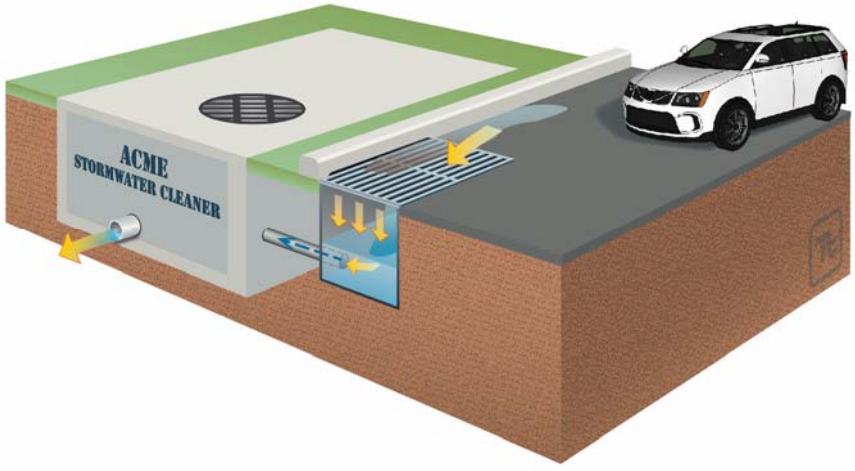


Figure 3.A2-8. Typical distributed flow-through treatment BMP schematic (arrows indicate water pathways).

Source Control Structural BMPs (Distributed BMP)

Source control structural BMPs are commercial products designed to treat runoff in highly urbanized environments. Mechanical separation, or more complex physicochemical processes, provides separation of gross solids and other pollutants. Many models feature media or materials designed to sequester hydrocarbons and other pollutants.

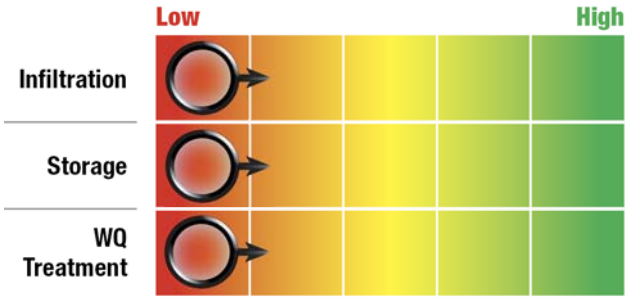




Hydrodynamic Separator



BMP Performance Functions



Design Variations

Several design variations include:

- ***Hydrodynamic Separators:*** mechanical devices that use screens, baffles, and/or vortex flow to separate sediment and gross solids.
- ***Catch Basin Inserts:*** inserts that use nets, screens, fabric, and/or filtration media to gross solids, fine sediments, oils, and/or grease from runoff entering a catch basin.

Typical Design Components

Figure 3.A2-9 presents a typical design and highlights potential design variations:



Figure 3.A2-9. Typical distributed source control structural BMP (arrows indicate water pathways).

Appendix 3.B1
Detailed List of Existing Regional BMPs in Upper Los Angeles River EWMP Group

Appendix 3.B1: Detailed List of Existing Regional BMPs in Upper Los Angeles River EWMP Group

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service
R1	LA	DR, O	WL	South Los Angeles Wetlands Park	33.993063, -118.265372	Construction of wetlands park to improve stormwater quality, treatment, reuse, irrigation, valuable green space, public recreation and education and habitat.	
R2	LA	O	WL	Echo Park Lake Rehabilitation Project	34.073323, -118.259996	Water quality, water conservation, nutrient removal	8/1/13
R3	LA	O	Det	Echo Park Lake Rehabilitation Project	34.073323, -118.259996	Water quality, water conservation, nutrient removal	8/1/13
R4	LA	O	Inf	Oros Green Street	34.093107, -118.238824	Construct five curb side "stormwater gardens" in street parkway and a large infiltration gallery beneath Steelhead Park.	

Notes: LA = Los Angeles (City), DR = Data Request, O = Proposition O, WL = Constructed Wetland, Det = Detention, Inf = Infiltration, Unk = Unknown BMP type

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service
R5	LA	O, OPTI	Inf	Taylor Yard River Park - Parcel G2 Land Acquisition	34.09738, -118.23881	Acquire a parcel of land adjacent to the LA River as part of Revitalization Master Plan. This project would include increasing riparian habitat by at least 80 acres in the L.A. River channel, at the Bowtie site and at the Taylor Yard G-2 parcel. This would include widening the channel bed and connecting it to the existing level of the overbank with a vegetated sloped bank that would be established with water harvesting features such as micro-grading and/or swales to capture and infiltrate water and plants that would survive seasonal inundation and lay down in flood event. Water sources could include reclaimed water, stormwater harvesting may utilize stormwater and street runoff (with small wetland features at the end of adjacent streets), and/or highway runoff. Where stormwater or street runoff is excessive during storm events a connection to the river would allow it to overflow into the channel, creating a hydrologic connection. The length of this widening would extend through the beginning of the bend in Bowtie downstream for 700 feet through the G-2 Taylor Yard parcel and beyond.	
R6	LA	DR	Det	Garvanza Park Rainwater Capture and Reuse	34.120119, -118.178611	The project will capture and detent stormwater from an existing storm drain into Garvanza Park for infiltration and irrigation use. The elements include the installation of a pretreatment device for sediment and trash and followed by a large detention gallery for beneficial uses.	

Notes: LA = Los Angeles (City), DR = Data Request, O = Proposition O, WL = Constructed Wetland, Det = Detention, Inf = Infiltration, Unk = Unknown BMP type

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service
R7	LA	DR	Inf	Elmer Ave Green Street	34.212074, -118.376848	This project includes both regional and distributed BMP elements. The project has installed sidewalks, curb and gutter, and catch basins along Elmer Avenue and also install necessary parkway stormwater gardens and driveway drains to accept runoff from residential lots adjacent to the project site. Finally, the project installed a large infiltration system underneath the Elmer Avenue project site, along the both sides of the street, to treat and infiltrate runoff from the street itself and residential runoff not fully captured by the stormwater gardens. The total drainage area to the project is approximately 42 acres. This work order is opened to capture the soft cost that BOS will utilize and may be reimbursed from the State. Infiltration System (sub-surface gallery), Canopy Trees, Drought Tolerant Plantings, Rain Gardens, Rain Barrels.	
R8	LA	DR	Inf	Sun Valley Park Infiltration	34.21821, -118.370349	Captures and treats/infiltrates runoff up to 50-yr storm frequency from a 24-ac upstream tributary drainage area consisting of mixed residential, commercial, and light industrial landuses. The treatment train consists of hydrodynamic separation systems for pre-treatment of gross pollutants and sediments, filtration unit to remove heavy metals, and Infiltration basins for groundwater infiltration/percolation. In addition, stormwater runoff from the park's 21 acres are treated via vegetated swales	2006
R9	LA	DR, O	Inf	Cesar Chavez Ground Water Improvements (aka Sheldon Arleta)	34.226596, -118.403904	Retrofit of existing gas collection system and flare. Restore capacity of the adjacent Tujunga Spreading Grounds. Renovate landfill gas collection system to increase groundwater recharge capacity from 50 cfs to 250 cfs at Sheldon Pit Stormwater Capture; Phase II: grading and earthwork to provide cover and establish drainage; Phase III: Develop new park and open space.	

Notes: LA = Los Angeles (City), DR = Data Request, O = Proposition O, WL = Constructed Wetland, Det = Detention, Inf = Infiltration, Unk = Unknown BMP type

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service
R10	LA	O	WL	Hansen Dam Wetlands Restoration	34.276018, -118.378321	Runoff from three existing parking lots will be sent through newly constructed sediment forebays for removal of trash & sediments prior to wetlands discharge	
R57	LA	Uninc TMDL IP	Inf	Tujunga Wash Greenway and Stream Restoration	34.188536, -118.418841	Diverts 0.5 cfs from the channel to the stream for percolation to the groundwater basin.	1/1/2012

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Appendix 3.B2
Detailed List of Planned Regional BMPs in Upper Los Angeles River EWMP Group

Appendix 3.B2: Detailed List of Planned Regional BMPs in Upper Los Angeles River EWMP Group

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R11	Bu	OPTI	Inf	Johnny Carson Park Stream Restoration and Park Revitalization	34.15351, -118.33049	The City of Burbank proposes to renovate Johnny Carson Park and restore the Old Tujunga Wash stream bisecting Johnny Carson Park to integrate a more natural treatment of urban storm water runoff by removing the concrete, improve and restore a natural flow of stormwater, and allow water to be absorbed into the water table as opposed to just diverting the water to the Los Angeles River. The revitalization of the streambed (currently a drainage channel), will improve ground water percolation, reduce stormwater runoff, reduce localized flooding, improve water quality. and provide an example of sustainable practices that are naturally aesthetic and functional. A full interpretive educational program through onsite signage will also be created to serve as an outdoor educational classroom of what it means to be sustainable by identifying water efficiency measures, California Native species, energy savings benefits of LED lights, recycled water benefits, and the riparian ecosystem via trails/paths throughout the park		
R12	LACFCD	OPTI	Inf	Lower Los Angeles River Area Linear Water Storage Feasibility Study	33.84666, -118.2025	Explore the feasibility and water conservation benefit of installing rubber dams in the Los Angeles River, Compton Creek and Rio Hondo channels upstream of the Dominguez Gap Spreading Grounds to create temporary linear water storage for later groundwater recharge. The proposed feasibility study would investigate channels in the Carson, Downey, Long Beach, Paramount, and South Gate areas.		

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LA TMDL IP = City of LA Metals TMDL Implementation Plan, Uninc TMDL IP = Unincorporated LA County Metals TMDL Implementation Plan, TPWMP = Tujunga-Pacoima Watershed Management Plan,
Det = Detention, Inf = Infiltration, LFD = Low Flow Diversion, TF = Treatment Facility, WL = Constructed Wetland

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R13	LACFCD	IRWMP	Unk	Santa Fe Spillway Basins	34.115841, -117.972565			
R14	LACFCD	OPTI	Inf	Eaton Wash Dam Inlet/Outlet Works Rehabilitation Project	34.169173, -118.090625	Project will construct a new low-flow gate that will improve water quality during low-flow releases. The elevation of the gate will be higher than the original four gates, to prevent turbid water from passing through the channel.	11/01/2013 (in progress)	
R15	LACFCD	IRWMP	Inf	Big Dalton Spreading Grounds Improvements	34.170944, -117.809122			
R16	LACFCD	OPTI	Inf	Devil's Gate Dam and Reservoir Water Conservation	34.18536, -118.17377	This project proposes to conserve stormwater by holding a reservoir pool behind Devil's Gate Dam and diverting the water to Eaton Wash Dam and Eaton Wash Spreading Grounds for poststorm groundwater recharge. A pump will be installed in the Devil's Gate Dam reservoir and water will be pumped out and conveyed through over 26,000 feet of pipeline to Eaton Wash Dam where it can be held for recharge at downstream spreading ground facilities.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R17	LACFCD	OPTI, IRWMP, 0, SVWMP, DR	WL	Sun Valley Watershed Strathern Wetlands Park Project (Rory M. Shaw Wetlands Park)	34.21887, -118.37465	The project consists of acquisition of a 46-acre, construction debris landfill and its conversion into a multi-purpose wetlands park facility. The project will include a storm drain system that will capture stormwater runoff from a 929-acre tributary area and convey it to the wetlands park. The wetlands park will feature a detention pond with a storage capacity of 400 acre-feet that will store runoff and reduce flooding in the surrounding areas. The wetlands park will also feature a 10-acre wetland that will provide a sustainable habitat for various plant and animal species; and a natural treatment system for removing pollutants from the collected stormwater runoff. The treated stormwater will then be pumped to existing underground infiltration basins at Sun Valley Park for groundwater recharge. The wetlands park will also include 15 acres of open and recreational space, and opportunities for educational and interpretive signage. The project will also include construction of a recycled water line system. Acquire the land necessary to convert a 30-acre gravel pit site into a multipurpose facility dedicated to stormwater retention and reuse		$52000000 cost estimate (2013 dollars) includes Property acquisition, Design, Construction of Detention Ponds, Wetlands
R18	LACFCD	OPTI	Inf	Branford Spreading Basin Cleanout and Pump	34.23018, -118.41554	Branford Spreading Ground has very low percolation rates compared to the Tujunga Spreading Ground directly across the Tujunga Wash Channel. This project will install a pump from Branford Spreading Ground to direct water into the Tujunga Spreading Ground leading to more groundwater recharge. In addition, the project will clean out the clogging layer at the bottom of basin, which will also improve percolation rates.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R19	LACFCD	OPTI	Unk	Bull Creek Water Conservation	34.29844, -118.48551	Historical records show that an annual average of 625 acre-feet of water passes though the Bull Creek Retention Basin facility. The basin is able to store about 400 acre-feet. All flows are lost to the ocean via the Los Angeles River. This project proposes conserving the lost water by diverting flows from Bull Creek Retention Basin to Pacoima Spreading Grounds. The concept includes installation of rubber dams, an intake structure, and a pipe to convey flows to East Canyon Channel where water can reach the Pacoima Spreading Grounds.		
R20	LACFCD	OPTI	Inf	Lopez Spreading Grounds Improvement	34.30008, -118.41152	The project proposes to optimize basin configuration and improve soil conditions in the basin bottom upper layers at Lopez Spreading Grounds. The basins will be reconfigured, expanded and deepened. The new basin configuration will increase the spreading grounds storage to 73 AF from the existing capacity of 24 AF. Flashboard systems between the basins will be replaced with new interbasin structures that include manual gate systems. The diversion structure to divert flows from the upstream Lopez Dam will also be upgraded with a gate system. The intake canal will be lined to prevent further sedimentation.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R21	LACFCD	OPTI	Unk	Bull Creek Los Angeles Reservoir Water Quality Improvement Project	34.3109, -118.48735	Plan, design, and construct stormwater conveyance facilities for compliance with the Enhanced Surface Water Treatment Rule. Facilities will be designed according to standards adopted by Department of Water Resources, Division of Safety of Dams. Improvements include widening a portion of the Bull Creek Extension Channel, realigning a section downstream of the widening, construction of a new diversion structure and overflow structure, and improvements to inlet structures. The Los Angeles Reservoir spillway will be removed from service. Proposed design facilitates a future stormwater capture program.		
R22	LA	Uninc TMDL IP	Inf	Rogers park watershed runoff treatment reuse and infiltration	Unknown	Regrade and increase the capacity of the spreading Tujunga Wash intake and rubber dam and relocate to Basin 1; add an intake and rubber dam near Basin 12 to capture additional flows from Tujunga Wash and Pacoima Diversion Channel, and install a telemetry system. Increase intake from 250 cfs to 450 cfs and storage capacity from 100 to 944 AF, and the added diversion of Pacoima Wash flows will allow recharge of approximately 4,200 AF per year.	7/1/2011	
R23	LA	LA TMDL IP	WL	Vacant; Adjacent to Compton Creek	33.936646, -118.257308			City of LA
R24	LA	DR	LFD	4th St & Santa Fe Priority Greenway + Sustainable Little Tokyo	33.944059, -118.133688	This sub-regional greenway plan will integrate upstream (and watershed wide) stormwater greenway objectives with a planned LFD. The proposal will extend paper streets (non-motorized transit linkages) to medium and major existing transit corridors. BMPs will include City stormwater standard plans and other regional BMPs.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R25	LA	O	Inf	Broadway Neighborhood Stormwater Greenway	33.999189, -118.278342	Construction of stormwater BMPs including dry wells, rain gardens, and sub-surface infiltration basins.		
R26	LA	LA TMDL IP	WL	Hellenbeck Middle School; Boyle Heights Green Corridor Project	34.034965, -118.211252			City of LA
R27	LA	DR	LFD	LA River Segment B Urban Runoff Project No. 2	34.040319, -118.230728	The Project is recommended to come into compliance with the LA River Bacteria TMDL - Segment B. It will consist of two elements addressing the dry- and wet-weather elements. 1. Dry-weather Flow: The major elements for the dry-weather implementation strategy will consist of diverting two 90-inch storm drains, one Removal & Reuse Urban Flow System (R2UFS), and approximately 2,500 feet of 18-inch reinforced concrete pipe (RCP). The R2UFS will be sited approximately at the intersection of Santa Fe Street and Palmetto Street in the public right of way. The new 18-inch RCP will carry dry-weather flow from the R2UFS to the Northeast Interceptor Sewer for treatment at the Hyperion Treatment Plant. 2. Wet-weather flow. The proposed retrofit would involve creating curb cuts to the existing sidewalk and installing bioretention cells along some section. The available parking lane would be paved with permeable pavement. The interior portions of the cells would be vegetated with native shrubs and grasses.		

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R28	LA	DR	LFD	LA River Segment B Urban Runoff Project No. 1	34.047175, -118.232601	The Project is recommended to come into compliance with the LA River Bacteria TMDL - Segment B. It will consist of two elements addressing the dry- and wet-weather elements. 1. Dry-weather Flow: Dry-weather flow from the county-owned 13-foot storm drain at 2nd Street will be intercepted by the installation of a diversion weir sized to minimize any hydraulic head losses to the existing system. Structural elements include an LFD. This diverted flow will then travel by gravity to the trunk sanitary sewer, Northeast Interceptor Sewer, located approximately at 7th Street and Santa Fe. 2. Wet-weather flow. The proposed retrofit would involve creating curb cuts to the existing sidewalk and installing bioretention cells along some section. The available parking lane would be paved with permeable pavement. The interior portions of the cells would be vegetated with native shrubs and grasses.		

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R29	LA	DR	LFD	LA River Segment B Urban Runoff Project No. 3	34.058622, -118.194794	The Project is recommended to come into compliance with the LA River Bacteria TMDL - Segment B. It will consist of two elements addressing the dry- and wet-weather elements. 1. Dry-weather Flow: Dry-weather flow from two parallel City-owned storm drains at Mission Road will be intercepted by the installation of a diversion weir sized to minimize any hydraulic head losses to the existing system. The storm drains consist of a 90-inch reinforced concrete arch (north drain) and an 84-inch by 120-inch reinforced concrete box (south drain). This diverted flow will travel by gravity to the trunk sanitary sewer, Northeast Interceptor Sewer, located at the intersection of the US 101 freeway and Mission Road for treatment at the Hyperion Treatment Plant. 2. Wet-weather flow. The proposed retrofit would involve installation of bioretention and permeable pavement throughout the drainage area. Curb cuts and flumes could convey runoff from the curb to bioretention areas installed on the adjacent public parcel and vegetated stormwater curb extensions would provide stormwater treatment and traffic calming benefits. Existing concrete channels that convey flow directly to the drainage area outlet (and the R2-G storm drain) could be replaced with bioswales to intercept and treat flow. Furthermore, an existing alley could be retrofit with permeable interlocking concrete pavers (PICP) capture excess flow from the drainage area. Maintenance of proposed BMPs could be carried out by existing grounds maintenance personnel and routine weekly street sweeping.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R30	LA	ACOE	WL	Reach 8 - Main Street to First Street	34.059415, -118.226752	Create pool & riffles system and plant for freshwater marsh; restore historic wash with riparian habitat; divert flow into side channels with riparian fringe and return to the river; wildlife access from river to bank; riparian habitat corridors; widen channel; terrace banks		
R31	LA	O	Unk	Albion Dairy Park	34.069801, -118.223724	Acquire a parcel of land adjacent to the LA River as part of LA River Revitalization Master Plan		
R32	LA	OPTI	WL	Headworks Ecosystem Restoration	34.07491, -118.0877	Project will restore native vegetation at a 40+ acre site (Headworks Spreading Grounds) that will feature an uplands meadow habitat area (atop an underground water storage tank) and a low lying wetlands area		
R33	LA	ACOE	WL	Reach 7 - Downstream Glendale Narrows/ Arroyo Seco to Main Street	34.075128, -118.225808	Create pool & riffles system and plant for freshwater marsh; daylight streams plant with riparian fringe and freshwater marsh; divert flow into side channels with riparian fringe and return to the river; riparian habitat corridors; restructure channel walls to support vegetation, plantings; widen channel (Arroyo Seco) sloping or terracing back to overbank levels		

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R34	LA	OPTI, NOI	Det	Humboldt Stormwater Greenway	34.07541, -118.22469	The project will result in the construction of the first BOS operated Storm Water Greenway (SWG) at an undeveloped street end that abuts the north bank of the Los Angeles River. It was funded as a Supplemental Environmental Project (SEP) by the Regional Water Quality Control Board in order to mitigate the elevated bacteria levels encountered at this outfall to Reach 2 of the LA River. An offline wet forebay, and dry-basin will be constructed to intercept, filter, and treat dry-weather flows diverted from the existing stormdrain. The greenway site will be landscaped and include a public plaza, native planting, and a bikeway and pedestrian path. It will result in a sustainable multi-modal transitway that connects Avenue 18 and 19 along Humboldt and that follows the Department of City Planning Cornfield Arroyo Seco Specific Plan. Features include a public plaza, a bikeway and a recycled water line that will support native planting. Project completion is scheduled for August 2013.		bioremediation elements include a pollution reduction/ infiltration system and a 175-foot graded swale/open channel surrounded by a vegetated basin.
R35	LA	ASWMP	Inf	Lincoln Heights Freeway Interchange BMP	34.080033, -118.220874	a. Install an infiltration gallery or subsurface flow wetland for the Avenue 26 storm drain. b) Create a minipark with public access on the site		
R36	LA	ACOE	WL	Reach 6 - Bowtie Parcel to Downtown Glendale Narrows/ Arroyo Seco	34.092686, -118.231559	Create pool & riffles system and plant for freshwater marsh; restructure channel walls to support vegetation; riparian habitat corridors; restructure top of bank to support vines and other vegetation; widen channel mainstem; widen channel sloping or terracing back to overbank levels		

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R37	LA	OPTI	Unk	Silver Lake Reservoir Bypass & Regulator Station	34.0986, -118.26491	As part of the improvements to remove the Silver Lake and Ivanhoe Reservoirs out of service to comply with the U.S. EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), the Los Angeles Department of Water & Power (LADWP) will be installing 4,500 feet of 66-inch welded steel pipe (WSP) in West Silver Lake Drive and on the bed of the Silver Lake Reservoir (SLR), from the intersection of West Silver Lake Drive and Armstrong Avenue, to the southerly edge of the SLR, where it will connect to an existing bypass under the Silver Lake Reservoir Dam.		May allow for modification to lake management approaches to allow for water quality benefits.
R38	LA	ASWMP	Inf	Sycamore Grove Park	34.100093, -118.203318	a) Naturalize the North Branch Storm Drain and restore former stream through Sycamore Grove Park. b) Install subsurface structural BMPs under the Arroyo Seco Alternative School c) Daylight the storm drain, or install BMPs, in the vacant storm drain easement north of the Arroyo Seco Alternative School		
R39	LA	DR	Inf	Arroyo Seco Urban Runoff Project No. 2	34.101367, -118.200805	The proposed retrofit would involve infiltration of dry and wet weather stormwater. The proposed project would be able to provide service to drainage from 200 acres of the sub-watershed. The available park land would be restored back to its original condition to resume the use of the park. The process train will include a set of BMPs which will aid in the removal of trash, bacteria, and metals.		

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R40	LA	OPTI	Inf	Arroyo Seco North Branch Creek Daylighting	34.10151, -118.2023	Naturalize north branch storm drain and restore stream through Sycamore Grove Park. Primary Objectives Addressed by the Project: By re-establishing an urban stream, this project addresses water quality, riparian habitat restoration, groundwater recharge, flood management, and public education. The Sycamore Grove Park site is approximately 800 feet long and 400 feet wide. This 8-acre site is located in northeast Los Angeles and situated west of the SR-110 (). This site encompasses Sycamore Grove Park and is bounded by South Avenue 49 to the northeast, the SR-110 to the east, medium density residential uses to the south, and North Figueroa Street to the west. Sycamore Grove Park is a landscaped area consisting of a large lawn, playground, and parking area. The North Branch tributary is contained within a storm drain beneath Sycamore Grove Park.		
R41	LA	DR	Det	Arroyo Seco Urban Runoff Project No. 3	34.103987, -118.190467	The proposed retrofit would involve installing a detention/retention basin in Hermon Dog Park. The land identified for the project is parkland. Project involves diverting stormwater flow from the adjacent storm drain to the newly constructed detention/retention basin for infiltration and subsurface reuse.		

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R42	LA	OPTI	Inf	Marsh Park, Phase II	34.10681, -118.2474	The Marsh Park Phase II project includes the planning, design, development and implementation for this second phase of the park. Improvements will include the removal of two smaller buildings and conversion of three acres of industrial land into a natural, landscaped open space park featuring native habitat restoration, treatment of on-site and off-site storm water via a system of arroyos used to detain and infiltrate stormwater, restrooms, parking, an outdoor pavilion for special events, decomposed granite walking paths, fitness stations and smaller picnic facilities. Outdoor seating areas, benches and interpretive displays along with a small facility for public nature programs will also be included. The focus of this facility will be to interpret the varied natural resources of the Los Angeles River which include aquatic and migratory birds. The site features prime riverfront property with a view of the natural streambed portion of the Los Angeles River which travels through the Glendale Narrows.		
R43	LA	DR	Inf	Arroyo Seco Urban Runoff Project No. 4	34.107674, -118.185967	The proposed project will include the construction of the following structures: diversion/maintenance hole structure, trash/sedimentation tank system for the removal of trash, metals, and toxics, connecting pipes, storage tank, control & pump system for subsurface water irrigation and infiltration.		

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R44	LA	ASWMP	Inf	Garvanza Elementary school	34.117786, -118.182294	a) Install infiltration galleries under Garvanza Park ballfields and open space at the northeast corner of the complex, and under parking / blacktop area at southeast corner; treat discharge from Avenue 63 storm drain. b) Install infiltration galleries under parking lots at southwest edge of campus to treat discharge from Figueroa storm drain. c) If these regional BMPs prove to be infeasible, install bioretention areas and cisterns to retain runoff from onsite rooftops and parking lots.		
R45	LA	ACOE	WL	Reach 5 - Los Feliz to Bowtie Parcel	34.119479, -118.269153	Create pool & riffles system and plant for freshwater marsh; daylight streams plant with riparian fringe and freshwater marsh; wildlife access from river to bank (in daylighted streams); restructure channel walls to support vines; riparian habitat corridors; terrace banks; modify trap channel to vertical banks		
R46	LA	ASWMP	Inf	Welch Site BMP	34.119705, -118.180468	a) Install infiltration galleries under Garvanza Park ballfields and open space at the northeast corner of the complex, and under parking / blacktop area at southeast corner; treat discharge from Avenue 63 storm drain. b) Install infiltration galleries under parking lots at southwest edge of campus to treat discharge from Figueroa storm drain. c) If these regional BMPs prove to be infeasible, install bioretention areas and cisterns to retain runoff from onsite rooftops and parking lots.		

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R47	LA	ACOE	WL	Reach 4 - Upstream Glendale Narrows to Los Feliz	34.124204, -118.271234	Create pool & riffles system and plant for freshwater marsh; daylight streams plant with riparian fringe and freshwater marsh; divert flow into side channels with riparian fringe and return to the river; riparian habitat corridors		
R48	LA	OPTI	Inf	San Rafael Creek Restoration	34.12524, -118.1667	San Rafael Creek is a tributary of the Arroyo Seco that runs in a canyon just south of La Loma and Laguna Roads. San Rafael Creek is one of the few remaining relatively natural tributaries of the Arroyo Seco, and as such is worth protecting. It is possible to reduce storm flows enough to warrant removing the concrete lining at the bottom of San Rafael Creek, and to restore the confluence of San Rafael Creek and the Arroyo Seco to a natural state. This would add valuable riparian habitat and wetlands. Project elements include develop a working group of residents and agencies with the goal of identifying ways to protect and restore San Rafael Creek while also respecting private property rights, restore riparian habitat and remove exotic invasive species from the San Rafael Creek drainage, remove the concrete lining at the bottom of San Rafael Creek, restore the natural confluence of San Rafael Creek and the Arroyo Seco, develop trails and interpretive materials focusing on stream hydrology and habitat.		

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R49	LA	ACOE	WL	Reach 3 - Ferrero Fields to Upstream Glendale Narrows	34.143528, -118.277199	Create pool & riffles system and plant for freshwater marsh; daylight streams plant with riparian fringe and freshwater marsh; divert flow into side channels with riparian fringe and return to the river; riparian habitat corridors; open water habitat; widen mainstem; widen tributaries		
R50	LA	IRWMP, OPTI	WL	Los Angeles River Natural Park	34.14581, -118.40519	This project proposes to acquire and develop a "Green Solution" system for natural stormwater treatment along the northern bank of the Los Angeles River. The L.A. River Natural Park will be able to divert and treat 11.4 acre-feet (or 3.7 million gallons) of runoff from over 200 acres of its surrounding tributary area. There will be a cumulative storage area of 11.4 acre-feet, including underground storage, which would provide 8 acre-feet of reuse for irrigation. In addition, during the dry season the project would draw up to 5,000 gallons per day of water from the L.A. River to sustain constructed wetlands, which provide settlement, filtration and cleaning before discharging the treated water back into the L.A. River. Because no storm drains currently exist in the surrounding area between the project site and Moorpark Avenue, diversion of stormwater to the L.A. River Natural Park would also help provide needed flood control improvements.		
R51	LA	LA TMDL IP	WL	Van Nuys Sherman Oaks Park	34.162703, -118.443689			City of LA

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R52	LA	LA TMDL IP	Inf	North Hollywood Park	34.163502, -118.380303			City of LA
R53	LA	OPTI	Inf	Whitnall HWY Powerline Easement Stormwater Capture Project	34.17971, -118.36627	The Powerline Easement Stormwater Capture Project entails the capture, treatment, and infiltration of stormwater runoff from streets in the San Fernando Valley. This project will help alleviate local flooding, provide water quality enhancements, and recharge the groundwater basin adding approximately 110 acre-feet to the regions water supply on an average year. Local stormwater runoff will be diverted using swales, culverts, and pipes through pretreatment devices and then into infiltration basins. The pretreatment devices will remove debris such as trash, suspended sediments, and pollutants associated with solids such as heavy metals. After pretreatment, water will then enter into 4 and 10 foot deep infiltration basins where the treated stormwater runoff will recharge the San Fernando groundwater basin. Maintenance consists of annually cleaning the treatment facilities and infiltration basins.		

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R54	LA	OPTI	Det	Sepulveda Basin Sports Complex Multi-Purpose Open Space Project	34.18436, -118.50759	This project would be Phase II of the Sepulveda Basin Sports Complex Project. It is the large open space area between the active recreation and the Los Angeles River and would provide a large area of opportunity for unprogrammed recreation space and stormwater capture BMPs. It would be passive recreation, with native vegetation and a walking path. It could include detention basins/cisterns underneath the open field area, and stormwater treatment through vegetated areas. This project is located adjacent to a soft-bottomed portion of the LA River in the Sepulveda Basin. Design concepts already exist and need funding for implementation. The project has already been cleared environmentally and will connect to the adjacent project which is already under construction, as well as the nearby non-motorized pathways.		
R55	LA	IRWMP	Unk	Caballero Creek & Los Angeles River Confluence Park	34.1874, -118.532985			
R56	LA	LA TMDL IP	Det	Pierce College	34.187521, -118.585299			Los Angeles Community College District
R58	LA	LA TMDL IP	Inf	Valley Plaza Park	34.190396, -118.400975			City of LA
R59	LA	LA TMDL IP	WL	Valley Plaza Park	34.190396, -118.400975			City of LA
R60	LA	LA TMDL IP	Inf	Strathem/ Slavern Parks	34.21272, -118.408095			City of LA
R61	LA	LA TMDL IP	Det	Lanark park	34.217145, -118.604004			City of LA

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R62	LA	OPTI, DR	Inf	Chase St. Priority Greenway + Bull Creek Park	34.22482, -118.49391	The Project will provide a street-end interpretive area on Bull Creek at Chase Street, and install a Stormwater Greenway along Chase Street from the eastern street end on the north side right-of-way to Hayvenhurst, and on the north and south right-of-way to Gothic. Vegetated planters in the parkways will capture and infiltrate street runoff, and will provide storm water filtration, and tree shading. The Bull Creek street-end will feature a native landscape as habitat and a recreational rest stop along the channel, and will provide an interpretive site for wildlife selected and supported by the specific native planting used in the project. A channel diversion from Bull Creek, with a pre-filter and lift station, will transfer runoff through a pipeline to a local Sod Farm where it will be used to irrigate up to 30-commercial acres. The project will integrate water conservation goals (LADWP), Storm water objectives (BOS), Economic enhancements to city property (LAWA), & public health and recreation benefits. Dry weather runoff from the creek would be diverted from the channel, treated and pumped under Chase St. to a cistern located at the Sod Farm parking lot. From here a recirculating pump and distribution pipe would feed the water to a subsurface irrigation system. A maximum of 450 gallons per minute can be diverted from the channel, providing 724 acre feet a year of water supply for irrigation and infiltration. This can save at least 100 AFY of potable water, currently used by the Sod Farm.		

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R63	LA	OPTI, DR	TF	Chase St. Priority Greenway + Bull Creek Park	34.22482, -118.49391	The Project will provide a street-end interpretive area on Bull Creek at Chase Street, and install a Stormwater Greenway along Chase Street from the eastern street end on the north side right-of-way to Hayvenhurst, and on the north and south right-of-way to Gothic. Vegetated planters in the parkways will capture and infiltrate street runoff, and will provide storm water filtration, and tree shading. The Bull Creek street-end will feature a native landscape as habitat and a recreational rest stop along the channel, and will provide an interpretive site for wildlife selected and supported by the specific native planting used in the project. A channel diversion from Bull Creek, with a pre-filter and lift station, will transfer runoff through a pipeline to a local Sod Farm where it will be used to irrigate up to 30-commercial acres. The project will integrate water conservation goals (LADWP), Storm water objectives (BOS), Economic enhancements to city property (LAWA), & public health and recreation benefits. Dry weather runoff from the creek would be diverted from the channel, treated and pumped under Chase St. to a cistern located at the Sod Farm parking lot. From here a recirculating pump and distribution pipe would feed the water to a subsurface irrigation system. A maximum of 450 gallons per minute can be diverted from the channel, providing 724 acre feet a year of water supply for irrigation and infiltration. This can save at least 100 AFY of potable water, currently used by the Sod Farm.		
R64	LA	TPWMP	Inf	Tujunga Spreading Grounds Optimization	34.226973, -118.416213	Improve intake from Tujunga Wash and add second intake below the convergence of Pacoima and Tujunga Wash to gain access to excess flows in Pacoima Wash		

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R65	LA	OPTI	Det	Sheldon Pit	34.22749, -118.41125	The Sheldon Pit is located immediately adjacent to the Los Angeles County Flood Control District's Tujunga Wash Channel on the south east bank. The pit was an active aggregate mine and is now operated by Vulcan Materials for fine sediment placement. The site is approximately 138 acres and has been mined to a depth of approximately 250 feet below ground surface at its deepest point. If acquired and enhanced with stormwater capture facilities along with multi-use attributes, the available capacity of storage for stormwater would be approximately 6,000 acre-feet. This project entails a massive water conservation effort by diverting water from Tujunga Wash into Sheldon Pit for groundwater recharge while open space attributes would provide benefits such as habitat enhancement and both active and passive recreational opportunities.		
R66	LA	DR	Inf	Verdugo Hills Golf Course Green Infrastructure	34.235144, -118.273164	The overall goal of the project is to improve the water quality of stormwater and runoff entering Verdugo Wash and ultimately Reach 3 of the LA River. This goal will be accomplished through acquisition of the existing Verdugo Hills Golf Course and diversion of stormwater flows from the adjacent channels into stormwater biofiltration features located on the project site. Sediment basins onsite will detain and settle runoff generated from the surrounding hills tributary to the site, slowly releasing overflows to storage and water quality improvement features. A portion of the stormwater runoff from the channels as well as any incidental dry weather runoff and the pollutants associated with the runoff will be managed on the project site and prevented from ultimately entering the LA River.		

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R67	LA	Uninc TMDL IP	Det	Santa Susana Creek at Topanga Canyon and Plummer	34.242696, -118.606371	Build 3 detention areas and 3 swales to improve water quality from urban runoff and stormwater.		Add detention capacity of 3.9 ac-ft, swale capacity of 33,840 cf. nine cisterns will store up to 1179 gallons.
R68	LA	Uninc TMDL IP	Unk	Browns Canyon Wash at Plummer and Variel	34.242717, -118.592776	Create greenway to capture and filter stormwater and urban runoff.		
R69	LA	SVWMP	Inf	Stonehurst Park	34.245915, -118.373222	excavation of open space in the park for infiltration		
R70	LA	Uninc TMDL IP	Inf	Tujunga - Sun Valley Tujunga wash Diversion Project (sheldon pit)	34.246434, -118.383938	Take in storm flows from Tujunga Wash and recharge the Upper Los Angeles River Basin.	1/1/2019	Take in storm flows from Tujunga Wash and recharge the Upper Los Angeles River Basin.

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R71	LA	Uninc TMDL IP, OPTI	Inf	Boulevard Pit Stormwater Capture Project	34.248231, -118.403192	Acquire and develop Boulevard Pit into a multi-use retention and recharge facility to enhance stormwater conservation.	1/1/2014	Recharge the San Fernando Valley Groundwater Basin with approximately 16,000 AF on average, per year, for storage and later pumping.
R72	LA	SVWMP	Inf	Stonehurst School	34.249679, -118.369673	Excavation and infiltration		
R73	LA	Uninc TMDL IP	Inf	Hansen spreading grounds	34.250281, -118.394804	Increase storage capacity by reconfiguring and deepening the existing spreading basins.	1/10/2010	156-acre parcel is adjacent to the Tujunga Wash Channel downstream from the Hansen Dam. Recharges the San Fernando Basin. Approx 150 cfs recharge
R74	LA	TPWMP	Det	Arleta Greenbelt	34.250459, -118.433834	Separate pedestrian trails and bike paths, swales, native planting. The project also creates detention basins within the powerline easement.		

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R75	LA	IRWMP, TPWMP	Inf	Pacoima Reservoir Sediment Removal	34.256392, -118.447861	Remove approximately 1.5 million cubic yards of accumulated sediment from Pacoima Reservoir.		
R76	LA	OPTI, Uninc TMDL IP	Inf	Pacoima Spreading Grounds	34.256392, -118.447861	Replace existing Pacoima Diversion Channel radial gate with a rubber dam; install telemetry; install trash rack and updated flow measurement instrumentation at intake; relocate headworks; remove sediment and clay lens as well as increase storage capacity to enhance percolation; combine basins to simplify operation, enhance landscaping around the perimeter of the facility. The existing headworks will be redesigned as a park or open space in the future.	3/30/2012	The rubber dam and new intake system will improve water conservation. Removing sediment and the clay lens will increase percolation from 100 cfs to about 200 cfs. Relocating the intake will improve intake operations and provide more open space.
R77	LA	TPWMP	Inf	Sunland Park Retrofit	34.260444, -118.32093	Retrofit and update a 16 acre park with existing large ball fields and adjacent storm drains so that stormwater is captured, infiltrated to offset irrigation use, and plant with native species.		

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R78	LA	IRWMP, TPWMP, OPTI	Det	Hansen Dam Water Conservation and Supply	34.260558, -118.385359	Change management regime of Hansen Dam to focus on water conservation by maintaining a water conservation pool within the reservoir during and subsequent to flood season.		May allow for modification to lake management approaches to allow for water quality benefits.
R80	LA	TPWMP	Det	Hansen Dam Wildlife Lake Improvement	34.260558, -118.385359	160 acres of sediment to restore aquatic habitat and increase dam storage capacity, install sediment gate on Hansen Dam to allow sediment migration		
R81	LA	TPWMP	Inf	Hansen Spreading Grounds Enhancement	34.260558, -118.385359	Increased or enhanced storage capacity, groundwater recharge, and operations would result from regrading basins and modernizing distribution system within the facility. Three phases are proposed: basin improvements, an intake facility upgrade and natural area restoration.		
R82	LA	TPWMP	Inf	Verdugo Hills HS Retrofit	34.260565, -118.300485	Reconstruct playfields to capture and percolate water underground, create of a swale system, amphitheater to serve second use as retention basin, and an outdoor classroom		
R83	LA	Uninc TMDL IP	Det	Browns Canyon Wash at Route 118 and Rinaldi	34.272658, -118.590707	Construction of detention areas and swales to improve water quality from stormwater and runoff.		Increase channel capacity by 197000 cf. Swales, detention will increase capacity by 572000 cf

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Det = Detention, Inf = Infiltration, LFD = Low Flow Diversion, TF = Treatment Facility, WL = Constructed Wetland

ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R84	LA	IRWMP, SVWMP, OPTI	Inf	Valley Generating Station (LADWP Steam) Stormwater Recharge Project	34.29221, -118.473997	Retention and infiltration basins. Reclamation plan to address hydrology and drainage, landscape planning and habitat restoration The Valley Generating Station (VGS) is a power generating facility owned and operated by LADWP and it's located in the upper Sun Valley watershed. This is one of various stormwater capture projects located in the Sun Valley Watershed in the San Fernando Valley and it is designed to help alleviate localized flooding, recharge the groundwater basin, and improve downstream quality in the San Fernando Valley. In order to accomplish the goals of this project, stormwater runoff will be captured and directed through a series of recharge basins, swales and overflow culverts to strategic points on-site. Other project considerations are the upgrade of the existing gravel pit for use as possible storage and stormwater infiltration as well as the construction of a large infiltration swale on Little San Fernando Road to provide off-site stormwater capture. This project will increase groundwater recharge necessary to sustain the long-term reliability and utility of the groundwater basin and decrease the region's dependence		
R85	LA	TPWMP	Det	Wilson Canyon Wash and Sylmar HS Retrofit	34.307882, -118.441902	Create 1.3 mi. trail system along Wilson Wash easement. Capture water in a cistern -potentially for irrigation. Naturalize bank, daylight the wash, and create a detention basin		
R86	LA	LA TMDL IP	Det	baseball field, park/Boyle Heights	unknown			City of LA

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R87	LA	IRWMP	Unk	Groundwater System Improvement Study	unknown			
R88	LA	IRWMP	TF	Groundwater Treatment Facilities	unknown			
R89	LA	IRWMP	Unk	Headworks East Reservoir	unknown			
R90	LA	IRWMP	Unk	Los Angeles River Revitalization Master Plan 32 Mile Channel and Easement Greening	unknown			
R91	LA	LA TMDL IP	Det	Next to Metrolink station	unknown			City of LA
R92	LA	LA TMDL IP	Det	Park	unknown			City of LA
R93	LA	SVWMP	Inf	Park on Wentworth	unknown	excavation and infiltration		
R94	LA	LA TMDL IP	WL	Park with walking path	unknown			Community Redevelopment Agency
R95	LA	LA TMDL IP	Inf	Park/Ball Field	unknown			City of LA
R96	LA	TPWMP	Inf	Power Line Easement Recharge	34.3080315, -118.42782	Detention and recharge basins, recreation trails, habitat enhancements and other native plantings		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R97	LA	DR	Det	Rancho Cienega Green Parking Lot	unknown	Underneath the existing baseball field, there is enough room for an underground water storage system that could hold up to 326,700 cubic feet of stormwater. This is enough room to store the annual runoff from the 20 acre catchment area to the south, assuming there are 3/4" storms per year.		
R98	LA	LA TMDL IP	Det	School/Athletic Fields	unknown			Los Angeles Unified School District
R99	LA	DR	Inf	Sheldon St. Priority Greenway	unknown	The project will reduce local street flooding issues reported the council district and Caltrans. Sheet flows filtered in parkways will be distributed within an infiltration area via perforated sub-surface pipelines. Northern street segments will lead to non-perforated/non-pressurized pipelines through an existing culvert and easement to an existing stormwater basin where further treatment and detention/infiltration of greater storm volumes can occur.		
R100	LA	LA TMDL IP	Inf	Sod Farms	unknown			City of LA
R101	LA	SVWMP	Det	Trunk storm drains	Unknown	54-in to 10ft x 10ft box culverts to transport SW to LA river or retention basins		
R102	LA	TPWMP	Inf	Tujunga and Pacoima Wash Bridge Retrofit and Channel Expansion	34.1565706, -118.403638	Widening of the existing Tujunga Wash and Pacoima Wash channels, creating new bridges with bicycle accessibility and removal of concrete where deemed appropriate.		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R103	LA	TPWMP	Inf	Tujunga wash Outdoor Classroom	34.2305465, -118.407491	Improve 13 acres of LADWP property with a swale system and trail, an amphitheater, and an outdoor classroom for two local schools with a native plant garden, outdoor education center and sports fields. Site would be designed to capture and infiltrate stormwater		
R104	LA	TPWMP	Inf	Tujunga-Sun Valley Tujunga Wash Diversion #1	34-15'-12", -118-23'-09"	Reclamation plan (surface mine) to address soil stabilization, hydrology, erosion control, landscape planning, habitat restoration and public access.		
R105	LA	TPWMP	Inf	Tujunga-Sun Valley Tujunga Wash Diversion #2	34-13'-38", -118-25'-05"	Diversion structure design and construction, landscape planning, habitat restoration and public access design		
R106	LA	LA TMDL IP	WL	Vacant; Clean Tech Manufacturing Center	unknown			City of LA
R107	LA	IRWMP	Unk	Verdugo Hills Stormwater Project	unknown			
R108	Pa	ASWMP	Unk	Lower Arroyo Park	34.119663, -118.167123	See comments under project P-1 in Section 6.2 above		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R109	Pa	OPTI	Inf	Eaton Spreading Grounds	34.16221, -118.08861	The project will increase the intake and storage capacity of the Eaton Wash Spreading Grounds facility. This will improve the facility's ability to recharge storm water into the groundwater basin, thus greatly increasing the sustainable local groundwater supply that is vital for the region. Los Angeles County Flood Control District will replace the vehicle access slab with a metal grate over the spreading grounds drop intake channel and replace the current diversion flashboards with an inflatable gate within the intake channel. These improvements in Eaton Wash Channel will better direct flows into Eaton Wash Spreading Grounds, thereby increasing its intake capacity. Basin 1 will be enlarged to increase the facility's storage capacity. The project will include improvements to the property along Sierra Madre Boulevard that will significantly improve the sustainability, aesthetics, and safety of the public walkway and street view. Two driveway entrances will be improved by increasing the gate set-back.	04/16/2013	
R110	Pa	ASWMP	Inf	John Muir High School	34.178061, -118.160905	Install infiltration gallery to infiltrate runoff from site and contents of storm drain running along W. Montana street		
R111	Pa	ASWMP	Inf	Hahamongna Watershed Park – Figueroa Drive	34.187684, -118.172346	Installation of an infiltration gallery for the Figueroa Storm Drain (known by the City of Pasadena as the West Altadena Storm Drain) prior to its discharge into the Arroyo Seco		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R112	Pa	ASWMP	Inf	Hahamongna Watershed Park – Altadena Drain	34.200303, -118.165705	a. Installation of an infiltration gallery for the Altadena Storm Drain prior to its discharge into the Arroyo Seco (known by the City of Pasadena as Altadena Storm Drain #1, P-175). b). Installation of an infiltration gallery for the storm drain running along Ventura Street prior to its discharge into the Arroyo Seco.		
R113	Pa	ASWMP	Inf	Central Arroyo Park – Seco Street Drain	unknown	a) Install an infiltration gallery at the end of the Seco Street Storm Drain prior to its discharge to the Arroyo Seco. b) Naturalize the main Arroyo Seco stream channel through Brookside Golf Course, and eventually connect it with a restored Arroyo Seco in Lower Arroyo Park.		
R114	Uninc	Uninc TMDL IP	WL	South Compton Creek Wetland	33.8534313802, -118.211104475			
R115	Uninc	Uninc TMDL IP	Inf	Enterprise Park	33.9137206136, -118.257630233			
R116	Uninc	Uninc TMDL IP	Inf	Magic Johnson Park	33.9195396943, -118.264242325			

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R120	Uninc	Uninc TMDL IP	Inf	Roosevelt Park	33.9702041196, -118.242046691			
R121	Uninc	Uninc TMDL IP	Inf	Bethune Park	33.9836217933, -118.253029563			
R122	Uninc	Uninc TMDL IP	Inf	Montebello (Grassy Section Dividing Street)	34.0135544658, -118.133059148			
R124	Uninc	Uninc TMDL IP	Det	Obregon Park	34.0376570615, -118.177153346			
R126	Uninc	Uninc TMDL IP	Inf	Whittier Narrows Park	34.0418580415, -118.051933695			
R127	Uninc	Uninc TMDL IP	Inf	Whittier Narrows Recreation Area	34.0445016608, -118.059674039			

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R128	Uninc	Uninc TMDL IP	Inf	Charles White County Park	34.1882705404, -118.152320121			
R129	Uninc	Uninc TMDL IP	Inf	Farnsworth Park	34.2003797299, -118.132042072			
R130	Uninc	Uninc TMDL IP	Inf	Loma Alta County Park	34.2009524242, -118.157409259			
R131	Uninc	Uninc TMDL IP	Inf	Two Strike Park	34.2334232894, -118.236081541			
R132	Unk	SVWMP	Det	Sun Valley Middle School	34.203894, -118.377302	Excavation of sports field; retention and detention basin; underground storage tanks		
R135	Unk	SVWMP	Inf	Vulcan Gravel Processing Plant	34.228703, -118.381531	retention basin and infiltration basin; pump and storage tank		
R136	Unk	SVWMP	Inf	Cal Mat Pit	unknown	retention and infiltration basins. Reclamation plan to address hydrology and drainage, landscape planning and habitat restoration		
R137	Unk	TPWMP	Det	CBS-Viacom Radio Community Park	34.1825631, -118.41937	Deliverables will include a passive recreation park and possible detention basin with trails and native plants		

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ID	Jurisdiction	Data Source	BMP Subcategory	BMP Name	Location (Latitude and Longitude)	Purpose of BMP (treatment objectives)	Date Facility Placed in Service	Comments and Notes
R138	Unk	SVWMP	Unk	Lateral storm drains	unknown	Smaller storm drains to convey SW to trunk lines or retention basins		
R139	Unk	SVWMP	Inf	Parking Lot Infiltration	unknown	subsurface infiltration basins with distribution pipes		
R140	Unk	SVWMP	Inf	Powerline Easement	unknown	sedimentation and infiltration basins;		
R141	Unk	SVWMP	Inf	Rosecoe School	unknown	excavation and infiltration		
R142	Unk	SVWMP	Inf	Street storage	unknown	underground storage tanks and infiltration galleries		
R143	Unk	SVWMP	Det	Tuxford Green	unknown	Underground cisterns; pipes; irrigation		
R145	San Marino	San Marino	Inf	Lacy Park Infiltration/Retention Basin	unknown	Construction of stormwater infiltration and retention facilities in Lacy Park.		
R146	San Marino	San Marino	Inf	Huntington Drive Infiltration Tree Wells	unknown	Construction of stormwater infiltration wells in city-owned tree wells along Huntington Drive.		
R147	San Marino	San Marino	Inf	Various City Parks and Schools	unknown	Construction of stormwater infiltration and retention facilities in various city parks and schools in San Marino.		
R148	San Marino	San Marino	Inf	Possible Partnership with Huntington Library	unknown	Construction of stormwater infiltration and retention facilities in partnership with the Huntington Library.		
R145	San Marino	San Marino	Inf	Lacy Park Infiltration/Retention Basin	unknown	Construction of stormwater infiltration and retention facilities in Lacy Park.		

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Appendix 3.C
BMP Performance Data Analysis

Appendix 3.C: BMP Performance Data Analysis

3.1 BMP Performance Analysis

This appendix presents the results of a statistical analysis of available BMP performance data relevant to southern California. The goal was to review and summarize data regarding performance of BMPs for reducing constituents of concern from stormwater and non-stormwater flows. The scope of work specified the analysis should be based on data provided by the WMG, specific to southern California, and analyzed in consideration of applicable MS4 Permit limitations. Few BMP performance data were available from the WMGs, and thus external data were compiled as described below. The compiled dataset is extensive and appendices are presented through web links (to avoid complications with printing).

The following sections provide an overview of the data sources, description of statistical methods, and summary of the results of the statistical analysis.

3.2 Data Sources for BMP Performance Data

Data for the BMP performance analysis were derived from the International BMP Database (IBD), the most extensive effort to collect and distribute BMP performance data in the U.S. The IBD is sponsored by the U.S. Environmental Protection Agency (USEPA), Water Environment Research Foundation (WERF), the American Society of Civil Engineers (ASCE)/Environmental and Water Resources Institute (EWRI), the American Public Works Association (APWA), and the Federal Highway Administration (FHWA). The stated purpose of the project is "to provide scientifically sound information to improve the design, selection and performance of BMPs."

The currently (Nov 2013) available sites with monitoring data in Southern California are displayed in **Figure 3.C-1.** There are 44 sites that have data within the mapped area and the sites have a total of 58 BMPs that were sampled. Each of these BMPs in the IBD was mapped to the categories and subcategories established in Section 3. Many of the BMPs, particularly bioswales, are owned and operated by Caltrans and therefore implemented on roadways, maintenance stations, and park and ride facilities.

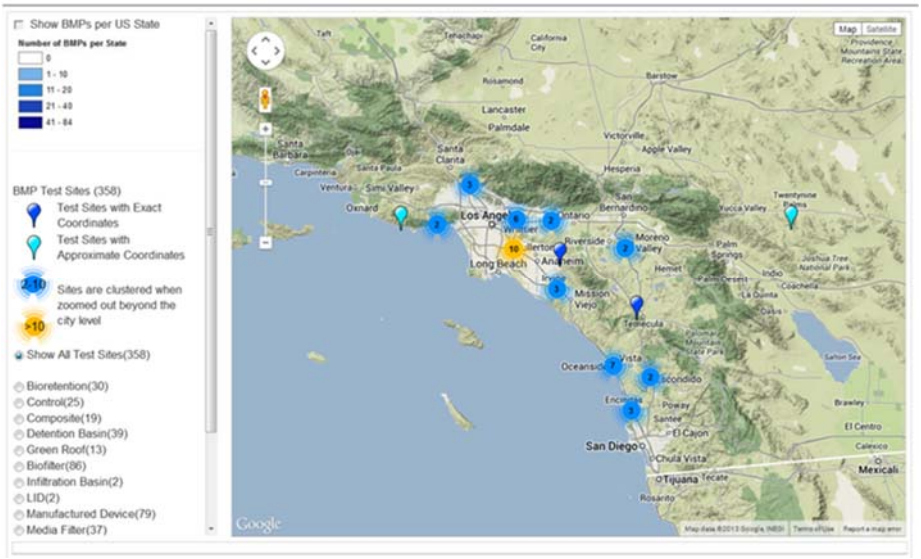


Figure 3.C-1 Southern California BMPs from the International BMP Database (www.bmpdatabase.org)

3.3 Description of Analyzed Data

Analysis of BMP data in the International BMP database collected from Southern California provides a cross-section of structural BMP results and constituents. The following provides an overview of the data characteristics:

- **BMP types:** the BMPs in the IBD were categorized according to those defined in Section 3, after review of the BMP design details. Five of the BMP subcategories were represented in the IBD for the Southern California region, including the following:
  - Constructed wetlands
  - Site-scale detention
  - Bioswales
  - Flow through Treatment BMPs
  - Catch basin inserts
- **Constituents:** the IBD contains sample data for hundreds of constituents ranging from metals to pesticides. This analysis herein emphasized a subset of constituents referred to herein as "common constituents of concern", as follows:
  - Total suspended solids (TSS)
  - Fecal coliform
  - Total copper
  - Total lead, and
  - Total zinc

Beyond these five constituents, the database was screened for additional constituents with sufficient data to perform analysis and results. Based on this screening, an additional 18 constituents were identified, for a total of 22 constituents. To assist with organization and presentation of the results, each of the 22 constituents were categorized into four groups as follows:

- Metals
- Bacteria
- Solids, and
- Nutrients.

- **Land uses:** a majority of the BMPs are located primarily for transportation related sites. Other major land use categories such as residential, commercial, and industrial are not heavily represented in the analysis herein. However, the effluent concentrations and performance metrics are still generally considered applicable to non-transportation land uses. Many bioswales were included in the analysis, which allowed for grouping of bioswales into three categories: "all", "Caltrans", and "Non-Caltrans."

- **Monitoring methods:** the majority of the data from the IBD are based on flow-weighted composite (FWC) samples which is the generally preferred practice. FWC samples provide a better measurement of the total load from a storm event and most accurately portray the removal efficiency of BMPs. These types of samples can be used to generate good event mean concentrations (EMCs) that can be used to calibrate water quality models. The analysis herein emphasizes reduction in *concentrations* of constituents. Flow reduction is heavily site- and storm-specific (depended on rainfall intensity, soil types, antecedent conditions, etc.) and can be predicted through other means (e.g., modeling during the RAA).

3.4 Statistical Analysis

The statistical analysis herein is primary based on three metrics:

- Tabular summary statistics of inflow and outflow from BMPs (mean, median, percentiles, etc.)
- Graphical presentation of the inflow and outflow using box plots
- Tabular presentation of constituent reductions and tests for statistical significance of differences between inflow and outflow

It is acknowledged that "percent reduction" is a BMP performance metric that deserves caveats (see the article "Voodoo Hydrology" in the July 2006 article of *Stormwater Magazine*[1]). Percent reduction is a readily-understandable BMP performance metric, and it also convenient for reporting a compact form. However, BMP performance is ultimately characterized by both the reduction of pollutants from inflow to outflow and the concentration of constituents in the outflow. For this analysis, percent reduction is presented as a simple metric to compare different BMPs across different storm and land use conditions.

[1] http://www.stormh20.com/SW/Editorial/Voodoo_Hydrology_37.aspx

In addition, inflow and outflow datasets were analyzed separately, in order to characterize the quality of BMP outfalls and allow for future comparison to Permit limitations.

An emphasis of the analysis herein was handling of non-detected samples. The approach to handling non-detects can greatly affect estimated summary statistics. For the BMP performance analysis herein, statistical analyses of measured concentrations were based on regression-on-order statistics (ROS). The primary advantage/purpose of the ROS approach is to account for sample limits of detection (SLODs) in samples that were non-detect (referred to as "censored"). An Excel add-in developed by the California Department of Transportation was used to generate ROS, for which the primary references for the statistical procedures are Shumway and Azari (2000) and Helsel (1990).

3.5 Results

The analysis performed under this task produced thousands of statistical measures that can be used to evaluate BMPs. These results will support the Reasonable Assurance Analysis (RAA), by supporting assumptions regarding effluent concentrations from some BMPs. The results are presented in formats that are designed to allow readers to focus on both absolute (inflow and outflow concentrations) and relative performance of BMPs (percent reductions) for individual constituents and groups of constituents. As mentioned previously, extensive appendices were generated and are available for web download. The results of the analysis are presented as follows:

- **Percent removal:** the results in **Table 3.C-1** provide mean and median removal percentages for the BMPs and for each of the 22 POCs analyzed. The table can be used to evaluate relative performance across constituent and BMP categories.
- **Inflow and outfall concentrations for common POCs:** shown in **Table 3.C-2** through **Table 3.C-6** are comparisons of standard statistics for the five available BMP categories across each of the common POCs. The corresponding box plots in **Figure 3.C-2** through **Figure 3.C-6** graphically represent the range of inflow versus outflow performance for the BMP categories.
- **Inflow and outflow concentrations for all 22 constituents:** standard statistics of inflow and outflow from BMPs for all constituents are available in **Appendix E: Detailed Summary Statistics for BMP Inflow and Outflow for All Constituents.**
- **Performance statistics and box plots for all constituents:** extensive summary statistics, , including significance testing of percent reductions, and box plots of BMP performance across the BMP categories are available in **Appendix F: Detailed Performance Metrics and Box Plots**.

The presented box plots include whiskers that span from the 10th to 90th percentiles and display outliers, defined as values that are more than 1.5 times the inner quartile range beyond the median. These outliers are *included* in all the generated summary statistics. This approach is consistent with technical memorandums on the IBD website.

Table 3.C-1 Mean and Median Percent Removal from Inflow to Outflow for All Pollutants and BMP Categories

Constituent Group	Pollutant	BioSwale (All)		BioSwale (Caltrans)		BioSwale (Non-Caltrans)		Constructed Wetland		Flow Through Treatment BMP		Site Scale Detention	
		% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median	% Change, Mean	% Change, Median
Metals	Total Arsenic	-51.14%	-21.85%	21.19%	29.33%	**-70.90%**	-44.19%	**-64.23%**	-65.00%	-11.57%	-18.52%	-19.56%	-24.00%
	Total Cadmium	**-51.15%**	-58.47%	-15.99%	-49.52%	**-68.14%**	-66.32%	**-74.50%**	-62.40%	1.22%	-48.00%	**-53.72%**	-49.44%
	Total Chromium	-24.85%	-42.03%	-21.11%	-28.38%	-27.37%	-61.06%	**-81.54%**	-88.30%	**-35.10%**	-37.04%	-60.67%	-50.00%
	Total Copper	**-69.02%**	-68.29%	**-59.24%**	-60.98%	**-70.39%**	-60.32%	-98.02%	-85.81%	-55.03%	-38.89%	**-51.83%**	-48.04%
	Total Iron	-57.30%	-61.20%	-48.56%	-47.57%	---	---	---	---	---	---	---	---
	Total Lead	**-75.46%**	-77.05%	**-69.92%**	-75.02%	**-76.11%**	-67.68%	-98.11%	-97.41%	**-63.71%**	-76.15%	**-66.23%**	-59.26%
	Total Nickel	**-59.02%**	-64.38%	-41.24%	-46.58%	**-69.50%**	-72.97%	-48.11%	-36.78%	-21.04%	-28.57%	-62.53%	-45.21%
	Total Zinc	**-74.08%**	-75.66%	**-71.53%**	-76.14%	**-71.42%**	-68.65%	**-84.48%**	-85.56%	**-62.40%**	-74.89%	**-68.98%**	-64.64%
Bacteria	Fecal Coliform	-13.70%	-82.00%	---	---	-13.70%	-82.00%	-94.54%	-92.69%	-26.36%	-91.43%	99.1%	41.7%
	Total Coliform	---	---	---	---	---	---	-0.18%	-62.97%	**-99.91%**	-99.90%	---	---
Solids	Total Suspended Solids	**-50.46%**	-59.21%	-24.21%	-51.28%	-61.37%	**-58.33%**	**-94.55%**	-95.22%	**-65.0%**	-82.28%	**-62.82%**	-62.00%
	Total Dissolved Solids	-3.72%	7.32%	17.58%	12.36%	-17.36%	-2.50%	**+1169%**	1739%	12.12%	16.67%	-0.29%	0.00%
	Turbidity	**-62.65%**	-50.67%	**-62.65%**	-50.67%	---	---	---	---	---	---	---	---
Nutrients	Kjeldahl nitrogen (TKN)	-18.52%	-15.00%	29.02%	16.67%	**-31.74%**	-25.24%	-22.91%	8.33%	-24.22%	-30.97%	-14.86%	-20.21%
	Nitrogen, ammonia as N	15.93%	-25.50%	40.91%	-9.04%	---	---	-61.86%	-57.14%	28.35%	50.00%	---	---
	Nitrogen, Nitrate (NO_3) as N	-12.14%	-21.25%	13.77%	-1.31%	-22.54%	-23.29%	-66.90%	-87.87%	24.13%	41.41%	-13.89%	-10.59%
	Nitrogen, Nitrite (NO_2) as N	89.01%	31.91%	89.01%	31.91%	---	---	**-100%**	-100%	---	---	---	---
	Nitrogen, unionized ammonia (NH_3) as N	---	---	---	---	---	---	---	---	**-56.11%**	-62.50%	---	---
	Organic carbon, Dissolved	-10.96%	7.50%	17.74%	34.02%	-28.27%	-14.14%	-32.54%	-40.91%	-1.43%	-7.14%	6.92%	9.09%
	Organic carbon, Total	-13.17%	0.00%	15.30%	18.18%	-29.70%	-5.56%	-23.90%	-6.67%	-4.78%	-12.79%	0.68%	6.06%
	Phosphorus as P, Dissolved	+263%	+250%	---	---	+263.42%	+250.00%	+186.92%	90.18%	-7.14%	-11.11%	-3.15%	22.22%
	Phosphorus as P, Total	+125%	+100%	+219%	+269%	92.89%	68.18%	-19.33%	-14.29%	**-34.10%**	-25.00%	**-35.61%**	-19.44%
	Phosphorus, orthophosphate as P	+369%	+553%	+531%	+795%	59.09%	31.91%	---	---	---	---	---	---

Note 1: Bolded, orange values indicate statistically different inflow and outflow concentrations based on 95% confidence intervals.

Note 2: If insufficient data were available to calculate the % removal, then --- is shown.

Note 3: Catch basin inserts are not shown because effluent data were insufficient.

Table 3.C-2 Inflow/Outflow Summary Statistics for TSS (mg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	69	75	23	100	38	169	59
Bioswales	31	31	159	103	45.0	18.0	76.0	31.0	130	54
Catch Basin Inserts	0	6	---	88	---	20	---	37.5	---	71
Flow Through Treatment BMPs	13	13	230	218	8.875	2.875	39.5	7.00	89.25	22.25
Constructed Wetlands	1	1	13	14	140	3.50	230	11.0	255	13.5

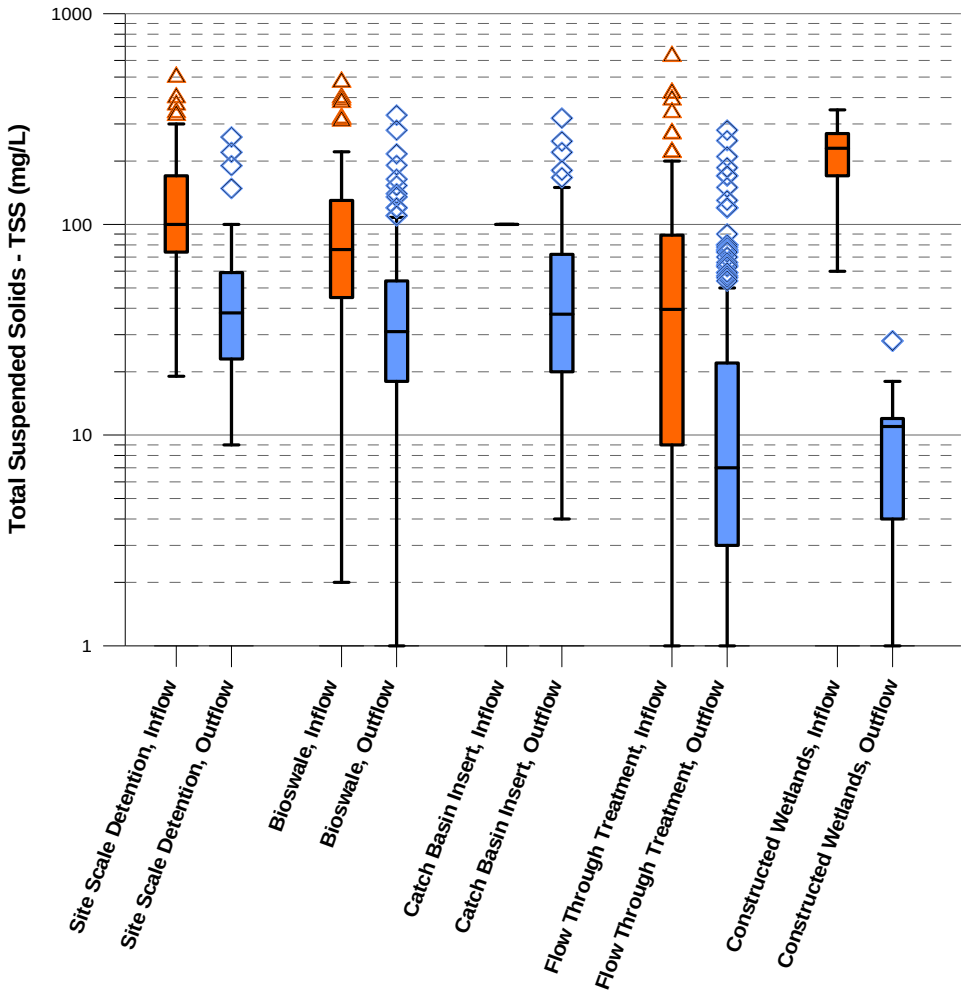


Figure 3.C-2 Box Plots of Inflow/Outflow TSS Concentrations in Southern California

Table 3.C-3 Inflow/Outflow Summary Statistics for Fecal Coliform (#/100mL)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	9	9	34	30	300	475	600	850	1700	3075
Bioswales	8	8	33	19	500	130	5000	900	16500	5000
Catch Basin Inserts	0	6	---	---	---	---	---	---	---	---
Flow Through Treatment BMPs	11	11	172	152	300	7.47	900	77.1	3000	797
Constructed Wetlands	2	2	13	14	230	20.0	1300	95.0	3800	255

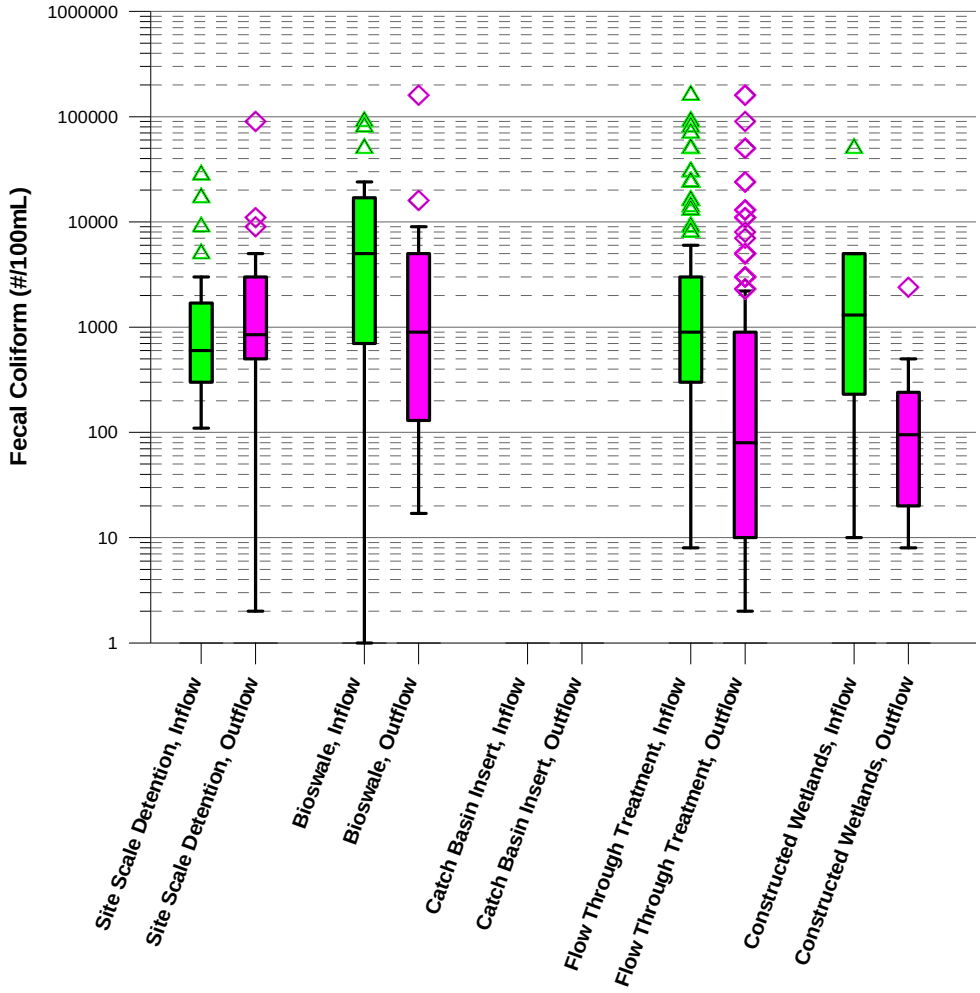


Figure 3.C-3 Box Plots of Inflow/Outflow Fecal Coliform Concentrations in Southern California

Table 3.C-4 Inflow/Outflow Summary Statistics for Copper (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	68	26.25	15.00	39.45	20.50	63.75	28.00
Bioswales	31	31	150	100	22.00	8.23	41.00	13.00	70.50	19.90
Catch Basin Inserts	0	6	---	88	---	5.95	---	13	---	22
Flow Through Treatment BMPs	11	11	150	146	11.98	6.20	18.00	11.00	33.00	21.25
Constructed Wetlands	2	2	21	22	11.15	5.55	62.00	8.80	110.00	14.75

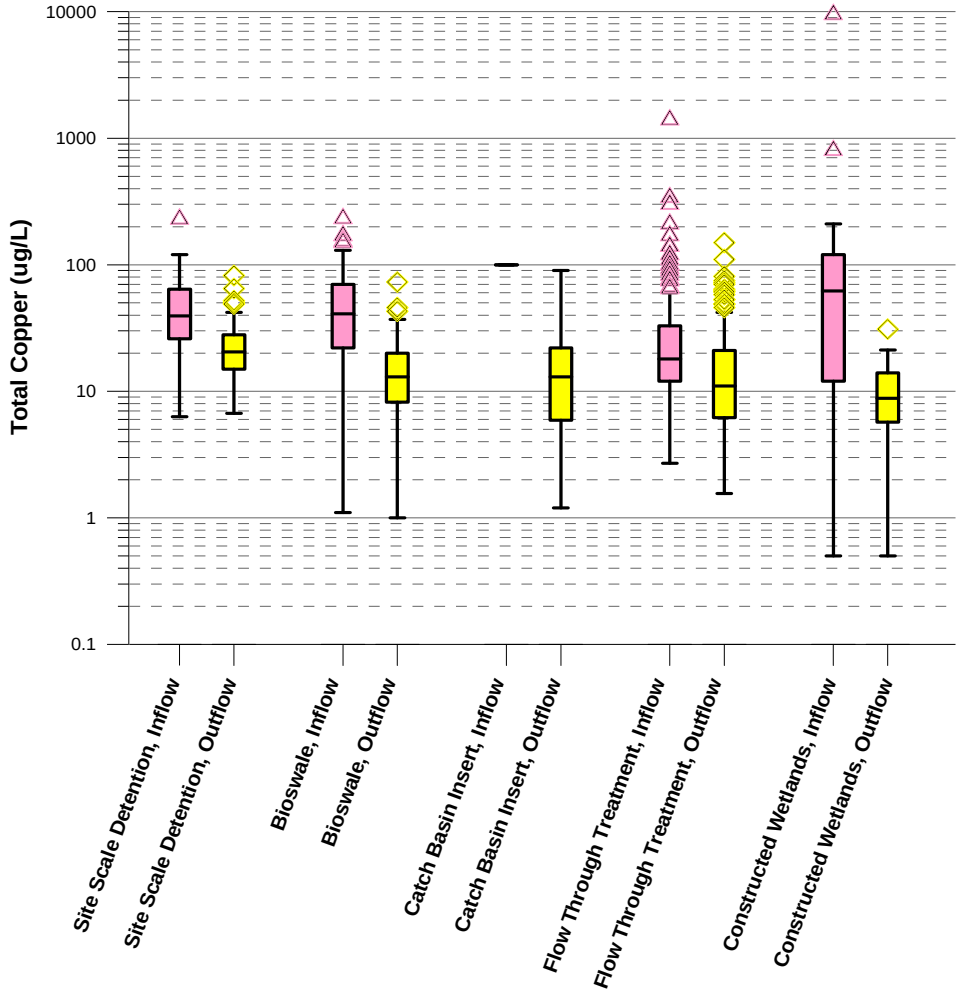


Figure 3.C-4 Box Plots of Inflow/Outflow Copper Concentrations in Southern California

Table 3.C-5 Inflow/Outflow Summary Statistics for Lead (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	69	34.40	13.00	54.00	22.00	108.25	36.50
Bioswales	31	31	150	100	13.92	3.53	32.89	7.55	77.75	21.50
Catch Basin Inserts	0	6	---	88	---	2.3	---	6	---	12.45
Flow Through Treatment BMPs	11	11	149	146	6.50	1.00	13.00	3.10	25.50	7.10
Constructed Wetlands	2	2	21	22	3.32	2.70	170.00	4.40	315.00	8.32

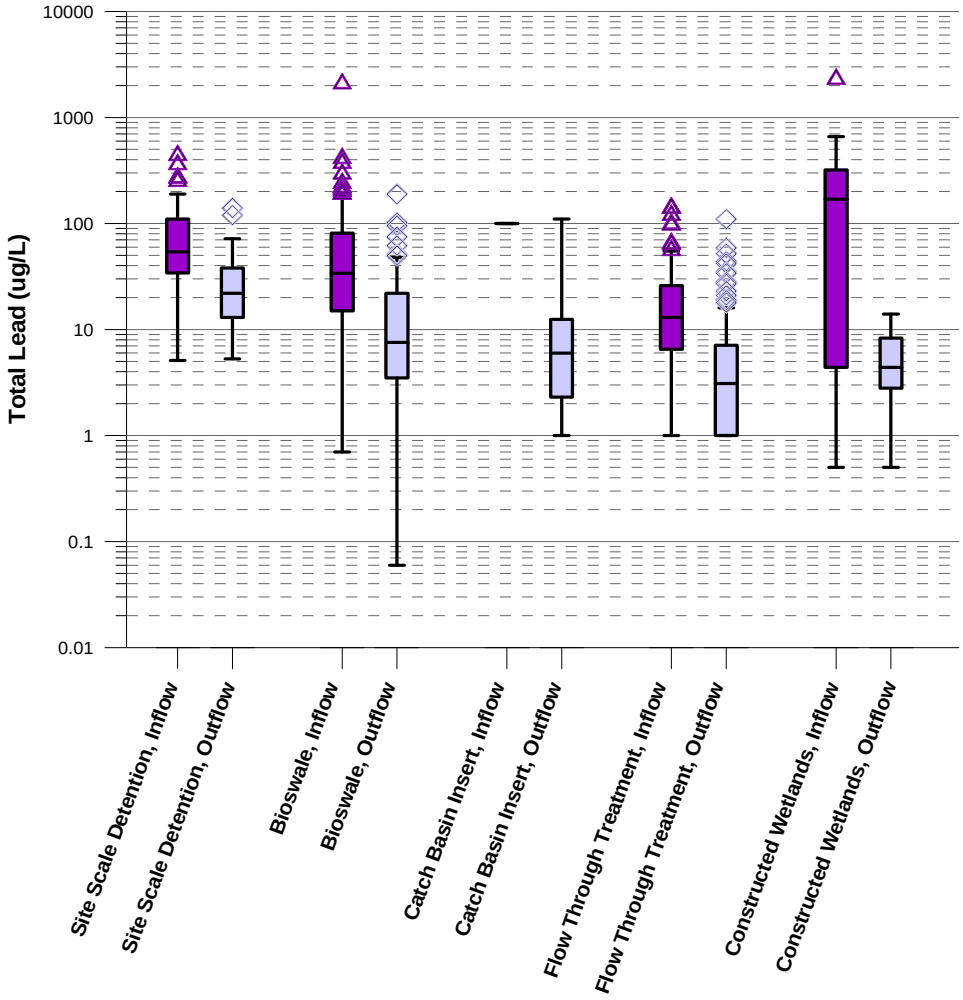


Figure 3.C-5 Box Plots of Inflow/Outflow Lead Concentrations in Southern California

Table 3.C-6 Inflow/Outflow Summary Statistics for Zinc (µg/L)

BMP Category	Number of BMP Sampling Locations		Number of Samples Analyzed		25th Percentile		Median (50th Percentile)		75th Percentile	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Site Scale Detention	5	5	76	68	152.75	68.25	280.00	99.00	504.75	150.00
Bioswales	31	31	150	100	110	29.5	228	55.5	360	82.5
Catch Basin Inserts	0	6	---	88	---	50.5	---	107	---	220
Flow Through Treatment BMPs	11	11	150	146	110	23.00	221	55.5	400	131
Constructed Wetlands	2	2	21	22	109.00	28.53	270.00	39.00	450.00	84.35

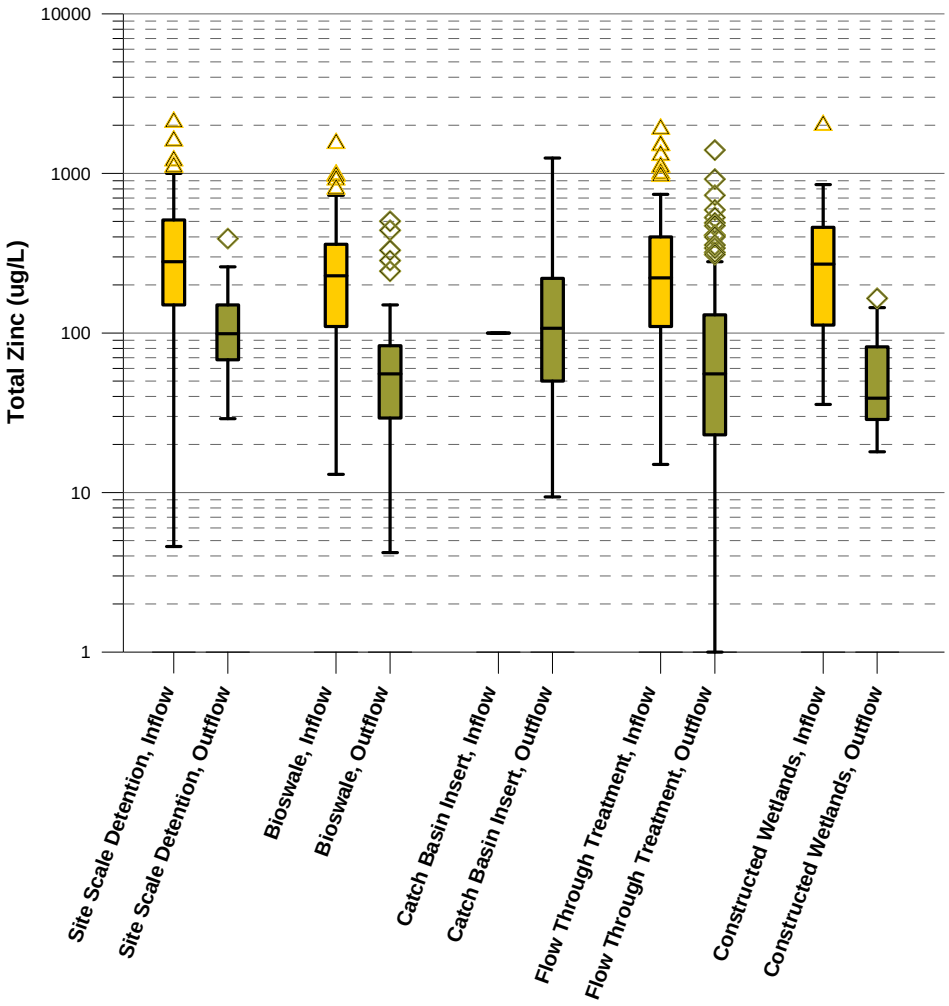


Figure 3.C-6 Box Plots of Inflow/Outflow Lead Concentrations in Southern California

3.5.1 Discussion and Observations regarding BMP Performance

The statistical analysis presented herein has many applications, including supporting the RAA for the EWMP. As future applications are undertaken, the results can be analyzed in more detail. For this Work Plan, several general observations are highlighted, as follows:

- **Comparison of outflow quality among BMPs:** the constructed wetland (n = 2) and flow through treatment BMPs (n = 31) generally exhibited the highest quality effluent. Reductions of TSS were generally higher compared to other BMPs and concentrations of TSS in outflows were generally lower (see **Table 3.C-2** and **Figure 3.C-2**). Elevated performance is also apparent for other constituents. The constructed wetlands exhibited exceptional reductions (>84%) of total copper, lead, and zinc. Constituents were likely reduced in the constructed wetlands by means of sedimentation, chemical and biological conversions, and uptake. The flow through treatment BMPs in the dataset were mostly Caltrans BMPs including media filters and proprietary cartridge filters with a range of sand/peat and sand/gravel mixes.

- **BMP performance for individual constituents:** among the constituents analyzed, the percent removals were often the highest for total metals, especially lead and zinc (**Table 3.C-1**). The poorest performance was often for nutrients, with phosphorous concentrations increasing in some cases (likely due to leaching). For bacteria, only the constructed wetlands and flow through treatment BMPs were able to generate outflows with median fecal coliform concentrations less than 235 MPN per 100mL (which is an applicable Permit limitation if fecal coliform is assumed equivalent to *E. coli*) (see **Table 3.C-3** and **Figure 3.C-3**).

- **Application of the data herein for the RAA effort:** in general, the majority of pollutant removal associated with potential stormwater BMPs in the RAA will be due to volume reduction (infiltration). The Watershed Management Modeling System, which will be used for the RAA, is process-based and thus is able to estimate volume reduction and the proportion of inflow that is infiltrated, treated, and overflowed. Because the model is dynamic, these proportions change from storm to storm (i.e., overflows are less frequent during small storms than large storms). For the subset of planned BMPs with a treatment component, some assumptions will be needed regarding the quality of treated and discharged outflow (e.g., biofiltration BMPs, which have an underdrain). The analysis herein will support those assumptions. It is noted that only a subset of the potential BMP categories (defined in Section 3) had sufficient data for data analysis. As such, an important consideration will be whether BMP performance statistics of the BMPs analyzed herein are relevant to some of the other BMPs that may be included in the RAA (but were not analyzed herein). For example, because biofiltration is vegetated filtration, it is reasonable to assume the performance data for the flow through treatment (filtration) BMPs (and perhaps constructed wetlands) are applicable to biofiltration. The specific approach for applying the statistics herein for estimating concentrations of constituents in underdrain outflows (if necessary) will be determined during the RAA effort.

Appendix 3.D
Institutional BMPs Installed and Maintained

Appendix 3.D: Institutional BMPs Installed and Maintained

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
Installed																			
2010-2011	Dog Parks													1					**1**
	Dust Control								1										**1**
	Enhanced Street Sweeping													1					**1**
	Water Truck for Dust Control								11										**11**
2011-2012	Concrete Curing								2										**2**
	Concrete Finishing								4										**4**
	Concrete Waste Management								6										**6**
	Dewatering Operations								2										**2**
	Dog Parks								1										**1**
	Dust Control								3										**3**
	Enhanced Street Sweeping								6										**6**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
	Erosion Control								2										**2**
	Hazardous Waste Management								7										**7**
	Liquid Waste Management								3										**3**
	Material Delivery & Storage								4										**4**
	Material Use								1										**1**
	Paving and Grinding Operations								3										**3**
	Potable Water/Irrigation								2										**2**
	Preserve Existing Vegetation								5										**5**
	Sanitary/Septic Waste Management								4										**4**
	Scheduling								4										**4**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
	Solid Waste Management								8										**8**
	Spill Prevention and Control								3										**3**
	Street Sweeping and Vacuuming								1										**1**
	Stockpile Management								4										**4**
	Vehicle and Equipment Cleaning								2										**2**
	Vehicle and Equipment Fueling								3										**3**
	Vehicle and Equipment Maintenance								2										**2**
	Water Conservation Practices								3										**3**
	Wind Erosion Control								2										**2**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
Maintained																			
2010-2011	Dog Parks			1	2		1	7						3					**14**
	Dust Control								1										**1**
	Enhanced Street Sweeping		100		12		1							3					**116**
	Hardscape Design											1							**1**
	Landscape Design											1							**1**
	Water Trucks								10										**10**
2011-2012	Concrete Curing								9										**9**
	Dog Parks				2			7	1										**10**
	Dewatering Operations								2										**2**
	Dust Control								9										**9**
	Erosion Control								4										**4**
	Enhanced Street Sweeping		100		12				19					1					**132**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
	Hardscape Design											1							**1**
	Hazardous Waste Management								7										**7**
	Landscape Design											1							**1**
	Liquid Waste Management								3										**3**
	Material Delivery and Storage								4										**4**
	Material Use								1										**1**
	Paving and Grinding Operations								6										**6**
	Potable Water/Irrigation								12										**12**
	Preserved Existing Vegetation								5										**5**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
	Sanitary/Septic Waste Management								4										**4**
	Scheduling								4										**4**
	Solid Waste Management								8										**8**
	Spill Prevention and Control								3										**3**
	Stockpile Management								6										**6**
	Street Sweeping and Vacuuming								1										**1**
	Vehicle and Equipment Fueling								3										**3**
	Vehicle and Equipment Maintenance								4										**4**
	Waste Oil Recycling Center								1										**1**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

BMP Type		Alhambra	Burbank	Calabasas	Glendale	Hidden Hills	La Canada Flintridge	City of Los Angeles	LA County	LACFCD	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	Total
	Water Conservation Practices								3										**3**
	Water Trucks								8										**8**
	Wind Erosion Control								11										**11**

Notes: BMPs reported by LA County and LACFCD in the Annual Report are not specific to the EWMP area, instead they are reported for their entire jurisdiction and thus the numbers herein are a gross overestimate of the BMPs in the EWMP area. These estimates will be refined prior to EWMP development.

Appendix 3.E
Water Quality Priorities Addressed by MCMs

Appendix 3.E. Water Quality Priorities Addressed by MCMs

MCM	2012 Permit Requirement	Water Quality Priority Pollutants												Comments
		Salts	Trash	Nutrients	Metals	Current Organics				Historical Organics		TBD	Bacteria	
					Metals, except Se	Selenium	OP Pesticides	PAHs	Pyrethroids	OC Pesticides	PCBs	Cyanide		
D.2 Progressive Enforcement (Applies D.6, D.7, D.8, and D.10)														
	Develop and maintain a Progressive Enforcement Policy													Dependent on program element - See specific categories below. Notes:
	Conduct follow-up inspection within 4 weeks of date of initial inspection													[a] if still being used
	Take progressive enforcement													[b] if present in sediment
	Retain records													[c] if contained in runoff from historic sources
	Refer violations to Regional Board													
	Investigate complaints from Regional Board (RB)													
	Assist RB with Enforcement Actions													
D.5 Public Information and Participation Program (PIPP)														
	Participate in a Countywide PIPP, WMP PIPP, or individual PIPP that measurably increases knowledge and changes behavior, and involves a diversity of socio economic and ethnic communities	X	X	X	X		X [a]		X	X [a, b]			X	PIPP addresses pollutants that have sources that could be targeted with an outreach campaign.
	Maintain reporting hotline	X	X	X	X		X [a]	X	X	X [a, b]	X [a,c]		X	Reporting hotline provides an opportunity for the public to report activities that could address the listed pollutants which likely have sources for which activities could be observed and reported.
	Publish hotline info on web, telephone book													N/A: Grouped with Reporting Hotline
	ID staff/department that serve as the contact (publish this info)													N/A: Grouped with Reporting Hotline
	Organize events (e.g., clean ups)		X	X									X	
	Residential Outreach (Individually or with group):													N/A: General, see specific requirements below.
	Public Service Announcements	X	X	X	X		X [a]		X				X	General requirement to "conduct storm water pollution prevention public service announcements and advertising campaigns," more specificity provided in next two requirements. Same notes as PIPP program.
	(Develop) Public education materials on: vehicle fluids; household waste; construction waste; pesticides, fertilizers, and integrated pest management (IPM); green wastes; and animal wastes		X	X	X		X [a]		X	X [a, b]			X	Same notes as PIPP program
	Distribute public education materials at points of purchase	X		X	X				X				X	Only listed for pollutants that have sources that can be actively purchased now. Could potentially be used as an avenue for educating on historically purchased products (i.e. organophosphate and organochlorine pesticides, but those are not identified since this would likely not be the target of a point of purchase campaign).
	Maintain stormwater website	X	X	X	X		X [a]	X	X	X [a, b]	X [a,c]		X	Same notes as PIPP program and reporting hotline.
	Provide schools with materials to educate children (K-12); can use state produced materials		X	X	X		X [a]		X	X [a, b]			X	Same notes as PIPP program

MCM	2012 Permit Requirement	Water Quality Priority Pollutants												Comments
		Salts	Trash	Nutrients	Metals			Current Organics		Historical Organics		TBD	Bacteria	
D.6 Industrial/ Commercial														
	Track Critical Sources - maintain inventory (watershed based or lat/long recorded)		X	X	X			X			X	X	X	Will depend on the type of industrial and commercial facilities in watershed
	Educate - notify critical sources of BMP requirements		X	X	X			X			X	X	X	
	Implement a Business Assistance Program for select sectors or small businesses - technical assistance, and distribute materials to specific sectors			X	X			X			X	X	X	
	Inspect Commercial Sources		X	X	X			X			X	X	X	
	Inspect Industrial Sources - initial mandatory inspection		X	X	X			X			X	X	X	
	Secondary mandatory inspection		X	X	X			X			X	X	X	
	No Exposure - evaluate and conduct 2nd inspection at 25% of facilities													
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)		X	X	X			X			X	X	X	
D.7 Planning and Land Development														
	Update ordinance/design standards to conform with new requirements (LID and Hydromod)	X		X	X		X [a]	X	X	X [a, b]	X [a,c]		X	Expect LID/Hydromod to reduce runoff, reducing associated pollutants. Would apply to entire PLD section.
	Optional: Establish alternative compliance for technical infeasibility, e.g., allow onsite biofiltration or offsite infiltration or gw replenishment or retrofit													
	Optional if allowing offsite mitigation: Develop a prioritized list of offsite mitigation projects													
	Optional if allowing offsite mitigation: Develop a schedule for completion of offsite projects (must be with 4 yrs of the Certificate of Occupancy of the first project that contributed funds)													
	Optional if allowing offsite mitigation: Notice offsite projects to RB website													
	Optional if allowing offsite mitigation: List of mitigation projects descriptions and estimated pollutant and flow reductions													
	Optional if allowing offsite mitigation: Provide aggregated comparison of alternative compliance to results that would have been expected with on site retention of the SWQDv													
	Optional: Submit documentation that a previously adopted LID ordinance provides equivalent pollutant loading and flow reduction													
	Plan Review process - check LID and BMP sizing, etc.,													
	Establish internal agreements with structure for communication and authority for departments overseeing plan approval and project construction													
	Require O&M plan for LID, treatment and hydromod BMPs													
	Implement tracking and enforcement program for LID, treatment and hydromod BMPs													
	Inspect all development sites upon completion and prior to occupancy certificates													
	Verify O&M of BMPs operated by Permittee through inspection													
	Develop maintenance inspection checklist													

MCM	2012 Permit Requirement	Water Quality Priority Pollutants												Comments
		Salts	Trash	Nutrients	Metals			Current Organics		Historical Organics		TBD	Bacteria	
	Require private parties that operate BMPs to submit verification of O&M; enforce as needed													
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)													
D.8 Construction														
	Update erosion and sediment control ordinance/procedures to conform with new requirements			X	X	X	X [a]	X	X	X [a]	X [a]		X	MCMs that reduce sediment transport will reduce sediment-associated pollutants, if those pollutants are present in soils. Will apply to entire Construction section.
	Sites < 1 acre; inspect based upon water quality threat													
	Establish priority inspection process													
	Site < 1 acre; Require sites with soil disturbing activities to implement minimum BMPs													
	Require construction sites to prepare erosion sediment control plan(ESCP); review and approve (≥ 1 acre)													
	Verify construction sites coverage under the CGP and 401 cert													
	Develop/implement ESCP review checklist													
	Require construction sites to adhere to standards and make standards readily available													
	Conduct inspections at public and private sites (at least 1x/2 weeks for high threat sites (more frequently when rain is predicted or occurs; at least monthly for lower threat; also must inspect during all phases of construction at least 3 times)													
	Develop/implement SOPs/inspection checklist													
	Track number of inspections for inventoried sites and verify minimum inspections are completed													
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)													
	Train plan review staff and inspectors													
	Staff must be knowledgeable in QSD/P key objectives, local BMPs standards													
D.9 Public Agency Activities														
	Require public construction sites to implement Planning and Land Development requirements, implement Erosion and Sediment Control BMPs, and obtain Construction General Permit coverage				X	X	X [a]	X	X	X [b]	X [b]		X	MCMs that reduce sediment transport will reduce sediment-associated pollutants
	Maintain inventory of Permittee owned facilities (including parks and recreation faclities,)	X	X	X	X		X [a]	X	X		X		X	Depends on how the inventory is used, but should track public facilities that may be sources of pollutants. Will also depend on the facilities in the jurisdiction and pollutant sources.
	Update inventory													See above MCM
	Develop retrofit opportunity inventory; evaluate and rank	X		X	X	X	X [a]	X	X	X [a, b]	X [a,c]		X	Depends on type of retrofit and BMPs included
	Cooperate with private land owners to encourage site specific retrofitting; includes pilot projects and outreach	X		X	X	X	X [a]	X	X	X [a, b]	X [a,c]		X	Depends on type of retrofit and BMPs included
	Obtain IGP coverage for public facilities where appropriate													
	Develop procedures to assess impact of flood mgt projects on water quality of receiving waters; evaluate to determine if retrofitting is feasible		X		X	X	X [a]	X [b]	X	X [b]	X [b]		X	If implemented, would likely address sediment transported pollutants. If infiltration is incorporated, all pollutants would be addressed.

MCM	2012 Permit Requirement	Water Quality Priority Pollutants												Comments
		Salts	Trash	Nutrients	Metals		Current Organics			Historical Organics		TBD	Bacteria	
	Evaluate existing structural flood control facilities to determine if retrofitting facility to provide additional pollutant removal is feasible		X		X	X	X [a]	X [b]	X	X [b]	X [b]		X	If implemented, would likely address sediment transported pollutants. If infiltration is incorporated, all pollutants would be addressed.
	Implement source control BMPs at Permittee owned facilities/activities		X		X				X					
	Require city-hired contractors to implement source control BMPs		X		X		X [a]		X					
	Prevent vehicle/equipment washing discharges to the MS4, including fire fighting and emergency response vehicles				X									
	Ensure new/redeveloped/replaced wash facilities are plumbed to the sanitary sewer or self contained.				X									
	Implement IPM program				X (copper)		X [a]		X					
	Ordinances, policies, and procedures reflect IPM techniques and include commitments and schedules to reduce the use of pesticides that cause impairments				X (copper)		X [a]		X					
	Annually update in inventory of pesticides used by agency; quantify pesticides used by staff and contractors; demonstrate IPM alternatives to reduce pesticide use				X (copper)		X [a]		X					
	Use SOPs for pesticide application				X (copper)		X [a]		X					
	Ensure no application of pesticides or fertilizers when two or more days with a 50% chance of rain is predicted by NOAA; within 48 hrs of 1/2 inch of rain; or when water is flowing off the site				X (copper)		X [a]		X					
	Ensure staff applying pesticides are certified or working under supervision of a certified applicator in the appropriate category				X (copper)		X [a]		X					
	Update catch basin map add GPS locations and update priority		X	X									X	
	Inspect/Clean catch basin in areas not subject to Trash TMDL- Priority A: 3x during wet season, 1x during dry 1x; PriorityB:1x during wet 1x and 1x during dry; Priority C: 1x per yr. Maintain records.		X		X (copper)									
	Required trash management at public events		X											
	Place and maintain trash receptacles/capture devices at newly identified high trash generating areas		X											
	Label storm drains	X	X	X					X				X	Included pollutants with sources that could be easily dumped into storm drains/catch basins
	Inspect labels prior to each wet season	X	X	X					X				X	
	Record and relabel illegible labels within 180 days of inspection	X	X	X					X				X	
	Post signs at access points to water bodies (open channels, creeks; lakes)	X	X	X					X				X	
	In areas not subject to the Trash TMDL, install trash excluders on catch basins or outfalls in areas defined as Priority A, or implement substantially equivalent BMPs		X											

MCM	2012 Permit Requirement	Water Quality Priority Pollutants												Comments
		Salts	Trash	Nutrients	Metals		Current Organics			Historical Organics		TBD	Bacteria	
	Inspect and Remove trash and debris from open channels and other drainage structures 1x/yr before rainy season.		X	X									X	
	Eliminate discharge of contaminants during MS4 maintenance		X	X	X [b]		X [b]	X [b]	X	X [b]	X [b]		X	Will address sediment-transported pollutants, if they are present in sediment.
	Implement controls to limit infiltration of seepage from sanitary sewers to the storm drains			X									X	
	Implement routine preventative maintenance for both systems, survey sanitary sewer and MS4. May use SSO General WDR to fulfill this requirement.	X		X								X	X	
	Implement inspection and maintenance program for Permittee owned BMPs		X	X	X		X [b]	X [b]	X	X [b]	X [b]		X	Depends on BMP type. Will address sediment-transported pollutants, if they are present in sediment.
	Manage residual water in treatment control BMPs removed during maintenance	X		X	X	X	X [a]	X [b]	X	X	X		X	Will prevent discharge of any pollutants present in the water.
	Street sweeping - Priority A: 2x/mo; B: 1x/mo; C: as needed, not less than 1x/yr		X	X	X								X	
	Implement road construction maintenance BMPs (e.g., restrict paving activity to exclude periods of rain)			X	X	X	X [a]	X	X	X	X		X	Will address sediment-transported pollutants, if they are present in sediment.
	Inspect and/or clean Permittee owned parking lots 2x/mo		X		X								X	General training could support reducing all pollutants of concern.
	Train employees and contractors on stormwater requirements	X	X	X	X	X	X [a]	X	X	X	X	X	X	General training could support reducing all pollutants of concern.
	Train employees and contractors on pesticide use						X [a]		X					
D.10 Illicit Connections and Illicit Discharges Elimination														
	Continue IC/ID program	X	X	X	X		X [a]	X	X			X	X	
	Written procedures for conducting investigations and eliminations	X	X	X	X		X [a]	X	X			X	X	
	Initiate investigation within 72 hours from becoming aware of the discharge	X	X	X	X		X [a]	X	X			X	X	
	Implement solutions to eliminate discharge; conduct follow-up investigation to verify elimination; follow Progressive Enforcement Plan (see D.2)	X	X	X	X		X [a]	X	X			X	X	
	When discharge originates upstream of jurisdiction, notify the upstream jurisdiction and Regional Board within 30 days	X	X	X	X		X [a]	X	X			X	X	
	Initiate investigation within 21 days for illicit connection	X	X	X	X		X [a]	X	X			X	X	
	Permit or document illicit connection that only discharge stormwater or allowed non-stormwater	X	X	X	X		X [a]	X	X			X	X	
	Eliminate illicit connection within 180 days of investigation	X	X	X	X		X [a]	X	X			X	X	
	Facilitate public reporting via hotline	X	X	X	X		X [a]	X	X			X	X	
	Signage adjacent to open channels provide info re: public reporting	X	X	X	X		X [a]	X	X			X	X	
	Document calls and actions associated with hotline	X	X	X	X		X [a]	X	X			X	X	
	Implement procedures on responding to complaints; evaluate and update procedures	X	X	X	X		X [a]	X	X			X	X	
	Implement a spill response plan	X	X	X	X		X [a]	X	X			X	X	
	Train staff and contractors on ID/IC	X	X	X	X		X [a]	X	X			X	X	
	Create a list of positions and contractors that require ID/IC training	X	X	X	X		X [a]	X	X			X	X	

Appendix 3.F
MCM Effectiveness Information

Appendix 3.F. MCM Effectiveness Information

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
D.2 Progressive Enforcement (Applies D.6, D.7, D.8, and D.10)				
	Develop and maintain a Progressive Enforcement Policy			
	Conduct follow-up inspection within 4 weeks of date of initial inspection			
	Take progressive enforcement			
	Retain records			
	Refer violations to Regional Board			
	Investigate complaints from Regional Board (RB)			
	Assist RB with Enforcement Actions			
D.5 Public Information and Participation Program (PIPP)				
	Participate in a Countywide PIPP, WMP PIPP, or individual PIPP that measurably increases knowledge and changes behavior, and involves a diversity of socio economic and ethnic communities	Varied depending on whether specific sources can be clearly targeted and magnitude of source.	PIPP addresses pollutants that have sources that could be targeted with an outreach campaign. The degree of effectiveness will depend on the magnitude of the source within the jurisdiction as compared to other sources. Effectiveness limited primarily by the program's ability to reach the public and change their behavior. Awareness factor depends on the media type: Television 40%, Radio 25%, Billboard 13%, Brochure/pamphlet/postcard 8%. Effectiveness can be quantified by Awareness x Participation (fraction willing to change behavior). Participation depends on the specific activity, as well as on the fraction of the target audience who are not already performing the target activity.	Caraco, D. 2013. Watershed Treatment Model (WTM) 2013 Documentation. Center for Watershed Protection, Ellicott City, MD
	Maintain reporting hotline	Undetermined	Reporting hotline provides an opportunity for the public to report activities that could address the listed pollutants which likely have sources for which activities could be observed and reported. The degree of effectiveness will depend on the magnitude of the source within the jurisdiction and the public's desire to report activities.	
	Publish hotline info on web, telephone book		N/A: Grouped with Reporting Hotline	
	ID staff/department that serve as the contact (publish this info)		N/A: Grouped with Reporting Hotline	
	Organize events (e.g., clean ups)	High	High for trash, medium for other pollutants, depending on event setup	
	Residential Outreach (Individually or with group):		N/A: General, see specific requirements below.	
	Public Service Announcements	Varied depending on whether specific sources can be clearly targeted and magnitude of source.	General requirement to "conduct storm water pollution prevention public service announcements and advertising campaigns," more specificity provided in next two requirements. Same notes as PIPP program.	
	(Develop) Public education materials on: vehicle fluids; household waste; construction waste; pesticides, fertilizers, and integrated pest management (IPM); green wastes; and animal wastes	Varied depending on whether specific sources can be clearly targeted and magnitude of source.	Brochure: recalled by 28% of the dog walking population and 50% of that pop. started picking up after their dogs; TV and Radio: recalled by 40% of the dog walking pop. and 50% of that pop. started picking up after their dogs.	Orange County, 2006; Caraco, DS. 2001. The Watershed Treatment Model Version 3.0. Center for Watershed Protection. Ellicott City, MD.
	Distribute public education materials at points of purchase	Varied depending on whether specific sources can be clearly targeted and magnitude of source.	Only listed for pollutants that have sources that can be actively purchased now. Could potentially be used as an avenue for educating on historically purchased products (i.e. organophosphate and organochlorine pesticides, but those are not identified since this would likely not be the target of a point of purchase campaign).	
	Maintain stormwater website	Undetermined	Same notes as PIPP program and reporting hotline.	
	Provide schools with materials to educate children (K-12); can use state produced materials	Varied depending on level of access to schools	Same notes as PIPP program	

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
D.6 Industrial/ Commercial				
	Track Critical Sources - maintain inventory (watershed based or lat/long recorded)	Undetermined, but provides information needed for other actions that would have higher effectiveness.	Will depend on the type of industrial and commercial facilities in watershed	
	Educate - notify critical sources of BMP requirements	Medium-likely to be effective if BMPs are implemented.		
	Implement a Business Assistance Program for select sectors or small businesses - technical assistance, and distribute materials to specific sectors	Undetermined, but could lead to other actions that would have higher effectiveness.		
	Inspect Commercial Sources	High if sources found that can be addressed.	Focused attention on high priority sources may produce large pollutant reductions.	
	Inspect Industrial Sources - initial mandatory inspection	High if sources found that can be addressed.		
	Secondary mandatory inspection	High if sources found that can be addressed.		
	No Exposure - evaluate and conduct 2nd inspection at 25% of facilities	High if sources found that can be addressed.		
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)	High if sources found that can be addressed.		
D.7 Planning and Land Development				
	Update ordinance/design standards to conform with new requirements (LID and Hydromod)	High when LID implemented.	Expect LID/Hydromod to reduce runoff, reducing associated pollutants. Would apply to entire PLD section. Runoff reduction ranges from 40-90% depending on type of control. Comment applies to entire LID section.	Center for Watershed Protection, 2008. Technical Memorandum: The Runoff Reduction Method
	Optional: Establish alternative compliance for technical infeasibility, e.g., allow onsite biofiltration or offsite infiltration or gw replenishment or retrofit			
	Optional if allowing offsite mitigation: Develop a prioritized list of offsite mitigation projects			
	Optional if allowing offsite mitigation: Develop a schedule for completion of offsite projects (must be with 4 yrs of the Certificate of Occupancy of the first project that contributed funds)			
	Optional if allowing offsite mitigation: Notice offsite projects to RB website			
	Optional if allowing offsite mitigation: List of mitigation projects descriptions and estimated pollutant and flow reductions			
	Optional if allowing offsite mitigation: Provide aggregated comparison of alternative compliance to results that would have been expected with on site retention of the SWQDv			
	Optional: Submit documentation that a previously adopted LID ordinance provides equivalent pollutant loading and flow reduction			
	Plan Review process - check LID and BMP sizing, etc.,			
	Establish internal agreements with structure for communication and authority for departments overseeing plan approval and project construction			
	Require O&M plan for LID, treatment and hydromod BMPs			

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
	Implement tracking and enforcement program for LID, treatment and hydromod BMPs			
	Inspect all development sites upon completion and prior to occupancy certificates			
	Verify O&M of BMPs operated by Permittee through inspection			
	Develop maintenance inspection checklist			
	Require private parties that operate BMPs to submit verification of O&M; enforce as needed			
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)			
D.8 Construction				
	Update erosion and sediment control ordinance/procedures to conform with new requirements	High	MCMs that reduce sediment transport will reduce sediment-associated pollutants. Expected that all Constuction MCMs will collectively contribute to reduction in sediment. Watershed Treatment Model assumes 70% efficiency for erosion and sediment control.	Caraco, D. 2013. Watershed Treatment Model (WTM) 2013 Documentation. Center for Watershed Protection, Ellicott City, MD
	Sites < 1 acre; inspect based upon water quality threat			
	Establish priority inspection process			
	Site < 1 acre; Require sites with soil disturbing activities to implement minimum BMPs			
	Require construction sites to prepare erosion sediment control plan(ESCP); review and approve (≥ 1 acre)			
	Verify construction sites coverage under the CGP and 401 cert			
	Develop/implement ESCP review checklist			
	Require construction sites to adhere to standards and make standards readily available			
	Conduct inspections at public and private sites (at least 1x/2 weeks for high threat sites (more frequently when rain is predicted or occurs; at least monthly for lower threat; also must inspect during all phases of construction - at least 3 times)			
	Develop/implement SOPs/inspection checklist			
	Track number of inspections for inventoried sites and verify minimum inspections are completed			
	As needed conduct Progressive Enforcement follow-up inspections (see D.2)			
	Train plan review staff and inspectors			
	Staff must be knowledgeable in QSD/P key objectives, local BMPs standards			
D.9 Public Agency Activities				
	Require public construction sites to implement Planning and Land Development requirements, implement Erosion and Sediment Control BMPs, and obtain Construction General Permit coverage	High	MCMs that reduce sediment transport will reduce sediment-associated pollutants. Watershed Treatment Model assumes 70% efficiency for erosion and sediment control.	Caraco, D. 2013. Watershed Treatment Model (WTM) 2013 Documentation. Center for Watershed Protection, Ellicott City, MD

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
	Maintain inventory of Permittee owned facilities (including parks and recreation faclities,)	Undetermined, but could lead to other actions that would have higher effectiveness.	Depends on how the inventory is used, but should track public facilities that may be sources of pollutants. Will also depend on the facilities in the jurisdiction and pollutant sources.	
	Update inventory		See above MCM	
	Develop retrofit opportunity inventory; evaluate and rank	Undetermined, but could lead to other actions that would have higher effectiveness.	Depends on type of retrofit and BMPs included	
	"Cooperate with private land owners to encourage site specific retrofitting"; includes pilot projects and outreach	Medium	Depends on type of retrofit and BMPs included	
	Obtain IGP coverage for public facilities where appropriate	Undetermined, but could lead to other actions that would have higher effectiveness.		
	Develop procedures to assess impact of flood mgt projects on water quality of receiving waters; evaluate to determine if retrofitting is feasible	Undetermined, but could lead to other actions that would have higher effectiveness.	If implemented, would likely address sediment transported pollutants. If infiltration is incorporated, all pollutants would be addressed.	
	Evaluate existing structural flood control facilities to determine if retrofitting facility to provide additional pollutant removal is feasible	Undetermined, but could lead to other actions that would have higher effectiveness.	If implemented, would likely address sediment transported pollutants. If infiltration is incorporated, all pollutants would be addressed.	
	Implement source control BMPs at Permittee owned facilities/activities	Medium to High		
	Require city-hired contractors to implement source control BMPs	Medium to High		
	Prevent vehicle/equipment washing discharges to the MS4, including fire fighting and emergency response vehicles	High		
	Ensure new/redeveloped/replaced wash facilities are plumbed to the sanitary sewer or self contained.	High		
	Implement IPM program	High		
	Ordinances, policies, and procedures reflect IPM techniques and include commitments and schedules to reduce the use of pesticides that cause impairments	Medium		
	Annually update in inventory of pesticides used by agency; quantify pesticides used by staff and contractors; demonstrate IPM alternatives to reduce pesticide use	Medium		
	Use SOPs for pesticide application	Medium		
	Ensure no application of pesticides or fertilizers when two or more days with a 50% chance of rain is predicted by NOAA; within 48 hrs of 1/2 inch of rain; or when water is flowing off the site	Medium		
	Ensure staff applying pesticides are certified or working under supervision of a certified applicator in the appropriate category	Medium		
	Update catch basin map add GPS locations and update priority	Undetermined, but could lead to other actions that would have higher effectiveness.		

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
	Inspect/Clean catch basin in areas not subject to Trash TMDL- Priority A: 3x during wet season, 1x during dry 1x; PriorityB:1x during wet 1x and 1x during dry; Priority C: 1x per yr. Maintain records.	High	Load reductions depends on extent, timing, and frequency of cleaning. Semi-annualy cleaning can reduce TSS by 56%, total nitrogen by 10% (CWP, 2009). Nutrients and metals by 5-10% (Pitt, 1985).	Center for Watershed Protection (CWP). 2006. Technical Memorandum 1 - Literature Review. Research in Support of an Interim Pollutant Removal Rate for Street Sweeping and Stormdrain Cleanout Activities. October. Pitt, R. and P. Bissonette, 1985. Characterizing and Controlling Urban Runoff through Street and Sewerage Cleaning. Bellevue Urban Runoff Program. USEPA EPA/600/S2-85/038.
	Required trash management at public events	Medium		
	Place and maintain trash receptacles/capture devices at newly identified high trash generating areas	Medium		
	Label storm drains	Undetermined, but could lead to other actions that would have higher effectiveness.	Included pollutants with sources that could be easily dumped into storm drains/catch basins	
	Inspect labels prior to each wet season	Undetermined, but could lead to other actions that would have higher effectiveness.		
	Record and relabel illegible labels within 180 days of inspection	Undetermined, but could lead to other actions that would have higher effectiveness.		
	Post signs at access points to water bodies (open channels, creeks; lakes)	Undetermined, but could lead to other actions that would have higher effectiveness.		
	In areas not subject to the Trash TMDL, install trash excluders on catch basins or outfalls in areas defined as Priority A, or implement substantially equivalent BMPs	Medium		
	Inspect and Remove trash and debris from open channels and other drainage structures 1x/yr before rainy season.	High		
	Eliminate discharge of contaminants during MS4 maintenance	High		
	Implement controls to limit infiltration of seepage from sanitary sewers to the storm drains	High		
	Implement routine preventative maintenance for both systems, survey sanitary sewer and MS4. May use SSO General WDR to fulfill this requirement.	Medium		
	Implement inspection and maintenance program for Permittee owned BMPs	Undetermined, but could lead to other actions that would have higher effectiveness.	Depends on BMP type	
	Manage residual water in treatment control BMPs removed during maintenance	High	Will prevent discharge of any pollutants present in the water.	

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
	Street sweeping - Priority A: 2x/mo; B: 1x/mo; C: as needed, not less than 1x/yr	Medium	Reported decreases in loading from street: TSS decreased 22% with monthly sweeping and 31% with weekly sweeping; Street sweeper type: Regenerative Air/ Vacuum; Efficiencies applies to sediment load from streets	Law, N.L., K. DiBlasi and U. Ghosh. 2008. Deriving Reliable Pollutant Removal Rates for Municipal Street Sweeping and Storm Drain Cleanount Programs in the Chesapeake Bay Basin. September 2008; Zarriello et. al, 2002
	Implement road construction maintenance BMPs (e.g., restrict paving activity to exclude periods of rain)	Medium		
	Inspect and/or clean Permittee owned parking lots 2x/mo	Medium	General training could support reducing all pollutants of concern.	
	Train employees and contractors on stormwater requirements	Medium	General training could support reducing all pollutants of concern.	
	Train employees and contractors on pesticide use	Medium		
D.10 Illicit Connections and Illicit Discharges Elimination				
	Continue IC/ID program	Varied	Will vary depending on ability to identify and eliminate source. Continuous sources will be more effective than intermittent sources to address.	
	Written procedures for conducting investigations and eliminations			
	Initiate investigation within 72 hours from becoming aware of the discharge			
	Implement solutions to eliminate discharge; conduct follow-up investigation to verify elimination; follow Progressive Enforcement Plan (see D.2)			
	When discharge originates upstream of jurisdiction, notify the upstream jurisdiction and Regional Board within 30 days			
	Initiate investigation within 21 days for illicit connection			
	Permit or document illicit connection that only discharge stormwater or allowed non-stormwater			
	Eliminate illicit connection within 180 days of investigation			
	Facilitate public reporting via hotline			
	Signage adjacent to open channels provide info re: public reporting			
	Document calls and actions associated with hotline			
	Implement procedures on responding to complaints; evaluate and update procedures			
	Implement a spill response plan			
	Train staff and contractors on ID/IC			
	Create a list of positions and contractors that require ID/IC training			

High Effectiveness	Activities that clearly address a pollutant source, are within the control of the Permittees to address, and can result in elimination of the source. Or activities performed by others that could eliminate a pollutant source and that the permittees can confirm (e.g. All the LID requirements).
Medium Effectiveness	Activities that clearly address a pollutant source and are within the control of the Permittees to address, but does not have the ability to eliminate the source. Or BMPs that are implemented by others that are known to have some effectiveness in removing pollutants and that the permittee can confirm (e.g. BMPs put in at an industrial facility that will be inspected or training of municipal employees or contractors whose activities can be confirmed)

MCM	2012 Permit Requirement	Potential Effectiveness	Comments	References
	Undetermined Effectiveness		Activities over which the Permittees have not direct control and therefore cannot easily determine effectiveness or activities that do not directly address a source. These activities either set up the ability to do a BMP that might have a high or medium effectiveness (e.g. produce an inventory of industrial sources or evaluate retrofit opportunities) or provide education that might change behavior, but can't be confirmed directly by the permittee. As a result, the effectiveness of the activity cannot be clearly determined.	

Appendix 5.A
Material from Stakeholder Workshop

Enhanced Watershed Management Programs (EWMP) Regional Workshop

Los Angeles Region Watersheds

(Ballona Creek, Dominguez Channel, Upper LA River, Marina del Rey, Santa Monica Bay)

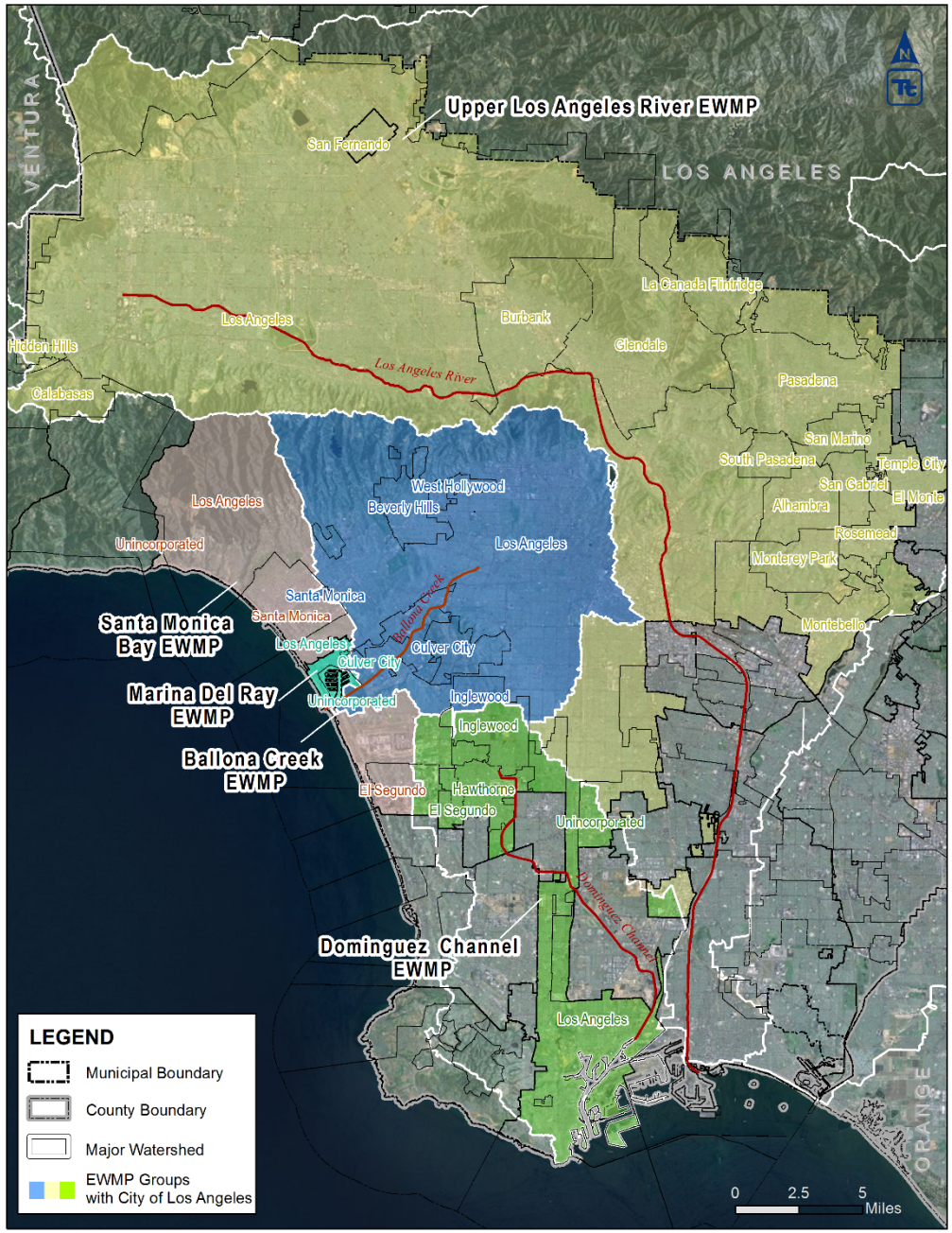
Agenda

April 10, 2014 in the Witherbee Auditorium at the LA Zoo

Desired Objective:	Educate stakeholders about EWMP process and invite input regarding EWMP process and potential ideas for regional projects.
10:00 – 10:10	Welcome/Workshop ground rules – Dave Jones, Workshop Facilitator
10:10 – 10:20	Welcoming Remarks – Shahram Kharaghani, City of LA Bureau of Sanitation
10:20 – 10:50	Perspectives from Key Agencies • City of LA Board of Public Works – Commissioner Barbara Romero • City of LA Bureau of Sanitation – Traci Minamide, Chief Operating Officer • California Regional Water Quality Control Board, LA Region – Renee Purdy • LA County Dept. of Public Works – Gary Hildebrand • City of LA Dept. of Water & Power – Andy Niknafs • Metropolitan Water District of Southern California - Kathy Kunysz
10:50 – 11:00	Roles and Responsibilities of Key Watershed Management Group members – Dave Jones
11:00 – 11:20	EWMP Work Plan & EWMP Plan Goals and Objectives – Dustin Bambic
11:20 – 11:40	Regional Projects – Michael Drennan
11:40 – 11:55	Recap and overall schedule – Hampik Dekermenjian
11:55 – 12:10	Question & Answer Session before lunch break
12:10 – 12:30	Break - grab light lunch, sandwiches, etc., and bring to breakout group
12:30 – 2:00	Breakout groups/ individual watershed groups/ watershed project discussions 1. Ballona Creek 2. Dominguez Channel 3. Upper Los Angeles River 4. Santa Monica Bay 5. Marina del Rey
2:00 – 2:15	Workshop Wrap Up

For copies of the presentation slides or for more information, please contact LAstormwater@LACity.org.

Five Watersheds being addressed at today's workshop



Upper LA River Watershed Management Group
(representatives & primary contacts)

- **City of LA &** – Alfredo Magallanes & Vijay Desai
- **County of LA & LACFCD** – Jolene Guerrero & Tona Avalos
- **Alhambra** – Claudine Meeker & David Dolphin
- **Burbank** – Alvin Cruz
- **Calabasas** – Alex Farassati
- **Glendale** – Maurice Oillateguerre
- **Hidden Hills** – Joe Bellomo
- **La Canada Flintridge** – Arabo Parseghian
- **Montebello** – Sam Kouri
- **Monterey Park** – Amy Ho & Mikki Lee
- **Pasadena** – Sheila Kennedy
- **Rosemead** – Sean Sullivan
- **San Fernando** – Robert Dickey
- **San Gabriel** – Algis Marciuska
- **San Marino** – Kevin Sales
- **South Pasadena** – Shin Furukawa & Mikki Lee
- **Temple City** – Mikki Lee

Ballona Creek Watershed Management Group
(representatives and primary contacts)

- **City of LA** – Huub Cox & Ryan Thiha
- **County of LA & LACFCD** – TJ Moon
- **Beverly Hills** – Daniel Cartagena
- **Culver City** – Steve Finton & Kaden Young
- **Inglewood** – Lauren Amimoto
- **West Hollywood** – Matthew Magener & Sharon Perlstein
- **Santa Monica** – Neal Shapiro & Rick Valte

Santa Monica Bay Beaches Watershed Management Group
(representatives & primary contacts)

- **City of LA** – Huub Cox & Hamid Tadayon
- **County of LA & LACFCD** - TJ Moon
- **Santa Monica** – Neal Shapiro & Rick Valte
- **El Segundo** – Lifan Xu

Dominguez Channel Watershed Management Group (representatives and primary contacts)

- **City of LA** – Alfredo Magallanes & Vijay Desai
- **County of LA & LACFCD** – Bill Johnson
- **El Segundo** – Lifan Xu
- **Hawthorne** – Doug Krauss
- **Inglewood** – Lauren Amimoto

Marina del Rey Watershed Management Group

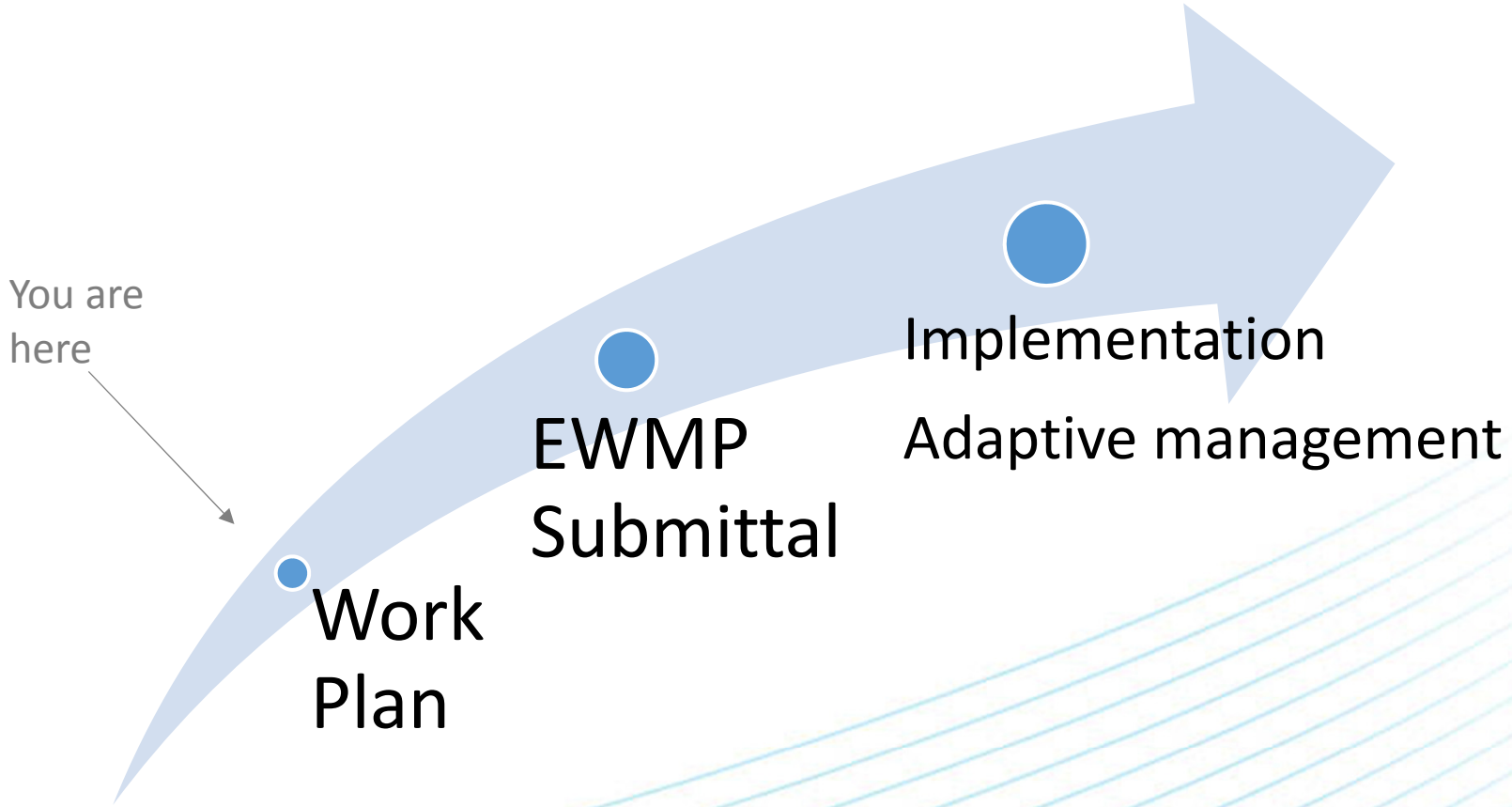
- **County of LA & LACFCD** – TJ Moon
- **City of LA** – Huub Cox and Wendy Dinh
- **Culver City** – Steve Finton & Kaden Young

Watershed Management Groups

- **Purpose** – to collaborate amongst agencies (jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit
- **Process** – the WMGs meet on a monthly basis to address EWMP and other MS4 Permit compliance issues
- **Status** – some WMGs have been meeting regularly for several years. WMG collaboration will likely continue indefinitely to promote regional watershed water quality benefits.

EWMP Elements

EWMP Process

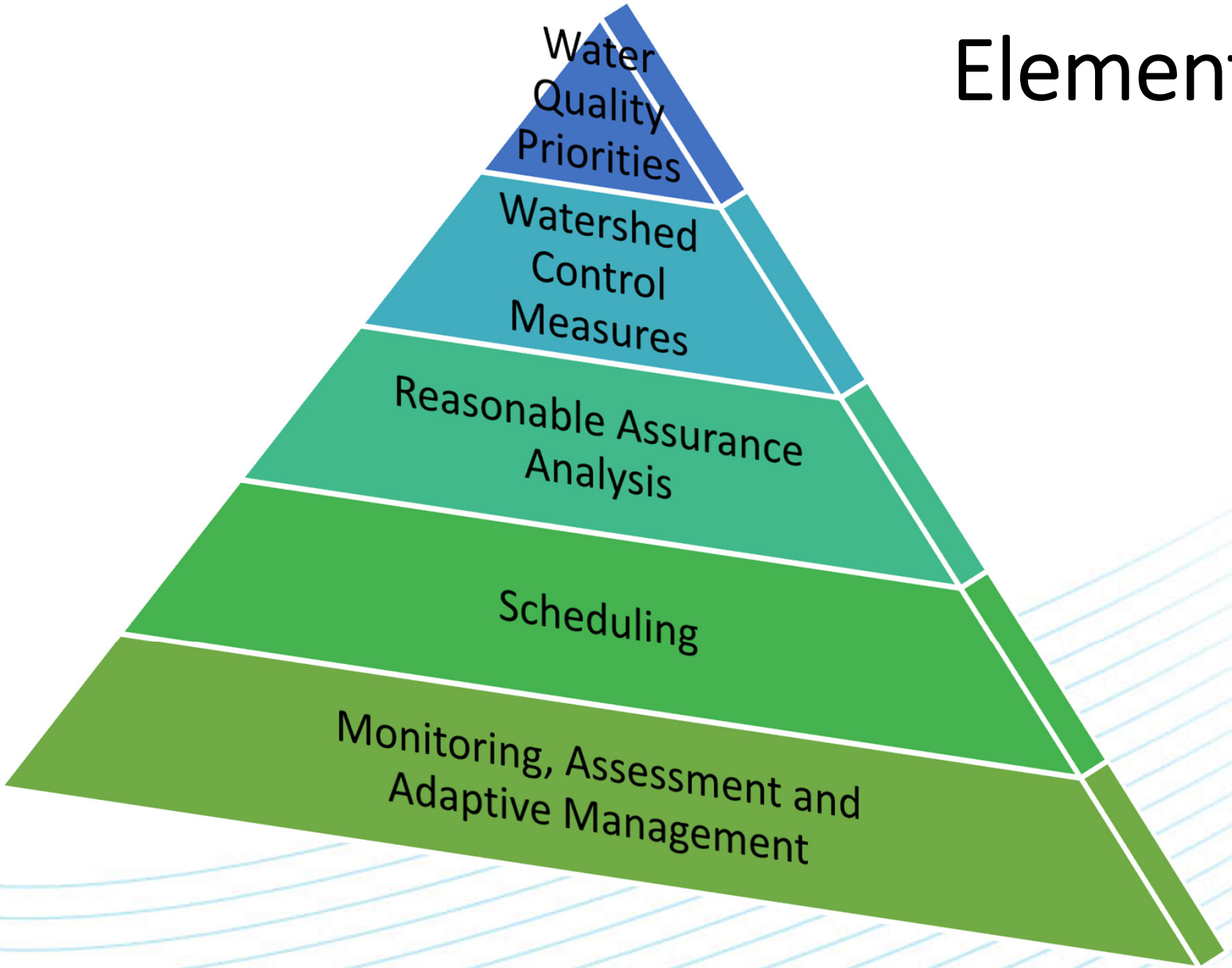


EWMP Development

- Work Plan
  - Path forward for developing EWMP
  - Data compilation and analysis conducted to date
  - June 28, 2014

- EWMP
  - Comprehensive Plan for complying with Permit
  - Multiple other benefits
  - June 28, 2015

EWMP Elements



Water Quality Priorities

Highest

- **Total Maximum Daily Loads**
  - e.g., Ballona Creek has TMDLs for bacteria, metals, and pesticides

High

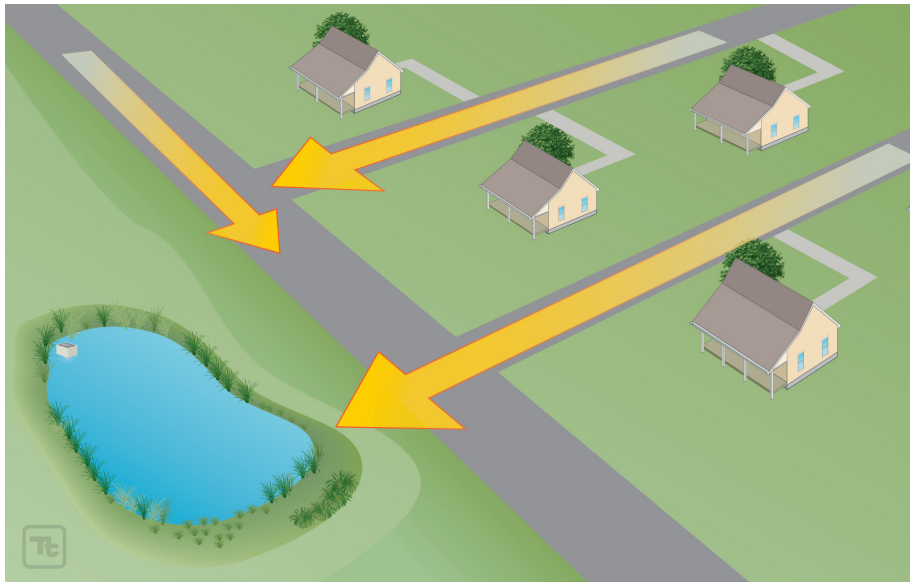
- **Impaired on 303(d) list**
  - e.g., Dominguez Channel is impaired by bacteria

Medium

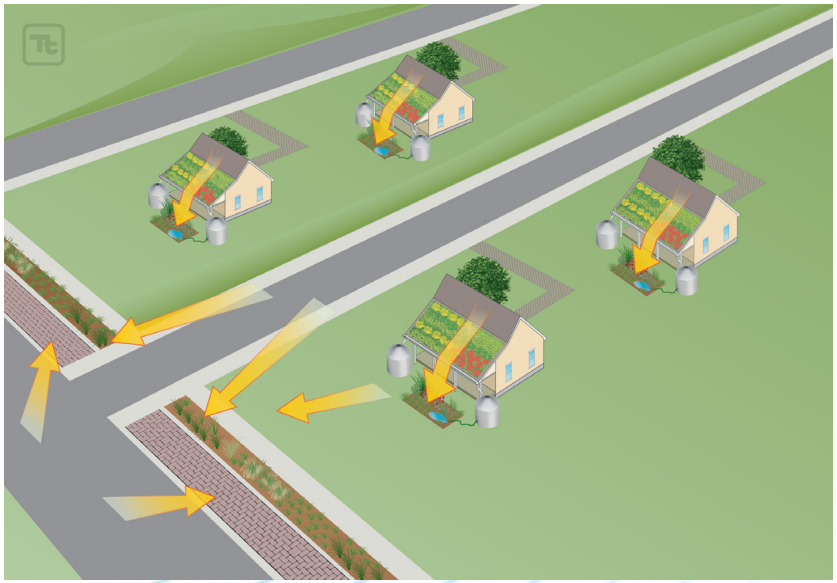
- **Exceedances found during EWMP data analysis**
  - e.g., upper Los Angeles River had exceedances for salts

Control Measures

REGIONAL



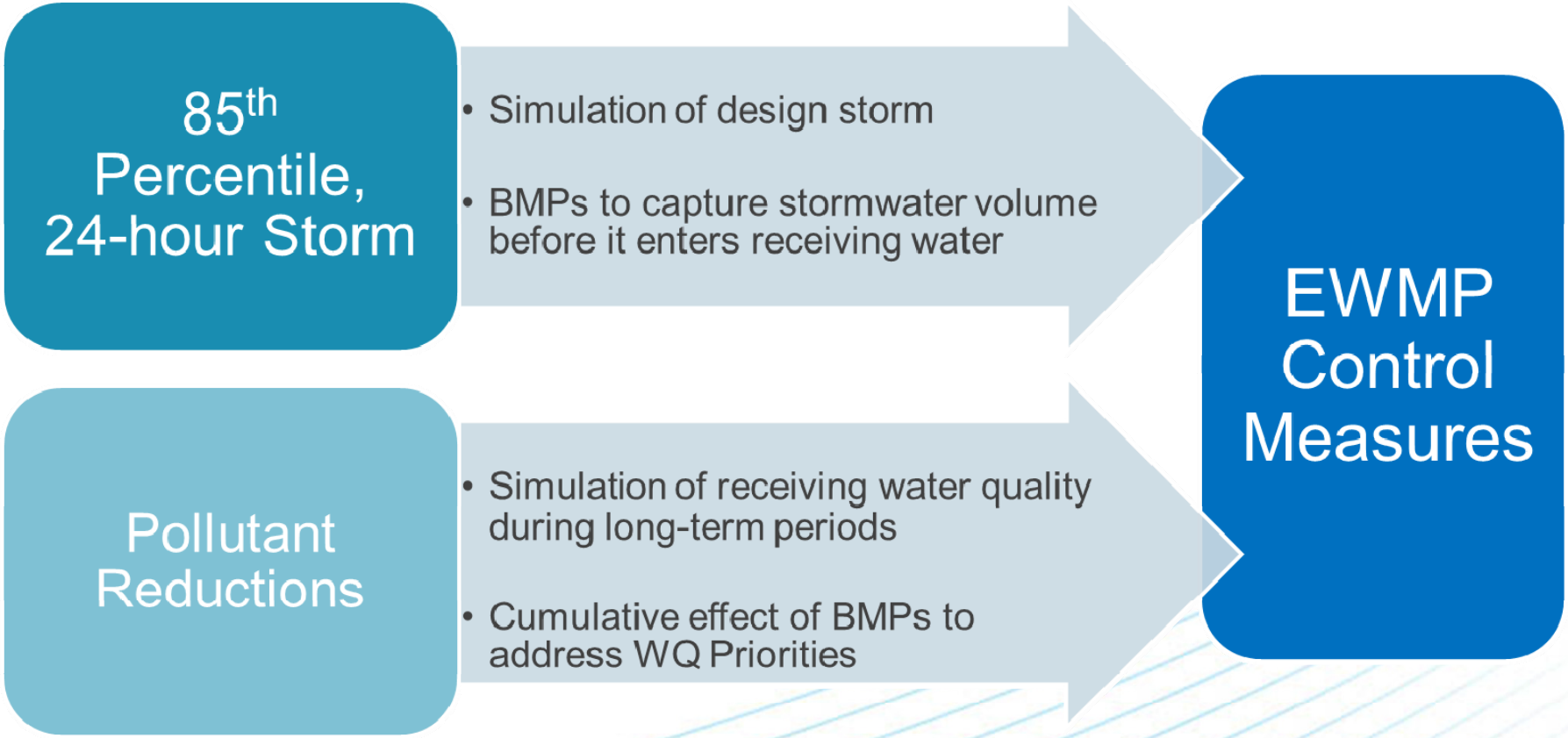
DISTRIBUTED



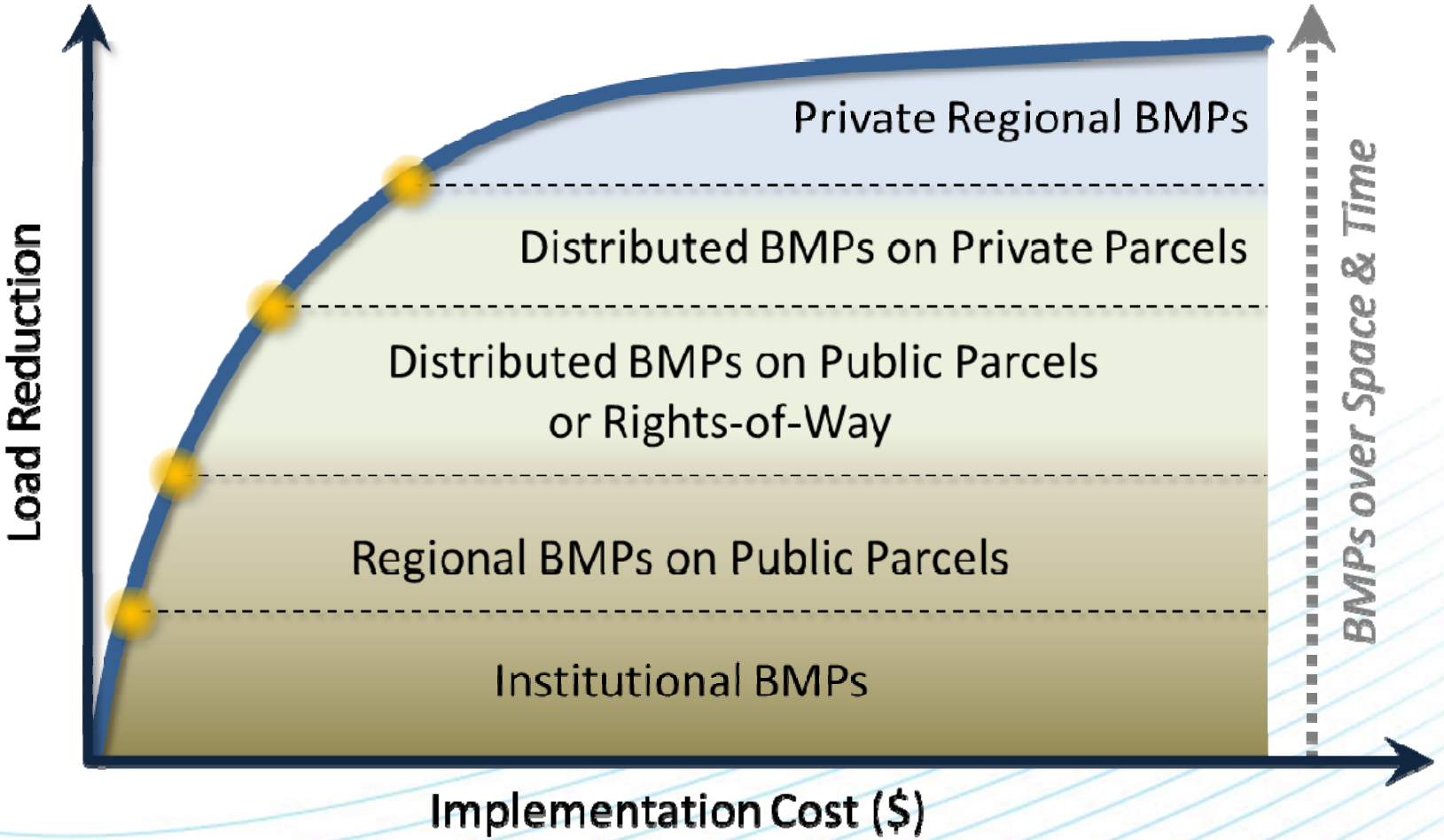
INSTITUTIONAL:

- Enhanced MCMs (e.g., street sweeping)
- Irrigation reduction
- + Many more

Reasonable Assurance Analysis



Sequencing


Private Regional BMPs
Distributed BMPs on Private Parcels
Distributed BMPs on Public Parcels
or Rights-of-Way
Regional BMPs on Public Parcels
Institutional BMPs
Load Reduction
Implementation Cost ($)
BMPs over Space & Time

Scheduling

Los Angeles River TMDLs

TMDL	Weather Condition	Compliance Dates and Compliance Milestone									
		2012	2013	2014	2015	2016	2020	2024	2028	2032	2037
Trash	All	9/30	9/30	9/30	9/30	9/30					
		70%	80%	90%	96.70%	100%					
		20%	40%	60%	80%	100%					
Metals	Dry	1/11					1/11	1/11			
		50%					75%	100%			
	Wet	1/11						1/11	1/11		
		25%						50%	100%		
Bacteria	Wet										3/23
											Final

Outcome of EWMP

- Prioritization of water quality issues
- Identification of control measures
  - Emphasis on Regional EWMP Projects
- Scheduling for implementation
- Estimates of costs
- Process to adapt based on monitoring data and experience gained

Key Reasons for Development of EWMPs

Regulatory

- 2012 Permit Requires Watershed Management Plan Development – EWMPs Fulfill Requirement
- Multiple TMDLs with effluent limits

Practical

- Establishes Watershed Management Approach
- Allows BMP Customization, Targeted Implementation
- Facilitates Resource Sharing

Strategic

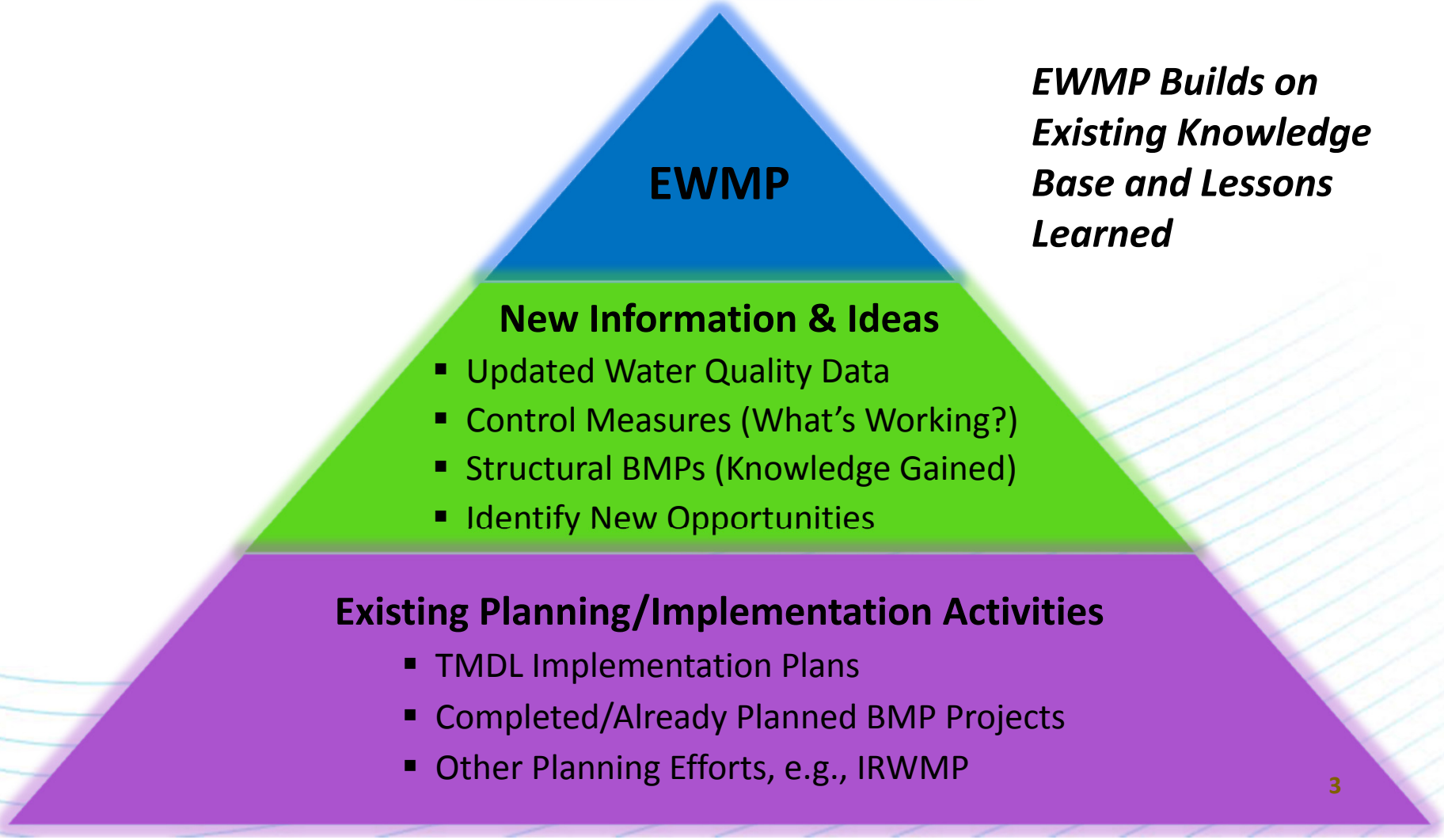
- Supports Integrated Water Management Goals
- Promotes Multi-Benefit Outcomes
- Consistent with Sustainability Initiatives

Broad Range of Potential Benefits from EWMP Implementation



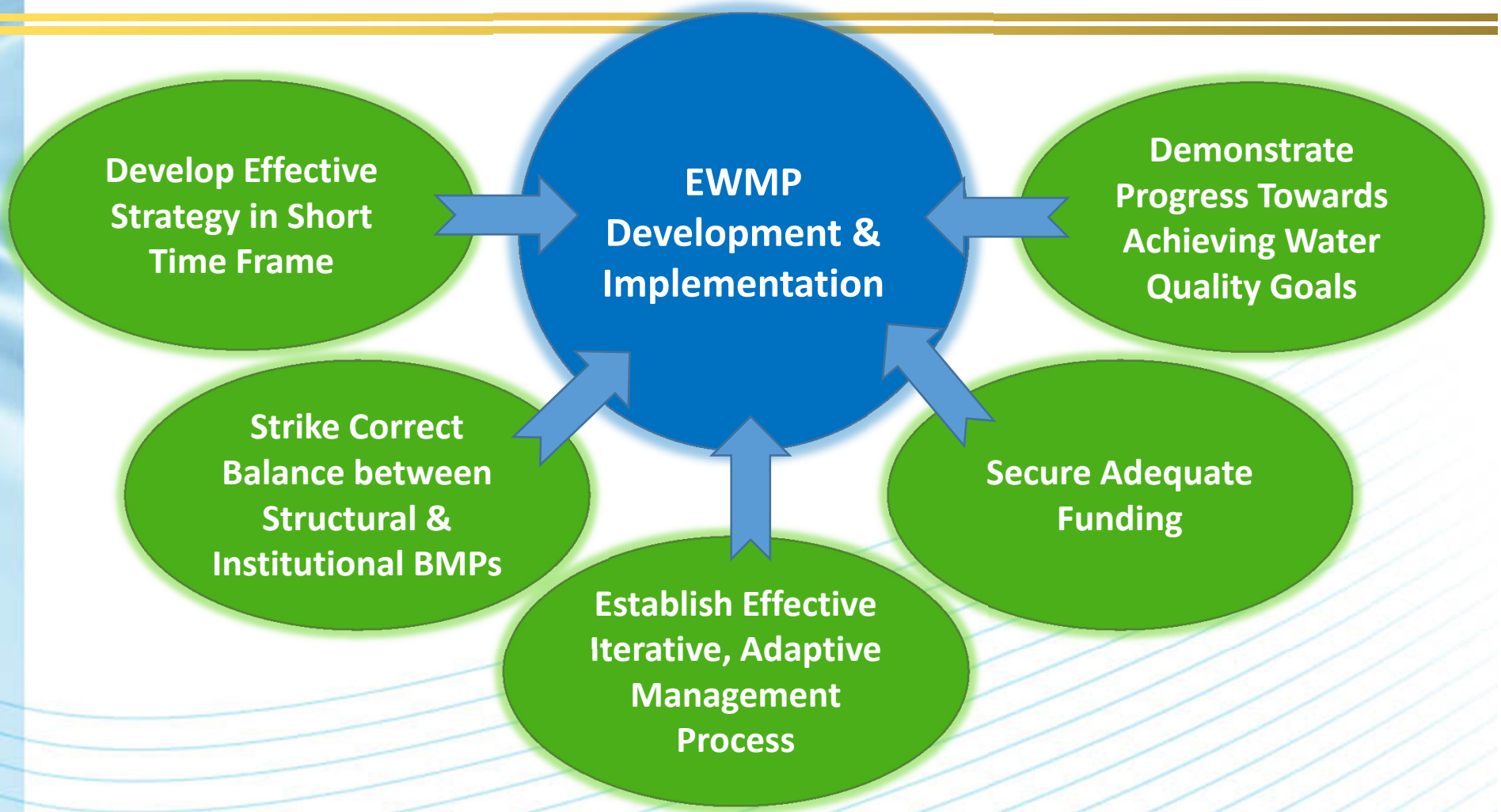
- Improve Water Quality
- Manage Flood Risk
- Promote Water Conservation
- Improve Local Aesthetics
- Enhance Recreation Opportunities
- Support Public Education Opportunities

EWMPs Build on Existing Efforts and Knowledge Gained



EWMP Builds on Existing Knowledge Base and Lessons Learned

Key EWMP Challenges



EWMP Schedule Revisited

- Work Plan
  - Establishes Approach for Developing EWMP
  - Documents Data Compilation and Analysis Conducted to Date
  - Deliver by June 28, 2014

- EWMP
  - Establish Comprehensive Plan that Complies with Permit Requirements
  - Incorporate Multi-Benefit Stormwater Management Projects
  - Deliver by June 28, 2015

Regional Projects

- Review schedule and progress to date
- Describe integration with other planning efforts
- Define types of regional projects
- Provide examples of projects already in place or planned
- Next steps/invite input in breakout sessions

Schedule

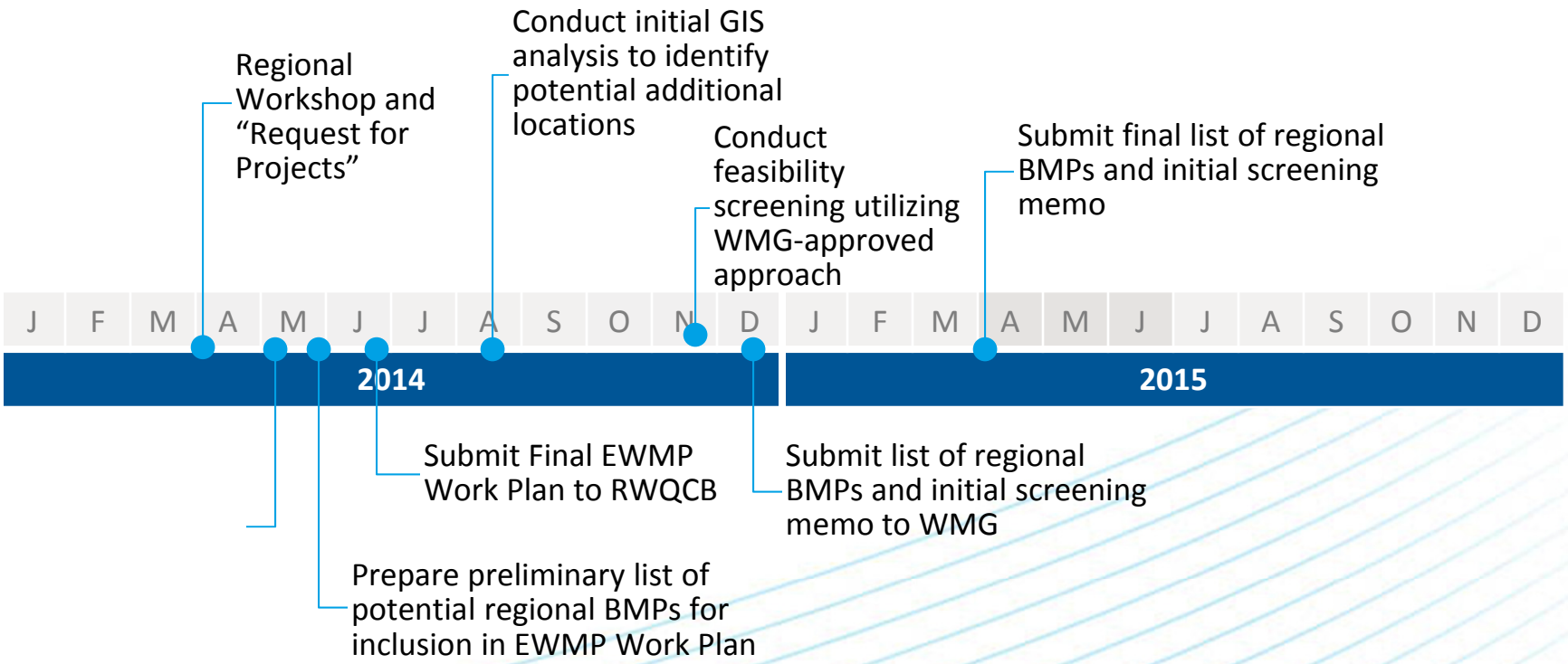
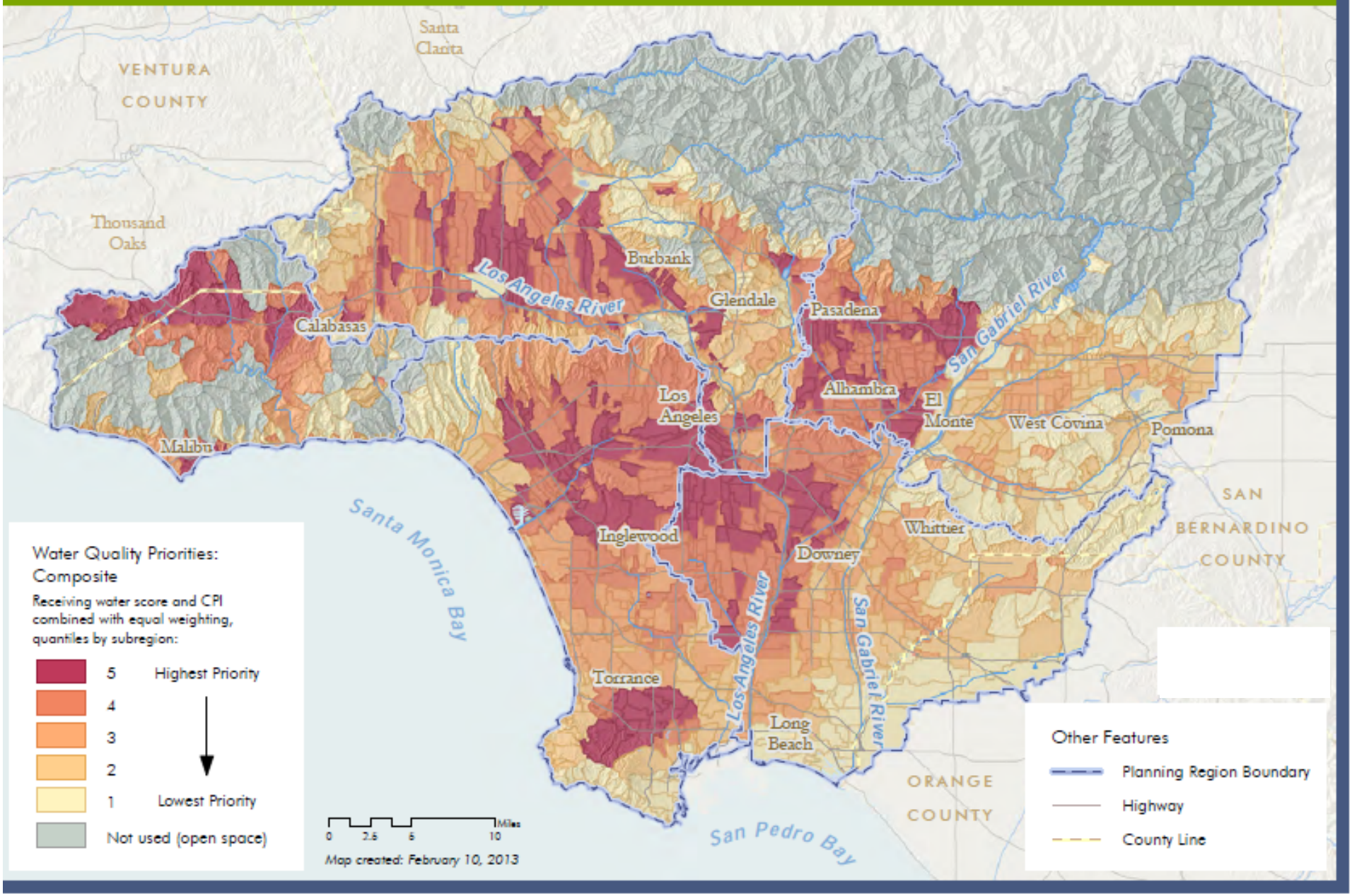
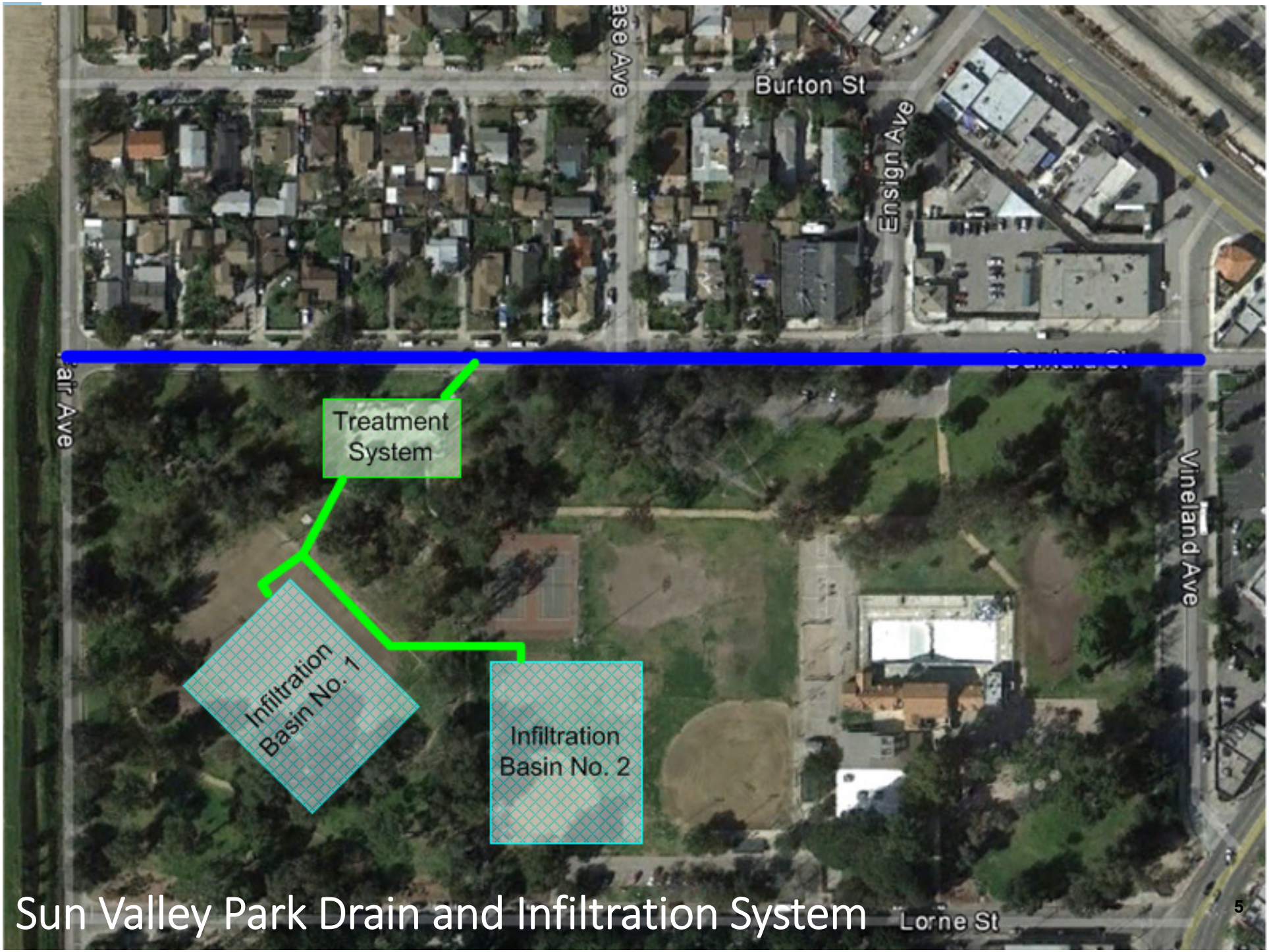

Regional Workshop and "Request for Projects"
Conduct initial GIS analysis to identify potential additional locations
Conduct feasibility screening utilizing WMG-approved approach
Submit final list of regional BMPs and initial screening memo
J F M A M J J A S O N D J F M A M J J A S O N D
2014
2015
Submit Final EWMP Work Plan to RWQCB
Submit list of regional BMPs and initial screening memo to WMG
Prepare preliminary list of potential regional BMPs for inclusion in EWMP Work Plan

Figure 2: Water Quality Prioritization: Composite (Equal Weighting)



Definitions of Types of Projects

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Retention	Surface retention basin, subsurface retention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water
	Low Flow Diversion	Facilities designed divert dry weather flows to the sanitary sewer
Distributed	Site-Scale Retention	Dry retention basin, wet retention pond, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips and vegetated swales)
		Rainfall harvest (green roofs, cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Structural BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

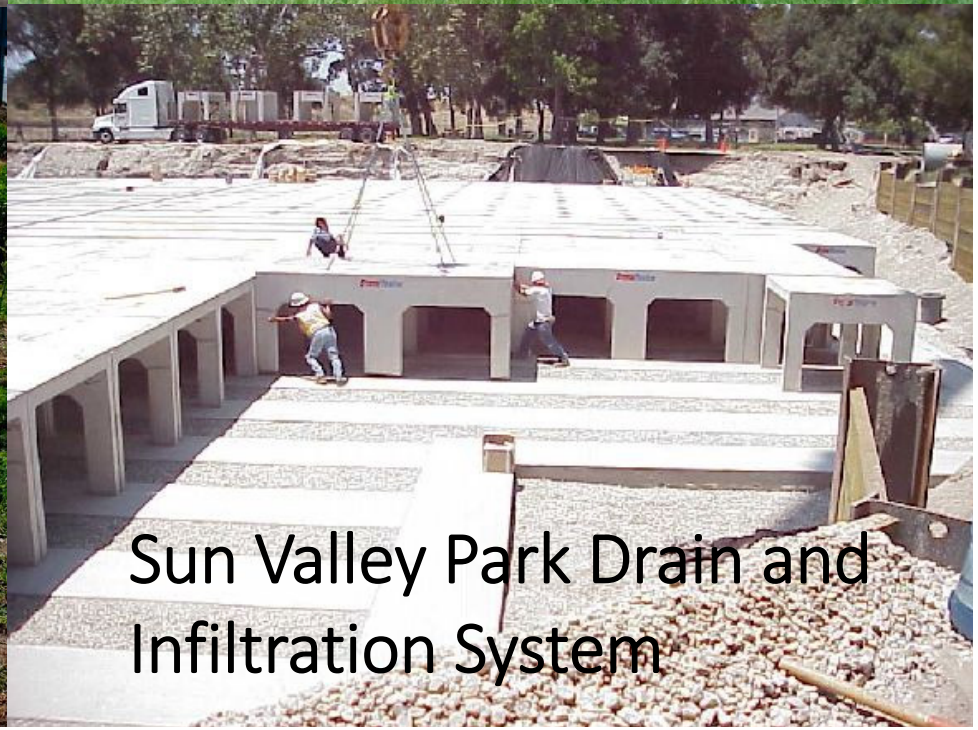


Sun Valley Park Drain and Infiltration System









Sun Valley Park Drain and Infiltration System

Dominguez Gap Wetlands

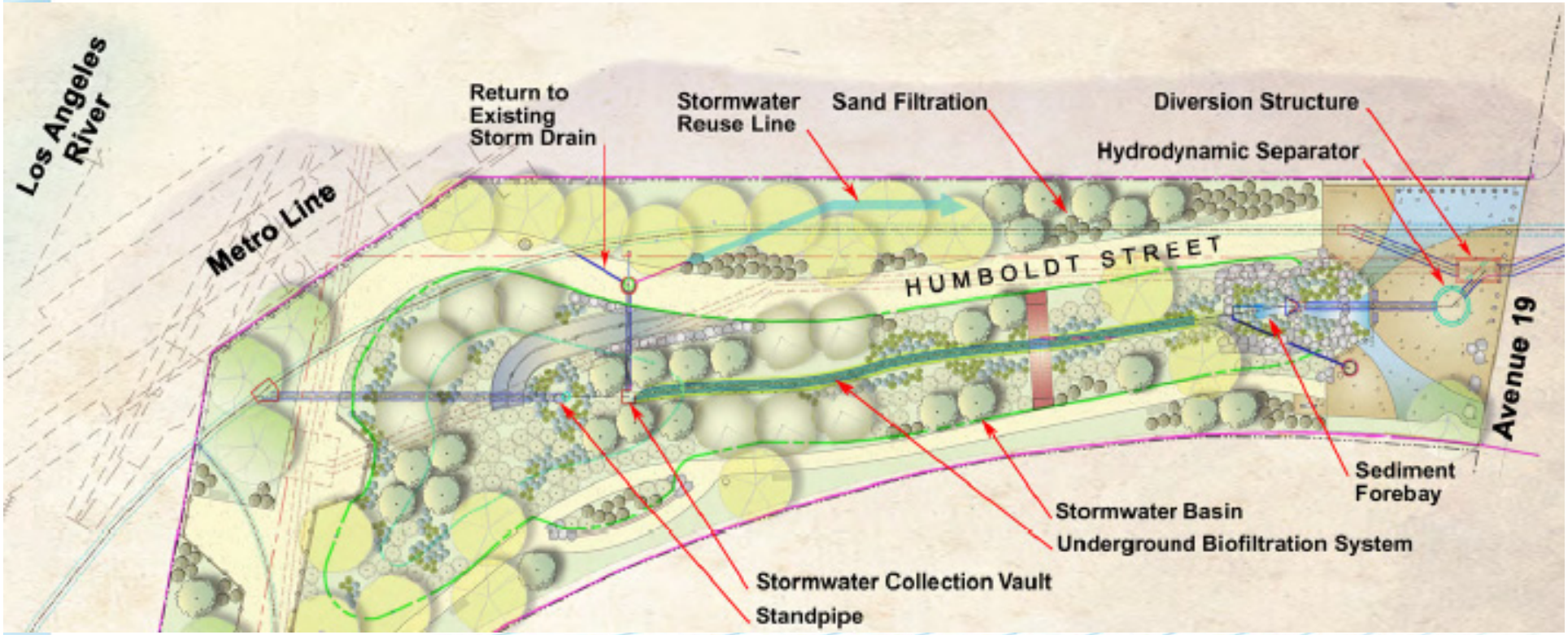




Dominguez Gap Retention Basin - Before


Dominguez Gap Wetlands - After

Ed P. Reyes River Greenway Project



Ed P. Reyes River Greenway Project (Before)

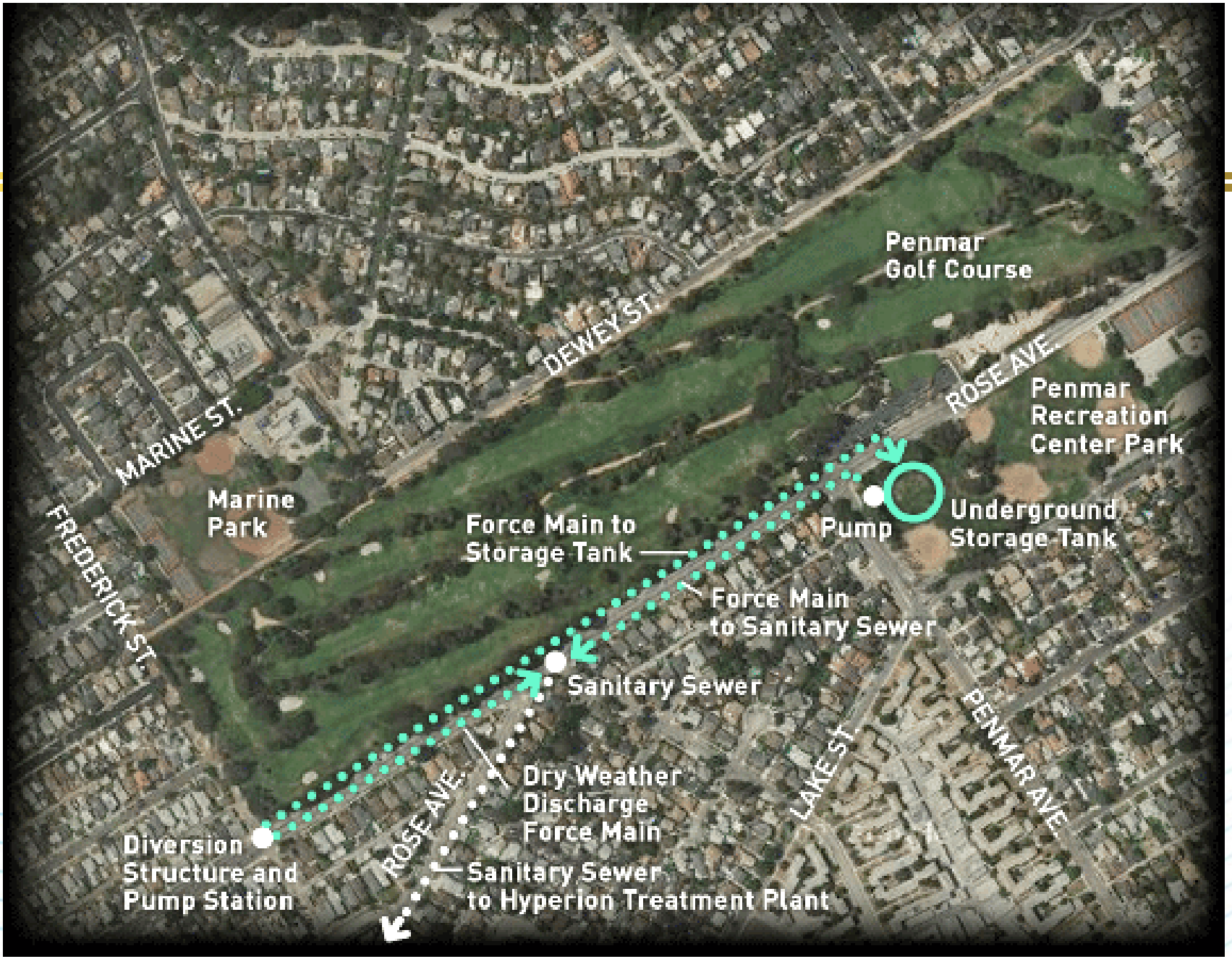


Ed P. Reyes River Greenway Project (After)




Legend
Humboldt Storm Drain
Drainage Area = 135 Acres
Storm Drain
Monitoring Sites
HUMBOLDT ST
ARTESIAN ST
PASADENA AVE
1
2
3
4
5
6
7
8
9
10

Penmar WQ Improvement Project



Hermosa Strand Infiltration Trench Project

Bacteria TMDL compliance (Santa Monica Bay)

Heavily used recreational beach

Dry weather and low flow wet weather

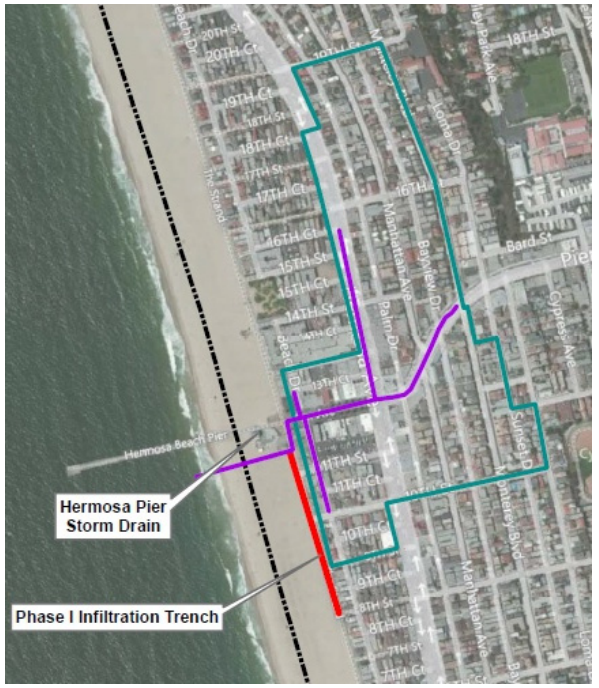
76-acre drainage area

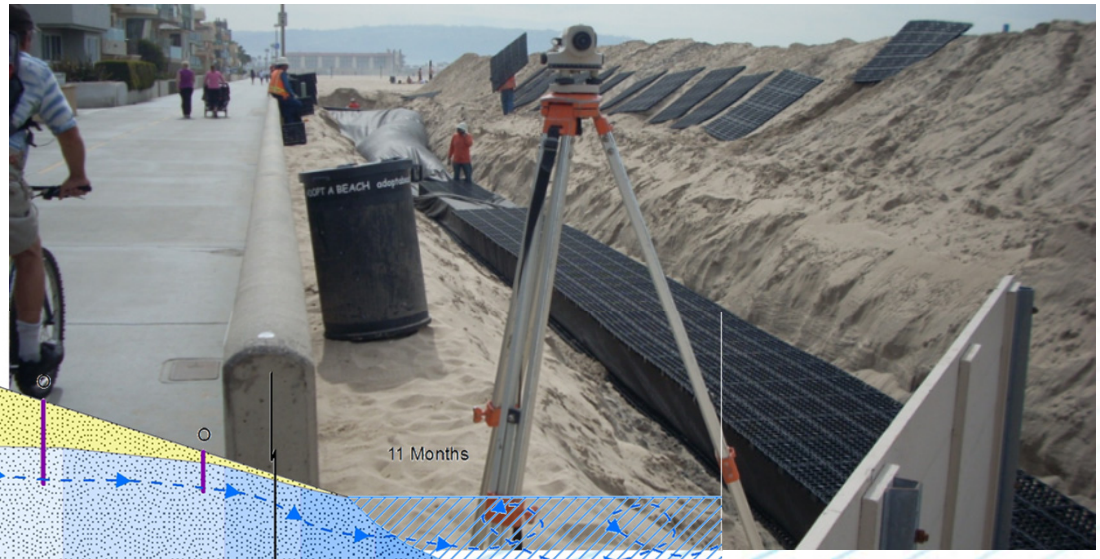
Groundwater monitoring demonstrated bacteria treatment via combined unsaturated/saturated natural sand filtration

Investigating long-term potential for design storm capacity accounting for sea level rise scenarios









Clean Water State Revolving Fund

Water Boards


Tujunga Wash - Before

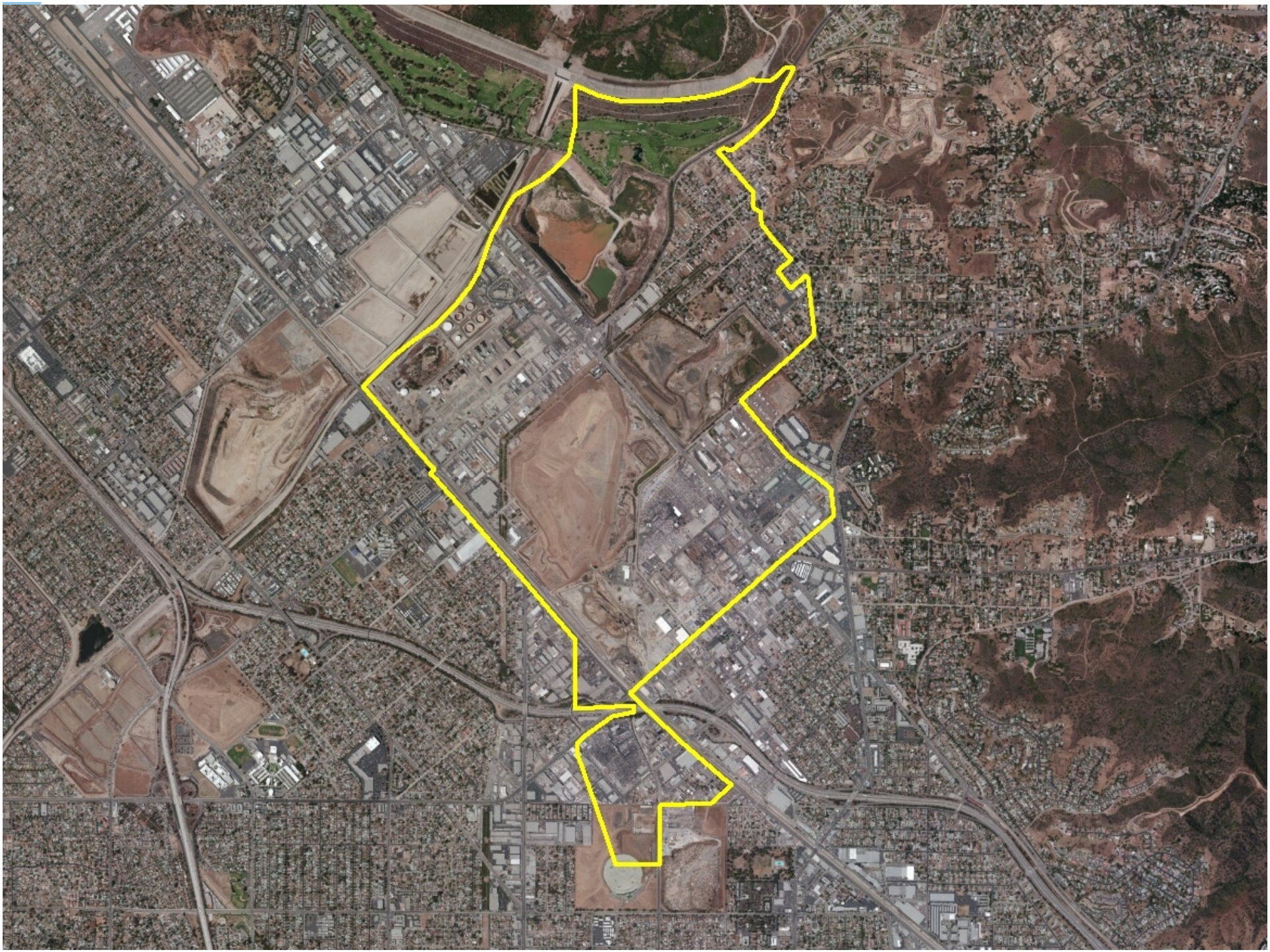

Tujunga Wash - After

Strathern Wetlands Park - Before



Strathern Wetlands Park - After



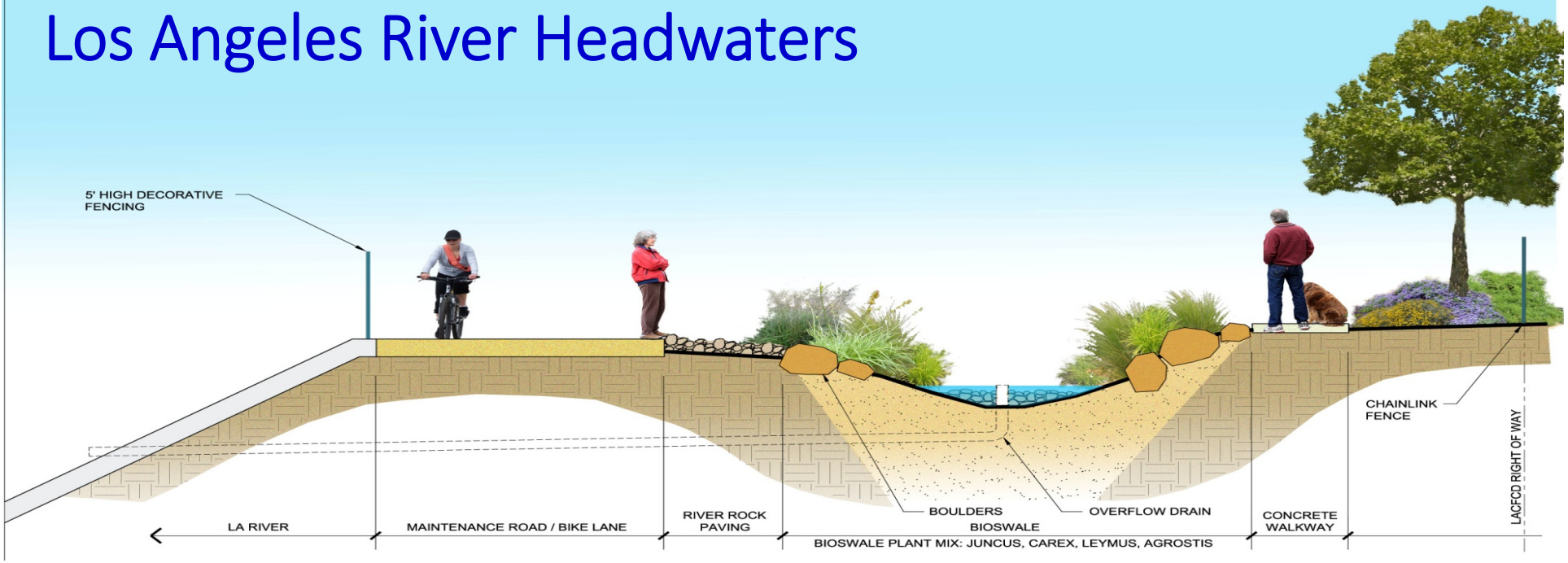



STRATHERN PIT
-10'
-41'
-35'
-20'
-30'
SUN VALLEY PARK

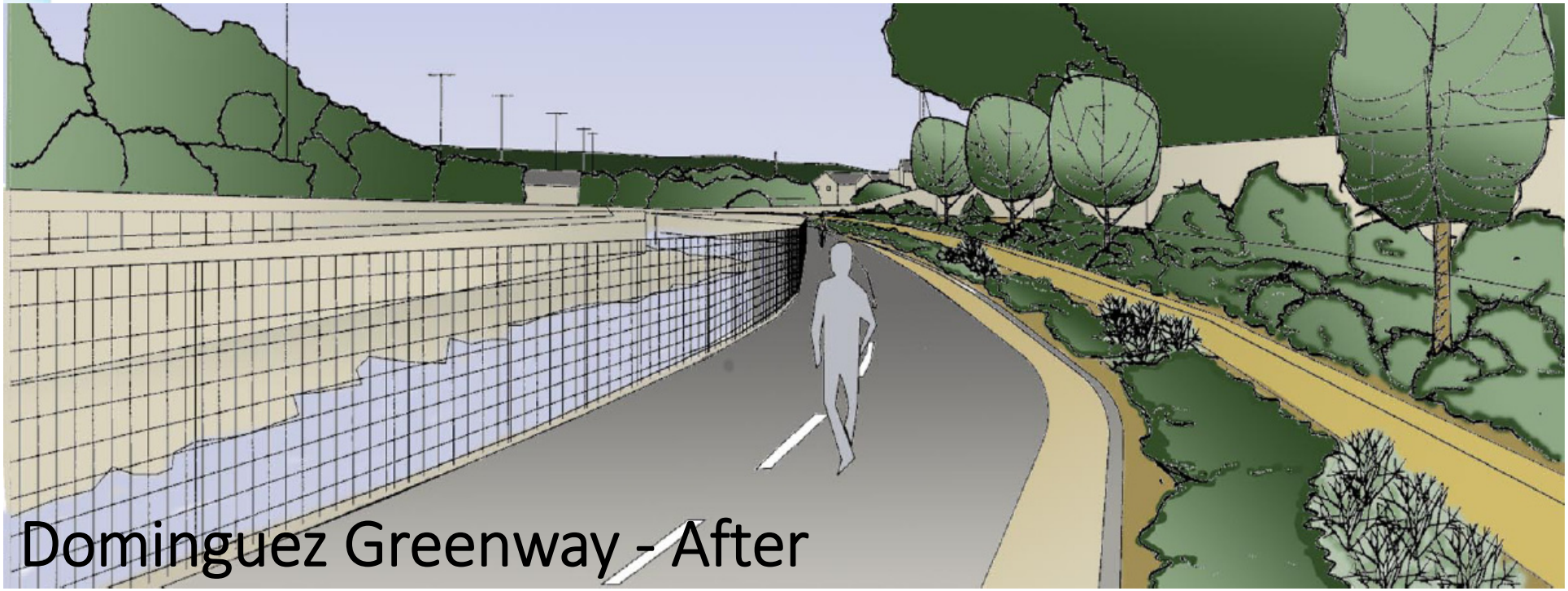




Los Angeles River Headwaters



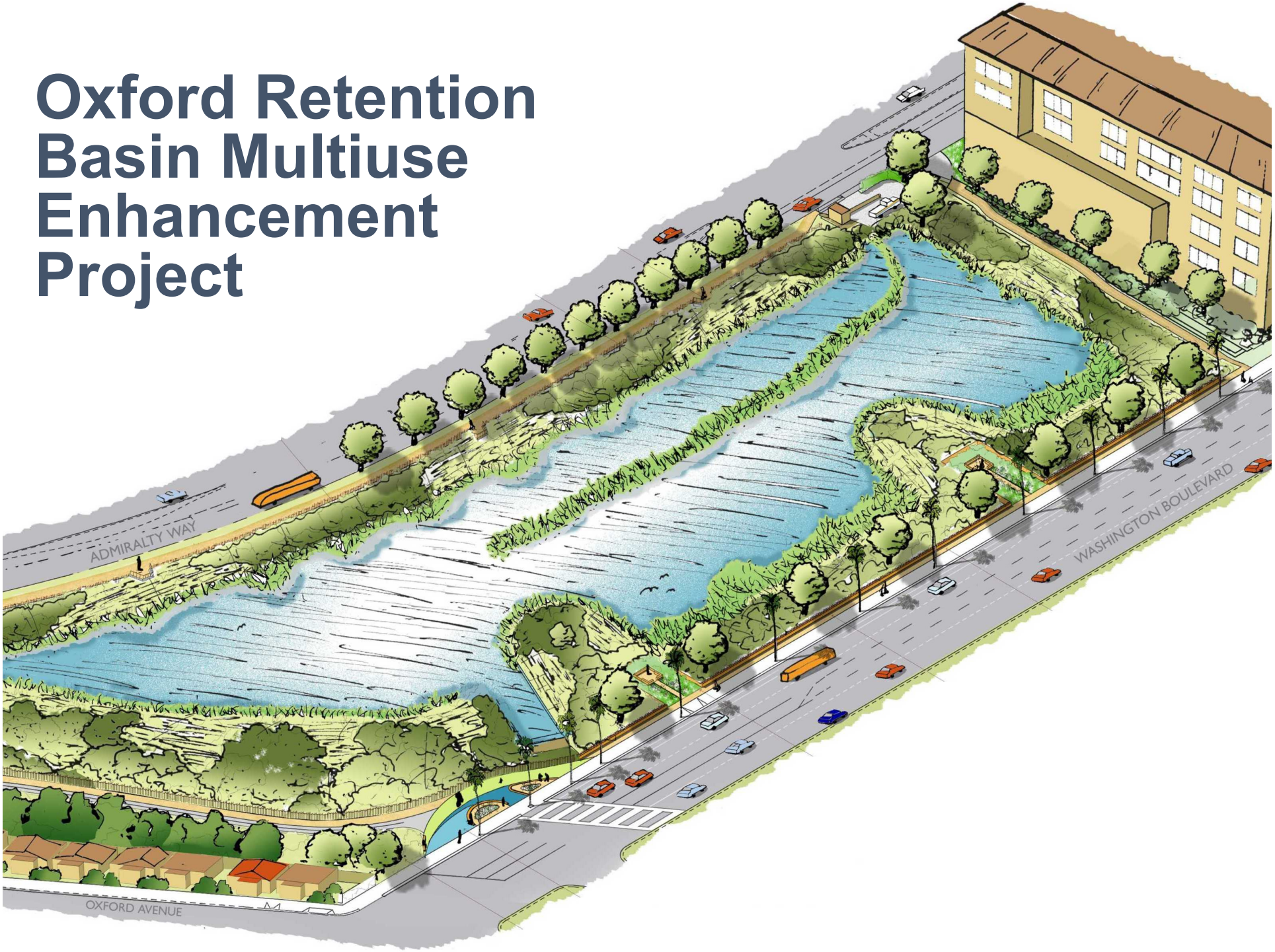

Dominguez Greenway - Before


Dominguez Greenway - After

Oxford Retention Basin Multiuse Enhancement Project



Oxford Retention Basin Multiuse Enhancement Project



Marina del Rey - Parking Lot 7



Next Steps

- Attend watershed breakout sessions today
- Get involved
- Submit your ideas - July 2014
- WMGs to Review Projects and Initial Screening – Aug – November 2014
- WMGs to Prepare Draft Final List of Projects – Dec 2014