

Item 6 - Appendix E

Response to Comments

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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**2016 Proposed Revisions to the Clean Water
Act Section 303(d) List of Impaired Waters
for the San Francisco Bay Region**

Response To Comments

April 5, 2017

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STAFF RESPONSE TO COMMENTS ON THE STAFF REPORT AND PROPOSED REVISIONS TO THE 303(D) LIST

We received eight comment letters during the public comment period, which began on February 10, 2017, and closed on March 13, 2017. The comments from these eight letters and our responses are presented here.

Comment letters received:

1. Alameda Countywide Clean Water Program
2. Bay Area Clean Water Agencies
3. Center for Biological Diversity
4. Earth Law Center (and other organizations)
5. San Francisco Public Utilities Commission
6. Santa Clara Valley Urban Runoff Pollution Prevention Program
7. Santa Clara Valley Water District
8. Western States Petroleum Association

Comment Letter 1: Alameda Countywide Clean Water Program

Comment 1.1: The commenter does not agree that Arroyo Las Positas should be listed for toxicity and provided the following rationale: “Two of the three sites for which toxicity data are available drain areas of the Livermore Valley characterized by special alkali-saline soils that can be expected to elevate adjacent waterbody levels of electrical conductivity (EC). A 2007 SWAMP study identified 1500 microSiemens per centimeter as an EC limit for *Selenastrum capricornutum* in standard toxicity tests and recommended that sample waters exceeding this EC level be tested against high EC controls of similar salinity to differentiate actual toxicity from reductions in growth due to elevated EC. This protocol was not in effect for the data collected in 2001 and 2002. Specific conductance exceeded 1500 microSiemens per centimeter in three of the five samples that showed significant *S. capricornutum* growth reductions in laboratory tests. It is highly likely that the algae growth results for up to three samples would be reported as not significantly toxic under the updated testing guidelines. Thus, the SWAMP data do not present a reasonable case for this proposed listing.”

The commenter presents a compelling rationale concerning the quality of the data on which the proposed listing is based. Water Board staff has reviewed the 2007 SWAMP report cited by the commenter and the 2013 memo from the SWAMP Toxicity Workgroup. Staff agrees that at least three of the four exceedances of the evaluation guideline are based on unreliable data due to elevated EC and the absence of high EC controls. Therefore, we have modified our initial listing recommendations and do not recommend listing Arroyo Las Positas for toxicity. Arroyo Las Positas is already on the 303(d) List for other pollutants.

Comment 1.2: “The proposed indicator bacteria listing for Oakland Inner Harbor is based on data collection targeting locations where one would expect elevated levels of indicator

bacteria rather than representing the waterbody as a whole. Therefore, this dataset should not be used to list this waterbody as the data do not meet Section 6.1.5.2 of the 303(d) Listing Policy. In addition, replacement of old sanitary sewer lines and sewer laterals is already being required by consent decree covering East Bay Municipal Utility District (EBMUD), Oakland, and other cities in the EBMUD service area. Thus, the impairment is already being adequately addressed. Therefore, if this water body is listed despite the lack of spatial representativeness, it should be listed in category 4b – Water Quality Segments Being Addressed by Actions Other than TMDLs.”

Water Board staff share the concerns about how the sampling locations were chosen. The data collection effort was explicitly focused on assessing water quality in the vicinity of storm drains. However, the observed water quality was poor all throughout the sample collection period with over 80% of all samples at all three locations exceeding the applicable water quality objectives for enterococcus. The consistently poor water quality at the three sampling locations may not be perfectly representative (spatially) of water quality throughout Oakland Inner Harbor, but the data suggest that water quality would likely be poor at other locations more distant from storm drains that were not sampled during the data collection efforts. Moreover, contact recreation occurs in this waterbody (kayaking and rowing are common) at locations similar to those represented by these data.

At this time, staff cannot confirm that the efforts suggested by the commenter to control sources of indicator bacteria are sufficient to address adequately the impairment. Staff must follow a more rigorous process required by the U.S. EPA¹ to document the adequacy of efforts before recommending inclusion in Category 4b. This evaluation will need to take place in a subsequent listing round.

Comment Letter 2: Bay Area Clean Water Agencies

Comment 2.1: “The Water Quality Control Policy for Developing California’s Clean Water Act Section 303(d) List does not include a provision for retiring data when considering which pollutants to add to the list. However, the data that are used to generate the new proposed 303(d) listings are generally at least ten years old. For example, the new heptachlor listing for the South San Francisco Bay is based on fish tissue and water column concentrations from a data set that ranges from 1993 to 2008. POTWs began their industrial pretreatment programs in 1989, and since then there has been a marked improvement in effluent quality. Furthermore, a recent search of the Department of Pesticide Regulation database shows that heptachlor is not an active ingredient registered in any product at this time. Since the purpose of the 303(d) list is ostensibly to identify contaminants that will be targeted for management action, it would make sense to use data that is no older than a decade.”

¹ *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act.* <https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf>

We appreciate the concerns raised by the commenter, and we re-evaluated the available data and applicable thresholds. We recommend not listing for heptachlor epoxide in the South San Francisco Bay. We applied the modified Office of Environmental Health Hazard Assessment (OEHHA) Advisory Tissue Level as a fish tissue threshold and there were no exceedances. Advisory Tissue Levels, while still conferring no significant health risk to individuals consuming sport fish in the quantities shown over a lifetime, were developed with the recognition that there are unique health benefits associated with fish consumption and that the advisory process should be expanded beyond a simple risk paradigm in order to best promote the overall health of the fish consumer. Staff acknowledges that water quality assessment sometimes relies on older data and that there is no provision in the Water Quality Control Policy for Developing California's Clean Water Act (CWA) Section 303(d) List (Listing Policy) for retiring data *solely* on the basis of age. Staff must have a reason to exclude older data as not being representative of current conditions. There are circumstances where one would want to restrict attention to newer data – for example if there is a change in water quality due to implementation of a control measure or restoration effort. Interpretation of the policy leans towards conducting an assessment where there are available data, even if the data are older.

Comment 2.2: The commenter raises concerns about listing Bay segments for sediment toxicity. They provide the following comment about listing for toxicity in general: “Toxicity is an effect, rather than a pollutant, so it does not make sense to add it to a list that is used to identify pollutants for which Total Maximum Daily Loads are to be developed. Toxicity itself cannot be given a waste load allocation. The purpose of the toxicity test is to provide a diagnostic tool for the identification of a toxicant. For example, if further investigations show that pesticides are causing toxicity, then the pesticides themselves should be listed and controlled, not the toxic effect.”

There are many pollutants covered by the Listing Policy that may be viewed the same way as toxicity. For example, low dissolved oxygen concentrations and high and low pH are generally water quality conditions caused by some other pollutant (e.g., nitrogen, phosphorous). We often list waters for low dissolved oxygen because of its direct relationship to aquatic life beneficial uses without knowing all the details of what is causing the observed effect.

Fundamentally, the purpose of the 303(d) water quality assessment is to identify waters that are not supporting beneficial uses. To do this, we compare available data to numeric thresholds that relate to the beneficial uses of the water body. The Basin Plan has a narrative water quality objective for toxicity, and the evaluation guideline (test organism survival less than 80%) is a scientifically appropriate numeric interpretation of the narrative objective. In addition, the Listing Policy requires a water segment to be placed on the 303(d) List “if the water segment exhibits statistically significant water or

sediment toxicity,” whether or not the source of the toxicity is known (Listing Policy, § 3.6, at p. 5.). The CWA requires states to assess the quality of waters with respect to beneficial uses and not restrict our attention to those in which we already know the identity of the pollutant that may be causing the impairment.

While we are proposing this listing be sustained in the final set of listing recommendations, we agree that a Total Maximum Daily Load (TMDL) for the Bay is not warranted. The only other possibility would be to list as a Category 3 water (insufficient information to determine beneficial use support, but data indicate that uses may be threatened). We have a long history of working through the Regional Monitoring Program (RMP) to address information about sediment toxicity in the Bay and have not identified to-date the cause of toxicity; we have found the issue to be a perplexing one. As a followup to this listing recommendation, we have initiated additional discussions through the RMP and, regardless of the listing category, will continue to figure out our next steps to resolve the issues (see response to comment 2.3). Nonetheless, we feel we are obligated to identify the impairment based on the available toxicity data.

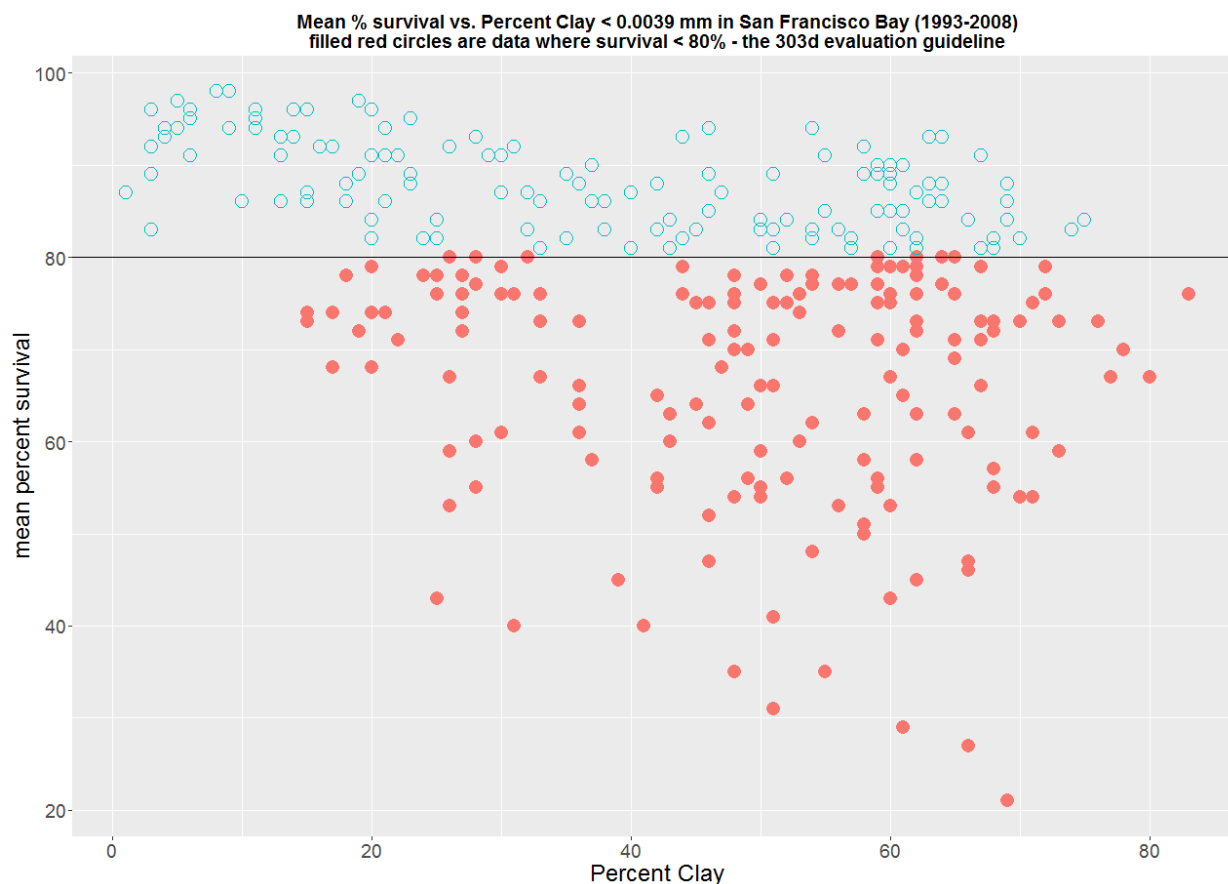
Comment 2.3: “Observed toxicity effect may also be unrelated to the presence of a toxicant. The data used to generate the listings in each segment of the San Francisco Bay showed significant toxicity in sediments, but very little toxicity in the water column. The 10-day survival toxicity test with the amphipod *Eohaustorius estuarius* is the primary sediment test protocol used in the Regional Monitoring Program and the State Water Resources Control Board’s Sediment Quality Objective (SQO) program. In 2014, the Regional Monitoring Program conducted a study² looking at the response of *E. estuarius* to kaolin clay particles in sediment. The results of the study showed that clay concentrations in the sediment reduced the survival rates of this species, and the effect was particularly pronounced in larger organisms. Therefore, it is probable that at least part of the observed toxic effect observed was due to interference by clay particles in the sediment itself, rather than a chemical toxicant.”

We agree with the commenter that the observed toxicity is sediment toxicity, not water column toxicity. We also agree that the clay effect on the test organism should be investigated and accounted for in future data collection. Despite this possible confounding factor, the observed sediment toxicity was so widespread and frequent that we find it likely that a large portion of the observed toxicity is due to a toxicant and not the clay effect on the test organism. The figure below was prepared using data evaluated for the current 303(d) assessment collected in San Francisco Bay³ from 1993

² *The effects of kaolin clay on the amphipod Eohaustorius estuarius*, Brian Anderson, Bryn Phillips, and Jennifer Voorhees Dept. of Environ. Toxicology, University of California, Davis May 5, 2015 SFEI Report No.: 755, See http://www.sfei.org/sites/default/files/biblio_files/755_Anderson%20et%20al_Clray%20Effects_2015%20Final%20Report.pdf

³ Data combined from Suisun Bay, San Pablo Bay, Central San Francisco Bay, South San Francisco Bay, and Lower San Francisco Bay.

through 2008. The figure shows the mean survival of the test organism (mainly *Eohaustorius estuarius*) plotted against the percent of clay associated with the sample.



The horizontal line at 80% survival indicates the survival level below which the sample was considered an exceedance of the evaluation guideline. The data falling below this level are colored red (filled circles) and considered a toxic result. There are numerous exceedances of the evaluation guideline even for relatively low (below 40%) clay content, and survival does appear lower at higher clay concentrations. Lower rates of survival at higher clay content could be associated with higher contaminant exposure to the test organism due to the increased surface area for contaminant adsorption on smaller sediment particles in high clay environments. Alternatively, some of these low survival data at higher clay concentrations could also be due to the phenomenon mentioned by the commenter. We do not have information on the size of the test organisms to assess the degree to which some portion of the observed toxicity at higher clay concentrations might be caused by the clay particles adversely impacting the larger amphipod test organisms.

The Water Board and other RMP stakeholders are aware of the information in the paper cited by the commenter, and we will be working together with stakeholders to ensure

that future sediment toxicity data are collected in a way to minimize the possible confounding effect of the clay impact on the test organism.

Understanding sediment toxicity and effects on benthic dwelling organisms in marine and estuarine environments has long been the focus of investigation both in San Francisco Bay and statewide. The State Water Board has adopted sediment quality objectives (SQOs) that take into account information about sediment toxicity, sediment chemistry, and the diversity and abundance of benthic-dwelling organisms. Based on the results for each of these three legs of the triad, each sampling location in the Bay can be assigned to one of five categories of degree of impact (unimpacted, likely unimpacted, probably impacted, likely impacted, and clearly impacted). The 2007 Pulse of the Estuary⁴ reported on initial results of applying the SQO approach to San Francisco Bay. In the figure published in the Pulse, most of San Francisco Bay sampling locations fell into the “possibly impacted” and “likely impacted” categories. The degree of impact was generally higher in Lower San Francisco Bay and South Bay. We will plan on reviewing this information in more detail to see if it is possible to refine the impairment listing in the future.

At this time, we do not find sufficient grounds to reject the preponderance of available data based on the possible suspicion that some (likely) small portion of the data may be compromised due to the clay effect. When assessing water quality in subsequent assessments, Water Board staff will take into consideration what we now know about clay impacts on the test organism in weighing the reliability of newer data (that removes the confounding effect) against that of older data. We will also evaluate the need to assess different organisms and to evaluate whether some portions of the Bay warrant specific listings, similar to the toxic hot spot listings that already exist, rather than whole Bay segments.

Comment Letter 3: Center for Biological Diversity

Comment 3.1: “The proposed integrated report found several harbor, bay, and estuarine water bodies throughout the SFBB may be threatened by low pH, but were classified as Category 2. However, we urge you to acknowledge that ocean acidification is already affecting the SFBB for these waters.”

There were very few exceedances of the Basin Plan’s pH objectives (either low or high pH) for waterbodies for which data were available. Nearly all the instances in which pH objectives were not met were in marinas and not in the open bay. The excursions were both for high pH and low pH and were not persistent through time, suggesting that the low or high pH events were likely due to local water quality conditions or discharges.

⁴ http://www.sfei.org/sites/default/files/biblio_files/Pulse2007_full_report_web2.pdf

We also acknowledge that our current objectives for pH may not be appropriate for use in assessing condition with respect to ocean acidification. A workshop held in October 2016 at Stanford identified pH as one of the water quality objectives needing modification.

http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/961_OceanAcidificationSettingWaterQualityGoals.pdf

Comment 3.2: “The San Francisco Bay Regional Water Quality Control Board should acknowledge that ocean acidification driven by atmospheric carbon dioxide deposition is happening in waters of the SFBB.”

The Water Board and its stakeholders are concerned about the possibility of ocean acidification impacts in San Francisco Bay. In fact, the RMP held a workshop⁵ on October 19 and 20, 2016, (held in association with the Stanford workshop mentioned above) to review the available evidence and make recommendations for monitoring to assess possible acidification in San Francisco Bay. The two key findings of the workshop were that 1) ocean acidification is impacting estuaries along the Pacific Coast, but that 2) chemical and biological data on acidification threats and impacts are lacking for San Francisco Bay. The interdisciplinary group of experts at the workshop provided several specific recommendations for future work in this area. First, they recommended that we continue to synthesize existing data from the Bay to develop conceptual models and use the existing water quality models for the Bay and the Gulf of the Farallones to identify locations of the Bay and times of year when exposure to low pH, poorly oxygenated water is possible. Second, we should coordinate amongst various monitoring efforts to identify opportunities to add ocean acidification monitoring to existing monitoring programs. Third, we should implement a carbonate chemistry monitoring program on existing ship-based monitoring programs. The RMP is engaged in some initial work to address the workshop recommendations.

Comment 3.3: “Ocean acidification should be included in the final integrated report. Coastal, estuarine, and bay waters throughout the SFBB may already be experiencing the harmful effects of ocean acidification. Increasing concentrations of atmospheric carbon dioxide and the contribution of pollution, sedimentation, and inadequate watershed management can substantially amplify the fluctuating pH conditions in these waters making them more corrosive. Thus, the estuarine and coastal ecosystem of the SFBB may further suffer due to ocean acidification.”

While we are concerned about present or future possible impacts to beneficial uses caused by ocean acidification, we must have stronger evidence than is presently

⁵ Wheeler, S., Knight, E., Trowbridge, P., Shimabuku, I., Nielsen, K., Largier, J., Sutula, M., Valiela, L., Nutters, H. 2017. Proceedings of the Workshop on Monitoring for Acidification Threats in West Coast Estuaries: A San Francisco Bay Case Study. Workshop conducted October 19-20, 2016, at the San Francisco Estuary Institute, Richmond, CA. Workshop summary prepared by the California Ocean Science Trust, Oakland, CA.

available in order to justifying listing any waterbody as impaired due to this phenomenon. We list water bodies based on data demonstrating the existence of beneficial use impact – rather than listing based on the vulnerability of a waterbody to suffer impacts or listing based on the presence of a phenomenon that could lead to such impacts. Another option is to propose listing based on evidence of a worsening water quality trend, but there are no readily available data for such an analysis. We generally list waterbodies when there is already evidence of the impacts in harming beneficial uses.

For water quality assessment, the Water Board must follow the Listing Policy, and, in the absence of specific data illustrating the impacts in San Francisco Bay, it must utilize a weight of evidence approach or trends evaluation, consistent with Section 3.10 of the Listing Policy, using San Francisco Bay-specific data. There are not sufficient data available (i.e., submitted in response to 2010 data solicitation) to conduct this assessment at present. The submitted studies (citations) generally discuss potentially deleterious effects of atmospheric deposition on ocean acidity and negative impacts to aquatic organisms such as shellfish and zooplankton. None of the studies document specific water quality impairments to waterbodies in the San Francisco Bay Region, and thus the data and information submitted by the commenter are inapplicable and/or inconclusive for the purposes of making a listing decision. See *Ctr. for Biological Diversity v. U.S. E.P.A.* n(2015) 90 F. Supp. 3d 1177, 1206 (determination that data regarding ocean acidification could not be extrapolated to a different location with different water quality conditions to support a 303(d) listing decision was not arbitrary and capricious).

Comment 3.4: “Current water quality criteria for pH are inadequate to address ocean acidification. The estuarine/marine habitat pH criterion in the Water Quality Control Plan for the San Francisco Bay basin is inadequate to protect aquatic life. Based on the scientific available information on the deleterious effect of ocean acidification on marine life in estuarine waters, these water quality objectives regarding pH standards are inadequate, because negative effects can be observed at pH levels well within the current range that is considered normal. Thus, the San Francisco Bay Regional Water Quality Control Board should develop new water quality standards for ocean acidification (either numerical or narrative) that better reflect natural variability and potential negative effects of acidification on vulnerable coastal and estuarine species. Even though most pH values of coastal and estuarine/bay waters across the San Francisco Bay basin may fall within the ranges attaining pH numeric standards for California, scientific evidence over the past decade clearly shows that these waters are becoming more acidic, directly compromising the growth and survival of important calcifying coastal and estuarine species.”

The 303(d) listing process is not designed, intended, nor able to change existing water quality standards. Requests to consider modifications to pH objectives are appropriate during review of the California Ocean Plan or during the Water Board’s Triennial Review process.

The commenter seems to suggest that waters in the San Francisco Bay basin have become more acidic over the last decade, but we could find no supporting material in the comment letter to support this specific claim.

Comment Letter 4: Earth Law Center

Comment 4.1: The commenter asks that we list waterbodies based on flow impairment, and is concerned specifically about the Napa River. They focus their comments on our ability to list for a water quality concern without requiring development of a TMDL as follows: “the Staff Report runs afoul of the CWA by ignoring Category 4C entirely for inclusion in either its 303(d) list or its 305(b) report, incredibly reporting that zero water bodies in the San Francisco Bay region are impaired due to altered hydrology. As with other regional water boards, the San Francisco Bay RWQCB appears to rely on the Listing Policy for this decision, which states that the 303(d) list only includes those water segments that require the development of a TMDL. Here, again, the Staff Report assumes an illegally narrow definition of its requirements under the CWA. The Integrated Report is supposed to include both a robust and legally adequate 303(d) list as well as a robust and legally adequate 305(b) report. These requirements are combined; they are not the same. If the State Water Board and Regional Water Boards take the position that pollution-impaired waterways (including flow-impaired waters) cannot be included in the Section 303(d) list, then the Listing Policy – which by definition applies only to the Section 303(d) list – is irrelevant. It cannot be used as an excuse to ignore flow impairments entirely. The state in that case must then turn to its requirements under Section 305(b), which broadly require it to report on water quality, including as impacted by altered flow.”

The Listing Policy provides the decision-making rules (methodology) for interpreting data and information in the context of beneficial uses, existing numeric and narrative water quality objectives, and antidegradation considerations. The Listing Policy requires a defined methodology or water quality objective by which to evaluate any “factor” for listing. The Listing Policy does not include decision-making rules to evaluate hydrologic conditions. The Water Board does not, at this time, have a methodology and water quality objectives or peer reviewed thresholds available to conduct an analysis of flow data or flow alteration information that meets the requirements of the Listing Policy. The Integrated Report listing determinations *must be supported* by documentation that explains the analytical approaches used. This is consistent with the U.S. EPA’s 2005 Guidance for Assessment and Listing (see page 29 and U.S. EPA’s review of a state’s methodology for consistency with the CWA and a state’s water quality standards).

For the current listing cycle pertaining to the State Water Board’s consideration of approving the 2016 Integrated Report, the notice of solicitation was transmitted on January 14, 2010. The deadline for the submission of data and information was August 30, 2010. State Water Board staff examined and reviewed all data that was timely submitted. Data and information submitted subsequent to the deadline is not

considered for purposes of the 2016 Integrated Report for this listing cycle. Based on the assessment of the data and information submitted in response to the data solicitation, staff determined that no waterbodies in the San Francisco Bay Region should be placed in Category 4c during the current assessment cycle. For more information on the approach followed by staff in preparing the Integrated Report for the San Francisco Bay Region (particularly with respect to the issue of flow impairment and Category 4c), please refer to the discussion on pages 9-12 of the [2012 California Integrated Report Clean Water Act Sections 303\(d\) and 305\(b\)](#).

Comment 4.2: “Because Section 303(d)(1)(A) broadly requires identification of impairments regardless of whether TMDLs are needed, the state’s Section 303(d) list should include a robust Category 4C set of listings. State law cannot weaken the requirements of the CWA by artificially limiting the scope of this list.”

CWA section 303(d) requires the identification of impairments of water quality standards and the development of TMDLs to address those impairments within a reasonable time frame. Category 4c of the Integrated Report is not considered to be part of the 303(d) List of impaired waterbodies by either the State Water Board or U.S. EPA. The State Water Board considers waters in Category 4a (a TMDL has been developed), 4b (other regulatory controls obviate the need for TMDL development), and 5 (TMDL needed) to be those on the statewide 303(d) List while U.S. EPA considers only Category 5 waters to be part of the federal 303(d) List.

Comment 4.3: “U.S. EPA issued formal Integrated Report Guidance (i.e., for the combined Sections 303(d) and 305(b) reports) to states and territories in August 2015; in it, EPA specifically addresses the topic of hydrological impairment. The U.S. EPA Guidance clearly states that

If States have data and/or information that a water is impaired due to pollution not caused by a pollutant (e.g., aquatic life use is not supported due to hydrologic alteration or habitat alteration), those causes should be identified and that water should be assigned to Category 4C.

The Guidance specifically references hydrologic alteration as an example of a Category 4C listing. It further references EPA Guidance going back at least to 2006, which similarly said that flow-impaired waters should be identified in the Integrated Report under Category 4C. Again, no reason is given in the Staff Report for ignoring the clear flow impairments throughout the region in light of the CWA, guidance, and state direction.”

At this time, there is no defined methodology and water quality objective or peer reviewed numeric thresholds available to make determinations about flow alterations and the extent to which they impact beneficial uses in accordance with the Listing Policy. Consequently, there is no methodology to determine classification into any 305(b) report category based on flow data or flow alteration information. Please also see the response to comment 4.1.

Comment 4.4: “The SD RWQCB recently adopted an Integrated Report and Staff Report that identified 30 waterway segments for listing in Category 4C, either with a Category 5 pollutant listing or alone.”

Water Board staff developed this Integrated Report and its recommendations consistent with the Listing Policy and the State Water Board Guidance for developing California’s Integrated Report. Staff typically uses a water quality objective (numeric or narrative) to determine if water quality standards are attained. The Basin Plan does not contain a water quality objective for protection of aquatic life from flow alteration. However, in accordance with Section 3.10 of the Listing Policy, there is a methodology to evaluate an antidegradation component of water quality standards by identifying trends of declining water quality in the absence of specific water quality objectives. The data and information provided by the commenter do not satisfy the information requirements of Section 3.10⁶ of the Listing Policy. See also the response to comment 4.9.

Comment 4.5: “California has identified hydrologically impaired waterways in the past. In California, “Pumping” and “Water Diversion” are listed as the sole causes of impairment for Ventura River Reach 4, in the Los Angeles Region. Also in the Los Angeles Region, Ventura River Reach lists for “Pumping” and “Water Diversion,” and Ballona Creek Wetlands is listed as impaired by “Hydromodification,” among other impairments. All three water body segments are listed for these specific flow-related impairments in Category 5.24 California’s history of identifying flow-related impairments under Section 303(d) should be considered precedential.”

California does not have a defined methodology or water quality objective for evaluating the beneficial use impacts from “pumping” and “water diversion” in accordance with the Listing Policy. Please see the response to comment 4.1. Water Board staff developed this Integrated Report and its recommendations consistent with the Listing Policy and the State Water Board Guidance for developing California’s Integrated Report. Regarding the Los Angeles Water Board’s decision to place waterbodies on the 303(d) List (and in Category 5 of the 305(b) Report) for flow-related impairments, it is important to note that Los Angeles Water Board staff placed these waterbodies on the 303(d) List before the adoption of the Listing Policy in 2004. More importantly, there is no supporting documentation or data associated with the fact sheets for these waterbody and pollutant combinations. Consequently, the methodology or reasoning used by the Los Angeles Water Board is not available for evaluation.

⁶ Section 3.10 of the Listing Policy information requirements include: 1. data collected for at least three years; 2. establishment of specific baseline conditions; 3. specification of statistical approaches used to evaluate the declining trend in water quality measurements; 4. specification of the influence of seasonal effects, interannual effects, changes in monitoring methods, changes in analysis of samples, and other factors deemed appropriate; 5. determination of the occurrence of adverse biological response (section 3.8), degradation of biological populations and communities (section 3.9), or toxicity (section 3.6); and 6. assessment of whether the declining trend in water quality is expected to not meet water quality standards by the next listing cycle.

In previous 303(d) List updates, we occasionally identified potential sources, such as groundwater, using our best professional judgement. However, State Water Board staff directed Regional Water Board staff to identify sources on the 2016 303(d) List *only* when a TMDL or other source identification document is available for the waterbody segment and pollutant combination. This methodology provides a consistent and transparent approach to source identification because it does not rely on staff's best professional judgement.

Applying this methodology to the State's 2012 Integrated Report, State Water Board staff revised the potential sources to "source unknown" for all waterbody segment and pollutant combinations (statewide) where no source identification documentation was available. Since revisions to pollutant sources did not affect the 303(d) List status of any waterbody segment and pollutant combination, the revisions did not require approval by this Water Board. In the development of the 2016 Integrated Report, we identified potential sources only for those waterbody segment and pollutant combinations where an approved TMDL or other source identification document is available, consistent with direction from State Water Board staff.

Comment 4.6: "Many states around the country have followed U.S. EPA Guidance and the CWA by properly identifying flow-impaired waterways in their Integrated Reports (in categories 4c and 5)."

Please see the responses to comments 4.3 through 4.5. The Water Board will review and evaluate assessment methodologies for flow impairment employed by other states during the development of the next Integrated Report.

Comment 4.7: "Flow standards are not required to identify hydrologically impaired waterways in Category 4C. Most, if not all, of the states that identify hydrologic (including flow) impairments make those listing decisions based on best professional judgment and the information before them. Flow standards are not required to be developed first. Even the State Water Board has stated that flow listings could be done "based on staff's professional judgment as well as the evidence submitted by the data," and that they "would likely be mostly narrative . . . unless there are specific numeric targets for flow in place." In other words, the state itself has recognized that flow criteria are not necessary for flow impairment listings. ELC has compiled significant information collected on various states' hydrologic impairment listing strategies and would be pleased to provide this additional information if desired."

Water Board staff developed this Integrated Report and its recommendations consistent with the Listing Policy and the State Water Board Guidance for developing California's Integrated Report. Staff typically uses a water quality objective (numeric or narrative) to determine if water quality standards are attained. The Basin Plan does not contain a water quality objective for protection of aquatic life from flow alteration. However, in accordance with Section 3.10 of the Listing Policy, there is a methodology to evaluate an

antidegradation component of water quality standards by identifying trends of *declining water quality* in the absence of specific water quality objectives. The data and information provided by Earth Law do not satisfy the requirements of Section 3.10 of the Listing Policy (see response to comment 4.4). Stream flow is a factor in attaining water quality standards. However, Water Board staff does not have, at this time, a mechanism to move forward with evaluating flow alteration impacts. However, there are efforts to develop flow objectives and criteria in California. The State Water Board's Division of Water Rights staff is currently drafting a manual with the goal of providing a framework to develop regional flow criteria and objectives (personal communication with Division of Water Rights staff).

Comment 4.8: “States, including California, have identified and are identifying flow-impaired waterways in their Integrated Reports not only because the Clean Water Act calls for it and U.S. EPA Guidance reinforces it. They also do so because it makes smart policy sense. If the main problem with a waterway is not temperature or dissolved oxygen but flow, for example, then that information should be available so the best permitting and resource allocation decisions can be made to protect affected waterways.

Identification of flow-impaired waterways is also important because those listings help the public exercise their own responsibility to help improve waterway health. Hydrologic impairment listings also can and should be used in CEQA analyses of proposed projects that could further impact the flow of identified waterways, thus preventing additional damage to already-impacted waterways and fish. ELC has prepared and submitted extensive comments to the state on the numerous policy benefits of properly identifying flow-impaired waterways.”

Please see the response to comment 4.1.

Comment 4.9: “The Staff Report states that “[t]o meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each assessed waterbody into one of five *nonoverlapping* categories based on the overall beneficial use support of the waterbody.” This statement appears to limit the RWQCB to placing water bodies in only one category, an interpretation presumably reflected in the recommendation to include zero listings in Category 4C. This approach is simply incorrect. U.S. EPA has been quite clear that water bodies can be placed into multiple categories, and in fact should be in order to provide the best available information to U.S. EPA and Congress.

U.S. EPA reiterated this point in its joint report with USGS, stating that “EPA’s guidance has noted that assessment categories *are not mutually exclusive*, and waters may be placed in more than one category (for example, Categories 4C and 5).” Accordingly, flow impairments should be reflected in Category 4C *whether or not* there is a pollutant present, the approach taken recently by the SD RWQCB. Otherwise, the state is conflating the Section 303(d) and 305(b) reports rather than combining them, ignoring its Section 305(b) responsibilities in the process. Because the state must comply with *both* Sections 305(b) and 303(d), it must provide information relevant to all categories applicable to a single water body. The Integrated Report does not meet these mandates.”

Water Board staff is aware of the San Diego Water Board’s approach to assign waterbody segments to more than one 305(b) Report category and that U.S. EPA’s 2006 and 2015 Integrated Report guidance (dated July 29, 2005, and August 13, 2005, respectfully) *permits* assignment of waterbodies to multiple categories. However, the use of multiple categories is *not required*, and, in fact, the guidance states that it is optional. The State Water Board staff’s guidance on developing the 305(b) Report for California is to assign waterbodies to a single category. Further, the California Water Quality Assessment Database assigns waterbodies to a single category. Consequently, when State Water Board staff compiles the Integrated Reports for each Regional Water Board into a single Integrated Report for the State, each waterbody segment will be assigned to a single 305(b) Report category. Our Integrated Report does address all requirements of sections 305(b) and 303(d) of the CWA.

Comment 4.10: “Federal regulations state that states must evaluate “all existing and readily available information” in developing their 303(d) lists and prioritizations The San Francisco Bay RWQCB has more than enough data needed to list one or more waterways, and at a minimum the Napa River (non-tidal), as hydrologically impaired.”

We evaluated all readily available information in the development of the 2016 Integrated Report. We reviewed and evaluated the information provided in the context of Water Board priorities and available resources to meet the timeline for the 2016 Integrated Report. Due to a lack of flow assessment guidance and a lack of numeric or narrative flow objectives, we did not formally develop fact sheets to include all of the information provided by Earth Law Center in its 2010 letter responding to the data solicitation. In addition, please refer to responses to comment 4.1 regarding Integrated Report decision-making in accordance with the Listing Policy and efforts to develop flow objectives and assessment methodologies. Please see responses to comments 4.4 and 4.7 regarding evaluating flow data and information under Section 3.10 of the Listing Policy.

Comment Letter 5: San Francisco Public Utilities Commission

Comment 5.1: “SFPUC supports the delisting of Baker Beach. We also note that the reference to Horseshoe Cove in the current listing for Baker Beach is incorrect.”

We agree that Baker Beach should be de-listed and are recommending that as part of this update to the 303(d) List. Unfortunately, we are not able to correct the referenced typo on an already archived line of evidence (the reference to Horseshoe Cove). However, this is not a material error that impacts the de-listing determination.

Comment 5.2: “Lake Merced in San Francisco is listed for low dissolved oxygen (DO) and for pH excursions outside the range specified in the Basin Plan. However, the variations in DO and pH values are characteristic of similar waterbodies subject to periodic

stratification due to natural processes. The listing was made by EPA and the TMDL is targeted for completion in 2019. The current Triennial Review Process updates the listing with additional data points, but recommends no changes due to DO and pH impairment based on current interpretation and application of the Basin Plan Objectives. The SFPUC and its partners have and will continue to work with Board staff to revisit and update the major assumptions associated with this listing decision prior to the next listing cycle currently scheduled for 2022.”

We cannot recommend removing Lake Merced from the 303(d) List with respect to DO or pH. This waterbody is not meeting the current objectives in the Basin Plan for these constituents. We have followed the Listing Policy and determined that this waterbody is still impaired for both constituents. However the development of site-specific DO and pH objectives for Lake Merced is a high priority for the Water Board, as described in the 2015 Triennial Review List of Prioritized Basin Planning Projects.

Comment 5.3: “The proposed listings for Pilarcitos Lake and Crystal Springs Reservoir are not appropriate because the source of the mercury (precipitation or atmospheric deposition) to these reservoirs cannot be controlled.”

The Fact Sheets for Pilarcitos Lake and Lower Crystal Springs Reservoir circulated for public review and comment associated the fish tissue data with impairment of the “Commercial or recreational collection of fish, shellfish, or organisms”. This beneficial use has not been designated in the Basin Plan for these reservoirs. The appropriate beneficial use to evaluate is wildlife habitat (WILD). The definition of WILD in the Basin Plan makes no mention of limiting this beneficial use based on the presence or absence of controllable water quality factors.

The Staff Report for the statewide mercury water quality objectives⁷ cites information in a USGS report⁸ concerning how the 0.2 ppm mercury concentration in trophic level four fish “should reasonably protect most threatened endangered species and other piscivorous wildlife, with the exception of the California least tern.” The data for Lower Crystal Springs Reservoir (0.89 ppm in largemouth bass) and Pilarcitos Lake (0.26 in rainbow trout) are above the 0.2 ppm proposed objective to protect human health, so, according to the information presented in Ackerman(2015), these data indicate that the wildlife beneficial use is likewise not supported. The fact sheets for these reservoirs have been modified to focus on protection of wildlife habitat using this reasoning.

⁷ Draft Staff Report, Including Substitute Environmental Documentation For Part 2 of the Water Quality Control Plan For Inland Surface Waters, Enclosed Bays, And Estuaries Of California—Tribal And Subsistence Fishing Beneficial Uses And Mercury Provisions. January 2017.

http://www.waterboards.ca.gov/water_issues/programs/mercury/docs/staff_report/hg_staff_report.pdf

⁸ Ackerman and co-authors developed a relationship sport fish and grebe blood. A total mercury concentration of 0.2 µg/g ww in sport fish corresponds to a total mercury concentration of 1.0 µg/g ww in grebe blood. 1.0 µg/g ww in grebe blood generally puts birds at elevated risk of potential impairment. Ackerman JT, Hartman CA, Eagles-Smith CA, Herzog MP, Davis J, Ichikawa G, Bonnema. *Estimating Mercury Exposure to Piscivorous Birds and Sport Fish in California Lakes Using Prey Fish Monitoring: A Tool for Managers*: U.S. Geological Survey (USGS) Open-File Report 2015-1106

The commenter cites the definition of the bioaccumulation objective in the Basin Plan and notes that it calls out “controllable water quality factors”. Although we are not relying on a bioaccumulation objective (see above) for these proposed listings, we do note that the commenter only considers the origin of the mercury in relation to controllable water quality factors. In fact, there are numerous mercury-impaired lakes and reservoirs in California for which the source of mercury is likely atmospheric deposition. Pilarcitos Lake and Lower Crystal Springs Reservoir are not unique in this respect. In fact, the [Statewide Mercury Program](#) acknowledges that many of the mercury-impaired waterbodies in California have atmospheric deposition as a primary source, yet control measures are available even in such circumstances to address the impairment and achieve water quality improvements. *Controllable water quality factors* is a term that encompasses more than the source of the pollutant. These factors also include control measures available to remedy the impacts of the pollutant.

The source of the mercury does not preclude these two reservoirs inclusion on the 303(d) List. Moreover, there are controllable water quality factors that can be brought to bear to reduce the concentrations of methyl mercury, which is the form of mercury that is found in fish tissue and bioaccumulates in the food web. These include food web manipulation, reservoir oxygenation (to reduce mercury methylation in sediments and hypolimnia), and others. Therefore, even if the commenter is correct that the *source* of mercury for these two reservoirs cannot be reasonably controlled, there are controllable water quality factors relevant to the transformation of inorganic mercury to methyl mercury as well as the transmission of methyl mercury through the food web.

Comment 5.4: “Lower Crystal Springs and Pilarcitos data for this assessment was collected by one monitoring project on a single day in 2007. The dataset is outdated, limited, and does not appear to meet the requirements of the State 303(d) Listing Policy (2015).”

We explained in the fact sheets for these proposed listings that, though the samples were collected from a single location on a single day, fish are not static and move throughout a lake and accumulate mercury in tissue over time. A single collection date sampling multiple fish represents pollutant conditions across space and time. The sample exceeding the guideline is constituted by several fish that have independently accumulated enough mercury such that the average of all these fish exceeds the evaluation guideline. Therefore, it is highly likely that if more fish had been caught on another day to form additional composites, these would also exceed the evaluation guideline, and, hence, the number of exceedances would exceed the allowable frequency described in Section 3.4 of the Listing Policy. This assessment approach for mercury in lake and reservoir fish tissue was applied consistently throughout the region.

Comment 5.5: “The beneficial use impaired is bioaccumulation, but fishing is prohibited in both Pilarcitos Lake and Lower Crystal Springs Reservoir. The primary threat is to human consumption.”

The beneficial use impaired is wildlife habitat. Please see the response to comment 5.3 above.

Comment 5.7: The commenter does not agree with listing Fort Funston for indicator bacteria and states: “To date data collected on the shoreline at Fort Funston is not representative of this location. The Fort Funston site is not subject to the routine AB 411 sampling that occurs on other California beaches; rather, the surf zone is only sampled as soon as possible after a combined sewer discharge (CSD) begins. For the Fort Funston site, sampling is only linked to major storms and the resulting CSDs. The Listing Policy (6.1.5.3 Temporal Representation) guidance indicates that if samples are collected during a short term natural event such as a storm, the data cannot be used as the primary data set for listing. In this case, all data is collected during and immediately after major storms.

Because the dataset does not comply with the provisions in the Listing Policy, Fort Funston should not be listed.”

Staff agrees with the commenter that Fort Funston should not be listed, and, that instead of listing, we recommend that this water body be placed in Category 3 (insufficient information to determine beneficial use support, but data indicate that uses may be threatened).

The table below shows the dates of the five exceedances of the enterococcus single sample maximum for the period 2005 through 2010 along with the rainfall information surrounding that date.

Date	Enterococcus SSM (objective = 104 MPN)	Rainfall (inches) http://w2.weather.gov/climate/xmacis.php?wfo=mtr
Dec 12, 2006	2613	2.32
Oct 4, 2007	156	No rainfall from Oct 1 through 4
Jan 4, 2008	144	1.96
Feb 16, 2009	2603	3.84 inches between Feb 15-17
Feb 17, 2009	1860	3.84 inches between Feb 15-17

Four of these five exceedances are clearly associated with intense rainfall events and do not constitute a strong basis for listing Fort Funston, because these data are not temporally representative of water quality conditions relevant to assessment of the water contact recreation beneficial use. While we recommend that this waterbody be placed in Category 3 at this time, we strongly encourage more comprehensive data collection efforts to assess water quality at this beach throughout the year. The goal will

be to have data quality temporally representative of conditions relevant to water contact recreation throughout the year and not only during storm events.

Comment Letter 6: Santa Clara Valley Urban Runoff Pollution Prevention Program

Comment 6.1: “Some of the data points used by the State to support impairment listings, however, were collected over 20 years ago. There are several issues with relying on data from prior decades. An important consideration should be whether water quality control programs that directly address pollutants of concern were initiated after the water quality data were collected. Specifically, water and sediment toxicity data collected prior to the initiation of the pesticide control program mandated by the SF Bay Regional Water Board’s Water Quality Attainment Strategy (WQAS) for Pesticide-Related Toxicity for Urban Creeks and implemented under the Municipal Regional Stormwater NPDES Permit (i.e., NPDES Permit No. CAS612008) should not be considered representative of current water quality conditions in Coyote Creek or the San Francisco Bay. The control programs associated with the WQAS and MRP have been in place since the mid-2000s and continue to address water quality standards associated with pesticides and have had an important effect on pesticide-related toxicity in these water bodies. For example, in creek monitoring data from the Santa Clara Valley, we have seen a drop in the concentrations of certain pyrethroid pesticides in local creeks over time.

Regional or State Water Board staff should remove outdated data from the water quality analysis that was used to derive the proposed 303(d) listings, such as toxicity data collected in the late 1990s that were collected prior to the implementation of significant control programs (e.g., WQAS and associated requirements included in NPDES permits since the mid-2000s).”

There are two types of information required to justify restricting assessment to newer data as suggested in the comment. First, we would need evidence of the types of control programs mentioned by the commenter. Second, we would need data collected after the implementation of the control program showing that the water quality problem has been resolved and that objectives are being met in the receiving water. As discussed in the response to comment 8.1, we do not see evidence that the sediment toxicity impairment has been resolved in San Francisco Bay, despite the control programs cited by the commenter. A large proportion of the data collected after 2000 still exhibits sediment toxicity. Likewise, the sediment toxicity data supporting the proposed listing for Coyote Creek were collected in 2007 and 2008, well after the initiation of the control programs cited by the commenter. It may be the case that data collected after 2008 show substantially less toxicity in the Bay or in creeks; however, for this listing cycle, we could not consider data more recent than 2010. See also the response to comment 2.1 regarding the issue of assessing older data. Data from 2010 to approximately 2020 will be evaluated when we prepare the 2022 303(d) List. At that time, we can determine if there has been significant improvement in water quality conditions relative to sediment toxicity data.

Comment 6.2: “The Staff Report states that all data collected through 2010 were assessed as part of the 2016 303(d) listing process. However, our review of the dataset indicates that not all receiving water monitoring data that were collected via NPDES permits and submitted to the Regional Board prior to 2010, were incorporated into the data review assessment process. For example, as directed by NPDES permits, water quality data collected from 2002 to 2008 in Santa Clara Valley creeks during implementation of the SCVURPPP Multi-Year Receiving Waters Monitoring Plan were submitted to the SF Bay Regional Water Board each year during that timeframe. we request that: 1) all SCVURPPP 2002-2008 data previously submitted to the SF Bay Regional Water Board consistent with NPDES requirements be added to the dataset for which the proposed listings are based; 2) the listing recommendations be revised (as needed) based on the inclusion of these data; and 3) the new listing recommendations be revised accordingly and re-released for public comment.”

The data used for the current assessment *were received* from January 14, 2010, through August 30, 2010, in response to the data solicitation. The Santa Clara Valley Urban Runoff Pollution Prevention Program did not submit any data during that time period in response to the solicitation. The Program did submit data and information in 2007 (as part of the previous assessment cycle) that were assessed during the 2010 cycle. See reference ID 2414 in the [2010 Integrated Report](#). The reference indicates that this submitted information covers the period 2002-2007.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 2007. Monitoring and Assessment Summary Report: Santa Clara Basin Creeks (2002-2007). Watershed Monitoring and Assessment Program.

Data collected by the Program subsequent to the already assessed (2007 submittal) data should be uploaded to CEDEN to make sure they are available for assessment in future assessment cycles, consistent with the 2013 amendment to the Listing Policy.

Comment 6.3: “Data are run through binomial tests with no interpretation in the context of the receiving water bodies or monitoring program goals and objectives. We have previously cautioned the State Water Board and SF Bay Regional Water Board on use of this simplistic process to determine exceedances of water quality standards. Unfortunately, in the 2016 proposed listings, the use of this approach continues and appears to have resulted in potentially erroneous listings that (if adopted) will require the use of limited public resources to address via the collection of additional data that could be better used on control measure program implementation actions focused on real water quality problems. Additionally, as discussed in comment #1, the Regional and State Water Boards should limit the timeframe when data are considered to be representative of “current” water quality conditions.”

State Water Board and Water Board staff worked diligently to review a large amount of data for the San Francisco Bay Region. The data assessed for the current cycle resulted in the creation of 3260 lines of evidence for waterbody-pollutant combination. State Water Board and Water Board staff assessed data according to the requirements of the

Listing Policy, and it is not the prerogative of Water Board staff to do otherwise. Regarding the limitation of the data timeframe, please see the response to comment 2.1.

Comment 6.4: “The data points used as lines of evidence for proposing the toxicity listing for Coyote Creek were collected at three stations identified as C-3-0, 205COY060, and 205SUP022 (Figure 1). One of the stations (C-3-0) is a sampling station for the main water mass of San Francisco Bay and is not located within the freshwater channel of Coyote Creek and therefore should not be used to assess impairments to Cold Freshwater Habitat. Although Station C-3-0 is identified as “Coyote Creek,” it is located well within the tidally-influenced waters and cannot be considered representative of water or sediment quality in the freshwater portions of Coyote Creek with any degree of certainty. While slough waters are directly connected to the Bay, they do not provide Cold Freshwater Habitat at the intersections. Toxicity results from Station C-3-0 should not be included in the lines of evidence for listing Cold Freshwater Habitat impairments in Coyote Creek. With data from Station C-3-0 eliminated from the lines of evidence used for Coyote Creek, this leaves a very small and insufficient number of data points in the dataset in CEDEN upon which to support a toxicity listing for Coyote Creek.”

All of the sampling stations are within the mapped boundary of Coyote Creek, and sediment toxicity was observed at least once at all three locations. The downstream sampling location is tidally-influenced, but the test organisms used in the toxicity tests were appropriate for high salinity conditions. We agree that assessment of the COLD beneficial use is not appropriate for this tidally-influenced site. This line of evidence has been modified to apply to the more appropriate beneficial use (estuarine habitat). There are still two toxic sampling results in three samples for the COLD beneficial use portion of the waterbody, and that is a sufficient number of exceedances to support our listing recommendation consistent with the requirements of the Listing Policy.

Comment 6.5: “Additionally, if more recent data from Coyote Creek collected through the SWAMP Statewide Stream Pollution Trends (SPoT) Program since 2008 were included in the data evaluation, Coyote Creek would not be included on the 303(d) list, given that these data show very low frequencies of sediment toxicity.”

The data mentioned by the commenter were not submitted for assessment in response to the data solicitation in 2010. All of the submitted data submitted in response to the solicitation were assessed. Please see the response to comment 6.2. Evidence of improvements to water quality since 2008 will be considered during future water quality assessments. If data collected from 2007 to the next data solicitation period demonstrate that uses are supported according to the Listing Policy, then the Creek can be de-listed. However, our initial assessment of newer data (post 2008) from the SWAMP Statewide Stream Pollution Trends (SPoT) Program reveals additional toxicity exceedances on Coyote Creek that would further substantiate our listing recommendation based on currently available data.

Comment 6.6: “For South San Francisco Bay, Water Board staff must clearly distinguish that the proposed listing is for sediment toxicity rather than water toxicity. Distinguishing between water and sediment toxicity is important because different pollutants and mechanisms contribute to toxicity in the different matrices. In addition, toxicity control programs would differ depending on which type of matrix is impaired.”

The fact sheet has been edited to clarify that the evaluation guideline exceeded related to sediment toxicity. When the final impaired waters list is published, there will be a comment for all waterbodies listed for toxicity that will specify if the toxicity was observed in sediment or the water column. This comment does not appear on the fact sheets.

Comment 6.7: “For Guadalupe Slough, both water and sediment toxicity exceedances appear to be referenced in the Fact Sheet as being used to support the proposed listing. Regional and State Water Board staff must clearly distinguish that the proposed listing is for sediment toxicity rather than water toxicity. There were only 1 of 2 sediment samples with excursions, and only 2 of (sic) 15 water samples with excursions. The one sample with observed toxicity from the sediment dataset was collected in August 1998 and the two samples with water column toxicity were collected in January and July 1997. Distinguishing between water and sediment toxicity is important because different pollutants and mechanisms contribute to toxicity in the different matrices. The nearly 20-year old toxicity detections in 1997 and 1998 and not believed representative of current Guadalupe Slough receiving water conditions.”

The proposed Guadalupe Slough toxicity listing is for water column toxicity. The fact sheet contains information on all lines of evidence (as required), but only the water column toxicity form the basis of the proposed listing (2 exceedances in 16 samples). See also the response to comment 6.6 regarding clarification of the nature of the toxicity in the fact sheet and in the final published version of the 303(d) List. We are sympathetic to the argument put forth in the comment, but these older data are the only available basis for making a listing determination at present. While it is possible that conditions have changed due to the restoration project, we do not have more recent data to assess the water quality improvement. Regarding the comment on the age of the toxicity data, please also see the response to comments 2.1 and 7.1.

Comment 6.8: “Given the uncertainty about whether the moderate, episodic sediment toxicity observed in San Francisco Bay is a result of the test method being used or a pollutant, we recommend placing the South San Francisco Bay in Category 2 (i.e., evidence is insufficient to make complete use support determinations). Placing the South Bay in this category is consistent with the scientific community’s current understanding of sediment toxicity in the Bay and will allow the Regional Monitoring Program (with active participation from SF Bay Regional Water Board staff) to further evaluate whether a water quality concern associated with toxicity is present prior to moving forward with a TMDL, which will take significant public agency (State and local) resources to develop.”

The sediment toxicity observed in South San Francisco Bay or San Francisco Bay as a whole is consistent through time rather than episodic (see plot below). The plot shows the sediment toxicity data in South Bay from 1993 through 2008. Samples for which clay content was greater than 50% are colored red. The horizontal line at 80% survival indicates the survival level below which the sample was considered an exceedance of the evaluation guideline. There are outstanding questions to be resolved to ensure that the test best reflects toxicity, and these questions will be pursued (see response to comment 2.3) through RMP data collection and other special studies. However, we consider the available toxicity data sufficient to make a use support determination. These data are reliable enough for us to maintain that persistent sediment toxicity is likely in South San Francisco Bay and throughout San Francisco Bay. Therefore, Water Board staff does not support placing San Francisco Bay segments in Category 2.



Comment Letter 7: Santa Clara Valley Water District

Comment 7.1: “The proposed toxicity listing for Guadalupe Slough is based on samples collected in August 1998, with two of 16 samples exhibiting toxicity. Given that these data are 18 years old and that the sediment in an estuarine environment changes over time, these data should no longer be considered indicative of the current situation. In addition, this slough has changed due to the breaching of the levee for the saltpond restoration

project. The Water District recommends not listing and instead recommends that the SWAMP program conduct a new evaluation.”

As stated in response to comment 6.7, we cannot reject data based on the age of the data alone, and we do not have more recent data showing that the water quality has improved. While it is possible that conditions have changed due to the restoration project, we do not have more recent data to assess the water quality improvement. We do not plan on immediately launching a TMDL project based on these data.

Documentation of the water quality improvements owing to the restoration along with more recent toxicity data can be put forward in subsequent water quality assessment cycles, and this information may suggest that a de-listing is appropriate.

See also the response to comment 2.1.

Comment 7.2: “The timing for listing of reservoirs is unclear with relationship to the Statewide Mercury Control Program for Reservoirs, which has a spreadsheet of future listings that are not consistent with these current listings, leading to confusion over the timing of reservoir listings.”

The commenter appears to be referring to [Table C-1](#) of the Staff Report for the Statewide Mercury Control Program, which identifies the mercury-impaired waters by region.

The commenter is correct that the *new* mercury listings for lakes and reservoirs do not match up with the lakes and reservoirs on that list. However, this mismatch is because some of the lakes and reservoirs included on Table C-1 are *already* listed as impaired.

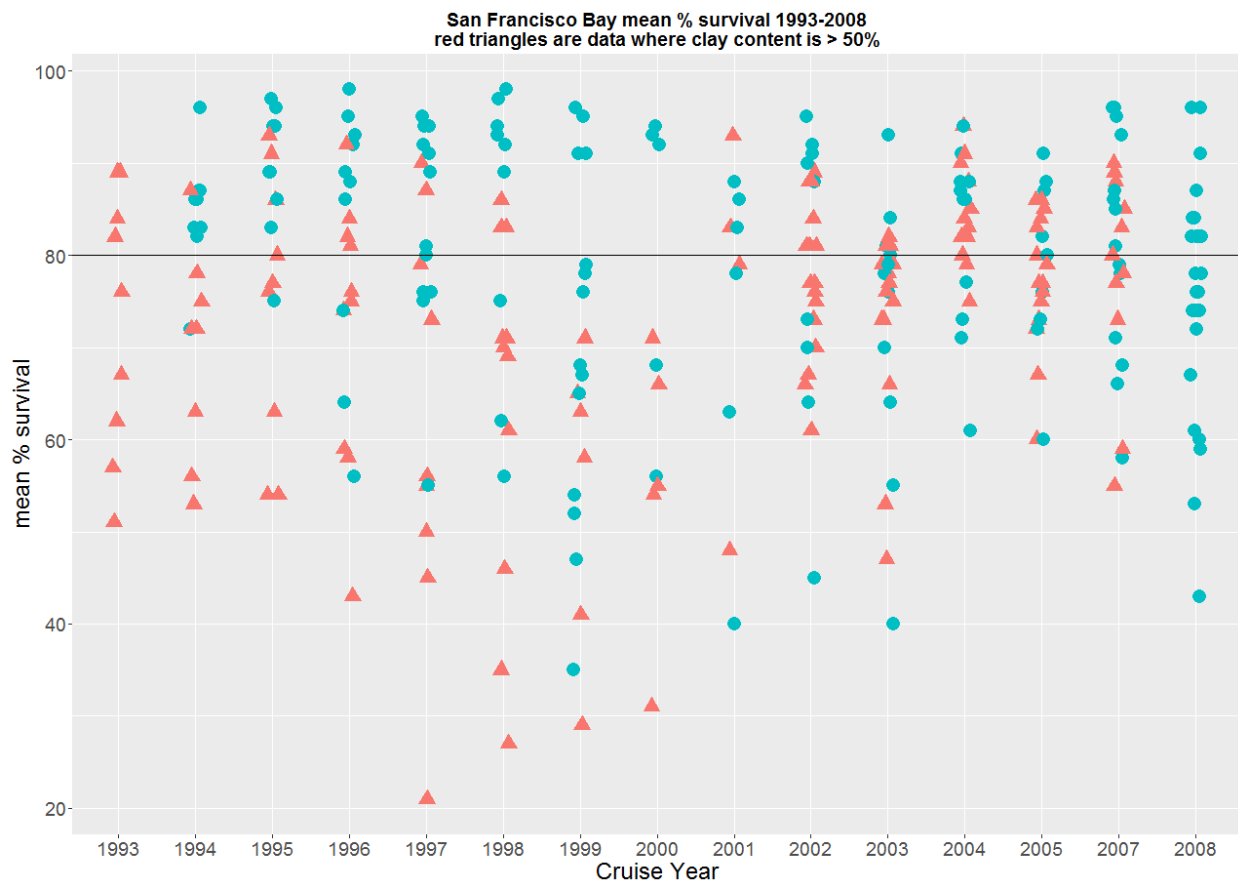
We assessed all readily available data as of 2010, so the *newly* proposed listings should make the 303(d) List for our region consistent with the information in that table.

Comment Letter 8: Western States Petroleum Association

Comment 8.1: “The sediment samples should be evaluated from an annual perspective rather than using the entire period of 1993–2008. The amphipod survival may be improving in the second part of this period. This trend of improving sediment toxicity would be a substantial reason for not listing the segments of the Bay for toxicity. The toxicity data are between 9 and 24 years old. Conditions in the Bay may be improving over time, and given sediment redistribution and deposition, more recent data should be used to assess whether to place water bodies on the 303 (d) list for toxicity.”

We evaluate data consistent with the Listing Policy. We do not have the discretion to evaluate data in the manner suggested by the commenter (annual events). Likewise, we cannot arbitrarily exclude consideration of older data without a reason for doing so (see response to comment 2.1). The figure below shows the sediment toxicity data for San Francisco Bay from 1993 to 2008. One does not discern an obvious improving trend over this time period. In fact, a substantial portion of the data falls below the evaluation guideline (horizontal line at 80% survival, data where clay content greater than 50% are

colored red) even for more recent years. A water quality assessment would reach the same conclusion even if we did exclude the older data.



Comment 8.2: “Insufficient samples were evaluated for bivalve or urchin larval development, and the results were too highly variable, to conclusively determine whether these samples were consistently toxic. Confounding factors such as naturally occurring ammonia and hydrogen sulfide concentrations were not evaluated during the toxicity testing, so these results are inconclusive for assessing persistent anthropogenic chemicals.

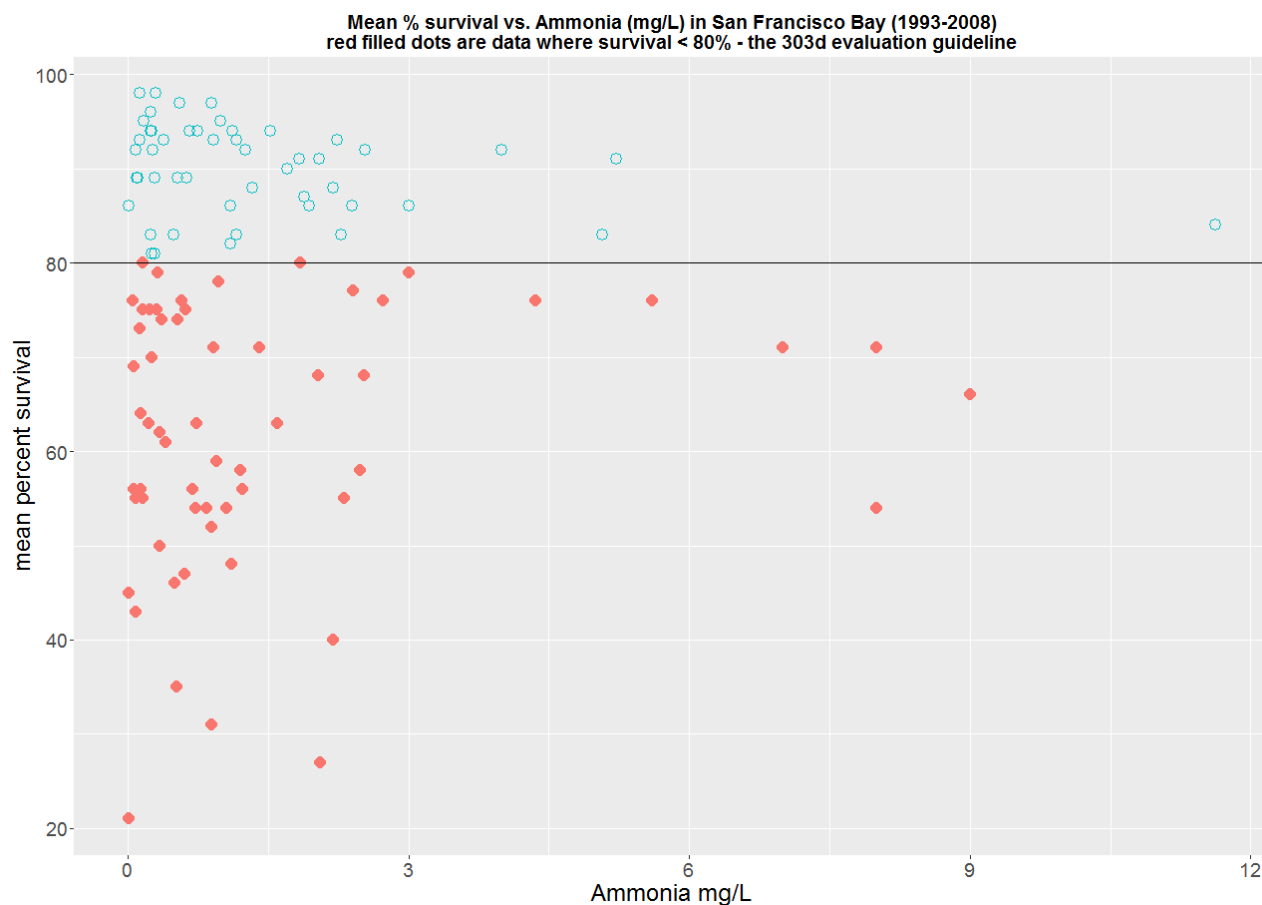
Due to the variability in responses, we believe that percentage survival is a better indicator of toxicity trends as compared to percentage normal alive.”

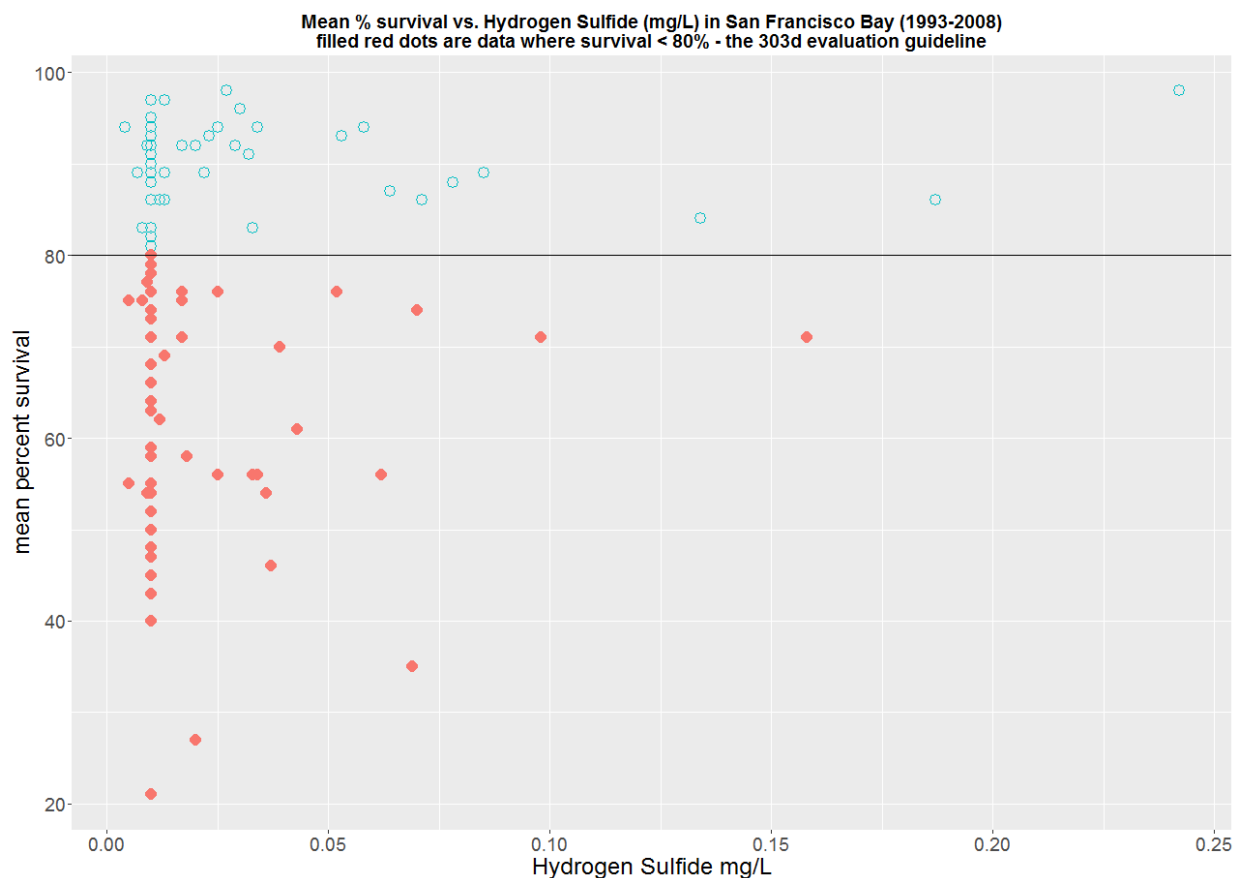
We have a large amount of data for amphipod survival, and we have made our water quality assessment with these data. A scarcity of data for a particular test organism does not preclude making an assessment based on the available data for another test organism. Percent survival of the amphipod, *E. estuarius*, was the metric used for the bulk of the data.

We have no reason to believe that the sediment toxicity data are compromised by high levels of ammonia or hydrogen sulfide, as these toxicants would not be expected in high concentrations in the parts of the Bay where these sediment toxicity samples were taken. We have plotted (see below) the survival data versus the total ammonia (un-

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ionized ammonia not available) and hydrogen sulfide concentration measured in the same sediment sample, and there is no clear evidence of worsening toxicity with increasing concentrations of these two constituents. Note that hydrogen sulfide non-detects were assigned the detection limit value of 0.01 mg/L, and most of the data are below the hydrogen sulfide action level of 0.122 mg/L cited in the commenter's letter. The plots show significant numbers of toxic outcomes even for very low ammonia and hydrogen sulfide concentrations and even a lack of toxic outcomes for high hydrogen sulfide concentrations.





Comment 8.3: “The amphipod *E. estuarius* is unsuitable as a test animal for the high-clay concentrations in San Francisco Bay. Because grain size is known to confound toxicity tests performed using this organism, the confounding factor of grain size must be evaluated before listing. The San Francisco Estuary is dominated by kaolin clay, a fine-grained material. Grain size has been shown to affect survival of marine amphipods such that a decrease in survival with an increase in percentage fine-grained material was observed. U.S. EPA guidance on amphipod toxicity testing recommends that the characteristics of the sediment should be within the tolerance limits of the test organism. Should future amphipod testing be performed, we recommend that an organism that is more tolerant to changes in grain size should be considered, such as *L. plumulosus*. Because grain-size impacts were not evaluated, samples for this organism should not be used as the basis for listing.”

Please see the response to comment 2.3.

Comment 8.4: “As noted in the attached technical memorandum, it has not been established that a pollutant contributes to the observed “toxicity” in the Bay sediment samples. Without information on the cause of toxicity, it will not be possible to develop a TMDL or implement management actions to address the “toxicity” in these water bodies.”

Please see the response to comment 2.2.