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Part I. RESPONSIVENESS SUMMARY

NEWPORT BAY & SAN DIEGO CREEK TMDLS FOR TOXIC POLLUTANTS

Prepared by USEPA, Region 9

June 14, 2002

INTRODUCTION

This document summarizes the comments that were submitted, identifies the commentor, and responds to those comments. They are arranged by topic wherever possible. When multiple comments were received on a single topic, the multiple commentors are grouped under one comment number. Changes to the TMDLs made in response to a comment are generally summarized in the response to that comment.

Comments were received from the following organizations and individuals:

- The Irvine Co./Latham & Watkins
- California Dept. of Pesticide Regulation
- Bordier=s Nursery
- Irvine Ranch Water District (IRWD)
- California Farm Bureau Federation
- Orange County Integrated Waste Management Department/GeoSyntec Consultant
- California Regional Water Quality Control Board, Santa Ana Region
- National Resources Defense Council/Defend the Bay/Limmo-Tech, Inc.
- City of Irvine Public Works Department
- City of Costa Mesa
- City of Irvine
- Orange County PFRD
- MANA (Makhteshim-Agan of North America, Inc.)
- Dr. John Skinner

GENERAL LEGAL COMMENTS

L1. *Comment:* TMDLs should not be based on narrative standards when there are numeric standards which have been subject to notice and comment rulemaking. It is arbitrary and capricious to ignore the specific CTR numerical standards that are just two years old, and instead base the TMDLs on outdated, vague, ambiguous, less reliable narrative criteria. EPA oversteps its authority by establishing numeric targets that are more restrictive than the adopted numeric WQS.

Commentor(s): Irvine Co./Latham&Watkins, California Farm Bureau Federation

Comment: One source of uncertainty concerns interpretation of the narrative Basin Plan objectives pertaining to toxic substances when numeric objectives are either not available or there may be debate about their relevance, given the nature of the impairment. We support the application of appropriate data, including sediment and tissue data (fish or other organisms), to interpret and implement the narrative objectives. *Commentor:* Santa Ana Regional Water Quality Control Board.

Response: EPA regulations provide that TMDLs shall be established Aat levels necessary to attain and maintain the applicable narrative and numerical WQS....@ 40 C.F.R. 130.7(c)(1). It is incorrect to say

that in developing these TMDLs, EPA ignored any CTR numeric standards. Rather, EPA took into consideration, and developed TMDLs designed to achieve, both the CTR numeric criteria (for those pollutants having CTR numeric criteria) and also the narrative bioaccumulation and toxicity criteria.

As discussed in the TMDLs, the metals and selenium TMDLs are based explicitly on the CTR numeric criteria or equations, and for the OP pesticides there are no promulgated numeric criteria. The comment that EPA ignored the CTR criteria, therefore, appears to be addressing the TMDLs for the OC compounds, mercury and chromium. EPA did in fact calculate the numeric targets for the OC, mercury and chromium TMDLs based on tissue or sediment screening criteria which we considered the best indicators of achieving the narrative criteria; however, we emphasize, as noted above, that our analysis indicated that attaining the sediment or tissue targets would also result in attainment of the CTR water column numeric criteria.

EPA regulations provide that in developing TMDLs, site-specific information should be used whenever possible. 40 C.F.R. 130.7(c)(1)(i). For the OC compounds, mercury and chromium, the available data were primarily sediment and tissue data. When we compared this data with screening criteria developed by various organizations, it appeared that these pollutants are having an adverse impact on the environment in this particular watershed such that the beneficial uses, e.g. RARE and WILD, and the narrative standards designed to protect those beneficial uses, were not being achieved. As discussed in the Overview section of the TMDLs, the narrative objectives considered for these TMDLs are (1) toxic substances shall not be discharged at levels that will bioaccumulate in aquatic resources to levels which are harmful to human health, and (b) the concentrations of toxic substances in the water column, sediments or biota shall not adversely affect beneficial uses. As discussed in the TMDL, all the water bodies in this watershed are designated for wildlife habitat and recreational beneficial uses, and other beneficial uses (e.g. uses related to fishing and preservation of biological habitats) apply to specific portions of the watershed.

Based on our analysis of the available data along with relevant screening criteria (discussed generally in the Overview section of the TMDLs and more particularly in the TMDL for each group of pollutants), we determined that it was necessary to develop sediment and fish tissue targets to protect the beneficial uses and to achieve the narrative criteria designed to protect those beneficial uses B in general, to protect against pollutant bioaccumulation in the food chain and resultant human health or aquatic life impacts from consumption of contaminated organisms. Additionally, EPA determined that these pollutants, as present in this particular watershed, are more likely to be associated with particulate matter sorbed to bottom sediments, rather than occurring in the dissolved phase in the water column; therefore, setting sediment and tissue targets most closely relates to the actual way in which the pollutants exist in the environment in this particular watershed. EPA determined that developing such targets was more appropriate than simply applying the CTR criteria, which apply to the water column.

We acknowledge that the CTR numeric criteria would generally be the applicable target, and, as noted above, we are in fact basing the metals and selenium targets on the CTR criteria and equations. EPA-s decision regarding the appropriate targets for the OC, mercury and chromium TMDLs in this particular watershed does not reflect a determination that the statewide CTR numeric criteria are no longer applicable. Rather, based on the our review of site-specific data for those specific pollutants, we determined that establishing the TMDLs based on the statewide CTR numeric criteria alone would not be sufficient to protect the designated uses and attain the narrative criteria in this particular watershed. In order to protect the applicable uses and meet the narrative criteria, the most appropriate approach, for these particular pollutants in this particular watershed, was to develop TMDLs designed to meet narrative as well as numeric criteria.

US EPA ARCHIVE DOCUMENT

L2. *Comment:* EPA=s inclusion of numeric targets into any TMDL is unacceptable because the statute and regulations don=t mention numeric targets. Establishing numeric targets is tantamount to creating a new water quality standard.

Commentor: California Farm Bureau Federation

Response: EPA disagrees. Since a TMDL is an inherently quantitative analysis, it is necessary to develop appropriate quantitative indicators of any applicable narrative criteria in order to calculate the pollutant level that can be present in the water and attain the applicable criteria, and the appropriate loads (see EPA Region 9, 2000). The TMDL process provides a mechanism for identifying quantitative targets as necessary to interpret and apply existing, applicable numeric or narrative water quality standards for different pollutants. Establishing numeric targets, or a numeric interpretation of a narrative criterion, is not establishing a water quality standard but rather is a necessary step in the implementation of a narrative criterion.

L3. *Comment:* EPA cannot base TMDLs for priority toxic pollutants listed pursuant to CWA 307(a) on narrative criteria. CWA 303(c)(2)(B) provides that water quality criteria for these pollutants Ashall be specific numerical criteria.@ It is contrary to law to rely instead on the less reliable narrative criteria. The commentor cites the case of *City of Los Angeles v. U.S. EPA*, No. CV-00-08919 (C.D. Cal. 2001).

Commentor: Irvine Co./Latham&Watkins

Response: See response to comment L1. CWA 303(c)(2)(B) requires that states adopt numeric water quality criteria for certain toxic pollutants. EPA satisfied this requirement with promulgation of the California Toxics Rule (CTR). Neither the Clean Water Act nor the *City of Los Angeles* decision precludes the State from also adopting narrative criteria as well as numeric criteria for toxic pollutants. EPA developed these TMDLs to meet both numeric and narrative water quality criteria.

L4. *Comment:* The narrative criteria upon which EPA is relying are without specific procedures to translate them into numerical criteria and therefore cannot be used as the basis of a TMDL. EPA=s Dec. 12, 1988 guidance on water quality standards under CWA 303(c)(2)(B) provides that narrative standards for toxic pollutants must include a procedure to translate the narrative standards into numerical standards. Because California has not adopted such a translation procedure, EPA cannot apply narrative standards to toxic pollutants and cannot base a TMDL on the State=s narrative standards.

Commentor: Irvine Co./Latham&Watkins

Response: EPA=s 1988 guidance was designed to identify options a State could follow in meeting the requirement of CWA 303(c)(2)(B) that there be numeric criteria for toxic pollutants. Under EPA=s guidance, if a state does not adopt numeric criteria for toxic pollutants, the state is allowed to satisfy Sec. 303(c)(2)(B) by adopting a translator procedure to translate narrative criteria for priority toxic pollutants. The EPA guidance does not preclude a State from adopting narrative criteria in addition to numerical criteria, and does not invalidate the narrative criteria at issue in these TMDLs. As noted in response to Comment L3, CWA 303(c)(2)(B) has been complied with through the California Toxics Rule. (CWA 303(c)(2)(B) does not apply to chlorpyrifos and diazinon because they are not listed pursuant to CWA 307(a); see 40 C.F.R. 401.15.)

L5. *Comment:* EPA cannot rely on non-regulatory sediment or fish tissue values to establish a TMDL for priority toxic pollutants unless those values have been the subject of notice and comment rulemaking. EPA is trying to perform an Aend-run@ around the requirement that numerical criteria or a Atranslator@ procedure for priority toxic pollutants go through notice-and-comment rulemaking. This is especially a problem when there are numeric criteria which are not being used and which have gone through

US EPA ARCHIVE DOCUMENT

rulemaking. EPA cannot promulgate a regulation establishing sediment and biota criteria through the establishment of a TMDL.

Commentor: Irvine Co./Latham&Watkins

Response: See response to Comment L4. In these TMDLs, EPA is using sediment and fish tissue values in interpreting the State=s narrative criteria. EPA=s interpretation is included in the TMDLs, which have been subject to a 45-day public review and comment period. Thus, commentors have had full opportunity to comment on EPA=s interpretation of the narrative criteria. In these TMDLs, EPA is not establishing sediment and biota criteria. Rather, EPA is using the best information available to set TMDLs which meet both the numeric water quality criteria and also the narrative bioaccumulation and toxicity criteria.

L6. *Comment:* EPA cannot base TMDLs on narrative criteria that give the public no explanation as to how they will be applied. EPA regulations at 40 C.F.R. 131.11(a)(2) provide that when a state adopts narrative criteria for toxic pollutants, it must provide information identifying the method by which it intends to regulate point sources. The Basin Plan does not contain such information.

Commentor: Irvine Co./Latham&Watkins

Response: 40 C.F.R. 131.11(a)(2) requires the State to provide information identifying the method by which the State intends to regulate point source discharges of toxic pollutants on water quality-limited segments based on the State=s narrative criteria. Thus, this requirement becomes an issue when the State takes regulatory action. EPA=s action in establishing these TMDLs does not directly regulate point source discharges. No NPDES permittee must directly comply with this TMDL. Pursuant to 40 CFR 122.44(d)(1)(vii)(B), when permits are issued, the permits must include conditions consistent with wasteload allocations in TMDLs. That is not to say, however, that TMDLs themselves are a permit or a regulation of point sources, nor that their only function is permit-related. TMDLs are used by States in a variety of ways, including addressing nonpoint source pollution, and general watershed planning.

The State has been closely involved in the development of these TMDLs and supports EPA=s interpretation of the State=s narrative criteria and use of site-specific data. Some of the screening values which EPA used in developing the numeric targets were values established by the State, e.g. the OEHHA tissue concentration screening values and the Department of Fish and Game aquatic life criteria values for chlorpyrifos and diazinon. Additionally, these TMDLs themselves provide abundant information that the State may use in implementing its narrative criteria. The State may consider the methods used to derive the acceptable pollutant loads in these TMDLs as a method (or a major component of a method) for regulating point source discharges based on the narrative criteria in this particular watershed.

The State intends to revisit these TMDLs and develop implementation plans for them as part of their Basin Plan amendment process. In developing the implementation plans, the State will be determining how to regulate point source discharges which may need to be reduced based on the calculations and wasteload allocations in these TMDLs. If the State identifies additional methods pursuant to 40 C.F.R. 131.11(a)(2), in addition to those set forth in these TMDLs, those will be identified during the Basin Plan amendment process. Additionally, if the State obtains new information which it can use in interpreting the narrative standards through numeric targets, or if the methods ultimately identified by the State lead to a different interpretation of the State=s narrative, the State may revise the TMDLs as appropriate and submit the revised TMDLs to EPA for approval.

L7. *Comment:* EPA cannot establish a TMDL for any pollutant without first demonstrating that the watershed at issue is in violation of an applicable water quality standard for that pollutant. EPA has not

US EPA ARCHIVE DOCUMENT

demonstrated through monitoring data that any of the watersheds are in violation of applicable numeric standards for many of the pollutants in these TMDLs.

Commentor: Irvine Co./Latham&Watkins

Response: The commentor=s assertions concerning the limits on when a TMDL may be developed are not correct. TMDLs are developed for Awater quality limited segments,@ and EPA defines Awater quality limited segments@ as including both waters which are not meeting water quality standards, and also waters which are not expected to meet standards. 40 C.F.R. 130.2(j). Additionally, in determining which segments are water quality-limited, States consider whether narrative criteria as well as numeric criteria are being achieved In determining which segments in this watershed needed TMDLs for which pollutants, EPA assessed available toxicity and chemical data in three water-quality categoriesBwater column quality, sediment quality, and tissue levels. EPA used a two-tiered weight-of-evidence approach, set forth in detail in EPA=s *Decision Document of Water Quality Assessment for San Diego Creek and Newport Bay* (ADecision Document@) (2002), to determine which TMDLs were appropriate.

L8. *Comment:* EPA cannot establish a TMDL for any pollutant without first demonstrating that the TMDL will render the watershed in compliance with an applicable water quality standards. For several of the pollutants, EPA has not demonstrated that implementation of the TMDL will bring the watersheds in compliance. [Comments regarding specific TMDLs are discussed separately in the sections on those TMDLs.]

Commentor: Irvine Co./Latham&Watkins

Response: EPA agrees that under Clean Water Act 303(d), TMDLs are to be established at levels necessary to implement the applicable water quality standards. However, if a TMDL is not stringent enough to meet a water quality standard, then the remedy is not to determine that no TMDL is appropriate, as the commentor seems to be suggesting, but instead to make the TMDL more stringent. EPA has calculated these TMDLs at levels necessary to meet all applicable water quality standards, as is discussed in the specific TMDLs. However, we acknowledge that there are many uncertainties in these analyses, and we strongly support the Regional Board=s plans to monitor implementation of these TMDLs and, if warranted, revise the TMDLs.

L9. *Comment:* The toxics TMDL is invalid to the extent it proposes to regulate nonpoint source pollutant. Because the TMDLs propose allocations for nonpoint sources, they exceed EPA jurisdiction. Pollutants only deal with discharge from point sources.

Commentor: Irvine Co./Latham&Watkins

Response: The TMDL program applies to both point source and nonpoint source pollution. This was recently reaffirmed by the Federal Court of Appeals for the Ninth Circuit. See *Pronsolino v. Marcus*, 91 F.Supp. 2d 1337 (N.D. Cal. 2000), affirmed by *Pronsolino v. Nastri*, No. 00-16026 (9th Cir. May 31, 2002).

L10. *Comment:* U.S. EPA=s resort to a narrative toxicity standard which does not itself identify a single compound is a concern.

Commentor: Irvine Co.

Response: These TMDLs are intended to meet all applicable water quality standards, narrative or numeric. Because all the pollutants at issue in these TMDLs are considered to be toxic substances, EPA considers the toxicity and bioaccumulation narrative standards to be applicable.

US EPA ARCHIVE DOCUMENT

L11. *Comment:* None of the compounds which are the subjects of these TMDLs are included in the 1998 303(d) list, even though the consent decree requiring establishment of these TMDLs was signed in 1997. The List specifies broad categories of compounds and Aunknown toxicity, but does not identify specific compounds. EPA should not deny the public the opportunity to participate in the process of determining which specific pollutants are responsible for the impairment. EPA knew the pollutants of concern in 1997 when it entered into the consent decree, but did not require California to notify the public of these pollutants in the 1998 List.

Commentor: Irvine Co./Latham&Watkins

Response: While EPA prefers that States identify specific pollutants in their 303(d) Lists, we recognize that sometimes States are only able to identify general classes of pollutants or broader problems such as Aunknown toxicity.@ The pollutants identified in the 1997 consent decree were EPA=s best understanding of the probable pollutants for which TMDLs needed to be developed. The consent decree itself, however, specifically noted that the list of pollutants was subject to change by the State, and that EPA could also determine that TMDLs were not needed. In fact, the TMDLs being established by EPA in this action differ somewhat from the list in the consent decree, as explained in EPA=s *Decision Document* (2002). Given the uncertainties regarding the specific pollutants, EPA determined that the State=s identification of general categories in its 1998 303(d) list was adequate to meet the requirements of the Clean Water Act and its implementing regulations

L12. *Comment:* The technical work is arbitrary and capricious because it is based on compound assumptions and extrapolations and Ablack box@ science. There is too much uncertainty, subjectivity, and error. The materials are too hard to understand, do not satisfy minimum scientific standards, and do not give the public a meaningful opportunity to comment. Affected parties have not been afforded due process because they have not been given a full and fair opportunity to participate in TMDL development.
Commentor(s): Irvine Co./Latham & Watkins

Comment: The conclusions in the proposed toxics TMDLs are presented without detailed backup data. Potential concerns relating to data validation, sampling procedures, sample preparation, use of appropriate laboratory procedures, establishment of dose-response, seasonal variability, biological population evaluation, etc., could not be evaluated. *Commentor:* Orange Integrated Waste Management Department/GeoSyntec Consultant

Response: EPA acknowledges that the scientific issues involved in these TMDLs are complicated, and for that reason we included the Technical Support Documents (TSDs) in the materials available for public review and afforded the public a 45-day public comment period. There were also opportunities for public input at EPA and State workshops and meetings, as discussed under APublic Participation@ in the TMDL document. The fact that there is uncertainty does not preclude development of a TMDL. Indeed, Congress fully anticipated that there would be uncertainty, and for that reason incorporated the margin of safety requirement in the TMDL statute. EPA acknowledges that there were some errors in the draft analysis and appreciates the complete review provided by commentors. The final TMDLs have been revised to correct errors which EPA and others found during the public review period. These revisions are discussed in the final TMDLs and/or in responses to specific comments.

With respect to the comment that Apotential concerns@ about the technical basis for the TMDLs could not be evaluated, the comment did not identify any specific concerns about the approaches used to calculate the TMDLs. As noted above, the TSDs, as well as the TMDLs, were available for public review during the comment period. Although EPA is not required to include every aspect of a TMDL analysis in the decision document, EPA did attempt to fully explain the analytical basis for the TMDL decisions in

US EPA ARCHIVE DOCUMENT

the TMDL summary document and TSDs. Many commentors did review and comment in detail on the technical approaches used for these TMDLs. The general comment about Apotential concerns@ does not provide a basis for modifying any specific aspect of the TMDL decisions or underlying technical analysis.

L13. *Comment:* The promulgation of a new TMDL is a rulemaking, as it will have a future binding effect and limit administrative discretion. EPA should publish the draft TMDL it in the Federal Register or give actual notice to Apersons subject to the rule@ to allow for public comment, citing 5 U.S.C. 553(b)(3) (Administrative Procedure Act). The supporting data for the TMDL should also be available for public comment. Among other things, the partitioning information is missing from the chemical description, the water values used are unavailable, the model used to calculate loading capacity is not comprehensible, and the basis for water column concentrations is not sufficiently explained to assess the accuracy of the approach.

Commentor: Irvine Co./Latham & Watkins

Response: EPA disagrees with the commentor=s assertion that establishment of TMDLs constitutes Arulemaking@ under the Administrative Procedure Act. These TMDLs are specific factual determinations B calculations of the loads these particular water bodies can receive and still achieve the water quality standards applicable to the water bodies. They have no application nationwide, nor even statewide. Furthermore, we submit that if Congress had intended to require EPA to use rulemaking procedures, it would have given EPA more than the 30 days in which EPA is expected to establish TMDLs after disapproving State TMDLs under CWA 303(d)(2). Indeed, the fact that Congress explicitly established a rulemaking procedure for other actions, e.g. establishing water quality standards in CWA 303(c), indicates that such a procedure is not required for actions such as TMDL establishment under CWA 303(d), where the statute does not specify any type of public participation at all, much less rulemaking procedures.

Although the CWA does not require any type of public notice prior to establishment of TMDLs by either EPA or the State, EPA regulations do require some public review when TMDLs are established under certain circumstances; for example, 40 C.F.R. 130.7 provides that when EPA establishes a TMDL after disapproving a State TMDL, EPA must Aissue a public notice seeking comment@ and consider the public comments received. There is no requirement, however, for publication in the Federal Register.

For the toxics TMDLs, EPA determined that the most effective way of providing notice and soliciting public comment was through the local newspaper of general circulation. Thus, EPA public-noticed the draft TMDLs in the Orange County Register. Copies of the public notice were mailed to the Basin Plan distribution list provided by the Regional Board and posted on the EPA Region 9 TMDL website. Public meetings and workshops were also held, as discussed in the APublic Participation@ section of the TMDL document. Copies of the TMDLs and TSDs were available at the public meetings, on the EPA REgion 9 TMDL workshop, and in the EPA and Regional Board offices.

As noted previously, EPA acknowledges that the scientific issues in these TMDLs are quite complicated, and for that reason made the more detailed TSDs available in the website postings, at the Regional Board and EPA offices, through mailings, and at the public meeting held during the comment period. EPA staff, EPA=s technical consultant, and all supporting data and information used to develop the TMDLs were also available to commentors via email, conference calls, and in person during the public comment period. The TMDLs were revised in several places in response to technical issues raised by commentors, as is discussed in responses to specific comments and/or in the final TMDLs. As sufficient level of detail was provided in the draft TMDLs and administrative record to facilitate a technical review of the TMDLs by interested commentors. The commentor=s consultants submitted extensive technical comments which express the commentor=s views concerning the technical approaches

US EPA ARCHIVE DOCUMENT

used in the TMDLs. Therefore, we disagree that insufficient information was provided in the TMDL documents and supporting information to enable the commenter to assess the TMDL methods.

L14. *Comment:* EPA used unreliable scientific methodologies to establish the TMDLs. EPA translated narrative standards into numeric standards using techniques that have not been subject to peer or public review, ignored well-established numerical data for the watersheds at issue, and produced a largely unintelligible explanatory document. (Commentor includes specific examples, which are addressed separately in this Response to Comments in the Technical Comments section.)

Commentor: Irvine Co./Latham&Watkins

Response: EPA based this TMDL on the best scientific data and methods which were available to us. In some cases, it was necessary to devise new methods of analysis specifically for these TMDLs. EPA=s reasons for considering narrative as well as numeric water quality criteria and data are set forth in our Response to Comment L1. While these TMDLs have not been subject to a formal peer review process, they have been subject to comprehensive public review, including workshops during and after development of the draft TMDL and the formal public comment period. EPA also worked closely with scientists at the Regional Board and with EPA=s consultant, Tetra Tech. We acknowledge that there were some errors in our original analysis, which have been corrected in the final TMDLs and are discussed in response to specific comments and/or in the final TMDLs.

L15. *Comment:* EPA must ensure that allocations for all point and non-point sources are included in the TMDLs. In some cases, EPA either does not include a potential source in the allocations or does not set an adequate allocation for that source. (Commentor includes several examples, which are addressed separately in this Response to Comments in the sections regarding the individual TMDLs.) Each individual point source should be assigned its own individual wasteload allocation, not grouped together under a catch-all loading (specifically noting the metals TMDLs) so that the WLAs may be implemented through the individual NPDES permits. All of the allocations should be transparent when reading the TMDL so that everyone is fully informed of what is being covered and so that dischargers are aware of which allocations apply to them.

Commentor: Natural Resources Defense Fund (NRDC)

Response: As noted above, comments regarding allocations in specific TMDLs are addressed in the specific TMDL sections of this Response to Comments. EPA agrees that TMDLs should if possible establish individual wasteload allocations for individual point sources. Given time constraints and the data available, however, we were not able to do this for some point sources in some of the TMDLs. We have identified the specific permitted discharges to which the grouped allocations apply and specified how these allocations should apply to individual dischargers in the future. For metals, we established concentration based wasteload allocations which apply to each NPDES permitted facility. More specific allocations within the general allocations will be determined by the Regional Board when it develops implementation measures for these TMDLs and revises permits consistent with these TMDLs.

L16. *Comment:* Where there is significant uncertainty and/or lack of data to support the source analysis, we believe a larger explicit margin of safety must be provided. EPA should clarify which loadings, if any, are encompassed by the explicit margin of safety.

Commentor: NRDC

Response: The explicit margin of safety was included to account for uncertainties in the analysis but was generally not intended to comprise an unallocated reserve or account for loadings not addressed in the source analysis. We do consider the MOS for the selenium TMDLs to encompass loading from

US EPA ARCHIVE DOCUMENT

atmospheric deposition, although this source is not considered to be significant. EPA considers the 20% explicit margin of safety for metals and the 10% MOS for the other pollutants, combined with conservative assumptions used throughout development of the TMDLs, to provide an adequate margin of safety. See also response to comments OP17, M11, and OC 37.

L17. *Comment:* The Regional Board has adopted a phased approach in establishing TMDLs for other pollutants (nutrients, sediments) in this watershed. The phased approach includes a schedule whereby final compliance with the TMDLs is to be achieved, and also includes interim implementation steps, including additional monitoring and investigation, and revision/refinement of the TMDLs if warranted. We expect the Board will take a similar approach in the adoption of the toxics TMDLs, given limited data and the difficulties anticipated in achieving compliance. We would welcome a discussion of EPA=s implementation recommendations for these TMDLs. The implementation recommendations section might be the appropriate vehicle to express EPA=s position that no discharge rights or obligations are changed directly by TMDL promulgation. Rather, any such changes would occur in the process of implementing the TMDL through NPDES permit/WDR modifications and other implementation actions identified by the Regional Board in the implementation plan in the basin plan. This is a position with which we agree, as reflected in the recently reissued Orange County MS4 permit. The Regional Board=s TMDL implementation approach to date has been to request that the responsible parties submit plans and schedules for achieving compliance with the requirements of the TMDLs. We urge EPA to endorse this approach.

Commentor: Santa Ana Regional Water Quality Control Board

Response: EPA supports the Regional Board=s phased approach. Additionally, the Regional Board=s interpretation of EPA=s position concerning the obligations of dischargers is correct. As recommended by the Regional Board, we are including an implementation recommendations section in the final TMDLs.

L18. *Comment:* The ambiguities in the TMDL preclude clear notice to the City of its obligations. Compliance with the TMDLs is unrealistic and an undue burden on the City. The City is not a major contributor of the pollutants and should not have to undergo tremendous cost to prove this.

Commentor: City of Costa Mesa.

Response: The commentor did not provide specifics concerning the cost which it envisions incurring, nor is the comment clear with regard to ambiguities and the City=s obligations. As discussed in Comment L17, the City=s discharge rights and obligations are not changed directly by the TMDL. Rather, such changes will occur, if necessary, in the process of implementing the TMDL by the Regional Board through permits or possibly other means.

L19. *Comment:* There are no time-for-compliance provisions in the TMDL. The TMDL will immediately place many stakeholders in a position of violating the TMDL. The TMDL should contain provisions for a phased-in approach for eventual compliance.

Commentor: City of Costa Mesa

Response: See Comments L17 and L18.

L20. *Comment:* A re-opener clause should be incorporated into the TMDL that allows the load allocations to be re-evaluated and revised. This will provide the ability to take into account any new

US EPA ARCHIVE DOCUMENT

scientific data that is developed or to revise the proposed load allocations in the event that stakeholders are unable to meet the load allocations as currently proposed.

Commentor: City of Costa Mesa

Response: EPA declines to include a mandatory reopener clause in the TMDLs; however, we note that the State is always free to revise a TMDL and submit the revised TMDL to EPA for approval, and we encourage States to do this when new information becomes available. In this regard, we note the Regional Board=s intent to develop a phased implementation approach, including additional monitoring, investigation, and revisions of the TMDLs if warranted. If commentors are concerned with implementability of the TMDLs, we urge them to submit comments and recommendations to the Regional Board when it develops implementation measures for the TMDLs.

L21. *Comment:* The TMDLs may result in regulatory requirements that are unattainable and subject stakeholders to third party lawsuits and possible criminal proceedings by regulatory agencies.

Commentor: Irvine Public Works Dept.

Comment: I believe that a forced TMDL for toxics will be counter productive and logistically unenforceable. How can the EPA hold liable the vast majority of permit holders and those businesses that have demonstrated continuous support and improvements of this watershed=s water quality? My hope is that EPA will not actively enforce these TMDLs and instead work with the Regional Board to develop an implementation plan that will satisfy the consent decree and reward stakeholders for their continued efforts to protect this watershed=s water quality. *Commentor:* Bordier=s Nursery.

Response: See Response to Comments L17-20. As discussed in Comment L17, discharge rights and obligations are not changed directly by the TMDL. Rather, such changes will occur, if necessary, in the process of implementing the TMDL by the Regional Board through permits or possibly other means. If commentors are concerned with implementability of the TMDLs, we urge them to submit comments and recommendations to the Regional Board when it develops implementation measures for the TMDLs.

L22. *Comment:* Further monitoring and analysis has been, and will continue to be, an important part of our TMDL implementation efforts, both to assess the effectiveness of control measures and to assist us in refining the TMDLs. In addition to implementation of a routine monitoring program, which will be coordinated with the local stakeholders, a number of special investigations are being conducted to forward the TMDL work. These include studies in the Rhine Channel area, an identified Toxic Hot Spot. The Regional Board has already approved a general cleanup plan for that area and the studies underway will help us to refine it. We expect that implementation of a detailed cleanup plan will be the key remediation vehicle for the Rhine Channel.

Commentor: Santa Ana Regional Water Quality Control Board.

Response: EPA applauds the Regional Board=s commitment to future monitoring, analysis, and refinement of these TMDLs, and the Regional Board=s efforts to coordinate this work with local stakeholders. We also commend the Regional Board for its work on the general Rhine Channel cleanup plan, and note that this is an positive example of combining the results of TMDL analyses with overall watershed planning.

L23. *Comment:* In order to manage the Irvine Groundwater Basin, IRWD will need to construct, operate and maintain water wells and desalters. These activities will require discharge to surface waters, because they will discharge large quantifies of water for short periods of time. IRWD requests that discharges associated with the management of the Irvine Groundwater Basin be included in any waste load allocations included in the TMDL.

US EPA ARCHIVE DOCUMENT

Commentor: Irvine Ranch Water District (IRWD).

Response: The grouped wasteload allocation for groundwater dewatering and groundwater treatment operations is designed to apply to the type of discharge described by the commenter. As discussed in the implementation section, we will urge the State to work with dischargers to collect data and conduct analysis necessary to support more specific delineation of wasteload allocations for individual dischargers of pumped groundwater. Meanwhile, the grouped allocation is intended to ensure that the sum of all discharges from this class of discharge does not contribute to TMDL exceedences.

L24. *Comment:* We request that EPA stay the promulgation and implementation of the proposed TMDLs pending further investigation, and allow further opportunity for public comment. *Commentor:* Latham & Watkins.

Comment: We suggest extending the deadline for comments by 90 days. *Commentor:* City of Irvine Public Works Department.

Comment: We encourage EPA to defer approval of the TMDLs in question until they can be revised and subjected to additional public review. *Commentor:* California Farm Bureau Federation.

Response: EPA has already negotiated an extension of the consent decree deadline for establishing these TMDLs (to June 15, 2002), has provided for a 45-day public comment period, and does not consider an additional extension to be appropriate. We agree that the issues are technically very complicated, and applaud the Regional Boards commitment to including monitoring and further analysis as it implements these TMDLs (see Comment L17, 20). As the Regional Board develops implementation measures for these TMDLs, there will be additional opportunity to both submit formal comments to the Regional Board, and also to work with Regional Board staff in developing the implementation measures.

L25. *Comment:* It is stated that TMDLs are required for toxic substances that are shown to cause probable adverse effects. However, it is not clearly stated how Aadverse effects@ are defined. The TMDL states, AEvidence of adverse impacts to aquatic life as a result of direct or indirect exposures to these toxic pollutants is limited.@ This lack of evidence is significant. It appears that based on these statements and the lack of definition of a problem statement that further study and data gathering may be required before a determination of Aadverse effect@ can be made.

Commentor: Orange County IWMD/GeoSyntec Consultant

Response: The Commentor is referred to EPAs 2002 *Decision Document*, in which we document our criteria for determining which TMDLs needed to be developed. We have revised the language in the TMDL to indicate that although water quality standards have been exceeded for the subject pollutants, the degree to which beneficial uses have actually experienced adverse effects is unknown. Water quality standards and TMDLs are designed to be protective, and the TMDLs are intended to identify maximum allowable pollutant loads and concentrations that can be discharged without exceeding water quality standards and harming beneficial uses.

EPA agrees that further study and data gathering is desirable for the implementation phase of these TMDLs, and concurs with the Regional Boards plans to increase data gathering and analysis and, if necessary, revise these TMDLs.

L26: *Comment:* It is difficult to comment on a draft TMDL that has no implementation plan.

Commentor: Irvine Co.

US EPA ARCHIVE DOCUMENT

Response: EPA is not establishing implementation plans for these TMDLs as it is the State, not EPA, which is responsible for developing implementation measures necessary to attain TMDLs, In its comments concerning the EPA TMDLs, the Regional Board signaled its commitment to adopt TMDLs and implementation plans for these toxic pollutants in a timely manner. The Regional Board will do this through the Basin Plan amendment process, which involves extensive public participation. At the request of the Regional Board, EPA has included general recommendations of implementation actions in a new section of the TMDL summary document (AImplementation Recommendations@). As discussed in that section, these implementation and monitoring recommendations are not required and are not part of the TMDL decisions being made by EPA at this time; rather, they are included with the TMDLs to assist followup planning and implementation work by the State and local stakeholders.

Organophosphate (OP) TMDLs

OP1. *Comment:* I am concerned that the banning of diazinon and chlorpyrifos from products available to the general public may not be enough to reduce the levels of the organophosphates in the waters of San Diego Creek to an acceptable level in a reasonable length of time. It may be necessary to also restrict commercial use of these compounds in order to protect the biota in creek water.

Commentor(s): John F. Skinner MD

Response: The EPA re-registration agreements phase out various diazinon and chlorpyrifos uses over a five-year period. The uses that will be discontinued include many of the commercial applications as well. Overall, it is our best estimate that more than ninety percent of diazinon and chlorpyrifos use (as of 1999-2000) will be discontinued over the next five years. The implementation recommendations in the final TMDL suggest that if reductions associated with the phase-out of these pesticides are insufficient to implement the TMDL, then additional actions to reduce discharges of these pesticides may be necessary.

OP2. *Comment:* Overall, the draft OP pesticide TMDL and the interpretation of supporting data are reasonable. Instead of specific technical comments, DPR would like to inform you of the recent availability of documents addressing urban pesticide use and water quality.

Commentor(s): California Department of Pesticide Regulation (CDPR)

Response: Three of the documents listed were reviewed during development of the TMDL. The additional studies will be reviewed and may be used by the Regional Board for developing the implementation plan for the TMDL.

OP3. *Comment:* The TMDL is worded to include all Organophosphate products not just the currently identified products Diazinon and chlorpyrifos.

Commentor(s): George Gutman, Bordiers Nursery

Response: The TMDL is for chlorpyrifos and diazinon only. TMDLs for other organophosphates are not being developed at this time. The term Aorganophosphates@ is used to distinguish these two pesticides from the organochlorine pesticides.

OP4. *Comment:* (A) There are state and federal regulations that require nurseries to maintain our stock and our facilities in Acommercially clean@ condition all the time. This requires pesticides. We are also in some case to be Afree from@ pests. This is the case for the federal quarantine on the Red Imported Fire Ant (RIFA). How will EPA work this issue out with USDA? (B) Ironically, to comply with protocols for

US EPA ARCHIVE DOCUMENT

protecting against the transport of red imported fire ants, the nurseries are directed to use diazinon on the nursery stock before it can be shipped from the nursery.

Commentor(s): (A) George Gutman, Bordiers Nursery, (B) Kathy Nakase, California Farm Bureau

Response: We are informed by the Regional Board that the implementation plan will address the issue of diazinon and chlorpyrifos use for the RIFA plan. Strategies to achieve the TMDL goals while taking into account the requirements of the RIFA program will be developed. In this regard, the Regional Board anticipates working with the stakeholders and building on the cooperative work being undertaken by the DPR, USDA, and UC Cooperative Extension to address potential water quality impacts from the RIFA program.

We also note that the USDA requires mitigation measures to minimize impact of quarantine treatment on the environment and human health. See, e.g. USDA *Imported Fire Ant Quarantine Treatments for Nursery Stock and Other Regulated Articles*, Program Aid No. 1653 (1999).

OP5. *Comment:* The OP pesticide TMDL creates a number of concerns for the agricultural community of Orange County. First, the OP pesticides, diazinon and chlorpyrifos, are important broad-spectrum pesticides for California agriculture. In reality, the ability of OPs to control a number of pests results in less pesticide use by the industry. When a farmer is forced to forego using OP, the farmer is usually forced to use two or more other pesticides that are designed to address a single pest. We state these concerns because of the statement on page 28, which indicates that additional measures will be necessary to achieve the reductions set forth in the TMDL. We are concerned that the allocations established by the TMDL will not be able to be implemented in an economically effective manner by the state and the Regional Board. If the set allocation is not implementable the impact to the Orange County agricultural community could be devastating.

Commentor(s): Kathy Nakase, California Farm Bureau

Response: Additional measures may be necessary to achieve the reductions in OP concentrations in San Diego Creek.. However, this does not mean that additional usage reductions are necessarily needed. Less than one percent of the applied diazinon and chlorpyrifos mass reaches San Diego Creek on an annual basis. Physical and chemical processes breakdown the pesticides before they reach the drainage channels. The Regional Board anticipates that the TMDL implementation plan will include a component focused on development and application of effective management practices that reduce pesticide concentrations in runoff.

OP6. *Comment:* Proposed application of the CDFG numeric targets is inconsistent with the NRC approach. EPA admitted that the methodology underlying the CDFG numeric targets would have to be updated when it was created seventeen years ago. The CDFG targets are excessively conservative. If the targets are to be used, they should reflect the results of PERA and Mesocosm/Microcosm studies. MANA recommends that EPA discontinue use of the numeric targets developed by the CDFG and revise the TMDL for diazinon and chlorpyrifos.

Commentor(s): Makhtashim Agan of North America Inc (MANA)

Response: The validity of the USEPA methodology (AGuidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses@) was affirmed recently with the promulgation of the California Toxics Rule (CTR) in May 2000 (40 CFR Part 131, page 31689). This is the methodology used by the California Department of Fish and Game (CDFG). The NRC approach, while it appears worthwhile to consider, is not yet reflected in relevant TMDL regulations.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

OP7. *Comment:* The saltwater chronic numeric target for chlorpyrifos in Upper Newport Bay is based on the National water chronic criterion of 5.6 pptr (EPA 1986). The criterion is based on 8 chronic bioassays in marine organisms. One of these bioassays was done by Chuck Mckenney at the EPA Gulf Breeze Laboratory and reported in 1981. The bioassay was a 28 day study in *Mysidopsis bahia*.

I discussed the study with Chuck Mckenney. He said the 42,000 pptr data point was in error in the National water criterion document and should be 42 pptr. He said 4 pptr and 10 pptr concentrations were estimated and not analyzed. The National water criteria are guidance and not standards unless adopted by local agencies for specific watersheds. Considering the lack of analytical verification and a questionable technique for assessing growth inhibition for the 4 pptr and 10 pptr concentrations, the effect level of 42 pptr is the lowest concentration verified by analysis and having effects on survival, reproduction, and growth. Adoption of this effect level would raise the chronic criterion above the California freshwater chronic criterion of 14 pptr.

Using a freshwater chronic criterion for chlorpyrifos in Upper Newport Bay seems appropriate since the period of concern is the during storm flows when the Upper Bay is dominated by freshwater. Therefore, whether the standard is considered to be a reinterpretation of the National chronic saltwater criterion (corrected from 5.6 pptr to 14 pptr or higher) or a CDFG recommended freshwater chronic guideline, the TMDL for chlorpyrifos in the Upper Newport Bay should be based on a maximum chronic concentration of 14 pptr.

Commentor(s): James Byard, (Irvine Co)

Response: Chuck Mckenny, the scientist who performed the study has expressed his confidence in the results, and that effects were present at the 4 pptr level (personal communication with EPA). The typographical error in the reporting of the bioassay did not affect calculation of the chronic criterion.

However, the numeric targets in the TMDL have been revised to use the recommended CDFG (2000) criteria, 9 ng/L(chronic) and 20 ng/L (acute), as these represent the latest scientific evaluation of available data. The study performed by Chuck Mckenny was reviewed by the CDFG and included in the data set used to derive the chronic numeric target.

OP8. *Comment:* There is no evidence of real-world, field toxicity in the waters that are subject of TMDLs.

Commentor(s): Latham & Watkins (Irvine Co)

Response: Numerous toxicity tests have demonstrated the occurrence of toxicity in the watershed. Cited references in the TMDL include:

Bailey, HC DiGiorgia, C and DE Hinton. 1993. *Newport Bay Watershed Toxicity Study*

Lee, GF and S Taylor. 2001a. Results of Aquatic Life Toxicity Testing Conducted During 1999-2000 in the Upper Newport Bay Watersheds.

Lee, GF and S Taylor. 2001a. Results of Aquatic Life Toxicity Testing Conducted During 1997-1999 in the Upper Newport Bay Watershed and Review of Existing Water Quality Characteristics of Upper Newport Bay and its Watershed.

CDPR 1999-2000. Preliminary Results of Pesticide Analysis and Acute Toxicity Testing of Monthly Surface Water Monitoring for RIFA Project in Orange County. (Monthly monitoring memos)

OP9. *Comment:* A simple mixing calculation indicates that if San Diego Creek contributes more than 40 percent of the volume in the Bay, Upper Newport Bay will not meet its target. Please provide an analysis of the relative proportion of the volume that San Diego Creek can contribute to the Upper Bay under

storm conditions that demonstrates that the numeric targets for Upper Newport Bay will be met under the range of storm conditions.

Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: The concentration-based TMDLs apply under all flow conditions to San Diego Creek and Upper Newport Bay and are sufficient to ensure that the numeric targets will be met under storm conditions. The Regional Board anticipates that the implementation plan will include a task to evaluate the degree of mixing and proportion of San Diego Creek flow volumes in Upper Newport Bay during storm conditions, and that the TMDL will be refined/revised as necessary.

OP10. *Comment:* The typical detection limit for chlorpyrifos water samples appears to be between 40-50 ng/L. Please provide guidance on how non-detect data for chlorpyrifos will be interpreted with respect to the numeric targets. Discuss the availability and use of sampling and analytical methods that will result in detection limits less than or near the numeric targets. This issue should be incorporated into the implementation plan.

Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: Some of the data summarized in the TMDL were collected using sampling and analytical methods with detection limits below the numeric targets. The Regional Board anticipates that the implementation plan for the TMDL will include a monitoring and reporting program that specifies appropriate detection/reporting limits for chlorpyrifos and diazinon.

OP11. *Comment:* Source Analysis: The TMDL provides text describing how the available data compare to the chronic numeric criteria for each waterbody and compound. Please provide the same information with respect to the acute criteria.

Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: Additional discussion of the data with respect to the acute criteria has been included in the TMDL and the TSD.

OP12. *Comment:* We cannot evaluate the current loadings in the analysis presented in the TSD. Please clarify how the mean base and storm flow concentration used in Tables C-14 and C-16 were determined. The concentrations in these tables are not consistent with the base and storm flow concentrations presented in Tables C-8 and C-11.

Commentor(s): Limno-Tech (NRDC/Defend the Bay); (B) James H. Eldridge, City of Irvine

Response: Tables C-8 and C-11 are data summaries for all 398 diazinon and chlorpyrifos samples collected from the various drainage channels in the watershed. Tables C-14 and C-16 refer to 28 samples collected at the San Diego Creek at Campus station (SDC-Campus). For purposes of estimating loads, the data from the SDC-Campus station are appropriate as the station is representative of flow from over 95% of the watershed (Tables C-14 and C-16).

The loads on page 25 of the Summary Document were determined using median concentrations from the data at the SDC-Campus station. The loads in Tables C-14 and C-16 of the TSD were determined using the mean concentrations. For consistency, the loads on page 25 have been edited to reflect the loads determined based on the mean concentrations as in the TSD.

It should be noted that the estimated loads are provided in the TMDL for information purposes only, as the TMDL is concentration based.

US EPA ARCHIVE DOCUMENT

OP13. *Comment:* Please reconcile the various existing load estimates.
Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: The load estimates in the TMDL were made using median concentrations from the SDC-Campus station while the load estimates in the TSD were made using mean concentrations. These concentrations were multiplied with mean annual base and storm flow rates. The text has now been revised to use mean concentrations in both the summary and the TSD, and the mean annual base and storm flow rates are based on the flow analysis from the TSD Part B.

OP14. *Comment:* The calculation of the percent contribution of indirect deposition from rainfall appears to be incorrect on page 17 of the TSD.
Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: The atmospheric deposition percentage calculations have been redone using the new loads calculated as described above (OP13).

OP15. *Comment:* The language in the TMDL contradicts the analysis of loadings from atmospheric deposition presented in the TSD. We recommend that the TMDL be changed to more accurately reflect the analysis presented in the TSD by rephrasing the second full paragraph on page 25. We suggest the following language be inserted into the TMDL. ALoadings from atmospheric deposition are potentially significant, though not well-quantified. Because the origin and magnitude of these loadings are not well understood, their potential contribution is factored into the margin of safety.@
Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: The text has been modified to include the language similar to the suggested text. See also response to OP17 concerning margin of safety.

OP16. *Comment:* (A) Why are there two calculations for Reach 1 in Table C-16? (B) Please correct the following errata:

- On page 24 of the TMDL there is a reference to Table 3.2,which does not appear in the document with the content described in the paragraph.
- The last paragraph in the chlorpyrifos section on page 24 lists the saltwater chronic numeric target as 9 ng/L. This should be changed to 5.6 ng/L.
- In Table C-16 in the TSD, ASD Creek Reach 1@ is listed twice. The second entry was likely meant to be AUpper Newport Bay.@

Commentor(s): (A) James H. Eldridge, City of Irvine; (B) Limno-Tech (NRDC/Defend the Bay);

Response: The sentence referring to Table 3.2 has been removed. The saltwater numeric targets have been changed to reflect the latest scientific evaluation published by the CDFG in 2000. The saltwater chronic numeric target has thus been revised from 5.6 ng/L to 9 ng/L. See also the response to comment OP7. Table C-16 has been revised to simply provide the estimated load at the San Diego Creek-Campus station.

OP17. *Comment:* Given the uncertainty regarding the origin and magnitude of loadings from atmospheric deposition, we suggest increasing the margin of safety to 20 percent for chlorpyrifos for both water bodies to encompass this uncertainty.
Commentor(s): Limno-Tech (NRDC/Defend the Bay)

US EPA ARCHIVE DOCUMENT

Response: As the TMDL is concentration-based, the uncertainty in the contribution from the atmosphere will not affect establishment of the TMDLs and allocations. Regional Board staff have indicated that the uncertainty may require targeted actions during the implementation period to ensure that the criteria are met in the watershed. These actions could include additional monitoring to better assess the significance of rainfall as a separate source, and a thorough investigation of potential sources and transport pathways to the watershed.

OP18. *Comment:* We suggest adding language to the text in the Allocations section that specifically states what sources are covered in each allocation.

Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: The TMDL has been revised to include the suggested information.

OP19. *Comment:* The storm average concentrations presented in Table 3-4 are not consistent with the mean concentrations presented in Tables C-8, C-11, C-14, and C-16. Please explain how the values in Table 3-4 were derived.

Commentor(s): Limno-Tech (NRDC/Defend the Bay)

Response: Multiple samples are available from five separate storm events in the watershed from 1997-2000. The storm average concentrations in Table 3-4 are the maximum single storm averages at the SDC-Campus station. These are the best data available for comparison to the chronic criterion (4-day average). For chlorpyrifos the data are six samples from January 25-26, 2000. For diazinon, the data are four samples from January 25-27, 1999.

The averages in Tables C-8, C-11, C-14, and C-15, are for all sampled storms from 1996-2000. The diazinon and chlorpyrifos averages for the entire watershed are presented in Tables C-8 and C-11 respectively (data summary), while the averages for the SDC-Campus station are used in Tables C-14 and C-16 (load calculation).

OP20. *Comment:* On pages 22 and 23 of the document it states that there is no evidence of bioaccumulation. Yet further down, the TMDL concludes by saying that adverse impacts may be affecting fish survival and reproduction. There does not appear to be any evidence to support the claim of adverse impacts to fish survival. Without supporting evidence, the statement should be stricken and the conclusion of acute and chronic toxicity should be reexamined.

Commentor(s): Kathy Nakase (California Farm Bureau Federation)

Response: The sentence concerning potential impacts on fish survival and reproduction has been deleted. However, the document notes that the presence of acute and chronic toxicity has been well documented using the standard test species *Ceriodaphnia dubia*.

The commentor is referred to EPA=s 2002 *Decision Document* for a discussion of EPA=s method for determining which TMDLs are needed. As indicated in that document, there is sufficient water-column evidence of toxicity that EPA has concluded that a TMDL is warranted.

OP21. *Comment:* As mentioned above, on page 28 the document discusses the phase out agreements and then concludes that additional measures will be necessary to achieve reductions. The document fails to provide information on why the phase-outs will not be protective and why additional measures will be necessary. Based upon the small percentage of land use related to agriculture in this highly urban

US EPA ARCHIVE DOCUMENT

environment, it is hard to believe that additional agricultural reductions will be necessary once the phase-outs are implemented.

Commentor(s): Kathy Nakase (California Farm Bureau Federation)

Response: The TSD describes the estimated load contribution from agriculture as around 10 percent. However, the re-registration agreements, which target urban uses to a greater extent than agricultural uses, may result in a higher proportion of agriculture use remaining. Only a miniscule fraction (<1%) of the annually applied diazinon and chlorpyrifos mass reaches San Diego Creek. Regional Board staff expect that the TMDL implementation plan will not be focused on further reducing the remaining diazinon and chlorpyrifos uses in the watershed. Instead, the implementation plan will address development and application of BMPs to ensure that runoff to San Diego Creek meets the numeric targets.

OP22. *Comment:* The allocation of 20 percent of Orange County pesticide usage to the Newport Bay watershed because it represents 20 percent of Orange County land may not be appropriate. If the ratio of agricultural to nonagricultural uses is used for analysis differences in the ratio between the Newport Bay watershed and Orange County as a whole may affect the apportionment of use for the watershed.

Commentor(s): James H. Eldridge, City of Irvine

Response: Estimation of pesticide usage in the watershed from records kept on a county-wide basis can be performed several different ways. As noted by the comment, pesticide usage patterns may not be uniform across Orange County; thus a simple approach using proportion of total area may result in some degree of inaccuracy. Pesticide usage rates are also affected by a large number of factors such as income, landscaping, lot sizes, population, and the presence or absence of pest infestations. Detailed evaluation of all these factors was not necessary given that the usage rates were only used to estimate the general magnitude (>90 percent) of the decline in usage expected from the EPA re-registration agreements.

OP23. *Comment:* There should be a description of the analysis of the impacts associated with expected reductions in loadings from the re-registration of both pesticides.

Commentor(s): James H. Eldridge, City of Irvine

Response: The Regional Board indicates that this analysis will be performed for the TMDL implementation plan. The TMDL analysis discusses the prospective reductions in loads associated with scheduled phase-outs of these pesticides in urban uses.

OP24. *Comment:* There is an inconsistency between the TMDL and the TSD. The conclusions of the TSD state that re-registration agreements with EPA will result in a 90 percent decline in use in Newport Bay and if there are corresponding declines in runoff concentrations, chronic numeric targets should be met for both substances. However, the conclusion in the draft TMDL states that AWhile these agreements should result in significant decreases in OP pesticide use and the resulting discharge concentrations to the water bodies, additional measures appear to be necessary to achieve the reductions set forth above.@ Since there is no analysis presented, no conclusions should be drawn.

Commentor(s): James H. Eldridge, City of Irvine

Response: The text has been revised to state Aadditional measures may be necessary@ rather than Aadditional measures appear to be necessary.@

US EPA ARCHIVE DOCUMENT

Achievement of the numeric targets through the re-registration agreements is dependent on the assumption of a linear relationship between usage and pesticide concentrations in runoff. While this might be the case, there is also some evidence that certain pesticide use practices may be responsible for a large part of the runoff load. Thus additional measures may be necessary.

OP25. *Comment:* There are no water quality standards for chlorpyrifos and diazinon. It is inappropriate to translate the narrative toxicity standard into numeric TMDLs using non-regulatory guidance values.
Commentor: Latham&Watkins.

Response: While at present there are no promulgated numeric water quality criteria for chlorpyrifos and diazinon, the narrative criteria for toxicity and bioaccumulation apply. See Responses to comments L1, L2 and L4.

OP26. *Comment:* We fully support EPA=s commitment to promulgate a TMDL for diazinon, even though this TMDL is not required by the consent decree. Available data demonstrates that diazinon is a source of water column toxicity in San Diego Creek. This toxicity is appropriately addressed by the development and implementation of a TMDL.
Commentor: Santa Ana Regional Water Quality Control Board.

Response: EPA appreciates the comment.

Selenium TMDLs

S1. *Comment:* The Regional Board concluded (RB 2000 Problem Statement) that there are no data for selenium indicating any water quality toxicity in Newport Bay and no evidence that concentrations of selenium are impairing beneficial uses or exceeding water quality standards in the Bay. Selenium concentrations in the Bay do not exceed the CTR saltwater criterion of 71 ppb.
Commentor: Irvine Co./Latham&Watkins

Response: Though there have been no measurements to date of dissolved selenium concentrations in Newport Bay that exceed the CTR saltwater criterion (71 ug/L), recent tissue data indicate that selenium is bioaccumulating to levels that pose a concern about potential toxicological/reproductive effects. Thus, there is evidence that the concentrations of toxic substances in the biota may be adversely affecting wildlife-related beneficial uses, in violation of the Regional Board=s narrative toxics objective. Combined with substantial evidence of water quality standards violations in San Diego Creek, Upper Newport Bay satisfies the decision criteria utilized in EPA=s Decision Document for identifying waters needing TMDL development.

Regional Board staff indicates that implementation of this TMDL is expected to be accomplished largely through the implementation of the selenium TMDL for San Diego Creek and other tributaries to the Bay, and that additional monitoring of selenium bioaccumulation in fish and mussels in Newport Bay will be conducted as part of the selenium TMDL implementation plan.

S2. *Comment:* Regulating selenium is not appropriate because selenium is naturally occurring in the watershed and there is little anthropogenic selenium. The Clean Water Act does not require cleanup of naturally occurring conditions. EPA can only regulate pollution, which is defined in the CWA as man-

US EPA ARCHIVE DOCUMENT

made alterations to water. The TMDL acknowledged that selenium loadings come largely from natural runoff and discharges of shallow groundwater, and that it would be difficult to estimate naturally occurring selenium discharge levels. While acknowledging the selenium is present naturally, EPA is proposing to regulate *all* selenium, without distinguishing natural from anthropogenic. This approach will require a cleanup that will never end, as nature will keep producing selenium. EPA should look at other TMDLs in the region where natural conditions are used as a benchmark, at which TMDL compliance is achieved.

Commentor: Irvine Co./Latham&Watkins**;** IRWD

Response: TMDLs need to analyze all sources of a pollutant, natural and anthropogenic. The commentors did not provide specific examples of TMDLs where natural conditions are used as a benchmark and how those TMDLs provide a useful model for the selenium TMDLs, so it is not possible to ascertain exactly what the commentors are proposing.

Moreover, EPA disagrees with the commentors' premise that the selenium in the surface water bodies of Newport Bay and its watershed is naturally occurring. Though selenium in the groundwater is naturally occurring, the selenium in the San Diego Creek watershed and Newport Bay is primarily the result of anthropogenic processes. Agricultural practices conducted in the early 20th century resulted in the rerouting of the drainage patterns in the San Diego Creek and Newport Bay watersheds. Swamps and marshes were drained (most notably the historical Swamp of the Frogs [La Cienega de las Ranas]), irrigation channels were constructed, and the drainage net was artificially extended downstream to Newport Bay (Trimble 1998). Prior to these changes, the San Diego Creek watershed did not have integrated drainage and did not regularly drain to the Bay. Large storm flows from the watershed ponded in the Swamp of the Frogs and an ephemeral lake located along the southwestern margin of the swamp between Upper Newport Bay and the present route of the Santa Ana River (Trimble 1998).

Though seleniferous water and sediments may have existed in the Swamp of the Frogs and the ephemeral lake, that selenium has now been re-mobilized and artificially rerouted into the watershed tributaries via groundwater discharge. As a result, the high selenium flows in San Diego Creek and its tributaries, which at one time did not except on very rare occasions reach Newport Bay, now flow directly to the Bay. It may be noted also that according to Trimble (1998), on those rare occasions when storm water overflowed from the ephemeral lake, it flowed westward into the Santa Ana River and directly into the Lower Bay, thereby completely bypassing the Upper Bay. The historical basis for selenium concentrations in the San Diego Creek Watershed has been described briefly by Dr. James Byard in his comments on the selenium TMDL (Irvine Co.). Dr. Byard notes that though seleniferous water and sediments may have accumulated in the inland lentic water bodies that existed on the Tustin Plain, selenium associated with these swamp and lake deposits has now been re-mobilized in the shallow groundwater. The shallow (perched) groundwater discharges through springs, seeps and weepholes to San Diego Creek, which has been artificially extended to Upper Newport Bay.

S3. *Comment:* Although natural in origin, selenium is an undesirable contaminant, and communities may as a result of selenium removal show some improvement. Because of the widespread presence of selenium in the surface and subsurface environment, it will be necessary to disturb the environment in order to remove the selenium. Consequently, programs instituted to remove selenium may cause some short term increases in selenium in the surface environment. The USEPA and other regulatory agencies need to recognize that minor excursions of the adopted selenium standard do not constitute a violation of the standard. Since selenium is neither created or destroyed, the only alternative to lessen selenium toxicity is to move excessively high concentrations of selenium to an environment which is less susceptible to selenium toxicity. IRWD recommends that selenium removal implementation plans require

US EPA ARCHIVE DOCUMENT

as a goal the net export of selenium from the Irvine Basin to ocean waters which would not be affected by minor increases in their selenium load.

Commentor: IRWD

Response: Many of the comments on these TMDLs concern implementation issues. All comments will be forwarded to the Regional Board for its consideration in implementing these TMDLs. The Regional Board has indicated that in developing the implementation plan for the selenium TMDL, a variety of remedial options for treating or removing the selenium in the surface flows and/or groundwater in the watershed will be considered.

S4. *Comment:* The naturally-occurring selenium in the creek exceeds the CTR criteria; thus, the Creek is likely to be well adapted to this naturally-occurring substance. The environment has adapted well to the natural selenium. EPA erroneously assumed that naturally-occurring selenium is toxic, when the local ecosystem is adapted to background levels exceeding the regulatory standard.

Commentor: Irvine Co/Latham&Watkins**;** Byard, IRWD

Response: Though selenium in the groundwater is naturally occurring, the presence of selenium in San Diego Creek as it now exists is the result of anthropogenic processes. See Response to Comment S2.

Additionally, the commentors have not produced any evidence to support the argument that the ecosystem is likely well adapted to existing selenium concentrations, which, as discussed above, are not naturally occurring. Selenium concentrations in San Diego Creek at Campus Drive consistently exceed the CTR criterion for fresh waters (5 ug/L). These concentrations are well above the level that Engberg et al (1998) characterized as certain to cause toxicological and reproductive effects. Selenium concentrations in fish tissues collected from San Diego Creek fall in the range of levels of concern for fish. This suggests that selenium is likely to cause ecological impacts in San Diego Creek.

Since selenium biomagnifies up the food chain, toxicological impacts from selenium in primary producers such as birds may not show up immediately. Toxicological effects of selenium on wildlife include lowered reproduction rates, shortened life spans, and stunted growth. Many of these effects are not readily observable and detailed biological studies will be needed to determine whether or not selenium is negatively impacting biota in the watershed and the Bay. We understand that several extensive investigations of selenium and its role in the San Diego Creek watershed are planned or are in the data collection stage. While these investigations may yield data on which the Regional Board may base a determination that revisions to the TMDLs are warranted, at this time EPA does not consider it prudent to postpone this TMDL analysis until a time when these toxicological and reproductive effects are more apparent or when additional data is gathered.

S5. *Comment:* EPA cannot establish a TMDL for any pollutant without first demonstrating that the TMDL will render the watershed in compliance with applicable water quality standards. EPA can=t show this for selenium because naturally occurring selenium exceeds the CTR criteria, so reducing anthropogenic selenium will not achieve water quality standards.

Commentor: Irvine Co./Latham&Watkins

Response: It appears that this comment is directed to the freshwater selenium TMDLs. Regarding compliance with applicable water quality standards, see our general response to comment L8. Regarding the commentor=s inference that Anatural@ sources of selenium are causing the observed exceedences of water quality standards in San Diego Creek, see response to comment S2.

US EPA ARCHIVE DOCUMENT

The selenium TMDLs and allocations do not specifically distinguish between apparently natural and anthropogenic sources of selenium discharge associated with rising or pumped groundwater because, as discussed above, basin land uses and hydrology have been substantially altered over time. We have set allocations which, upon implementation, would result in attainment of water quality standards for selenium. If the State later determines that it is infeasible to reduce selenium loadings to levels which result in attainment of standards, potentially because it finds that a significant portion of selenium loadings are truly natural in origin, the State may be able to carry out a use attainability analysis and revise the water quality standards accordingly.

S6. *Comment:* The agencies should take into consideration the unique characteristics of San Diego Creek watershed prior to implementing a TMDL based on the national standard for selenium of 5 ppb. The national standard is based on studies of a lake in North Carolina. Selenium in San Diego Creek is less likely to bioaccumulate.

Commentor: Irvine Co., Latham& Watkins; California Farm Bureau Federation.

Response: The 5 ppb standard has been adopted for California through the CTR and is considered the applicable standard in this watershed; therefore, it is necessary for these TMDLs to meet that standard.

Regarding the commentor-s technical concerns, bioaccumulation of selenium has been found in both lotic (running water) and lentic (standing water) systems. High instream selenium levels will also affect offstream linkages such as backwaters, marshes, reservoirs, and estuaries (Hamilton and Lemly, 1999). In addition, given the low flow regime that predominates in San Diego Creek (mean flow rate = 13 cfs), the presence of small pools, stagnant ponds, and in-stream sedimentation basins likely results in localized reducing conditions that could cause accumulation of the more bioavailable forms of selenium.

Though some data suggests that selenite is more toxic than selenate, selenate toxicity data are scant (Nagpal and Howell, 2001). Some organisms appear to be sensitive to selenate. A decrease in cell division and growth rates of some species of algae exposed to selenate have been shown by several studies (Davis et al., 1988; Dobbs et al., 1996; Richter, 1982). Selenate is also readily taken up and accumulated by plants and enters the food chain via this route (Dr. Lemly, USFS, personal communication, June 10, 2002). Since all forms of selenium may interconvert, they should all be considered toxicologically important (Drs. Teresa Fan and Gregory Cutter, comments at EPA Peer Consultation Workshop on Selenium Aquatic Toxicity and Bioaccumulation, EPA, 1998).

Studies of selenium have been conducted in various watersheds throughout the United States, including the western states. Chronic toxicological effects associated with selenium range from less than 2 ug/L (Skorupa and Ohlendorf, 1991) to 6.8 ug/L (Adams et al. 1998) depending on which endpoint is chosen to be protected and the models used by the investigators (Nagpal and Howell, 2001). Though the 5 ug/L CTR standard was based predominantly on a study of Belews Lake in North Carolina it falls within this range of values. Additionally, Skorupa (1998) reviewed 12 examples of selenium poisoning. Five of the sites (42%) were in California (Kesterson Reservoir, Richmond Chevron Marsh, Tulare Basin, Salton Sea, and Red Rock Ranch) and concluded that a national water-based criterion of less than 5ug/L was easily justified (Hamilton and Lemly, 1999). EPA is currently engaged in the process of reviewing its national criteria for selenium. Until this process is complete, it is appropriate to base the selenium TMDLs on the established CTR objectives. If these objectives are revised, or if a site-specific objective for selenium is developed and approved for the Newport Bay watershed, the TMDL must be revised accordingly.

US EPA ARCHIVE DOCUMENT

S7. *Comment:* Regional Board staff had proposed that the selenium TMDL be based on 2 ppb, based on the recommendations of US Fish & Wildlife Service. However, we recognize that the law requires the TMDL to meet the established CTR objective, and support basing the selenium freshwater TMDLs on the CTR objective. *Commentor:* Santa Ana Regional Water Quality Control Board.

Comment: Defend the Bay and NRDC believe that the chronic CTR criterion of 5 ug/l is not adequately protective. Rather, we believe that a 2 ug/l target for all flow conditions is required. A recent USGS study on the effects and fate of selenium in the San Francisco Bay and Delta found that a target of 5 ug/l is not adequately protective. In addition, US Fish & Wildlife Service has also suggested that a 2 ug/l target for selenium is necessary for adequate protection of fish and wildlife. If EPA does not use the 2 ug/l criterion, then a much larger margin of safety is required. *Commentor:* NRDC.

Comment: Targets for selenium must mirror the currently adopted water quality objectives, not objectives that may be adopted in the future. *Commentor:* California Farm Bureau Federation.

Response: EPA agrees with the Regional Board that the target should be based on the CTR criterion of 5 ppb. Commentors noted information from various studies which could support selenium targets which are either higher or lower than the currently applicable CTR standard. No evidence of current selenium bioaccumulation effects in San Diego Creek or Newport Bay biota was identified during the TMDL development process. Sufficient water column data were available to develop the initial TMDLs and allocations. In light of the uncertainty over, and disagreements about, the appropriate levels of protection from selenium exposures, the fact that criteria revision is currently underway, and the fact that we had sufficient water column data to develop TMDLs based on ambient criteria, EPA determined that it is most prudent to establish the TMDLs based on the existing CTR standard. However, we note that if the CTR in fact is altered and a lower criterion is adopted, the Regional Board will very probably need to revise the TMDL to ensure that the revised CTR criteria can be achieved.

As discussed in responses for other pollutants and in the general response to comment L1, EPA determined that in some other cases it is most appropriate to establish TMDLs for the watershed based on narrative standards due to the availability of data for sediment and/or fish tissue, the behavior of the pollutants following discharge, and the processes through which they potentially cause adverse effects to human or ecological health. However, those considerations were not applicable to the selenium TMDLs.

S8. *Comment:* A phased approach is recommended for the selenium TMDLs. We believe that a phased TMDL approach is particularly appropriate in dealing with selenium, given that the challenge of meeting the TMDL will be very significant, and given that we have relatively limited data on which to base management decisions. A number of studies are or will be underway shortly to assist us in filling those data gaps. One basic question is whether selenium is posing the ecological threat suggested by the findings of freshwater concentrations in excess of the CTR objective. Implementation of the selenium TMDL will also be difficult given that native groundwater is the major source.

Commentor: Santa Ana Regional Water Quality Control Board.

Response: EPA has not specifically developed these TMDLs as phased TMDLs. However, we acknowledge the problems noted by the Regional Board, and fully support the Regional Board=s plan to develop a phased implementation program for these TMDLs. As noted in comments and responses no. L17 and L18, no discharge rights or obligations are changed directly by promulgation of these TMDLs. Rather, such changes will occur, if necessary, in the process of

US EPA ARCHIVE DOCUMENT

implementing the TMDL by the Regional Board through permits or possibly other means.

S9. *Comment:* TMDLs are proposed even though existing loads are not well understood. For example, in the analysis of selenium, a total of 408 pounds per year is estimated to be from Aundefined sources.@ Leaving the source Aundefined@ makes subsequent implementation phases of the TMDL process unmanageable. Establishing a TMDL for this compound without better defining the sources in inappropriate.

Commentor: Orange County IWMD/GeoSyntec Consultant

Response: EPA acknowledges the uncertainties and supports the Regional Board=s phased approach as described in the previous comment. Uncertainties in TMDL development are not uncommon, and for that reason both the Clean Water Act and EPA=s implementing regulations specifically require a margin of safety.

S10. *Comment:* The Watershed is a flowing creek that terminates in an estuary. The flow-through nature of the Watershed limits the ability of selenium in the water column to equilibrate with sediments and the aquatic food chain

Commentor(s): Irvine Co./Byard

Response: Bioaccumulation of selenium has been found in both lotic (running water) and lentic (standing water) systems. High instream selenium levels will also effect offstream linkages such as backwaters, marshes, reservoirs, detention/sedimentation basins, and estuaries (Hamilton and Lemly, 1998). In addition, the low flow conditions (0-20 cfs) that predominates in San Diego Creek much of the year results in the presence of small pools and stagnant ponds. In-channel sedimentation basins are located in the creek directly above Newport Bay. These areas may result in localized reducing conditions that could provide conditions for accumulation of selenium in plants, sediment, and detritus and therefore, increase the concentrations of selenium in the food web.

S11. *Comment:* Other factors reducing the impact of selenium in the San Diego Creek are the predominance of selenate as the chemical form of selenium and the presence of high sulfate. Selenate is not as readily taken up by sediments and the aquatic food chain as selenite. Sulfate competes for the uptake of selenate into phytoplankton, reducing the bioaccumulation process.

Commentor(s): Irvine Co./Byard

Response: Since all forms of selenium may interconvert, they should all be considered toxicologically important. Though some data suggests that selenite is more toxic than selenate, selenate toxicity data are scant (Nagpal and Howell, 2001). Some organisms appear to be sensitive to selenate. A decrease in cell division and growth rates of some species of algae exposed to selenate have been shown by several studies (Davis et al., 1988; Dobbs et al., 1996; Richter, 1982). In addition, selenate is readily taken up and accumulated by plants, thereby entering the food chain (Dr. Lemly, USFS, personal communication, June 10, 2002). Sulfate does not appear to be important in terms of the expression of chronic toxicity except potentially for primary producers (USEPA, 1998).

S12. *Comment:* The EPA is considering lowering the selenium standard to 2 ppb. The high selenate, high sulfate, and flow-through characteristics of the San Diego Creek Watershed indicate that a 2 ppb standard would be unnecessarily overprotective. Even 5 ppb would likely be overprotective. A level of 10 ppb would most likely result in fish residue levels below 4 ppm. A reasonable approach would be a several year period at a watershed specific standard of 10 ppb_In the unlikely event that the levels of selenium in

US EPA ARCHIVE DOCUMENT

biota did not regress sufficiently to be below levels of concern, then a lower standard could be put in place. This titration approach to establishing a selenium standard for the Watershed would be the most efficient way to achieve protection of wildlife.

Commentor(s): Irvine Co./Byard

Response: The 5 ppb standard is the applicable numeric standard based on the CTR. This comment addresses potential revision of the selenium standards and is therefore beyond the scope of the TMDL establishment action.

S13. *Comment:* [T]he potential impacts to the Creek from high loads associated with storm events are much less than the smaller loads associated with dry flows. For this reason, an acute standard for selenium should be applied to storm flows_resulting from major storm events.

Commentor(s): Irvine Co./Byard

Response: Based on revision of the flow data (see revised TSD Part B), an acute standard of 20 ug/L for storm events exceeding 814 cfs (new flow tier 4), has been applied and the loads calculated accordingly.

S14. *Comment:* Selenium is present not only in surface soils but is also present to a substantial depth in the Irvine Basin. Based on the results of water analysis performed by the Orange County Water District, selenium is present at 32 ug/L at a depth of 100 feet and present at 5 ug/L to a depth of 360 feet.

Commentor(s): IRWD

Response: We are aware that selenium in the deeper groundwater aquifers often exceeds the levels in San Diego Creek., There appears to be little connectivity of these deeper aquifers with the surface flow in San Diego Creek, except as the result of man-s activities. The aquifer located at 100 feet is a confined aquifer and the communication between this aquifer and the shallow perched aquifer has not been investigated. Regional Board anticipates that the selenium TMDL implementation plan will include studies to investigate the connection between these aquifers.

Selenium from these aquifers can enter surface flows in San Diego Creek through construction dewatering, well construction, purging, and maintenance, and groundwater remediation (pump and treat) operations. Regional Board anticipates that as part of the implementation plan, these inputs will be evaluated and considered prior to revising existing NPDES discharge limits.

S15. *Comment:* I believe the major threat of selenium is coming from dry weather flows originating from groundwater sources that are purposefully drained from shallow aquifers in central Irvine_I believe that selenium reduction efforts should target dry weather flows in San Diego Creek instead of wet weather flows.

Commentor(s): Dr. Jack Skinner

Response: We agree. This has been discussed with Dr. Barry Hibbs, who is of the opinion that as much as 70% of the selenium in San Diego Creek is likely coming from the shallow groundwater aquifer (personal communication, June 10, 2002). However, though construction dewatering, well construction, maintenance and purging, and groundwater remediation operations may periodically contribute to the surface flows in San Diego Creek, perched groundwater is predominantly getting into the creek via seeps, springs, and weepholes, as a result of the hydraulic gradient, not due to purposeful drainage. Ongoing studies by Dr. Hibbs, and Dr. Tom Meixner of UCR, are investigating the sources of the selenium in the San Diego Creek watershed.

US EPA ARCHIVE DOCUMENT

Because of their relative infrequency, large volume of water, and high flow velocities, large storm events likely do not contribute to selenium in San Diego Creek itself, except for sediment that may be deposited in the creek in the inline sedimentation basins located just above Upper Newport Bay. The role these storm events play in contributing selenium to the Bay has not yet been determined. However, since the dry weather flows in San Diego Creek are currently dominated by groundwater inputs, treatment of these flows (and/or the shallow groundwater) will be an important step in removing a major source of selenium from the watershed.

S16. *Comment:* It is important to do the remediation of the groundwater selenium inputs near the source rather than just prior to entering Newport Bay.

Commentor(s): Dr. Jack Skinner

Response: We concur. Regional Board informs us that any remediation of selenium sources will be located as close to the sources as possible and upgradient of the Bay and tidally-influenced areas of the creek to ensure that the selenium is removed before it can reach sensitive estuarine habitats.

S17. *Comment:* _[W]ith regard to selenium, a 10% margin of safety will not be adequate if the TMDL is set at 5 ug/L instead of 2ug/L_As EPA has noted, there is considerable uncertainty and a lack of data to quantify loadings from various sources_For this reason, we recommend a larger margin of safety_In addition, the uncertainty regarding selenium sources to Newport Bay requires an additional MOS unless a thorough analysis indicates that compliance with the freshwater TMDLs will also ensure compliance with objectives in Newport Bay.

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: There are ongoing investigations of the sources of selenium in the San Diego Creek/Newport Bay watershed. However, as much as 70% of the selenium in San Diego Creek is likely coming from the shallow groundwater aquifer (Dr. Barry Hibbs, personal communication, June 10, 2002). Since San Diego Creek is by far the largest freshwater contributor (>95%) to Upper Newport Bay and it drains over three-quarters of the entire Newport Bay watershed, reductions of selenium in the creek should also result in reductions in the Bay. Therefore, the level of uncertainty about selenium sources does not warrant an additional margin of safety.

As noted previously, EPA is reviewing the 5 ppb selenium criterion, and investigations of selenium in this watershed are on going. If warranted by this review or site-specific studies, the TMDL, including the margin of safety, can be modified as appropriate.

S18. *Comment:* The Regional Board=s suggested approach of using different criteria for the base/small flows (2 ug/L) and medium/high flows (10 ug/L) is not sufficiently protective. Using a criterion of 10 ug/L is likely to cause toxicity to organisms in San Diego Creek.

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: Based on revised flow data (see Revised TSD Part B), the chronic CTR criterion of 5 ug/L will be applied to all flow tiers that exceed an annual average of 4 days (see Table 2, TSD Part B). This includes base flows (Q = $\leq$20cfs), small flows (20>Q$\leq$181cfs), and medium flows (181>Q$\leq$814cfs). The national acute criterion of 20 ug/L will only be applied to the large flows (Q>814cfs) which did not exceed 3 days in duration during the period of record examined for the TMDLs (Table 2, TSD Part B). The NTR value for acute conditions has been applied, as the CTR does not specify an acute criterion for selenium.

US EPA ARCHIVE DOCUMENT

The selenium numeric targets in these TMDLs are expected to be protective of the wildlife in San Diego Creek and Upper Newport Bay. Site specific studies of the role selenium plays in the watershed are currently being planned or conducted. Regional Board anticipates that the results of these studies will be used to refine or revise the selenium TMDL during the implementation process.

S19. *Comment:* We are concerned that the numeric target selected for Newport Bay (the CTR saltwater criterion) will not be sufficiently protective of wildlife.

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: The USFWS concurred with this saltwater value (71 ug/L) in its review of the CTR. This target is expected to result in protection of all designated uses in Newport Bay. Also, since San Diego Creek is the major contributor of freshwater flows to Newport Bay, reductions of selenium in the creek should also result in reductions in the Bay. Regional Board anticipates that additional monitoring of selenium bioaccumulation in fish and mussels in Newport Bay will be conducted as part of the selenium TMDL implementation plan.

S20. *Comment:* We recommend using a longer, more representative period to determine flow volumes for the loading capacity calculations, to ensure that the resulting calculated loading capacities are representative of actual conditions.

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: The TMDL now reflects evaluation of daily flow records for 19 water years at San Diego Creek at Campus. These data have been used to determine the flow tiers for developing selenium (and metals) TMDLs. The rainfall-runoff information outlined by OCPFRD (in their comments on the proposed TMDLs) has been used and the analysis has been extended to include all available complete water year records; i.e., water years 1977/78, 1983/1984, 1984/85 and so on up to 2000/01. Flow volumes associated with each tier were calculated by summation of daily flow rates with each tier for all 19 water years. (See Table B-2 in the TSD Part B).

S21. *Comment:* Allocations were combined for all of the Newport Bay water bodies_we recommend that the San Diego Creek TMDL Allocation be separate from allocation for Santa Ana-Delhi Channel...

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: This has been done. See revised tables in TSD Part D.

S22. *Comment:* We are concerned that the allocations for San Diego Creek and Santa Ana-Delhi Channel might not result in compliance with targets for Newport Bay.

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: Since San Diego Creek is the major contributor of freshwater flows to Newport Bay (>95%), reductions of selenium in the creek should also result in reductions in the Bay. Regional Board anticipates that additional monitoring of selenium water column concentrations and bioaccumulation in fish and mussels in Newport Bay will be conducted as part of the selenium TMDL implementation plan.

S23. *Comment:* We are concerned that it will be difficult to implement the tiered allocations. Therefore, implementation of the TMDLs should be closely monitored by the EPA.

US EPA ARCHIVE DOCUMENT

Commentor(s): Defend the Bay/NRDC/Limno-Tech

Response: We agree that implementation of these TMDLs will be challenging; the EPA will be providing feedback to Regional Board staff on all of the Toxics TMDL implementation plans.

S24. *Comment:* There are a great number of qualifiers describing loading pathways_If there is no methodology for quantifying existing loads by source, then that should be stated.

Commentor(s): City of Irvine

Response: Comment noted. The TSD explains the source analysis method used. We acknowledge that insufficient data and information were available to precisely characterize all loading sources. An investigation into potential sources of selenium in the San Diego Creek watershed is currently in progress. This study should help to quantify the unidentified sources of selenium in the watershed, and the Regional Board can revise the TMDL if necessary.

S25. *Comment:* For selenium, Figure 4-1 in the summary document (Figure D-9 in the TSD) is useful_, but should be expanded to give estimates of the existing loads from each source is these are available or is there a methodology to calculate them?

Commentor(s): City of Irvine

Response: A table has been added to the TSD (Table D-4) illustrating how the waste load and load allocations for selenium were calculated using the revised flow tiers.

S26. *Comment:* Additional explanation is needed for how the source allocations were made. If they are based on existing loads, the absence of source data in Table 4-5 should be rectified. If they are based on land use, the analysis should be explained. As it stands, it us unclear how the allocations are derived.

Commentor(s): City of Irvine

Response: Please see Table D-4 which has been added in response to the previous comment. Table D-4 presents a more detailed breakdown of the estimated waste load and load allocations.

S27. *Comment:* Page D-3 B Source Analysis - The report does not reference historical selenium data collected by the County prior to the NPDES program. From 1973 to 1987, the Orange County Environmental Management Agency (now PFRD) collected samples for selenium analyses from San Diego Creek at Campus Drive. In all, 26 samples were collected including three influenced by stormwater runoff. Although the data are limited, they show that levels above the CTR chronic freshwater criterion and proposed TMDL numeric target of 5 micro g/L, were present in San Diego Creek 20-30 years ago.

Commentor(s): County of Orange, Public Facilities and Resource Department

Response: We appreciate the submittal of the additional data but do not believe it supports revisions to the TMDLs.

S28. *Comment:* Page D-18 B Tables D-2 and D-3 B The daily average discharges (cfs) shown in Table D-2 are incorrect. This has resulted in substantial inaccuracies in the daily load calculations. The total flows (cfs) in Table D-3 for both dry and wet weather events for the periods 4-98 thru 9-98 and 10-98 thru 3-99,

US EPA ARCHIVE DOCUMENT

respectively are incorrect.

Commentor(s): County of Orange, Public Facilities and Resource Department

Response: We have revised Tables D-2 and D-3 accordingly, and recalculated the total flow volumes for the wet and dry seasons.

S29. *Comment:* Appendix A - The title references Table D-5. This should be changed to Table D-2 as there is no Table D-5 found in the text.

Commentor(s): County of Orange, Public Facilities and Resource Department

Response: Correction made.

Metals TMDLs

M1. *Comment:* It is not necessary to reduce metals loading through a TMDL because most of the metals, on average, are below the CTR standards. According to the Regional Board (Problem Statement 2000), dissolved cadmium, chromium, lead, nickel, silver and zinc Aare probably not causing, or contributing to, toxicity to aquatic life in Newport Bay and San Diego Creek.@ It appears that EPA has inflated the exceedences by assuming that the heavy metals readily dissolve in water, contrary to reality and common knowledge.

Commentor: Irvine Co./Latham&Watkins

Response: In preparing these TMDLs, EPA independently evaluated all readily available data for this watershed, including new and updated data since the Regional Board issued its 2000 Problem Statement, to determine which of the chemicals identified in the consent decree and by the Regional Board warranted TMDLs. The reasons EPA has determined that specific TMDLs should be prepared are discussed for each chemical in EPA=s *Decision Document* (2002). As discussed in that document, EPA assessed not only water column data, but also sediment quality data and fish/shellfish tissue data.

See response to comment L1 regarding our use of narrative as well as numeric criteria in developing these TMDLs. We disagree that the methods used in these TMDLs inflate water body exceedences and we did not assume that heavy metals readily dissolve in water. EPA=s methods for associating total and dissolved metals in the analysis are discussed in the TSD. On average, we found that dissolved metal and total metals concentrations were relatively close to each other.

M2. *Comment:* The TMDL does not contain a proposed methodology for allocating responsibility for any exceedence. For example, the copper TMDL includes allocations for urban runoff and for Aother NPDES permittees@. There are no provisions for distributing loads among the various stakeholders. What criteria will be used to assign limits?

Commentor: City of Costa Mesa

Response: EPA has provided additional information in final TMDLs to explain allocations. Section II of the Summary Document lists the NPDES discharge sources covered by the Aother NPDES permittees@ category. According to Regional Board staff, little monitoring data exists

US EPA ARCHIVE DOCUMENT

for these facilities and therefore it is not feasible to precisely estimate metals inputs from these sources. EPA has utilized best professional judgment to make an allocation to this source, rather than provide an allocation equal to zero.

M3. *Comment:* The summary tables E-10 and E-11 in the TSD need to be clarified. The totals for Pb and Zn do not reflect the sum of the sources. There is no explanation of whether the unknowns are significant.

Commentor: City of Costa Mesa

Response: EPA has reviewed and rectified summary tables E-10 and E-11 in TSD Part E. Insufficient data were available to support a precise assessment of the significance of the unknown sources. For example, groundwater inputs of these dissolved metals to could be significant in localized areas of San Diego Creek. In Newport Bay, zinc anodes are used on recreational boats, although they do not cover large surface areas as compared to wetted boat hulls, and are not likely to be nearly as significant a source of Zn as boat hulls are for Cu. Our review of available data and information yielded no evidence that Cd and Pb loads from unknown sources are significant.

M4. *Comment:* Explain the allocations for loading capacity. The correlation of allocations to existing loads is unclear except for ambient levels and air deposition.

Commentor: City of Costa Mesa

Response: EPA has included an explanation of allocations in the final summary document.

Comment: Clarify allocation categories for metals.

Commenter: Irvine Company/Geosyntec

Response: EPA categories are defined by either known inputs to water bodies, such as urban stormwater and NPDES permittees (e.g, CalTrans) or non-point sources such as agricultural runoff from nurseries or open fields. Undefined includes natural runoff and possible inputs (very small) from contaminated sediments existing in the waterbody. Boats refers to all wetted surfaces of recreational boat hulls in Newport Bay.

M5. *Comment:* It is unclear which OCPFRD data were used to calculate metals translator values. EPA=s translator average was 1.2, but analysis of SDC data from 1996-2000 yielded a translator closer to 3.0. It appears EPA included many pairs of data that were at the detection limit, which would yield translators of 1.0. Translators should be calculated for each metal on a site specific basis. Natural channels transporting greater sediment loads would have greater translators compared to concrete lined channels.

Commentor: County of Orange

Comment: The 80% dissolved to total metals ratio used for the TMDLs is a good estimate for nonstorm flows but the dissolved fraction in stormwater is about 40%. Use of the 80% translator could overestimate metals loads during storm flows.

Commentor: Irvine Company/Geosyntec

Response: EPA has used stormwater data (provided by OCPFRD) to estimate the ratio of dissolved to total metals. EPA concluded that it was reasonable to use a single translator based on average metals conditions since the mass-based TMDLs are expressed on an annual average basis and the concentration based TMDLs are expressed on an acute and chronic basis, but are

US EPA ARCHIVE DOCUMENT

not dependent upon the translator value(s) selected to be implemented.

M6. *Comment:* There is a large range of data shown in the TSD tables and the confidence interval brackets the CTR values for all parameters. The extreme values likely radically skew the data. Dry and wet weather data should be evaluated separately.

Commentor: Irvine Company/Geosyntec

Response: EPA synthesized considerable data collected by several groups in the TSD tables. The goal was to provide an overview of results from all data sources. Extreme results may skew the data, and it would be helpful to define dry vs. wet weather separately. However, there is no evidence that apparent outlier data are unreliable, and EPA guidance cautions against excluding apparent outliers without a sound rationale. We note that CTR values are not based on comparisons with means data values. Instead, most toxic pollutant standards are based on the assumptions that they are to be exceeded very rarely (i.e. once in 3 years on average). If the commenter intends to infer that the data indicate that the CTR standards are being met, we disagree.

M7. *Comment:* The margin of safety may be unreasonably stringent because (1) there are safety factors inherent to the CTR values, (2) unnecessarily conservative hardness values were applied, and (2) chronic standards were inappropriately applied. Expressing a margin of safety as a percent of the average concentration in the runoff has no scientific basis. The safety factor should be expressed as an upper or lower limit based on research on the pollutant of concern.

Commentor: Irvine Company/Geosyntec

Response: EPA applied the margin of safety based on uncertainty in several aspects of the source analysis; e.g., the dissolved to total metals ratio and the flow based approach. TMDLs are required to be set at levels necessary to meet applicable water quality standards with a margin of safety. This does not mean that a TMDL can simply rely upon a margin of safety considered in establishing the water quality standards. The commenter provided no evidence that the hardness values applied are Aunnecessarily conservative.@ The hardness values applied are consistent with the CTR assumptions and are based on moderate hardness values for each flow tier. The commenter provides no basis for concluding that chronic standards were inappropriately applied. EPA carefully evaluated the recurrence frequencies of flows in different flow tiers in comparison with the flow recurrence frequencies assumed in the CTR. Finally, the commenter provides no analysis supporting the assertion that expressing a margin of safety as a percentage of the concentration or mass based TMDLs is scientifically invalid. This approach is commonly used in TMDL calculations.

M8. *Comment:* The metals TMDLs are based on relatively wet years, which could result in an overestimate of loading capacities.

Commentor: NRDC

Response: EPA and Regional Board staff have revised flow records pertinent to these TMDLs. Analysis of nearly 20 water year records will provide more representative conditions in San Diego Creek; consequently this will yield more realistic estimates of loading capacities.

M9: *Comment:* Metals TMDLs for San Diego Creek should be concentration based and for Newport Bay should be mass based.

Commentor: NRDC

US EPA ARCHIVE DOCUMENT

Response: EPA has revised the final TMDLs to include concentration-based TMDLs for San Diego Creek and mass-based TMDLs for Newport Bay, as discussed in the TMDLs. Concentration based targets for Newport Bay have also been included to assure compliance with CTR standards, should the mass based allocations require verification of compliance.

M10. *Comment:* EPA does not include several potential sources in the metals allocations, including sediment porewater (for copper), Aundefined natural sources@, and nurseries (for copper).

Commentor: NRDC

Response: EPA has identified that dissolved copper concentrations in porewaters exceed chronic saltwater targets; however, this data was produced in 1998 and only for Lower Bay (not including Rhine Channel). Further monitoring results, preferably from Rhine Channel and maybe from Upper Bay, would be useful to assist with defining the contributions of dissolved copper from sediments. For now, Aundefined natural sources@ may represent porewater inputs. Allocations for nurseries were included in Aag runoff@ in allocations for Newport Bay.

M11. *Comment:* The metals TMDL implicit margins of safety are insufficient to account for uncertainty and should be increased another 5-10%.

Commentor: NRDC

Response: EPA has defined the margin of safety for both San Diego Creek and Newport Bay as 20%. This value arises from dissolved to totals metals ratios determined for copper in stormwaters. It is also consistent with the copper translator value defined for saltwaters in CTR (USEPA 2000a). No additional increase in margin of safety is warranted at this time.

M12. *Comment*: The hardness assumptions for high flow conditions are not stringent enough and are inconsistent with observed hardness levels under high flows. A low range hardness, perhaps at the 10^{th} percentile for the flow tier, should be used in determining the numeric targets.

Commentor: NRDC

Response: EPA has reviewed both high flow and low flow conditions to develop an indirect relationship between flow and hardness. Given that flow conditions vary widely as well as the individual hardness values, this was the best approach. The commentor does not provide convincing rationale for selecting the 10^{th} percentile.

M13. *Comment:* We disagree that chronic targets will always be protective due to variability during a 4 day averaging period. The acute targets should also apply.

Commentor: NRDC

Response: EPA has modified the metals TMDLs to include acute and chronic concentration based targets for base, small and medium flows. During large flows, and to be consistent with the short term duration of these elevated flow rate, only acute concentration targets apply.

M14. *Comment:* It is unclear whether EPA has verified that water column targets will be protective of sediments, which is a concern because the primary problem in Newport Bay is sediment toxicity.

Commentor: NRDC

US EPA ARCHIVE DOCUMENT

Response: EPA has considered this problem and defined both water column targets and sediment targets (Table 5-3) to define desired water quality conditions. Sediment targets are designed to protect benthic organisms and alleviate toxicity attributable to these metals.

M15. *Comment:* We would like to review any revised flows used to calculate the TMDLs. The calculations must be based on actual flow data covering a representative period.

Commentor: NRDC

Response: EPA and Regional Board staff have revised flow records pertinent to these TMDLs. Analysis of nearly 20 water year records will provide more representative conditions in San Diego Creek; consequently calculations from this revised analysis yield more realistic estimates of loading capacities.

M16. *Comment:* EPA should correct several errors in the loading capacity calculation method, which appears technically appropriate, and clarify the procedures and values used in the calculations.

Commentor: NRDC

Response: EPA has corrected the errors in Newport Bay loading capacity. See TSD Part E B Metals.

17. *Comment:* The allocations for copper show poor correspondence between San Diego Creek and Newport Bay for sources including CalTrans and nurseries. Allocations for Newport Bay should account for upstream loads and allocations from San Diego Creek, and allocations for other sources to the Bay need to be reduced accordingly.

Commentor: NRDC

Response: EPA has revised the mass-based allocations for Newport Bay to account for the considerations raised in this comment. San Diego Creek allocations are now concentration based and therefore they are not defined in mass per year. The allocations for Newport Bay are expressed as net allowable loads for each segment, not cumulative allowable loads for each source. Total allocations for individual sources can be calculated by summing individual allocations for individual water segments.

M18. *Comment:* Undefined (natural) LAs are much lower than source assessment indicates is contributed by natural sources. The natural source LAs should be increase to reflect this discrepancy, and the other allocations decreased accordingly.

Commentor: NRDC

Response: Values for undefined natural sources in Table 5-6a are consistent with contributions defined by natural sources as outlined in Table E-10 in TSD.

M19. *Comment:* The TMDLs do not adequately address seasonality and critical conditions because they do not carry through the flow tier approach to the mass-based allocations. The TMDLs and allocations should be adjusted to avoid lumping allowable loads for each flow tier into a single annual number.

Commentor: NRDC

Response: EPA has revised the allocations in San Diego Creek to be concentration based for each flow tier. Three out of four of those flow tiers have chronic targets; this

US EPA ARCHIVE DOCUMENT

amount to 362 days of the year. In Newport Bay, mass-based allocations are still defined as a single annual number. Given that sediment toxicity is the major impairment in this waterbody, a single annual number is reasonable to address the long term loading of metals which may contribute to sediment toxicity.

M20. *Comment:* We support the 20% margin of safety, but believe a larger margin of safety is warranted to reflect uncertainty about whether the water column target concentrations will be protective of sediment toxicity. Commenter disagrees that some factors characterized by EPA as providing an implicit margin of safety actually do so.

Commentor: NRDC

Response: EPA has defined a 20% margin of safety as described above. Commenter does not provide sufficient rationale to support a larger margin of safety. See also responses to Comments M11 and L16.

Organochlorine Compound TMDLs

OC1. *Comment:* EPA is proposing TMDLs for DDT, chlordane, dieldrin, toxaphene, and PCBs despite the fact that none of these compounds have been detected at all in the waters of Newport Bay and San Diego Creek. A TMDL is inappropriate because EPA has not demonstrated through monitoring data that any of the watersheds are in violations of applicable numeric standards. Also, DDT is not bioaccumulating in the watersheds to a level that is harmful to human health or the environment. Concentrations of DDT are declining. Current concentrations are not causing harm to human health or the environment. There is no indication that wildlife or humans are being harmed.

Commentors: Irvine Co.,/Latham&Watkins; City of Costa Mesa; Irvine Ranch Water District

Response: See response to comment L1 regarding use of narrative criteria and data. EPA determined that TMDLs should be prepared for these pollutants based on exceedences of tissue and/or sediment data, as set forth in EPA=s *Decision Document* (2002). The *Decision Document* explains EPA=s general approach to determining whether there were probable adverse effects to beneficial uses (and thus nonattainment of the narrative criteria), including EPA=s consideration of impairment in adjoining water segments. The basis for developing a TMDL for each specific segment and each specific pollutant is set forth in the Assessment Summary portion of the *Decision Document.* With regard to the comment that there is no indication that wildlife or humans are being harmed, we note that the Basin Plan provides that Aan adverse effect or impact on a beneficial use occurs where there is an actual or threatened loss or impairment of that beneficial use.@ EPA considers current data to warrant preparation of TMDLs, and does not consider it prudent to postpone TMDL analysis until a time when adverse effects on wildlife or humans may be more apparent.

OC2: *Comment:* EPA cannot rely on non-regulatory sediment or fish tissue values to establish a TMDL unless those values have been the subject of notice and comment rulemaking. EPA has proposed sediment quality criteria for dieldrin and other compounds but has not finalized them. EPA cannot promulgate a regulation establishing sediment and biota criteria through the establishment of a TMDL.

Commentor: Irvine Co./Latham&Watkins

Response: EPA is not establishing water quality criteria in this TMDL. See response to Comment L2 regarding numeric targets.

US EPA ARCHIVE DOCUMENT

OC3: *Comment:* Studies show that legacy pesticide levels are decreasing naturally.
Commentor: Bordier=s Nursery.

Response: EPA=s determination that these TMDLs are warranted is based on sediment and tissue exceedences and is documented in the *Decision Document* (2002). We agree that levels of the OC pollutants appear to be decreasing over time; however, the best recent data indicate that the sediment and tissue screening levels continue to be exceeded.

OC4. *Comment:* EPA cannot establish a TMDL for any pollutant without first demonstrating that the TMDL will render the watershed in compliance with applicable water quality standards. EPA can=t show this for organochlorines because of the legacy residues. There is no nexus between the loadings for DDT and the achievement of any applicable water quality standards. In light of the 37 kilograms of DDT already present in Newport Bay sediments, it is not plausible to expect to be able to even detect any change in the concentration that might be associated with an annual reduction of 0.23 kilograms entering the Bay. Achieving the proposed TMDL for DDT, and probably the other legacy pollutants, is unlikely to make any difference in Newport Bay.
Commentor: Irvine Co./Latham&Watkins

Response: See response to Comment L7. We agree that legacy pollutants present serious challenges in TMDL development and implementation, but these challenges in no way lead to the conclusion that TMDLs should not be developed. The Clean Water Act does not specify timeframes for restoration of impaired waters. We acknowledge that improvement of the situation in the Bay will be incremental and not immediate; however, reducing the input of legacy pollutants to the Bay will keep the problems from worsening, and will accelerate the pace of recovery. Moreover, given ample evidence that organochlorine pollutants can cause significant adverse effects even at very low levels, we believe it is reasonable and necessary to establish TMDLs that address the ongoing estimated loadings of these pollutants.
If the State determines, based on followup monitoring, that the pace of recovery is too slow or that the TMDLs are ineffective, they may consider tightening allocations and controls and/or investigate the feasibility of remediating contaminated sediment sources in the Bay.

OC5. *Comment:* Legacy pesticides should not be included in the TMDL because they don=t have a source nor are they background. Fixing this problem should happen outside the TMDL process. There is no purpose served by setting discharge limits on discharges that no longer occur. *Commentor:* City of Costa Mesa, IRWD
Comment: TMDLs for legacy pollutants create confusion and uncertainty since there is no responsible party for control or clean up of the legacy problem. *Commentor:* California Farm Bureau Federation.

Response: TMDLs must consider all sources of a pollutant in a waterbody, including natural background and legacy pollution. We disagree that there are no ongoing discharges of these pollutants. Ongoing loadings are associated with erosion of sediments to which OC pollutants may adhered, transport of sediments already in watercourses, and (potentially) discharges from localized hot spots or spill events. TMDLs can help determine whether additional pollutant source control or remedial actions are needed. TMDLs are but one tool available to the Regional Board, other agencies, and private entities for use in dealing with these problems, and EPA supports efforts in addition to the TMDL process to solve these problems. We hope, moreover, that the calculations and analyses in these TMDLs will assist planning

US EPA ARCHIVE DOCUMENT

agencies and entities in addressing these problems in a variety of ways.

OC6. *Comment:* Agricultural soils are more friable than urban soils and therefore more subject to erosion and mobilization of DDT into the aquatic environment. Therefore, the current process of converting land from agricultural use to urban use will reduce erosion and the transport of DDT into the aquatic environment. The Irvine Basin has in place extensive controls or Best Management Practices (BMPs) to minimize erosion of land under conversion to urban development. Rather than implement a standard that would be beyond current abilities to measure and then develop implementation strategies and BMPs to achieve the unmeasurable, IRWD feels that DDT control would be more successful by improving BMPs for contaminated soils than to set an unachievable numerical standard. *Commentor:* IRWD

Comment: The levels as outlined are too low for compliance at this time. There is no available technology for use in compliance. *Commentor:* Bordier=s Nursery.

Response: TMDLs are inherently quantitative, and it is necessary to set numeric loads. However, EPA acknowledges the challenges of implementing these TMDLs. All comments are being forwarded to the Regional Board for their use in developing implementation strategies for these TMDLs, and commentors are encouraged to work with the Regional Board in developing implementation measures. EPA=s implementation recommendations suggest that sediment control plans currently in place may result in sufficient OC pollutant reductions and that additional controls may not even be necessary. We note, however, that no commenter provided evidence to support assertions that TMDL compliance is infeasible in this case.

OC7. *Comment:* We urge you to specifically endorse, as the first phase of implementation for the organochlorine TMDLs, full implementation of the sediment TMDL reductions, coupled with monitoring to determine whether sediment TMDL implementation is sufficient to meet the organochlorine allocations.

Commentor: Santa Ana Regional Water Quality Control Board

Response: EPA recognizes the link between sediment and OC contamination, and fully supports full implementation of the Newport Bay sediment TMDL as the first step in the implementation of the OC TMDLs.

OC8. *Comment:* Partition coefficients used in Draft TMDLs were not identified. Kow and Koc values for DDT were too low and based on out-dated information in ATSDR.

Commentor: Irvine Co/R.Tjeerdema/J. Byard/S. Paulsen

Response: EPA has reviewed the Koc values used in the organochlorine TMDL analysis and has revised the numbers to reflect more recent values published in the literature. The values used in the analysis have been included and referenced in the revised Technical Support Document.

OC9. *Comment:* BCF values are inappropriate; there is no such thing as general BCF factor. BCFs should be [biological] species specific.

Commentor: Irvine Co/R.Tjeerdema

Response: EPA has reviewed the relevant literature on available BCF values and has determined that the BCF values used in the original analysis did not appropriately reflect values expected in the indicator species. Because tissue data were available for several fish species, updated BCF values that

US EPA ARCHIVE DOCUMENT

are more representative of a family of fish, for which data are available, have been used in the analysis. The BCF values are included and referenced in the Technical Support Document.

OC10. *Comment:* Use of mean values of mussel data is potentially inaccurate especially for San Diego Creek which has old data from 1984 to 1993.

Commentor: Irvine Co/R.Tjeerdema

Response: EPA agrees that the use of mussel data that does not coincide with available sediment data should be revised with a different approach to better represent existing conditions. The analysis has been modified to take advantage of more recently collected fish tissue data that are available for San Diego Creek. The revised analysis uses the available fish tissue data along with appropriate BCF values to support the calculation of existing loadings.

OC11. *Comment:* There is confusion about the DDT sediment target...if it pertains to 4,4'-DDT or total DDT, which is sum of DDT, DDE and DDE. Per conversations with EPA staff, new freshwater sediment targets for organochlorine compounds were identified. The new target would be 6.89 ug/kg dry for total DDT.

Commentor: Irvine Co/R.Tjeerdema/J. Byard/S. Paulsen

Response: EPA agrees that the sediment criteria used in the original TMDL analysis was incorrect for total DDT. The revised analysis uses the Total DDT sediment targets of 6.98 ug/kg for San Diego Creek and 3.89 ug/kg for Newport Bay.

OC12. *Comment:* Error in Tables F-5 and F-6 regarding units for fish tissue concentrations. The units should be ppb and not ppt. The fish data for Newport Bay in part F are in error and when corrected from ppt to ppb were still below the fish level that is the basis for the national water quality criteria and below the fish target level in the TMDL. Therefore, a TMDL for DDT is not needed.

Commentor: Irvine Co/R.Tjeerdema/J. Byard/S. Paulsen

Response: EPA has confirmed that the units in the original reference were incorrect and has made the corrections to the tables. Regarding the need for DDT TMDLs, see responses to comments L1 regarding narrative criteria, OC1 regarding the OC TMDLs in general, and OC15 regarding the DDT TMDLs. As noted in the response to Comment OC15 and in EPA=s 2002 *Decision Document*, we have determined that a TMDL for the Upper Bay is warranted based on both tissue and sediment exceedences, and that a TMDL for Lower Bay is warranted based on sediment exceedences. This remains true following adjustment of some methods and values applied in the final TMDL analysis.

OC13. *Comment:* Modeling approach used by EPA/Tetra Tech should recognize the declining trend in DDT concentrations in mussel tissue.

Commentor: Irvine Co/R.Tjeerdema/J. Byard/S. Paulsen

Response: EPA has acknowledged that available mussel data indicate a decreasing trend in DDT concentrations.

OC14. *Comment:* Model should more accurately capture DDT loading during wet and dry periods.

Commentor: Irvine Co/ S. Paulsen

US EPA ARCHIVE DOCUMENT

Response: EPA has revised the flow regimes used to calculate DDT loading in the final TMDL.

OC15. *Comment:* Draft TMDL shows the revised DDT sediment target (6.98 ug/kg dry) is being met, therefore no TMDL is required.

Commentor: Irvine Co/ S. Paulsen

Response: EPA has determined that the sediment criteria used in the original TMDL analysis was incorrect for total DDT. The revised analysis uses the correct sediment targets of 6.98 ug/kg for San Diego Creek and 3.89 ug/kg for Newport Bay (based in part on comments from commentors), and the analysis conducted using these targets does not indicate that DDT is meeting the criteria in either San Diego Creek or Newport Bay. EPA=s decision to develop DDT TMDLs is set forth in the *Decision Document* (2002). We have concluded that a TMDL is warranted for San Diego Creek based on tissue exceedences; for Lower Newport Bay based on sediment exceedences, and for Rhine Channel and Upper Newport Bay based on both tissue and sediment exceedences, as set forth in more detail in the *Decision Document.* See response to comment OC11.

OC16. *Comment:* Table 6-5 must contain typo errors. For DDT, the table states that the existing load already meets the numeric target, when the numeric values show otherwise. This table has similar inconsistencies for other constituents.

Commentor: Irvine Co/ S. Paulsen

Response: EPA appreciates the identification of the errors in Table 6-5, which are corrected in the final TMDLs.

OC17. *Comment:* The lack of accuracy, abundance of errors and absence of rationales in the TMDL modeling (for DDT) is frustrating. The technical analysis was not adequately explained, continually changed during the comment period, and it was never clear on what proposal one was commenting. Despite your efforts to facilitate our understanding, there have been too many major errors, too many changes in approach and explanation, poor technical analysis and poor technical writing. The TMDL conclusions are not based on a solid scientific foundation. This does not provide a fair and full opportunity to comment on the organochlorine TMDL. EPA is encouraged to allow a longer time for TMDL development and review. The commentor requests the opportunity to provide comments on any revised analysis.

Commentor: Irvine Co/R.Tjeerdema/J. Byard/S. Paulsen

Response: EPA appreciates the time and effort put forth to review and comment on these TMDLs. EPA has made every effort to improve the clarity of the document and has strived to ensure all pertinent details and references are included in the current version of the TMDL and technical support document. See responses to Comments L11 and L12 regarding the public review process.

We disagree with the characterization that the draft TMDL was not based on a sound scientific foundation, While some errors were identified and corrected in the final TMDLs, the basic methods used were sound. Several commentors indicated their endorsement of the technical methods used to calculate the TMDLs.

During the comment period, we attempted to address technical questions posed by commentors and participated in several meetings and telephone calls to explain our approaches. We did not change our proposal during the comment period, but several staff at EPA and our contractors were involved in these meetings and calls, which may have contributed to delivery of inconsistent oral answers to technical questions. We regret any confusion that may have occurred as a result. However, several commentors

US EPA ARCHIVE DOCUMENT

provided detailed technical comments, which EPA carefully considered in our final decisions. We believe the public was afforded a sufficient opportunity to review the decision documents and calculation methods.

OC18. *Comment:* Comment: A fundamental concern is with the modeled estimates of DDT in sediment in the future. It is incorrect to hold c-s and c-w constant, given that the mass of DDT must decline over time.

Commentor: Irvine Co.

Response: We note the comment concerning future declines in DDT concentrations, but do not believe it would affect the definition of the current DDT loading capacity, which provides the basis for the TMDL calculations.

OC19. *Comment:* Given that the draft TMDL shows that the sediment target of 6.98 ug/kg is likely being met, even considering the flaws in the modeling approach which overestimate future concentrations, it is unclear that a TMDL is required for DDT.

Commentor: Irvine Co.

Response: See response to comment OC15.

OC20: *Comment:* There is a related liability question of what would happen if the load allocations are being met and yet the target sediment and/or biota concentrations remain above levels deemed appropriate by EPA.

Commentor: Irvine Co.

Response: As discussed in the final TMDL summary document, load allocations are not self-implementing and do not create any direct liability for allocation holders. See response to comment OC4.

OC21: *Comment:* I was quickly struck by what seemed to be unusually low sediment targets for DDT and other organochlorines.

Commentor: Irvine Co.

Response: See response to comment OC15.

OC22: *Comment:* The commentor reports much confusion regarding the use of a MacDonald South Florida reference. The commentor points out several problems with using the South Florida reference: 1) a recent workshop concluded the approach is not adequate, alone, for setting regulatory targets, 2) MacDonald uses different sediment targets for sum DDT versus the TMDL report refers to DDT (the parent compound.) 3) MacDonald southern California approach of using bioassay data could be used and result in effects levels higher than the Canadian approach; 4) The log K-oc used by MacDonald could result in a sediment TMDL of 53 ppb, this can be compared to the highest level of DDT reported in sediment of 15 ppb (Masters and Inman.)

Commentor: Irvine Co.

Response: See responses to comments OC1, 12, and 15.

OC23: *Comment:* Fish data from the Creek is higher than the Bay, however the creek is a small and infrequent source of dietary fish.

US EPA ARCHIVE DOCUMENT

Commentor: Irvine Co.

Response: The commenter provides no evidence to support this assertion. In any event, fish consumption is a protected beneficial use of San Diego Creek, and it would not be reasonable to ignore evidence of OC pollutant bioaccumulation in San Diego Creek fish.

OC24: *Comment*: The 1.9 ppb for total DDT used is actually the TEL for DDT alone. AThe real total TEL for marine systems is 3.89 ppb.@ The commentor also states that a freshwater total DDT value of 6.98 ppb was discussed.
Commentor: Irvine Co.
Response: See response to comment OC15.

OC25: *Comment:* The commentor states that using different sediment target values would result in target water concentration values (now 6 pptr and 3 pptr) and indicate that a TMDL is not necessary.
Commentor: Irvine Co.

Response: See response to comments OC12 and 15.

OC26: *Comment:* Arguing against the need to develop a total DDT TMDL, the commentor refers to graphs in Figure F-4. AFor San Diego Creek, raising the sediment standard to 3.89 - 6.98 ppb would indicate that current projected total DDT concentrations are currently below it.
Commentor: Irvine Co.

Response: See response to comment OC 15.

OC27: *Comment:* The commentor states that using a regression approach with the mussel watch data A would have better estimated current total DDT loads as well as what they would likely be at the time of predicted TMDL implementation. This would have further supported the contention the total DDT in sediments and water is currently below concentrations requiring the development of a TMDL.@
Commentor: Irvine Co.

Response: EPA is not required to extrapolate the data as suggested by the commenter. Instead, we relied upon actual data results, based on relatively extensive monitoring, to identify the need to complete TMDLs for DDT. We did not detect statistically significant trends indicating that total DDT levels are currently below the screening levels.

OC28: *Comment:* Information regarding DDT in agricultural and nursery effluents in outdated and reflective of singular events, not long-term monitoring... total DDT are described as relatively high when they are clearly in the low ppb range.
Commentor: Irvine Co.

Response: EPA used all available data in the analysis. We have clarified our characterization of local DDT levels in the text to reflect the comment; however, we note that DDT levels in the low ppb range may contribute to adverse ecological effects over time.

OC30: *Comment:* The assumption that DDT (in dicofol) is present at 0.015% is clearly unsupported speculation.
Commentor: Irvine Co.

US EPA ARCHIVE DOCUMENT

Response: The text was modified to clarify the basis for the concern about potential DDT content in dicofol. The registered formulation of dicofol indicates that DDT may be present in the formulation as an impurity.

OC 31: *Comment:* The commentor disagrees that atmospheric deposition or trace impurities of DDT in other registered pesticides are likely. The draft TMDL provides no local information in support of these sources.

Commentor: Irvine Co.

Response: The text was modified to reflect this comment.

OC32: *Comment:* The commentor provides a citation for DDT in sediment in Upper Newport Bay which shows that concentrations of chlorinated hydrocarbons are declining to near detection limits.

Commentor: Irvine Co.

Response: See response to comment OC15.

OC33: *Comment:* Information on pesticide... clean-up sites is presented for the period 1988-94, but the ... pesticide involved is absent. It is unlikely that DDT or related chlorinated organics were involved, as their use was discontinued prior to 1988.

Commentor: Irvine Co.

Response: The comment is noted. Although DDT and most other OC pollutants addressed in these TMDLs were banned prior to 1988, this does not mean that their use from existing pesticide stocks or discharge from spills could not have occurred during the 1988-94 period. EPA was attempting to present all potentially useful information about potential OC pollutant sources in the analysis.

OC34: *Comment:* Sediment data for total DDT and 2 PCB arochlors are reported... the report describes the MDL as Arelatively high@ without either the specific analyte or actual value.

Commentor: Irvine Co.

Response: The comment is noted. Text in the final TMDLs was edited to clarify our analysis.

OC 35: *Comment:* The commentor states that the method for specifying water column concentrations (based on available monitoring data and best professional judgment) is not explained sufficiently to provide an assessment of the accuracy of the approach.

Commentor: Irvine Co.

Response: The text was clarified to address this comment.

OC36: *Comment:* Targets selected are not fully protective of designated uses. Targets should be revised as per Limmo-Tech (NRDC/Defend the Bay consultant) comments.

Commentor: NRDC

Response: EPA considers the targets to be protective, based on the analysis presented in the TMDL. Specific technical comments are responded to below.

OC37: *Comment:* There should be a margin of safety of 20%. There is a lack of detail in the source

US EPA ARCHIVE DOCUMENT

analysis, and where there is a lack of data to support the source analysis there should be a larger explicit margin of safety. Additionally, the TMDL should recognize the cumulative degree of uncertainty in the estimation of numerous parameters of the model, which is another reason for a larger margin of safety.
Commentor: NRDC

Response: Regarding the source analysis, EPA has developed the TMDL using the available source characterization data to support the analysis. Although the data to quantify existing sources is limited, we believe that the TMDLs provide the means to identify allowable loadings for the water bodies of concern. Further data gathering during the implementation of the TMDL will help to target restoration efforts.

EPA does not believe that any increase in the MOS is warranted at this time. EPA recognizes the range of values available for several of the key variables used in the analysis including Koc, partition coefficients, and estimates of sediment concentrations. EPA believes that 10% represents a reasonable margin of safety for the TMDLs in combination with the implicit margin of safety provided by the conservative analytical assumptions used in EPA=s calculation approach. Since the reduction of the loading of OC compounds will rely largely on natural attenuation, and current trends identify a decline in loading over time, a larger margin of safety is currently not supported. Should future monitoring and implementation suggest that the allocation is not sufficiently protective, the State may consider appropriate revisions.

OC38: *Comment:* Flow analysis used by EPA is based on relative wet (higher flow) years. This may not represent actual conditions and result in an overestimation of loading capacity.
Commentor: NRDC

Response: The final TMDLs were modified based on a longer, more representative flow record.

OC39: *Comment:* The commenter recommends additional detail and specific allocations to potential sources in the allocations.
Commentor: NRDC

Response: EPA believes the current level of allocations is consistent with the available information for the pollutants evaluated in these TMDLs. Additional source specific information can be addressed in the implementation phase of the TMDL.

OC40: *Comment:* The use of flow tiers is proposed by EPA to address seasonality and critical conditions. However, the use of flow tiers will be adequate only if those tiers carry through to the wasteload and load allocations.
Commentor: NRDC

Response: The environmental mechanisms through which OC pollutants cause ecological hard operate over relatively long timeframes; therefore, EPA concluded that it was unnecessary to develop the TMDLs based on short term pollutant loading and control timeframes. We found no evidence of seasonal variability in loading capacities that would warrant setting TMDLs based on shorter timeframes.

OC41: *Comment:* The numeric targets presented in Table 6-1 should be normalized to organic carbon rather than being solids-based. Organic carbon content varies significantly within and across media. Since these compounds will preferentially adsorb to organic carbon, these targets will be more meaningful if they are based on that fraction within each media (sediments and tissue). This may change the media that

US EPA ARCHIVE DOCUMENT

is most restrictive. The loading capacity calculations should be repeated to reflect these changes in the selected endpoints.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: The comment provides an insufficient rationale to warrant changes in the TMDL.

OC42: *Comment:* We suggest that if alternative sediment target values are considered for any compounds (e.g. Swartz et al., *Environ. Toxicol. Chem.* 13:949-962 for DDT), they be compared to the numeric targets proposed in the Draft TMDL and the lower of the two values be used to be most protective. Both values need to be based on the same media in order to be compared. We concur with EPA=s approach for developing numeric targets. Given the high historical loadings, the toxicity associated with these compounds, and their tendency to accumulate in sediment and tissue, setting sediment and tissue targets will be more protective than water column numeric targets.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: EPA verified that sediment and water column targets are the most protective available indicators.

OC43: *Comment:* The Source Analysis introduction in the TMDL is poorly worded when it suggests that DDT and PCB are the only chemicals still being discharged in the watershed. This wording should be changed or supplemented with text explaining that the basis for this statement is that these are the only compounds in this TMDL that are still detected at quantifiable levels in soil samples collected in the watershed.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: EPA has revised to wording in the final TMDL report to clarify that other sources might be present but data are available to support the presence of DDT and PCBs.

OC44: *Comment:* Adding flow charts or decision trees explaining the process used for the analysis of San Diego Creek and Upper Newport Bay loadings and allocations would be very helpful in understanding the analyses.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: The revised TMDL includes additional flowcharts describing the analyses performed for San Diego Creek and Newport Bay.

OC45: *Comment:* Neither the TMDL nor the TSD explains why the odd choice of flow tiers used in the San Diego Creek analysis can represent annual loads in the creek. The four tier approach used in the Metals TMDL provides a better characterization of annual flow conditions in the Creek and should be used in this TMDL for calculating the existing load and the loading capacity.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: The flow tiers used in the final TMDLs were modified based on a longer, more representative flow record.

OC46: *Comment:* The Total Suspended Solids (TSS) concentrations associated with each flow tier presented in Tables F-7 and F-8 for San Diego Creek seem to be at least an order of magnitude higher than what one might reasonably expect. Are there any characteristics in the watershed that would lead one

US EPA ARCHIVE DOCUMENT

to expect such high concentrations? Use of these concentrations allows a finite amount pollutant mass to be Aspread@ over a larger mass of solids, essentially diluting the chemical concentration when measured on a solids basis. The net result is an increase, likely an overestimate, of the loading capacity of San Diego Creek. No information is provided in the TMDL or TSD regarding the source and analyses that were performed to determine these TSS concentrations. No information is provided on the source and analyses that were performed on the TSS concentrations. Analysis of the tiered TSS data should be performed to select an appropriate concentration for each tier used in the loading analysis. Details should be included in the TSD.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: Additional information is provided in the TSD to describe the TSS analysis and sources of supporting information. The TSS concentration is derived based on a regression of RMA data for the flow tiers.

OC47: The fraction of organic carbon in the sediments is typically much different that the fraction of organic carbon in the solids entering the water column. The EPA approach appears to assume that they are the same. The analysis should be refined to account for differences in organic carbon content between the in-stream sediments and solids in the water column.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: Insufficient monitoring information and literature values are available to distinguish from in-stream and water column solids for this analysis.

OC48: *Comment:* The amount of DDT in dicofol can be a significant source to Newport Bay. The relative use of dicofol by land use should be factored into the allocations of load and wasteload categories. Control of the use of dicofol should be addressed in the implementation plan.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: Dicofol as a source of DDT is cited in the source analysis of the TSD and in the TMDL document. The source allocation includes sources with potential for dicofol application.

Implementation measures for this TMDL will be developed by the Regional Board. Many of the comments submitted on these TMDLs raise implementation issues and will be forwarded to the Regional Board for its use in developing implementation measures.

OC49: *Comment:* To clarify the TMDL the following items should be added. 1. Description of total suspended solids, fraction organic carbon for each media (water, sediment and tissue) and lipid content data sources. 2. The BCFs and partition coefficients (and their units) used to compute water column concentrations in Tables F-7, F-8, F-10, F-11 and F-17. 3. Equations, assumptions and input data used to compute values presented in Tables F-7, F-8, F-10, F-11, and F-17. 4. Units for the partition coefficient column presented in Table F-8.

Commentor: Limno Tech/NRDC/Defend the Bay.

Response: Revisions have been made to the TSD to include flowcharts, more detailed descriptions of approach, and updated tables and references of supporting materials.

OC50: *Comment:* The commenter requests confirmation of the use of net sedimentation rates in the analysis. They recommend that the analysis be redone using burial rates.

Commentor: Limno Tech/NRDC/Defend the Bay

US EPA ARCHIVE DOCUMENT

Response: The final TMDL TSD clarifies the sediment model approach.

OC51. *Comment:* Page 17 of TMDL provides summary of allocation strategy. More detail is requested.
Commentor: Limno Tech/NRDC/Defend the Bay

Response: EPA believes that the current level of allocation is consistent with the available information for development of this TMDL. The basis for the allocations is described in greater detail in the final TMDLs.

OC52: *Comment:* EPA should adjust scenario of allocation to make sure that sources outside San Diego Creek cannot increase from current load levels.
Commentor: Limno Tech/NRDC/Defend the Bay

Response: The allocation and TMDL loading capacities are designed to ensure protection of water quality standards. The TMDL allocation process selects existing loading if less than loading capacity to ensure that no additional discharges are allowed for the OC compounds. The final allocation was checked for San Diego Creek and Newport Bay to ensure that they are separately and collectively protective for all the water bodies of concern.

OC53: *Comment:* Clarify steps in section 6 of the TSD. Clarify which steps were applied to Newport Bay.
Commentor: Limno Tech/NRDC/Defend the Bay

Response: The revised TSD provides clarification of the approach taken for San Diego Creek and Newport Bay. The analysis and decision process have been further described using flowcharts.

OC54: *Comment:* Change equation 5 to equation 6 in Section 6 of the TSD.
Commentor: Limno Tech/NRDC/Defend the Bay

Response: The revised TSD correctly references the equations used and associated steps.

OC55. *Comment:* How was the RMA model used for San Diego Creek?
Commentor: Limno Tech/NRDC/Defend the Bay
Response: RMA modeling data was only used to derive suspended sediment concentrations for the flow tiers used in the San Diego Creek TMDL.

OC56: *Comment:* The Aundefined@ category of the Load Allocation in vague. The reviewer request that text be added to the TMDL describing the sources covered under Aundefined@.
Commentor: Limno Tech/NRDC/Defend the Bay

Response: EPA believes that the current source allocation is consistent with the available information for development of the TMDL. This category is intended to include sediment resuspension, atmospheric deposition, localized hot spots that have not been identified, and other uncharacterized sources. Further specific source information can be provided as part of the implementation process.

OC57: *Comment:* Presuming the Aundefined@ includes sediments and atmospheric deposition, the reviewer recommends that the undefined category remain unchanged and remaining sources be reduced

US EPA ARCHIVE DOCUMENT

sufficient to meet a 30% MOS.

Commentor: Limno Tech/NRDC/Defend the Bay

Response: For reasons discussed in previous comments, EPA does not consider a larger margin of safety to be warranted.

Chromium and Mercury TMDLs

CM1. *Comment:* According to the Regional Board (Problem Statement 2000), the data show that concentrations of chromium do not exceed CTR water quality objectives, and thus this chemical is Aprobably not causing, or contributing to, toxicity to aquatic life in Newport Bay and San Diego Creek.@

Commentor: Latham&Watkins

Response: EPA determined that a chromium TMDL was warranted for the Rhine Channel based on shellfish tissue exceedences, as set forth in EPA=s *Decision Document* (2002). The draft Problem Statement prepared by Regional Board staff recommended Cr TMDL in Rhine based on shellfish tissue exceedences.

CM2. *Comment:* The rationale for using the two tier flow system for chromium and mercury is not adequately explained.

Commenter: County of Orange

Response: EPA used a two tier flow system for chromium and mercury to define inputs of metal laden sediment from San Diego Creek. Two tiers represent dry and wet weather inputs as described in the TSD.

CM3. *Comment:* Explain why the chromium and mercury TMDLs are based on 15 years of runoff data when the report previously states that conditions have changed significantly during this time period.

Commenter: County of Orange

Response: EPA has explained in TSD Part B that flow conditions for San Diego Creek have changed over the past 15 years due to significant changes in land use (urbanization and loss of agricultural lands). The final TMDL is based on nearly 20 years of daily flow records for San Diego Creek to provide a more representative data set for these TMDLs. This decision recognizes the changes in land use as well as widely varying annual precipitation.

CM4. *Comment:* Mercury contamination may be a naturally occurring artifact rather than occurring from human causes based on the fact that mercury was mined in the Red Hill area. Mercury contamination in Rhine Channel could be from use of mercury-containing boat paints which are no longer used. Because this mercury pollution was episodic and is unlikely to reoccur, a mercury TMDL is not warranted.

Commenter: IRWD

Response: When developing TMDLs, EPA needs to consider all sources of the pollutant-- natural historical, as well as anthropogenic. As noted in the final TMDL, we considered the Red Hill site but do not believe it is likely to be a significant historical source of mercury loads to Rhine Channel. See response to comment OC4.

US EPA ARCHIVE DOCUMENT

CM5. *Comment*: The use of modeling approaches for the mercury and chromium TMDLs introduces substantial uncertainty into the TMDL results, necessitating a higher margin of safety than provided in the draft TMDLs.

Commenter: NRDC

Response: EPA does not find sufficient rationale in the comment to increase the margin of safety. On-going studies, conducted under review by EPA and Regional Board staff, will supply more relevant data to provide better interpretation of current conditions of these and many other toxic pollutants in the Rhine.

CM6. *Comment:* EPA should translate sediment and tissue target concentrations to values that can be directly compared, and use the most stringent of the resulting targets.

Commentor: NRDC

Response: EPA acknowledges the value of comment although this Atranslation@ is much like comparing apples to oranges. EPA believes the sediment target will also be protective of bioaccumulation of mercury and minimize build up of chromium in shellfish tissue.

CM7. *Comment:* Estimated loads from San Diego Creek are inconsistent between the Summary Document and TSD.

Commentor: NRDC

Response: EPA has rectified this inconsistency.

CM8. *Comment:* The fact that chromium levels in tissue are elevated but less so in sediment indicates there are likely sources besides existing sediment.

Commentor: NRDC

Response: EPA and Regional Board have included information pertaining to Newport Plating facility in vicinity of Rhine Channel. Two investigations of this facility in 1986 showed extremely high values of chromium and other metals in soil boring samples and groundwater. Regional Board have no indication that remediation has occurred at this facility (not operating for nearly 20 years). See TSD Part G.

CM9. *Comment:* Atmospheric deposition and mining operations have not been adequately considered as potential sources.

Commentor: NRDC

Response: EPA recognizes that atmospheric deposition could be contributing mercury to Rhine Channel although this waterbody has an extremely small surface area as to suggest negligible inputs. Any assessment to address inputs from mining operations would require further monitoring data from upstream non-point sources.

CM10. *Comment:* Partitioning coefficients are acknowledged as not well documented, and it is unclear which partition coefficients were selected for TMDL calculation. EPA must use the most conservative available value.

Commentor: NRDC

US EPA ARCHIVE DOCUMENT

Response: EPA has provided more information in the TSD for mercury and chromium to define partitioning coefficient and other values used.

CM11. *Comment:* Additional information must be provided describing the BCFs, partition coefficients, and other methods used to estimate loads and calculate loading capacities.
Commentor: NRDC

Response: EPA has provided more information in the TSD for mercury and chromium to define partitioning coefficient and other values used.

CM12. *Comment:* There is insufficient description of how the loading capacities for Rhine Channel were determined.
Commentor: NRDC

Response: EPA has included additional information to describe determination of allocations in the final TMDL.

CM13. *Comment:* There are many potential sources of chromium (e.g. atmospheric deposition and mining) discussed but not specifically allocated in the TMDL. These sources should be properly assessed and allocations identified. Failure to allocate to these sources may result in other allocations being too high.
Commentor: NRDC

Response: EPA believes the sources of chromium are best defined by the categories outlined in the TMDL. Atmospheric deposition and mining would be included in the category of Aother sources@.

Arsenic

A1. *Comment:* There should be a TMDL for arsenic because EPA agreed to do so under the consent decree.
Commentor: NRDC

Response: The pollutants identified in the 1997 consent decree were EPA=s best understanding of the probable pollutants for which TMDLs needed to be developed. However, the consent decree specifically noted that the list of pollutants was subject to change by the State, and that EPA could also determine that TMDLs were not needed. EPA has concluded that the most recent information does not justify establishing a TMDL for arsenic, as summarized in EPA=s 2002 *Decision Document* and in the Arsenic Analysis in the TMDL summary document.

A2. *Comment:* The new EPA screening value is not protective enough because it does not consider carcinogenic effects.
Commentor: NRDC/LTI

Response: EPA utilized the most reliable screening factor available for inorganic arsenic. Due to

US EPA ARCHIVE DOCUMENT

EPA=s concerns about the scientific validity of previously proposed screening values for assessment of potential carcinogenic effects, EPA believes it is inappropriate to apply it for TMDL screening purposes. The commentors provided no evidence to persuade EPA to reconsider this decision.

A3. *Comment:* EPA should account for weaknesses in its selected screening value by increasing the assumed fish consumption rate and redoing its risk analysis based on a higher fish consumption rate.

Commentor: NRDC/LTI

Response: The commentor provided no evidence of higher than average fish consumption rates by a significant portion of anglers in the Newport Bay area; therefore, EPA has no basis for reanalyzing arsenic-related risk based on a higher fish consumption value. EPA believes that absent evidence to the contrary, it is reasonable to apply national fish consumption rates recommended for criteria development in applying toxic pollutant screening values.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

REFERENCES

Adams WJ, *et al.* 1998. Assessment of selenium food chain transfer and critical exposure factors for avian wildlife species: Need for site specific data., in *Environ. Toxico. Risk Assess.*, 7th Vol., ASTM 1333, EE Little, AJ Delonay, and BM Greenberg, eds., *ASTM*, 1998.

Davis EA, Maier KJ, and Knight, A. 1988. The biological consequences of selenium in aquatic ecosystems. Calif. Agric. 1: 18-20. (Cited from Masscheleyn and Patrick, Jr. 1993).

Dobbs M.G., Cherry DS, and Cairns Jr., J. 1996. Toxicity and bioaccumulation of selenium to a three-tropic level food chain. Environ. Toxicol. Chem. 15: 340-347.

Enberg RA, *et al.* 1998. Federal and State Perspectives on Regulation and Remediation of Irrigation-Induced Selenium Problems, in *Selenium in the Environment*, Ed. by W. T. Frankenberger Jr. and Sally Benson, Marcel Dekker, Inc. New York, 1-25 pp.

Fan, T and Cutter G. 1998. Comments *in* Report on the Peer Consultation Workshop on Selenium Aquatic Toxicity and Bioaccumulation. United States Environmental Protection Agency (USEPA) sponsored workshop held in September 1998 in Washington, DC.

Hamilton SJ and Lemly AD. 1999. Commentary: Water-sediment controversy in setting environmental standards for selenium, *Ecotoxicology and Environmental Safety*, 44:227-235.

Henderson JD, *et al.* 1995. Assessing Selenium Contamination in two San Joaquin Valley, CA, Sloughs, US Fish and Wildlife Service, Region 1, Division of Environmental Contaminants, Sacramento, CA.

Hibbs BJ, California State University, Los Angeles, June 10, 2002, personal communication.

Lemly AD, U.S. Forest Service, June 10, 2002, personal communication.

Nagpal N K, Howell, K. 2001. Water Quality Guidelines for Selenium B Technical Appendix. National Library of Canada Cataloguing in Publication Data.

Richter JE. 1982. Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI. (Memorandum to C.E. Stephan, USEPA, Duluth, MN. June 30.) (Cited from USEPA 1987).

Skorupa JP. 1998. Selenium Poisoning of Fish and Wildlife in Nature: Lessons from Twelve Real-World Examples, in *Environmental Chemistry of Selenium*, Ed. by W. T. Frankenberger Jr. and R. A. Enberg, Marcel Dekker, Inc.

Skorupa JP and Ohlendorf HM. 1991. Contaminants in drainage water and avian risk thresholds, in *The Econcomy and Management of Water and Drainage in Agriculture*, A Dinar and D Zilberman, eds.

Trimble SW 1998. Historical hydrographic and hydrologic changes in the Newport Bay B San Diego Creek Watershed. (Report dated June 1, 1998, prepared for OCPFRD).

United States Fish and Wildlife Services (USFWS) 2000 Biological Opinion on EPA AWater Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants or the State of California@.