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Via Electronic Mail

January 25, 2013

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SUBJECT: **Proposed Benthic Community Impairment TMDL for Malibu Creek & Lagoon**

Dear Dr. Lin:

The California Association of Sanitation Agencies (CASA) and Tri-TAC appreciate the opportunity to provide comments on the proposed Malibu Creek & Lagoon Total Maximum Daily Load (TMDL) for Sedimentation and Nutrients to Address Benthic Community Impairments. CASA and Tri-TAC are statewide organizations comprised of members representing local public agencies and other professionals responsible for wastewater treatment. Tri-TAC is sponsored jointly by CASA, the California Water Environment Association, and the League of California Cities. The constituency base for CASA and Tri-TAC collects, treats and reclaims more than two billion gallons of wastewater each day and serves most of the sewered population of California.

CASA and Tri-TAC do not routinely comment on individual TMDLs. An exception to this practice arises when a draft TMDL would establish a precedent or conflict with efforts to ensure consistent statewide approaches to important regulatory and technical issues. In this case, many components of the draft TMDL are inconsistent and potentially contradictory to current statewide efforts to develop a policy to adopt biological objectives, as well as to eventually address biological impairments that may be identified. Specifically, we believe that the scoring tools used to identify the original benthic macroinvertebrate (BMI) bioassessment listing and subsequent TMDL evaluations were premature, inappropriate, and contradictory to those currently being developed as part of the State Water Resources Control Board's (SWRCB's) development of statewide biological objectives. The SWRCB's process includes improved tools for the estimation of BMI community health. Additionally, an evaluation of the available causal assessment tools, including those used in the linkage analysis of this TMDL by the SWRCB's Biological Objective Policy Technical Team concluded that currently available causal assessment tools were only marginally useful at eliminating potential causes of impairment and fell woefully short of being capable of identifying likely causes. We recognize that USEPA was under a time constraint for development of this draft TMDL due to a consent decree deadline. However, the TMDL as proposed does not reflect the minimum level of scientific rigor and technical accuracy required to establish regulatory requirements. These potentially precedential and significant flaws are of such statewide importance to warrant these comments.

With the SWRCB actively engaged and committing significant financial and technical resources in the development of a statewide biological objective policy, we believe that it is extremely premature and potentially contradictory for USEPA or Regional Water Quality Control Boards to circumvent this process by attempting to address these issues independently. Furthermore, the USEPA has already adopted a nutrient TMDL in 2003 for Malibu Creek,[1] and receiving water nutrient targets specified in that TMDL have not been fully attained. Further reductions to these targets to address suspected nutrient-related impacts to the benthic community may be unwarranted and unnecessary once the existing 2003 EPA TMDL nutrient targets have been achieved and BMI evaluations using the more robust tools and procedures developed by the SWRCB have been conducted. Therefore, it is our recommendation that nutrient targets and waste load allocations in this TMDL be set equivalent to those adopted in the 2003 EPA nutrient TMDL until those receiving water targets have been met and the SWRCB has completed development of the State's Biological Objective Policy, which is anticipated to include better and more robust scoring tools as well as more appropriate causal assessment tools.

Also of major concern is that the numeric targets and waste load allocations for nutrients being proposed in this TMDL are at or below the current limits of technology for wastewater treatment facilities. Complying with such targets and allocations, if attainable at all, would necessitate the expenditure of considerable public funds. It is therefore critical that all of the technical elements associated with the underlying 303(d) listing and the development of this TMDL are complete, technically robust, and capable of providing an appropriate level of certainty to the public that such expenditures will reasonably result in attainment of the desired biological condition. Given the significant efforts, changes, and scientific scrutiny being implemented by the SWRCB and nationwide experts regarding the BMI bioassessment tools and causal assessment procedures, the application of flawed and outdated tools contained in this TMDL is entirely inappropriate. Similarly, the high degree of uncertainty associated with the causal assessment in the draft TMDL that was used to link nutrients and sediments to benthic community impacts is wholly inadequate to justify the extraordinary costs that would be required to implement the TMDL.

Detailed and comprehensive discussion of the issues identified above are included in the attached summary. Thank you for your consideration of our comments.

Sincerely,

Roberta L. Larson, Executive Director
CASA

Terrie L. Mitchell, Chair
Tri-TAC

[1] USEPA (United States Environmental Protection Agency). 2003. Total Maximum Daily Loads for Nutrients Malibu Creek Watershed. U.S. Environmental Protection Agency, Region 9, San Francisco, CA. http://www.epa.gov/region9/water/tmdl/malibu/final_nutrients.pdf.

Attachment

CASA/Tri-TAC Comments

Proposed Benthic Community Impairment TMDL for Malibu Creek & Lagoon

The SoCal IBI is Inappropriate for Use as an Estimate of BMI Impairment in Malibu Creek

Comment 4-1

The draft TMDL references a publication[1] to support the contention that the SoCal IBI provides reasonably consistent results in low gradient/low slope habitats (page 8-4). However, this publication simply indicated that different sampling methods in low gradient/low slope habitats yielded reasonably consistent IBI scores but further concludes:

> *"Caution should be used when applying sampling methods or assessment tools that were calibrated for specific habitat types (e.g., high gradient streams) to new habitats (e.g., low gradient streams). Our evaluation of assessment tools unveiled a number of shortcomings that weaken application of these tools in low-gradient streams, including the inability to collect adequate numbers of organisms, poor sensitivity of assessments, and low precision of the sampling methods." (Emphasis added.)*

This conclusion is consistent with other expert opinions that determined that due to land use changes most often associated with low gradient and low elevation streams in southern California, significant uncertainty exists regarding appropriate reference condition for these streams[2,3]. Additionally, in a June 2008 Southern California Coastal Water Research Project (SCCWRP) and Los Angeles Regional Water Quality Control Board hosted stakeholder workshop on evaluating tiered aquatic life uses (TALU), Ken Schiff (SCCWRP) and Jerry Diamond, Ph.D. (Tetra Tech) concurred with stakeholders that low gradient (and not low elevation) was perhaps the most critical factor for distinguishing stream biology and that the lack of reference condition for low gradient streams is a critical data gap.[4]

It is therefore not surprising that the experts on the Technical Team charged by the SWRCB to evaluate and develop appropriate BMI tools for eventual inclusion in the SWRCB's Biological Objective Policy have rejected the use of the SoCal IBI (and all other regional multi-metric tools) for statewide bioassessment application. The most widespread and universal problem with the SoCal IBI identified by the Technical Team and Science Advisory Group experts is that reference

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[1] Mazor, R.D., K. Schiff, K. Ritter, A. Rehn, and P. Ode. 2010. Bioassessment tools in novel habitats: An evaluation of indices and sampling methods in low-gradient streams in California. *Environmental Monitoring and Assessment*, 167: 91-104.

[2] Tetra Tech. 2006. Revised Analyses of Biological Data to Evaluate Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams. Prepared for: EPA Region 9 and California Los Angeles Regional Water Quality Board. Tetra Tech, Inc. Owings Mills, MD.

[3] Tetra Tech. 2005. Evaluation of Tiered Aquatic Life Uses (TALU) for Southern California Coastal Streams. Draft Summary Report. Prepared for: EPA Region 9 and California Los Angeles Regional Water Quality Board. Tetra Tech, Inc. Owings Mills, MD.

[4] Jerry Diamond Ph.D., Tetra Tech. July 31, 2009. Memo to Los Angeles County Sanitation Districts. Tetra Tech, Inc. 400 Red Brook Blvd., Suite 200. Owings Mill, MD. 21117-6102.

expectation is assumed based on a region-wide sampling of minimally impacted locations without regard to site-specific differences in natural gradients such as slope, precipitation, watershed size, etc. Instead, these technical experts have developed a multi-metric tool that utilizes a modeled estimate of reference condition based on site-specific similarities in natural gradients from a statewide database of minimally impacted locations. This metric was then combined with an observed over expected ratio (O/E). These new scoring tools are ultimately combined into a single score for estimation of biological condition.

Even with the development of these more robust scoring tools, significant and as of yet unresolved concerns regarding the under-representation of reference locations in the South Coast Xeric eco-region (as well as other eco-regions and habitat types) have resulted in significant discussions among the Technical Team, Science Advisory Group, and stakeholders as to whether or not the newly proposed "modeled" scoring tools are appropriate for such locations. For regions where the scoring tool may not be appropriate, the Science Advisory Group has recommended alternative assessment approaches that include examinations of relative biological condition above and below suspected stressor sources.[5] An example of the limitations and failings of this tool can be found in the TMDL evaluation of possible impacts associated with the colonization of invasive New Zealand Mudsnails. In ruling out invasive species as a potential cause of the low SoCal IBI scores, the TMDL points out a location where the invasive species represents 3% of the total benthic invertebrate population at one point in time and over 80% of the total benthic invertebrate population at another (See page 8-39). However, the SoCal IBI was the same. Clearly, a benthic scoring tool incapable of distinguishing such a dramatic shift in species composition, particularly considering the shift was observed at the same location and was due to a non-native invasive species, is not well suited for use in this watershed.

In summary, the original BMI impairment decision was based exclusively on the inappropriate and flawed SoCal IBI scoring tool that has been resoundingly rejected by technical experts, particularly for some of the water body segments in this watershed. Additionally, the EPA TMDL focuses most of its effort on establishing anthropogenic causes suspected of influencing this flawed index. Although some effort was also made to evaluate an O/E metric, the manner in which EPA estimated reference expectations retained many, if not all of the shortcomings associated with the SoCal IBI. Finally, the technical experts are still evaluating whether or not the more robust tools they have developed are appropriate for streams in the South Coast Xeric eco-region and/or low gradient streams. For these reasons, the reliability of the original impairment listing for benthic invertebrate community is questionable and any causal assessment that uses these flawed tools would be equally unreliable.

Significant Uncertainty Exists in the TMDL's Casual Assessment (Linkage Analysis)

Comment 4-2

Through the causal assessment described in the Linkage Analysis Section of the TMDL, EPA concluded that habitat-related impacts associated with excess algae due to elevated nutrients (nitrogen and phosphorus) and sediment loadings were the most significant and likely causes of low SoCal IBI scores. In conducting this analysis, EPA relied heavily on existing causal assessment tools, specifically the Causal Analysis/Diagnosis Decision Information System (CADDIS). It is important to acknowledge that the same Technical Team assembled by the SWRCB to develop the scoring tools also conducted a pilot study to evaluate the efficacy of using the CADDIS causal assessment tool to identify causes of suspected BMI impairments in California. Their overarching

[5] Science Advisory Group Meeting. October 18, 2013. Science Advisory Group Recommendations Presentation. http://www.swrcb.ca.gov/plans_policies/docs/biological_objective/101712_meeting/nine_panel_response_oct.pdf

conclusion was that for streams exposed to chronic and systemic stressors, CADDIS was only marginally useful in being able to rule out potential causes but was wholly inadequate in identifying the causes of BMI impairments.[6] Additionally, the CADDIS causal assessment conducted for this TMDL did not utilize all available information including evaluation of all potential natural and anthropogenic stressors and failed to use appropriate comparator locations that are not also "reference" locations.

An evaluation of the TMDL's causal assessment indicates that the investigators used "reference" locations as "comparator" locations to evaluate spatial and temporal co-occurrence and biological gradient components of CADDIS. However, use of "reference" locations as "comparator" locations is not recommended because presumably all potential stressors would be absent in a "reference" location and therefore, it would be impossible to determine which stressors or gradients were responsible for the change in biological condition. For example, since all of the "reference" locations exhibited a slope of greater than 2%, it would be impossible to rule out slope as a major or primary contributing cause.

Similarly, practically any and all natural and anthropogenic habitat condition factors such as canopy cover, stream embeddedness, conductivity, and countless other variables could not be differentiated from the stressor being evaluated if "reference" locations are used as "comparator" locations. Therefore, it is recommended that comparator locations be selected that are similar in nearly every way to the test or "impaired" site with the exception of one or only a few stressor variables. An excellent candidate "comparator" site is the location immediately upstream of the Tapia Water Reclamation Plant (WRP) outfall (MC-12). Because this site is in very close proximity to the MC15 location immediately downstream of the Tapia WRP and since the WRP only discharges during the winter months, the only significant stressor differences between these two direct comparator locations are associated with winter month discharges that include increased nutrient loadings during the winter. Since the biological condition is essential identical at these two locations (with the downstream location actually scoring slightly higher than the upstream location), clearly winter nutrient loadings can be ruled out as a possible stressor. This represents a much more robust and better approach to quantifying spatial and temporal co-occurrence than the use of a "reference" location. If this analysis had been conducted, it would have demonstrated that there is no temporal and spatial co-occurrence associated with low SoCal IBI scores and winter nutrient loadings. For summer nutrient loadings, the relationship would be inconclusive.

Additionally, natural stressors or gradients do not appear to have been fully evaluated as part of the causal assessment in this TMDL. Specifically, changes in slope as a potential major or primary contributing factor were not completely evaluated. As previously discussed, this environmental gradient has been identified by experts as possibly the most critical factor for distinguishing stream biology in southern California. Coincidently, a correlation analysis conducted on data presented in this TMDL indicates that achieving "reference" condition as measured using the SoCal IBI (score of 40 or more), is virtually impossible if the slope at the site is less than 2% (see Figure 1). Although the lack of latitude/longitude coordinates for all the locations prevented conducting a quantitative analysis on precipitation, it is suspected that a similar relationship also exists with long-term mean precipitation based on the PRISM dataset for GIS. Other natural factors such as perenniality, local geology, flow, lack of riparian cover, channel alteration and others should have also been carefully evaluated before finalizing any conclusions.

[6] Science Advisory Group Meeting. October 17, 2013. Technical Team Causal Assessment Update Presentation. http://www.waterboards.ca.gov/plans_policies/docs/biological_objective/101712_meeting/four_caddis_overview.pdf

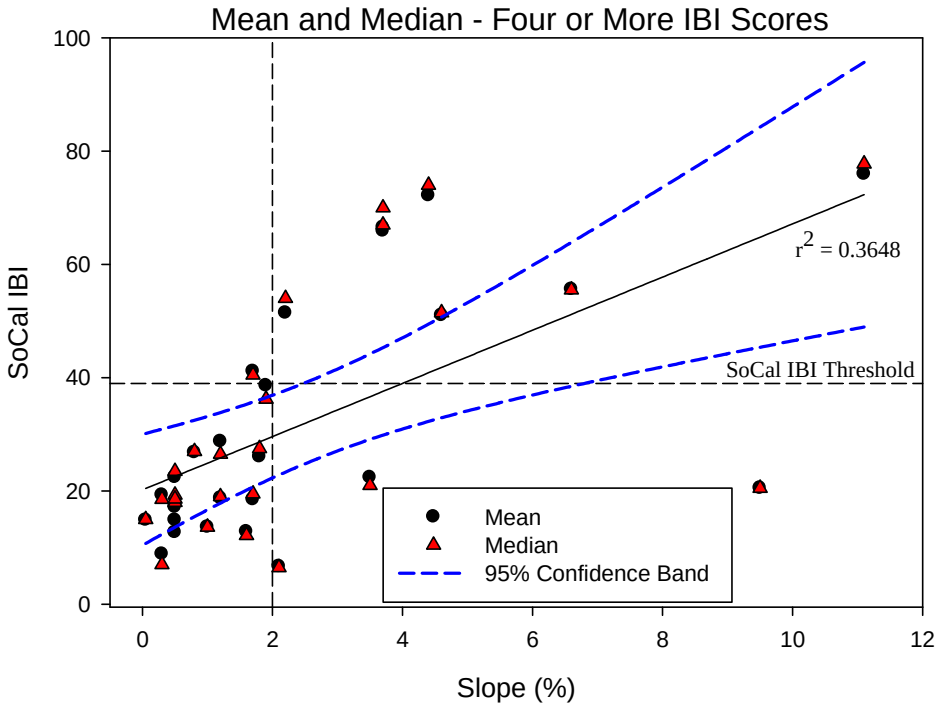

FIGURE 1: Relationship of Malibu Creek SoCal IBI to percent slope

Finally, various potential chemical stressors (natural and anthropogenic) known to impact benthic invertebrates at elevated concentrations were not adequately evaluated. These include but are not limited to sulfate, selenium, calcium, chloride, and others.[7] Furthermore, chemical compliance monitoring in the watershed indicated that many of these compounds exceeded the benthic invertebrate thresholds identified in the referenced study.[8] Although some contend that it is better to have concurrently collected biological data and water chemistry data to conduct a causal assessment, this is not always available and it is not always desirable. In this instance, use of annual or quarterly means would have probably been most representative of exposure conditions likely to impact the BMI community and should have been utilized to evaluate the spatial and temporal co-occurrence of these and other suspected compounds. Consistent with the recommendations provided by the SWRCB Biological Objective Policy Technical Team, CASA and Tri-TAC believe that a more thorough causal assessment should be conducted through an open stakeholder process using more robust tools and approaches being developed as part of the SWRCB's Biological Objective development process.

Receiving Water Nutrients Targets and Waste Load Allocations on Nutrients in this TMDL Should Be Consistent With Those Developed in the 2003 Nutrient TMDL for Malibu Creek **Comment 4-3**

Receiving water nutrient targets and waste load allocations for nitrogen and phosphorus were implemented as part of the 2003 Nutrient TMDL for the Malibu Creek watershed to specifically address excess algae associated with aquatic life and recreational beneficial use impairments. In the

[7] Pond, G. J., M. E. Passmore, F. A. Borsuk, L. Reynolds and C. J. Rose. 2008. Downstream effects of mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools. *Journal of the North American Benthological Society*, 27(3): 717-737.

[8] Water Quality in the Malibu Creek Watershed, 1971 – 2010. March 31, 2011. Submitted by the Joint Powers Authority of the Las Virgenes Municipal Water District and Triunfo Sanitation District to the Los Angeles Regional Water Quality Control Board in compliance with Order No. R4-2010-0165. LVMWD Report #2475.00.

2003 Nutrient TMDL, EPA determined that the summer months represented the critical condition in this watershed and set seasonal receiving water nitrogen for the winter months of 8 mg/L and 1.0 mg/L for the summer months. In the draft BMI TMDL, EPA notes these numeric targets are not being consistently met, with post-2005 summer month exceedances still being observed over 30% of the time (Table 7-6 on page 7-13). This would indicate that if nutrient loadings are in some way contributing to current algal conditions resulting in low SoCal IBI scores, consistent attainment of the 2003 Nutrient TMDL targets may potentially result in eventual attainment of the desired condition. This is particularly important considering that a causal assessment incorporating a more appropriate comparator site appears to indicate that winter month nutrient loadings are having no effect on the BMI community. For these reasons, CASA and Tri-TAC suggest that nutrient targets and waste load allocations not be further restricted until full implementation of the 2003 Nutrient TMDL results in consistent attainment of the 2003 targets developed to address the same impairments. At that point, an open stakeholder driven assessment should be conducted to evaluate if beneficial uses are still being impaired using the more robust and appropriate tools developed as part of the SWRCB's Biological Objective Policy efforts.

Biological Response Numeric Targets Should Not Be Used as NPDES Permit Limit

Comment 4-4

The draft TMDL states "[t]he biological response numeric targets for Malibu Creek and Lagoon are directly linked to the allocations and should be placed into the applicable regulatory mechanism (i.e., NPDES permit) in order to ensure that the benthic community condition achieves the water quality objectives." (Page 10-13) Notwithstanding the issues that the biological metrics used are inappropriate and that the biological response was not adequately linked to the pollutants for which allocations are being developed, it is not appropriate to hold individual NPDES permit holders responsible in their NPDES permits for attainment of biological response numeric targets. Insufficient evidence has been provided to indicate that any individual NPDES permit holder is causing or contributing to any biological condition impairment. These individual NPDES permit holders should not be held responsible for attaining targets that may not be related to their discharges, and that may require actions beyond the NPDES permit holder's control to resolve.

The Proposed Numeric Targets Are Not Attainable with Current Technologies **Comment 4-5**

The draft TMDL proposes numeric targets for nitrogen of 1.0 mg/L and phosphorous of 0.1 mg/L. Experts have opined that these two targets together are unattainable. For example, in litigation brought by the United States in *U.S. v. Eastern Municipal Water District*, U.S. Dt. Court for the Central District of California, Case No. CV 04-8182 (CBM (RNBx)), the United States' expert, Dr. Rhodes Trussell, opined that the Best Available Technology ("BAT") for publicly owned treatment plants was, in the case of nitrogen, an annual average of 2.5 milligrams per liter and a monthly maximum of 5 milligrams per liter. In the case of phosphorus, BAT could achieve an annual average of 0.25 milligrams per liter with a monthly average of 0.5 milligrams per liter. Thus, the proposed numeric targets in the draft TMDL are below those that can be reasonably achieved through current treatment technologies.

The proposed numeric targets are also below the currently defined Limits of Technology (LOT). Most experts on nutrient removal agree that LOT must be defined for a particular effluent under particular circumstances, and that a specific period of measurement must be included (e.g., daily maximum, monthly average, annual average, etc.). Nevertheless, 3 mg/L Total Nitrogen (TN) and 0.1 mg/L Total Phosphorous (TP) are often used as the starting point for discussing LOT for nutrient removal. However, it is still not clear that these two levels can be met simultaneously at one treatment plant. For example, in the Water Environment Research Federation (WERF) workshop "Nutrients 2007," a special session was held on the "State of the Art in Nutrient Removal Design."

At this workshop, three national experts were asked to address the same challenge, namely how to design a treatment plant to achieve TN of <3 mg/L and TP of < 0.1 mg/L on a monthly average basis. Although plants have met one of these criteria, we are unaware of any plant that can achieve both simultaneously as demonstrated by the below data:

Table 20: List of Plants Achieving TN < 2.5 mg/L[a]

Facility Name/Location	TN (mg/L)	TP (mg/L)
Bayou Marcus WRF, Pensacola, Florida	1.8	0.13
Central AWWT Facility, Fort Myers, Florida	1.75	0.1
City of Dunedin, Florida	2.3	0.31
Fiesta Village, Florida	1.0	0.19
Graceville, Florida	< 2.5	< 0.50
Iron Bridge Regional WRF, Oviedo, Florida	1.4	0.2
McDowell Creek WWTP, Huntersville, North Carolina	1.7	0.1
Reedy Creek Improvement District WRF, Lake Buena Vista, Florida	2.5	0.26
River Oaks, Florida	1.4	0.30
Triangle Wastewater Treatment Facility, Durham, North Carolina	2.37	0.26
Truckee Meadows, Reno, Nevada	2.0	0.34

[a]Sources of data in Table: deBarbadillo et al. 2006, Neethling et al. 2005, Pagilla et al. 2007, WERF 2006

A TMDL should not be adopted that, from its outset, is not attainable within the limits of technology. One of the main goals of the Clean Water Act, namely the goal of fishable/swimmable waters, clearly recognizes that this goal may not always be attainable. (33 U.S.C. §1251(a)(2) [limited to "where attainable"].) Thus, EPA should not adopt TMDLs that have demonstrably unattainable goals and targets.

The Draft TMDL Is Based On An Improper Listing Comment 4-6

Unlike the Nutrient TMDL, this draft TMDL is based on an alleged impairment to benthic communities, not an impairment on any particular pollutant. The use of surrogates has recently been called into question in the courts and should be carefully considered before EPA proceeds with this draft TMDL. In early January of 2013, a federal court in Virginia ruled that EPA is not authorized under the Clean Water Act to impose a flow-based TMDL for Accotink Creek in Fairfax, Virginia. (*Virginia Dept. of Transportation v. USEPA*, U.S. Dt. Court for the Eastern District of Virginia, Case No. 1:12-CV-775, Memorandum Opinion, Jan. 3, 2013.) In that case, the Court limited the jurisdiction of EPA and recognized that EPA can only regulate pollutants as that term is defined by Congress. Further, the Court recognized that the clear wording of the Clean Water Act states that waters can be listed under Section 303(d) and that TMDLs can only be done "for those pollutants which the Administrator identifies under section 1314(a)(2) of this title as suitable for such calculation" (*Id.* at 4, *citing* 33 U.S.C. §1313(d)(1)(C).) Thus, it is not clear that the listing for benthic community impairment was proper in the first place. If the listing was not proper because benthic community impairment is not a "pollutant", then it is not suitable for calculation of a TMDL. For these reasons, we believe that allowing the Nutrient TMDL to be fully implemented before moving forward with this draft TMDL is the most reasonable and efficient approach.