



February 25, 2013

Ms. Jeanine Townsend  
Clerk to the Board  
State Water Resources Control Board  
1001 I Street, 15th Floor  
Sacramento, CA 95814

**SUBJECT: Comment Letter – Board Workshop: Scientific Basis for Development of a Statewide Policy for Biological Objectives**

Dear Ms. Townsend:

The California Association of Sanitation Agencies (CASA), Tri-TAC, the Southern California Alliance of Publicly Owned Treatment Works (SCAP) and the Central Valley Clean Water Association (CVCWA) appreciate the opportunity to provide written comments associated with the State Water Resources Control Board's (State Water Board's) Workshop: Scientific Basis for Development of a Statewide Policy for Biological Objectives. Our associations collectively represent public wastewater agencies that provide sewer collection, wastewater treatment and water recycling services to millions of Californians. Our membership safely reclaims more than two billion gallons of wastewater each day.

First and foremost, our associations commend and appreciate State Water Board staff for the open and inclusive stakeholder process and communications incorporated in to the development of the scoring tools and causal assessment approaches. We hope and request that a similar process is utilized during development of the implementation and regulatory-related components of the Policy. We also appreciate staffs' commitment during the workshop to providing stakeholders with copies of any draft statewide policy for biological objectives (Policy) prior to it being sent out for peer review. Finally, we would also like to acknowledge and recognize the tremendous contributions made by the experts assembled by staff to serve on the Technical Team and Science Advisory Group (SAG). Their knowledge, expertise, and scientific input were instrumental in the development of the novel California Stream Condition Index (CSCI) scoring tool. Although the workshop represented the first public overview of this tool, it appears to be more robust and applicable than previously presented approaches and the more commonly utilized regional indices. We look forward to being able to provide more significant technical input once the details of this unique scoring tool have been released.

Even with the development of the seemingly more robust CSCI scoring tool, we suggest that the State Water Board proceed carefully with the implementation of this Policy and thoroughly consider the potential financial and resource impacts this Policy may have on the residents of California. Considering the significant limitations in the causal assessment tools and the potential financial, environmental, and social costs associated with this Policy, the State Water Board should

avoid incorporation of any Policy-related implementation components that cannot reliably be expected to achieve reasonable beneficial use goals. Additionally, impacts to beneficial uses not typically recognized by the State Water Board should also be considered and carefully evaluated as staff moves forward with development of the implementation provisions. Examples that should be a part of this discussion include flow alterations associated with recycled water use and deliveries, as well as stream modifications associated with flood control. Many channels are constructed and/or altered to move and deliver recycled water or to protect life and property during flooding. This anthropogenic and necessary channel modification by itself is a stressor known to alter benthic macroinvertebrate populations, and if not carefully addressed, could be impacted as a result of this Policy.

Since formal documents are not available during this comment submission period, the following comments and perspectives are based on our understanding of Policy elements as presented in Stakeholder Advisory and SAG meetings as well as additional conversations with State Water Board staff and members of the Technical Team:

1. An evaluation of current causal assessment tools that included development and examination of new alternative tools by the Technical Team and stakeholders found that these tools were limited in their ability to identify specific causes impacting benthic macroinvertebrates (BMIs), even in well monitored, “data rich” reaches, when the stressors influencing those reaches are believed to be chronic and systemic. Sound biological objectives in the absence of robust and reliable causal assessment tools have no value. BMIs are not “pollutants” and are known to respond to a wide range of natural and anthropogenic stressors, including stressors that the State Water Board is not willing and/or not authorized to control. Therefore, it is imperative that sound and robust causal assessment tools be developed that can reliably identify specific stressors impacting a stream. **We request that the State Water Board commit the necessary resources to retain the Technical Team and SAG to provide scientific input into development of sound causal assessment tools.**
2. It is anticipated that current funding commitments are expected to allow for the development of a “black box” California Environmental Data Exchange Network (CEDEN) module for processing bioassessment taxonomic data combined with latitude and longitude coordinates that will seamlessly calculate CSCI scores. However, conversations with members of the Technical Team have indicated that there is currently no funding available to develop, support, and maintain an FTP or other appropriate residence for the component tools including the reference database, R scripts, and other the tools that would allow capable individuals to perform and verify these calculations independently. Furthermore, development of the CEDEN tool is anticipated to take many months to complete. In the meantime, interested stakeholders will not have access to any scoring tools required to conduct their own evaluations. **We therefore request that the State Water Board provide the necessary efforts and funding to make the component tools available as soon as possible so that stakeholders (regulators, regulated, and NGOs) can start to effectively evaluate the scoring tool.**
3. Some stakeholders remain concerned that even with the recent addition of reference locations from underrepresented eco-regions, expectations for some streams (low slope, large watershed, unusual or unique geology, etc.) may not be appropriate. Members of the Technical Team have indicated that formal tests of applicability are possible with the new scoring tool, but these tests have not been developed. Furthermore, such an evaluation would require access to the

statewide data base and component tools. **In addition to providing stakeholder access to the component tools described above, we also request that the State Water Board utilize the Technical Team and SAG to develop formal applicability tools and assist in evaluating and providing input into these and other potential shortcomings.**

4. Scientific input is needed to evaluate whether or not “expectations” (however they are ultimately derived as a result of this Policy) can be reasonably achieved for streams. While it is anticipated that “expectations” for modified streams are likely to be different from those in undeveloped areas, technical insight is needed to determine if such “expectations” can be reliably achieved and if so, whether or not those “expectations” represent a significant improvement in the aquatic life beneficial use. **We therefore request that the State Water Board continue to retain and support the Technical Team and SAG during discussions on where objectives may be applied and what those objectives should be to provide the necessary technical guidance to help inform the regulatory applicability of the Policy.**
5. During the development of the observed over expected (O/E) component of the scoring tool, the SAG advised that rare species, those with less than a 50% probability of occurring at a site, should be excluded because including them increases the “noise” relative to the signal and results in decreased overall precision. However, with the modeled multi-metric index (MMI) component of the scoring tool, the complete taxa list (rare and common species) are utilized. A cursory observation of limited CSCI data indicates that the MMI component tends to score lower than the O/E component. While the two components scoring different is not unexpected, it would be concerning if one component typically scored less than the other. If such a bias exists, it may be a function of the increased signal to noise associated with incorporation of “rare” taxa into the MMI component. Since the CSCI is an average of the two scoring components, we are concerned that a systematic bias associated with increased “noise” in one component could ultimately result in an inaccurate assessment of the overall CSCI. For example, in some instances, the O/E component scored 1.5 (50% better than expected) which was then averaged with an MMI component score of 0.5 (50% lower than expected) resulting in a CSCI score 1.0 (100% of reference condition). In these cases, could the inclusion of rare taxa and associated increase in “noise” in the MMI component or the exclusion of rare taxa in the O/E component be confounding the overall assessment and are there techniques to address the apparent discrepancy? **We ask the State Water Board to request an evaluation by the Technical Team and SAG on this possible bias in the scoring tool.**
6. As this effort moves away from the development of the scoring tool and more into policy considerations associated with implementation, we strongly request that the State Water Board retain the Technical Team and SAG. Early on in the process, the SAG expressed an interest in knowing how the tool is likely to be implemented in a regulatory context in order to better help them more effectively provide input. This is particularly important in addressing and quantifying uncertainty. Significant uncertainty still exists regarding how and where the biological objectives identified in this Policy will be used in identifying impairment (303(d) listing), application of causal assessment tools, and associated management actions. Therefore, it will be necessary to reconvene these experts to assess whether or not the tool is robust and reliable enough to support potential regulatory actions in all areas the State Water Board ultimately intends to apply the Policy. For example, it is still unknown if the Policy will apply

reference expectations to all waters or if some eco-regions will be exempted entirely or whether alternative regulatory approaches, such degradation prevention or “best attainable” expectations could be ultimately selected. **It is our opinion that the Technical Team and SAG could provide significant technical input into where the tools are most reliable, where alternative approaches may be most useful, and what expectations are reasonable for specific habitat conditions, such as modified channels. We ask the State Water Board to actively utilize the Technical Team and SAG to provide such input.**

7. The SAG clearly indicated that the setting of CSCI impairment thresholds was purely a policy decision with no scientific or technical basis. For individual pollutants, impairment thresholds are set at a level with some clear connection to an aquatic life or human health effect. However, with biological objectives, the selection of an impairment threshold is an arbitrary decision based on an arbitrarily selected degree of allowable deviation from the “expected” reference condition, which is in itself highly uncertain (i.e. while all reference sites should be “expected” to score 1.0, actual CSCI scores at reference locations vary from about 0.3 to 1.4). While utilizing percentiles or standard deviations from a reference distribution provides some level of mathematical objectivity, the setting of an impairment threshold still ultimately comes down to a simple choice with no biological or ecological significance. For example, if the State Water Board would prefer to have more streams identified as “impaired”, they can simply set the threshold at one standard deviation from reference condition. If they would like to have fewer streams identified as “impaired”, they could set the threshold at three or four standard deviations from reference condition. Conversely, the setting of a biological impairment threshold could be determined by deciding how many non-impaired reference streams the State Water Board is willing to incorrectly identify as “impaired”. If it is desirable to identify very few reference streams as “impaired”, then the State Board could set the threshold at three or four standard deviations from reference expectations. If it is more beneficial to increase sensitivity at the expense of identifying a significantly high number of reference streams as “impaired”, then they could alternatively set the threshold at one standard deviation from reference condition. **We recommend that the State Water Board consider using the percentile or standard deviation approach as a means of prioritizing streams and reserve the identification of “altered” or “impaired” to only those locations falling below the lowest CSCI score observed in the reference pool. This would prevent identifying any reference stream as impaired and identify (and prioritize) the most significantly impacted streams.** Streams scoring above this threshold, but below one standard deviation of reference condition could be categorized as being on a “watch list”. If additional categories are desired, they can easily be accommodated by using intermediate thresholds.
8. Natural disturbances such as fire, decreased and increased flows associated with drought and storm events, and even large scale climate changes have been documented or suspected to have extremely large, and in some cases long lasting impacts on biological condition. By using a ten-year indexing period when selecting reference locations, some of these disturbances may have been incorporated to some degree into the setting of reference condition and may actually partially explain why the range of CSCI scores in reference streams is so large (CSCI scores ranging from about 0.3 to 1.4). However, there has been no detailed discussion on how to account for these expected, natural changes in biological condition observed at a test site using data collected over a much shorter time period. Even more frequent and localized natural

changes such as those associated with the annual variations in precipitation appear to not have been adequately addressed. In development of the tool, precipitation as a long-term average (10-year average precipitation) was incorporated, but was not determined to be a significant driver of expected biological condition. However, more short-term and natural annual drought and flooding events were not evaluated. While the long-term (10-year) average precipitation is relatively constant, inter-annual precipitation across much of the state is best characterized as a multiyear cycle of widely fluctuating precipitation rates. For example, in southern California, 61 out of the previous 133 years exhibited annual rainfall rates that differed from the long-term average by over 30%, and a cursory review of precipitation patterns for San Francisco and San Diego revealed a similar pattern. Since it is well documented that short-term scouring events associated with significant storm events can have a substantial impact on benthic macroinvertebrates, it is critical that the community changes associated with natural stressors be documented and addressed in either the scoring tool, the implementation approaches, or both. **We request that the variability of the CSCI associated with natural disturbances, particularly with inter-annual fluctuations in rainfall associated scouring event, be evaluated.**

9. In response to Board Members' questions at the Workshop and in discussions at the Stakeholder Group meetings, the Technical Team clearly indicated that a fish community index to evaluate biological condition would be infeasible in California. California has relatively few remaining native fish species and the majority of streams and lakes in the State are dominated by introduced non-native species, many of which provide significant angling recreational benefits. The State Water Board lacks the ability to eradicate the dominant non-native fish species in the State such as largemouth bass, catfish, bluegill, and brown trout. This list only represents a fraction of the non-native fish species that may be creating barriers and making restoration of fish communities impossible. Moreover, any such attempt at doing so would be perceived as extremely unpopular with the recreating public and other state agencies. Therefore, development of a native fish index has not been pursued in favor of the benthic macroinvertebrate and algal community indices with the understanding that the fish communities in nearly all of California's streams will always be biologically "poor". For this reason, if the intent of this Policy is to restore the biological condition of California's streams, it will fail in nearly all instances, even if invertebrate communities achieve a high level of ecological function. **In recognition of this ecological limitation, the State Water Board should more clearly and directly identify the specific intent and goal of this Policy so that a Policy can be drafted that will be likely to achieve those goals.**
10. During the January workshop, the Executive Officer of the San Diego Regional Water Board indicated in his presentation that this Policy is greatly needed in his region as a tool that will help in prioritizing streams in the region. Coincidentally, a stakeholder group member also testified at that workshop that they were supportive of development of this Policy as a valid and workable tool for prioritizing streams. Considering that this Policy, and in particular the scoring and eventual causal assessment tools incorporated into this Policy, represent a novel approach for addressing biological condition, the State Water Board should carefully consider how it is implemented. For some, the most significant emphasis should be in identifying those streams that are those currently scoring extremely high to help prioritize management actions to protect the resource. Others desire a tool that is capable of identifying streams marginally different

from reference to aid in supporting management actions most likely to result in a tangible improvement in beneficial uses. However, if the Policy ultimately sets a numeric target to assess a narrative Basin Plan Objective, the Policy will fall short of Regional Water Boards' and other's expectations that this will serve as a tool to effectively assist them in prioritizing streams. Instead of being able to allocate resources where they can be most effective or most needed, the Clean Water Act would obligate that all streams not meeting the arbitrary threshold would need to be addressed. This would result in resources being unnecessarily spread out across all streams failing the arbitrary threshold, with no leeway to focus efforts and resources on priority streams. **We therefore recommend that the State Water Board pursue a Policy approach that utilizes the technical tools to prioritize streams instead of using it to make formal impairment decisions under the Clean Water Act.**

11. In keeping with pursuing a prioritization approach, consideration should also be given to phasing implementation of the Policy. Under such a phased approach, the initial use of the Policy would be to incorporate monitoring and scoring with the new tools followed by establishment of priority classifications. Presumably, initial management priorities would be limited to the highest scoring streams in which reference conditions are attained. These streams potentially represent vulnerable and ecologically important areas and are the areas where existing causal assessment tools and corrective actions are most likely to be successful. In later phases, the Policy could be better developed using information learned from earlier phases including the effectiveness of management practices, reliability of achieving the desired biological condition, costs and other insights with the intent to eventually expand usage to other regions and areas. This will initially restrict use of the objectives and causal assessment tools to areas where there is little disagreement as to their applicability and where successful causal identifications are most likely to be obtained. Subsequent phases to extend applicability where appropriate can then be considered and developed utilizing the lessons learned and new tools developed during the previous phases as more information on the appropriateness of applying biological objectives to these areas is obtained.
12. State Water Board staff and the technical experts correctly assert that poor habitat condition is the likely cause of many if not most of the biological impairments in California, particularly in areas with significant urban and/or agricultural development. In southern California and elsewhere in the State, many perennial and wadeable streams are channelized. Such channel modifications greatly impact reasonable biological expectations. Setting reference expectations based on minimally impacted land use conditions for these modified habitats is generally accepted as being unreasonable, but setting some alternative intermediate expectation other than reference condition would also be unsupportable biologically and functionally arbitrary, unless beneficial use designations are also modified to reflect actual habitat conditions.

It is important that the State Water Board carefully consider the reason that these streams have been so heavily modified. For example, in the Los Angeles Region, the Los Angeles River historically meandered year to year between ocean outlets on Santa Monica Bay (Ballona Creek) and San Pedro Bay. It was also common for the San Gabriel River during high flow periods to actually join with the Los Angeles River. However, after disastrous floods in 1914, 1934, and 1938 that killed more than 100 residents and destroyed 5,600 homes, these rivers were channelized and headwaters dammed to protect people and property. Since that time,

significant stretches of land along these rivers have been developed and currently support safe housing and industry, protecting hundreds of thousands of people in the region. Even now, these channels run full during large storm events while still protecting the community from flooding. Reasonably foreseeable control measures to improve biological condition in these channels include potential addition of cobble substrate, removal of armoring, and planting of vegetation. However, such measures will also decrease the capacity and capability of these structures to provide adequate flood control protection. Therefore, these controls could be expected to have drastic and possibly tragic impacts on housing, roads, industry, recreation, other vital infrastructure and the economies that rely on these services due to the expected decrease in flood control capacity. **Therefore, the State Water Board should carefully evaluate the efficacy of setting biological objectives that may result in the need to alter or to reduce capacity of modified channels providing vital and necessary public services such as flood control, water supply, agricultural drainage, and other critical services.**

13. Statewide biological objectives could have the unintended, but reasonably foreseeable consequence of limiting growth and expansion of recycled water projects through restrictions on the ability to obtain necessary permits for new or expanded projects or through the “artificial” establishment of a perennial stream subject to the provisions in the Policy where they did not previously exist. Clearly, the potential impacts associated with decreasing and increasing flows on macroinvertebrates have the potential to be significant, but have been largely unstudied. Water agencies are currently looking into new and potentially large groundwater recharge projects in a continuing effort to provide safe and reliable water for the State, and many POTWs are looking to expand recycled water uses in and near their communities. Such projects can be expected to reduce recycled water discharges into some stream reaches, while potentially increasing discharges in others due to the use of existing stream channels to transfer water to recharge and recycling projects. Uncertainty associated with potential macroinvertebrate impacts due to such water movements could lead to delays or even abandonment of these vital projects.

To compound these issues, current and future water conservation efforts have and will continue to result in over-all decreases in POTW discharges, which will reduce flows into streams. Uncertainty over potential impacts on the macroinvertebrate community, particularly in areas with extensive stream channel modifications already in place, should not impede water conservation efforts. Impacts to water supply and water delivery will have significant and far ranging consequences throughout the state. Limitations and/or restrictions on water recycling and recycled water movement as a result of biological objectives would place increased demands on current water supplies, which are already under significant stress due to the dependence in much of the State on imported water supplies and the growing impacts of climate change. This could have drastic effects on California’s \$36.2 billion a year agricultural industry as the cost of water increases and more limited and less reliable water resources are diverted away from farming. This will result in increased food prices in California and across the nation as California provides over one half of the fruit and vegetable crops in the U.S. Such restrictions will also limit housing, industrial, and economic growth. Increased water recycling will allow for more sustainable residential and industrial development, but restrictions in response to uncertainty in meeting biological objectives could limit these opportunities. **Therefore, the State Water Board should carefully evaluate the efficacy of setting**

**biological objectives that may result in restricting recycled water projects, expansion of existing recycled water programs, and the ability to utilize channels and streams for delivery of recycled water.**

14. State Water Board staff recognize that reference biological expectations for some perennial and wadeable streams are not reasonable and have proposed alternatives that would establish an intermediate biological threshold lower than that of reference condition (“best attainable”) for these streams. This approach functionally “tiers” the biological expectation to some lower level even though the designated aquatic life beneficial use for the stream may remain the same as those in a more pristine or reference state. We believe that a more systematic approach that would ensure that beneficial uses and water quality objectives are appropriately matched is to create additional subcategories of the aquatic life use and apply them as appropriate within each region, similar to an approach that has been successfully incorporated into Ohio’s regulatory program that uses “tiered aquatic life uses” (TALU). In Ohio, the biological expectation has been adjusted up or down based on what is minimally necessary to support the tiered beneficial aquatic life use, recognizing that not all streams and channels should be expected to support the same beneficial use. Another approach would be to include a subcategory such as “Limited Warm Freshwater Habitat,” defined by the Santa Ana Regional Water Quality Control Board to be waters “which support warmwater ecosystems which are severely limited in diversity and abundance as the result of concrete-lined watercourses and low, shallow dry weather flows which result in extreme temperature, pH, and/or dissolved oxygen conditions. Naturally reproducing finfish populations are not expected to occur in Limited Warm Freshwater Habitat Waters.” (Santa Ana Region Basin Plan, Chapter 3, p. 4) State Water Board staff are proposing to tier/reduce the biological expectation knowing that meeting such an expectation will still not support the highest level of the desired beneficial use (or meet the narrative biological objective) because the beneficial use will remain unchanged. Therefore, the “best attainable” threshold becomes an arbitrary target that will not result in attainment of the biological objective and may or may not be necessary to support the desired aquatic life beneficial use. **For these reasons, it is imperative that the State Water Board evaluate an alternative that includes modifying both beneficial uses and water quality objectives to match those uses.**
15. There have been many discussions regarding how and where this Policy may apply. Some are expecting a tool that will help prioritize streams for more focused management actions. Others are interested in using the Policy to prevent biological condition degradation in currently high scoring streams, while still others anticipate that the Policy will result in regulatory mandated restoration of impacted streams. While we appreciate the opportunity to comment on the draft Policy before submittal to peer review, it would be helpful if the State Water Board could prepare and distribute a preliminary “straw man” outline of the regulatory and implementation components including where and how this policy is expected to be implemented well in advance of the preparation of the draft Policy. This will allow stakeholders including regulators, the regulated community, the Technical Team, SAG experts, and others to provide early input and identify potential technical limitations based on intended regulatory uses.

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Our associations thank the State Water Board for this opportunity to provide input into the development of the Policy. We look forward to working with the State Water Board as it continues to develop statewide biological objectives. If you have any questions about these comments or require additional information, please contact Roberta Larson at (916) 446-0388 or [blarson@casaweb.org](mailto:blarson@casaweb.org).

Sincerely,



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cc: Karen Larsen, SWRCB staff