



# County of San Diego



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August 16, 2017

Jeanine Townsend, Clerk to the Board  
State Water Resources Control Board  
P.O. Box 100  
Sacramento, CA 95812-2000

Dear Ms. Townsend:

## COMMENT LETTER – BACTERIA PROVISIONS

The San Diego Copermittees (Copermittees) appreciate the opportunity to comment on the proposed Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE)—Bacteria Provisions and a Water Quality Standards Variance Policy and the Proposed Amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan)—Bacteria Provisions and a Water Quality Standards Variance Policy and Staff Report (hereafter Bacteria Provisions). The Copermittees include the Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista, the County of San Diego, the San Diego County Regional Airport Authority, and the San Diego Unified Port District.

The Copermittees support water quality improvements in our watersheds through implementation of the MS4 Permit. We are fully supportive of the State Water Resources Control Board's (State's) effort to align the State's recreational water quality standards with the United States Environmental Protection Agency's (USEPA's) 2012 Recreational Water Quality Criteria<sup>1</sup>, which are based on recent epidemiological studies linking indicator bacteria levels to human health impacts. We believe that regulatory decisions based upon sound science are appropriate. The Copermittees have identified some suggested modifications that will support our efforts to use emerging science being developed in Region 9 and target control measures on sources that are most likely to reduce the risk of illness for recreators.

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<sup>1</sup> USEPA, 2012. Recreational Water Quality Criteria. U.S. Environmental Protection Agency, Office of Water. Washington D.C. (EPA 820-F-12-058, 2012).

The County of San Diego respectfully submits the following comments on behalf of the San Diego Copermittees. These comments were developed jointly and represent a general consensus among the San Diego Copermittees. Where Copermittees have more specific concerns relevant to their jurisdictions, these will be expressed in separate written comments provided by individual Copermittees.

**1. Provide a more in-depth description of the risk-based approach to the Bacteria Provisions**

The Copermittees request that the State include a more detailed description of the risk level that is the basis for the Bacteria Provisions. The only mention of risk level in the Bacteria Provisions occurs in the header of the WQOs table as 32 per 1,000 water contact recreators. Since the risk level is the driving mechanism to protect human health, it should be clearly described in both the Bacteria Provisions and Staff Report. Emphasizing the risk based approach is important to future public understanding of the standard and the significance of the WQOs.

The USEPA has a long record of establishing recreational criteria based on risk levels. The USEPA published recommended recreational water quality criteria in 1986 that establish the ambient condition of a recreational waterbody necessary to protect the designated use of primary contact recreation<sup>2</sup>. Criteria values were selected for E. coli and enterococci in order to carry forward the same level of public health protection that were believed to be associated with the USEPA's previous criteria recommendations<sup>3</sup> based on fecal coliform. The USEPA carried forward this risk-based approach in its 2012 Criteria development. Elevated levels of indicator bacteria were linked to increased risk of gastrointestinal illness through epidemiological studies conducted by USEPA during the National Epidemiological and Environmental Assessment of Recreational Water (NEEAR)<sup>4</sup> and the 2012 Criteria were established to carry forward the risk-based approach to setting recreational criteria based on indicator bacteria levels.

At the same time, the science of recreational water quality has been rapidly developing and research in southern California has been at the forefront of new scientific advancements. These advancements have increased the number of pathogens and indicators that can be measured in recreational waters, lowered the cost of those measurements, increased the reliability of health risk estimates at local sites based on site-specific data and provided more reliable data to be used in making effective regulatory decisions. The recent Surfer Health Study (SHS) conducted in the San Diego region was a large study that incorporated

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<sup>2</sup> USEPA. 1986. EPA's Ambient Water Quality Criteria for Bacteria – 1986. U.S. Environmental Protection Agency: Washington, DC. EPA440/5-84-002.

<sup>3</sup> USEPA. 1976. Quality Criteria for Water. U.S. Environmental Protection Agency: Washington, DC.

<sup>4</sup> USEPA, 2010a. Report on 2009 National Epidemiologic and Environmental Assessment of Recreational Water Epidemiology Studies. United States Environmental Protection Agency, Office of Research and Development. (EPA Report Number EPA-600-R-10-168, 2009).

USEPA, 2010b. Quantitative Microbial Risk Assessment to Estimate Illness in Fresh water Impacted by Agricultural Animal Sources of Fecal Contamination. United States Environmental Protection Agency. EPA 822-R-10-005.

an epidemiological component and a Quantitative Microbial Risk Assessment (QMRA) component, which found a different relationship between indicator bacteria levels and human health risk than the epidemiological studies that supported the USEPA criteria – and pointed out that human sources of indicator bacteria posed the greatest health risk, and that elimination of human sources is most effective at reducing the risk of illness<sup>5</sup>.

The ultimate goal of recreational water quality improvement programs is to reduce risk of illness to recreators, as opposed to being solely focused on reducing densities of fecal indicator bacteria. As such, incorporating a discussion of the risk-basis for the Provision will allow them to be adaptable to the evolving science in the event that a better indicator becomes available and ensure a clear understanding that the risk-level established in the provisions is protective of human health.

***Recommendation*** *Include a discussion within the Bacteria Provisions of the risk-level basis of the E. coli and Enterococci numeric criteria, and acknowledge that the fecal indicator-based criteria were established by USEPA to support an accepted risk level.*

## **2. Allow flexibility in the frequency of samples, and method of calculating the GM and STV to determine compliance**

The Copermittees support the inclusion of a minimum of a six-week period for the calculation of the GM. However, we recommend that the Bacteria Provisions not require this calculation on a weekly, rolling basis and that the provisions allow Regional Water Boards to implement a different averaging period if justified by a site-specific analysis or within the context of a TMDL. A requirement for weekly, equally spaced samples is unnecessarily restrictive for stormwater programs, as it limits flexibility to adapt sampling frequency in response to weather conditions, or in response to an exceedance.

In addition, the requirement for a rolling GM calculation may cause a single high value to result in repeated exceedances of the GM, long after the exceedance is no longer present. State staff noted in the Staff Report that “Using a rolling average to calculate the STV could result in the reporting violations over a 6-week period where the actual violation no longer exists.” We believe that this position is supported by sound science.

***Recommendation:*** *Allow flexibility in sampling timing by removing the language in the Bacteria Provisions requiring “equally spaced” sampling for the GM and STV, remove the specification of a rolling calculation for the GM, and allow Regional Water Boards to establish site-specific averaging periods and compliance determinations.*

## **3. Seasonal considerations should guide the applicability of the objectives**

The 2012 Recreational Criteria were derived based on epidemiological studies in climates that are different from California's (e.g., which do not have distinct wet and dry seasons). Within California, there are areas which have disparate patterns of pollutant concentrations between dry and wet conditions, with high pollutant runoff occurring during infrequent wet events which are confined to a distinct wet season. The analysis of the objectives should

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<sup>5</sup> SCCWRP, 2016. The Surfer Health Study: A Three-Year Study Examining Illness Rates Associated with Surfing During Wet Weather. Southern California Coastal Water Research Project. Technical Report 943. September 2016.

clearly evaluate the applicability of the science to these disparate conditions and identify appropriate implementation procedures for the objectives under the two conditions.

Under California Water Code (Section 13241), the State Water Board and Regional Water Boards are required to consider a number of factors when adopting water quality objectives, including in relevant part here: "Past, present and probable future beneficial uses of water; and water quality conditions that could reasonably be achieved through coordinated control of all factors which affect water quality in the area". We believe that the Staff Report should include appropriate information separately for wet and dry weather events to ensure that the State has all the necessary information to consider the required 13241 factors. Dry and wet weather have different foreseeable methods of compliance that could impact the analysis of the water quality that could be reasonably achieved. The current language of the Bacteria Provisions does not indicate if the differences between wet and dry conditions were evaluated in the Section 13241 analysis. Without such information, the State will be unable to properly consider compliance with section 13241. In short, such considerations might result in different requirements for wet weather when achieving the proposed objectives may not be plausible, much less, reasonable to achieve.

Further, implementation provisions for WQOs should clearly define implementation requirements for both wet and dry weather. The implementation procedures should be developed based on the 13241 analysis results, consideration of the underlying science used to develop the objectives, consideration of the short duration of storm events, and the associated potential impacts to beneficial uses. Establishing water quality objectives should assess the ecological impact of wet weather exceedances and establish associated implementation procedures that account for allowable exceedances and impacts that occur as a result of the exceedance during wet weather as distinct from dry weather.

In order to address this issue, the Copermittees recommend the Bacteria Provisions be amended to exclude wet weather events from GM calculations and only apply the acute STV endpoint to wet weather events. A similar approach is currently in place for AB411 data such that GM calculations only include dry weather events. The epidemiological studies that were the basis for the 2012 USEPA criteria were used to establish relationships with indicator bacteria predominantly collected during dry weather. Wet weather events are sporadic, short-term events that do not have lasting impacts on bacteria water quality in receiving waters. As a result, wet weather data is not appropriate in the long term conditions represented by the GM. Because the GM and STV both offer the same level of risk protection, using only the STV for wet weather conditions will not result in higher risk to human health and will be more representative of the conditions during wet weather events. In addition, the implementation section needs to be amended to provide explicit guidance to the Regional Water Boards on how to apply the WQOs during wet and dry weather conditions.

***Recommendation:*** Conduct a 13241 analysis specific to wet weather and modify the objectives for wet weather if necessary after the analysis. Further, specify that the GM be calculated based on dry weather events only, and that the STV should apply only to wet weather events.

**4. Allow high flow and seasonal suspensions of the objectives without a use attainability analysis**

The Copermittees fully support the State's inclusion of high flow and seasonal suspension of REC-1 beneficial use as implementation options in the Bacteria Provisions. However, we request that the State allow these to be completed without a use attainability analysis (UAA). The requirement to complete a UAA requires review by USEPA, and places an unnecessary burden upon the dischargers and Regional Water Boards, which will likely impede these options from being implemented.

There is precedent within Regional Water Board Basin Plans for a temporary suspension of objectives. The Santa Ana Regional Water Board includes criteria within the Basin Plan for temporary suspension of recreational use designations and objectives, which can be implemented without a UAA. As part of the work that led to the adoption of the Santa Ana Basin Plan recreation standards amendments in 2012, the Stormwater Quality Standards Task Force considered the merits of and various alternatives for modifying the REC-1 definition to improve clarity and precision, based on careful consideration of the scientific basis of the 1986 USEPA Recreational Criteria and earlier criteria guidance. The Santa Ana Basin Plan provides definitions and eligibility criteria for temporary suspension of objectives based on site-specific flow triggers, conditions such as engineered or highly modified channels, and for the termination of the temporary suspension. The Copermittees suggest that the State either provide similar guidance, or allow Regional Water Boards to develop regional guidance for temporary suspensions without development of a UAA.

***Recommendation:*** *Remove the requirement to conduct a UAA to use the implementation provisions provided in the amendments (high flow suspension, seasonal suspension, etc.), and allow Regional Water Boards to develop region-specific guidance.*

**5. Allow for mixing zones in the Ocean Plan Bacteria Provisions**

The Copermittees encourage the State to consider mixing zones for storm water and wastewater discharges within the Bacteria Provisions, and allow the bacteria objectives to be calculated taking into account dilution as applicable, and/or for receiving water monitoring points to be located where discharges are mixed with receiving waters. This approach would emulate and provide consistency with the position expressed within the new Industrial General Permit wherein it states "receiving water limitation requires that industrial storm water discharges and authorized NSWs not cause or contribute to an exceedance of applicable water quality standards. Water quality standards apply to the quality of the receiving water, not the quality of the industrial storm water discharge. Therefore, compliance with the receiving water limitations generally cannot be determined solely by the effluent water quality characteristics." Creating permit consistency will ensure reliability in interpretation and application of the requirements for MS4s and members of the general public.

Within the Staff Report, State staff include mixing zones for point sources within the "Issues eliminated from further consideration after early outreach and public consultation," and acknowledge that with no statewide policy, existing Regional Water Board policies and procedures will apply. Regional Water Boards would likely continue their current practices for allowing mixing zones where appropriate. The Copermittees are concerned that the

Ocean Plan definition of Receiving Water on page 60<sup>6</sup> and the lack of specific authorization and discussion of mixing zones for storm water in the Ocean Plan may preclude the ability of the Regional Water Boards to apply a mixing zone for storm water if desired.

As noted in the Staff Report, the Ocean Plan already has a statewide policy regarding mixing zones for toxic pollutants which are implemented through NPDES Permits. It is reasonable to extend a similar policy to the Bacteria Provisions in order to establish a statewide standard for addressing storm water discharges. A statewide standard would remove burden from individual Regional Water Boards to establish appropriate practices, and would be protective of recreational use in waters (such as oceans) where storm water discharge and receiving water are mixed. This would also clarify that mixing zones are allowed for storm water dischargers.

***Recommendation:*** *Include language in the Ocean Plan Provisions and Staff Report to allow for mixing zones for storm water dischargers.*

**6. Specify that the objectives only apply to waters where ingestion is reasonably possible**

The Copermittees request that the State specify that the Bacteria Provisions do not apply to waters designated as REC-2 or other waters where ingestion is not reasonably possible, to be consistent with USEPA guidance on the applicability of the recreational objectives. The 2012 Criteria, and the prior 1986 Criteria, are based on epidemiologic studies of illness following full-body contact recreation. USEPA's rule promulgating *E. coli* objectives for recreational freshwaters in certain Great Lakes states<sup>7</sup> provides that the pathogen indicator objectives apply "only to those waters designated by a State or Territory for swimming, bathing, surfing or similar water contact recreation activities, not to waters designated for uses that only involve incidental contact." USEPA defines this "secondary contact" recreation as "those activities where most participants would have very little direct contact with the water and where ingestion of water is unlikely. Secondary contact activities may include wading, canoeing, motor boating, fishing, etc."<sup>8</sup>. Basin Plan definitions of REC-2 are functionally equivalent to the USEPA description of "secondary contact" recreation and some activities included in the REC-1 definition fall in this category. To avoid misinterpretation of the USEPA 2012 Criteria, it is important to only apply the objectives where ingestion of water is reasonably possible. This modification will provide consistency between the various applicable regulations and ensure consistency in interpretation and application by all affected (i.e. MS4s and the general public).

***Recommendation:*** *Specify that the Bacteria Provisions are not applicable to REC-2 and waters where ingestion is not reasonably possible.*

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<sup>6</sup> RECEIVING WATER, for permitted storm water discharges and nonpoint sources, should be measured at the point of discharge(s), in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero). (Ocean Plan page 60)

<sup>7</sup> USEPA. 2004. Water Quality Standards for Coastal and Great Lakes Recreation Waters - Final Rule. 69 FR 220, 67218. November 16, 2004.

<sup>8</sup> U.S. Environmental Protection Agency. May 2002. Implementation Guidance for Ambient Water Quality Criteria for Bacteria, Draft. EPA-823-B-03-XXX.

**7. The recommended analytical methods should not be limited to measurements of *E. coli* and Enterococci.**

The Bacteria Provisions recommend USEPA Methods 1600 and 1603 or other equivalent method to measure culturable *E. coli* and Enterococci, respectively. This language may be interpreted as precluding the use of new methods to measure *E. coli* and Enterococci that are not culture based. Rapid indicator methods to measure the presence of pathogens outside of a lab culture continue to be an active area of research. It appears that the current language in the Bacteria Provisions would preclude the use of new and emerging rapid indicator or other comparable non-culture-based methods.

In addition, if an alternative indicator (e.g., coliphage) is developed and approved, the current Bacteria Provision language could be problematic assuming that the use of those methods is interpreted as a requirement. The Copermittees recommend that the text in the Bacteria Provisions regarding preferred methods be rewritten to be adaptable to future scientific developments such as improved measurements of *E. coli* and Enterococci as well as alternative indicators.

***Recommendation:*** Remove the word “culturable” from the sentences describing *E. coli* and Enterococci methods in the ISWEBE and Ocean Plan Provisions. Include language in the ISWEBE and Ocean Plan Provisions to allow use of a scientifically defensible or other (future) approved method(s) that measure alternative indicators.

**8. Allow the reference reach/antidegradation approach and natural sources exclusion approach to be applied to all waterbodies.**

The Copermittees support the use of the reference reach/antidegradation approach or natural sources exclusion approach (implementation tools) which will provide Regional Water Boards with flexibility to adapt the WQOs to their specific regions. However, the extent of the application of these approaches appears to be limited only to waterbodies with a TMDL as noted in the Staff Report:

*“The reference system/antidegradation approach and the natural sources exclusion approach are appropriate within the context of a TMDL. The TMDL process includes the robust analysis necessary to characterize bacteria sources and it provides an appropriate venue for determining the appropriateness of applying either approach.”*

The Copermittees disagree with this limitation and recommend that these implementation tools be expanded to waterbodies which do not have an existing TMDL or TMDL under development. The available reference reach studies developed in Southern California have been used in several regions (Los Angeles, Ventura and San Diego Counties) in relatively consistent ways. Therefore, it would be straightforward and appropriate to use the existing studies in a consistent manner in watersheds that do not have a bacteria TMDL. The limitation to only allow for the implementation tools to be used in the context of a TMDL may force Regional Water Boards and MS4 permittees to develop TMDLs in places that could be more quickly and effectively addressed without a TMDL.

While the Copermittees agree that the TMDL represents a robust analysis process to determine the alternative implementation approaches, it is not the only scenario that allows for such an analysis. Regional Water Boards should be allowed to oversee and approve robust reference system/antidegradation and natural sources exclusion approaches as they

deem appropriate. Expanding the implementation tools to all waterbodies will allow for more flexible and cost effective implementation options, faster and more complete protection of human health, and availability of all regulatory tools to address bacteria to all waterbodies.

***Recommendation:*** Update the ISWEBE and Ocean Plan Provision Implementation language to allow the reference reach/antidegradation and natural source exclusion approaches to apply to all waterbodies.

**9. Allow the reference reach/antidegradation approach and natural sources exclusion approach to be applied to both the STV and GM.**

As stated in the previous comment, The Copermittees support the use of these alternative implementation tools; however, the limitation to only apply it to the STV is unnecessary and not presented to be based on sound science. During the staff workshop, it was mentioned by Water Board staff that the STV was the only endpoint that was likely to see exceedances in reference reaches. The Copermittees respectfully disagree with this perspective and note that there are areas that experience high natural sources of indicator bacteria such that GM calculations are also elevated.

If an area experiences high levels of natural source indicator bacteria, which in many cases have been shown to cause lower rates of illness rates than anthropogenic sources of indicator bacteria<sup>9</sup>, then an exceedance of the GM and/or STV may still be protective of the USEPA derived risk-based illness rate and the water quality objectives may not be attainable due to these uncontrollable sources. Such determinations must be made only after analysis of the reference reach or natural source exclusion study data. Thus, Regional Water Boards should be given the discretion to determine if the reference reach/antidegradation approach and natural source exclusion can apply to both the GM and STV.

The Copermittees encourage the State Water Board to provide guidance in the Staff Report about how to execute reference reach/antidegradation and natural source exclusion approaches and not limit their applicability only to the STV.

***Recommendation:*** Update the ISWEBE and Ocean Plan Provision Implementation language to allow the reference reach/antidegradation and natural source exclusion approaches to be applied to both the GM and the STV. Provide guidance in the Staff Report about approaches to implement the reference reach/antidegradation and natural source exclusion approaches at the regional level.

**10. The Economic Analysis should consider Storm water in addition to Wastewater**

The Copermittees request that the State consider the economic impact to storm water dischargers within the Economic Analysis. The Staff Report only considers the cost savings for municipal wastewater treatment plants and industrial plants for bacteria monitoring, as the required indicators would be reduced from three to one. However, this is not the case for storm water dischargers and beaches subject to AB411 monitoring requirements.

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<sup>9</sup> USEPA 2012 Criteria Sources: Roser et al., 2006; Schoen and Ashbolt, 2010; Soller et al., 2010b; Till and McBride, 2004; WERF, 2011.



Within the Staff Report, it is stated that monitoring costs will be reduced at popular public beaches, as only Enterococci would be required to be monitored. This statement conflicts with the inclusion of the AB411 Total coliform, Fecal coliform, and Enterococci objectives in the Ocean Plan Bacteria Provisions.

**Recommendation:** *Modify the Staff Report Economic Analysis to consider the impact to storm water dischargers.*

**11. The salinity threshold should be written to clearly demonstrate that a waterbody will not be subject to changing *E. coli* and Enterococci WQOs.**

The Copermittees support the application of separate indicators for fresh and saline waters and particularly support the decision by the State Water Board to only apply the Enterococci indicator to saltwater, as it is known to result in erroneous exceedances when applied to freshwater due to natural sources. However, we are concerned that the distinction between saline and freshwater does not cover all waterbodies and may inadvertently expose estuaries and river mouths to varying WQO indicators due to seasonal and tidal changes to salinity. The ISWEBE Provision includes the following language in Table 1 to distinguish between the salinity of the waterbodies:

Freshwater (*E. coli*): *"All waters, except Lake Tahoe, where the salinity is less than 10 ppt 95 percent or more of the time"*

Saltwater (Enterococcus): *"All waters, where the salinity is equal to or greater than 10 ppt 95 percent or more of the time"*

However, no guidance is provided for waterbodies which may fall between the two cutoffs, for instance an estuary that is seasonally separated from the ocean such that it is saline (>10 ppt salt) only 70 percent of the time in a calendar year.

The Copermittees recommend that the State Water Board correct the wording of the salinity threshold to be discrete and cover all waterbodies (including those that might fall between the two salinity cutoffs) or provide recommendations of how to monitor waterbodies which do not fall into either freshwater/salinity classification. The Copermittees recommend making the following change to the freshwater language:

Freshwater (*E. coli*): *"All waters, except Lake Tahoe, where the salinity is **not equal to or greater** than 10 ppt 95 percent or more of the time"*

The Copermittees request modifications to avoid the condition where a waterbody would need to be monitored with varying WQO indicators based on the salinity of the receiving waters. Such a requirement would result in unnecessarily complicated monitoring efforts and compliance determinations.

**Recommendation:** *Update the language in the ISWEBE regarding salinity such that the threshold represents discrete classifications for *E. coli* and Enterococci. If a text change is not completed, provide guidance on how to apply the WQOs to waterbodies that do not distinctly fall into either the freshwater or saline category or that may change seasonally from one to the other.*

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In conclusion, the Copermittees are fully supportive of the State's effort to establish recreational water quality objectives that reflect the most up to date scientific understanding, and to promote uniformity in implementation across the nine Regional Water Boards. We recognize the tremendous effort that this project has involved, and look forward to working with the State to develop the objectives.

Thank you for your consideration of these comments. If you have any questions ore require additional information, please feel free to contact me at (858) 495-5317 or via e-mail at [JoAnn.Weber@sdcounty.ca.gov](mailto:JoAnn.Weber@sdcounty.ca.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Jo Ann Weber".

JO ANN WEBER, Planning Manager  
Watershed Protection Program

cc: San Diego Copermittees