

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

RESOLUTION NO. R9-2008-0028

A RESOLUTION AMENDING THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE IMPLEMENTATION PROVISIONS FOR INDICATOR BACTERIA WATER QUALITY OBJECTIVES TO ACCOUNT FOR LOADING FROM NATURAL UNCONTROLLABLE SOURCES WITHIN THE CONTEXT OF A TOTAL MAXIMUM DAILY LOAD

WHEREAS, the California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds that:

1. **California Water Code:** The amendment of the *Water Quality Control Plan for the San Diego Basin (9)* (Basin Plan) described in the recitals below was developed in accordance with Water Code section 13240, et seq.
2. **Triennial Review Priority:** This Basin Plan amendment is the result of an investigation of Issue No. 7 on the *Prioritized List of Basin Plan Issues for Investigation from September 2004 to September 2007* (Attachment 1 to Resolution No. R9-2004-0156) adopted by the San Diego Water Board as part of the 2004 Triennial Review of the Basin Plan.
3. **Natural Sources of Indicator Bacteria:** Exceedances of indicator bacteria water quality objectives frequently occur at beaches or in creeks that receive runoff from predominately undeveloped watersheds. This demonstrates that natural sources cause exceedances of indicator bacteria water quality objectives on their own, without contributions from anthropogenic sources.
4. **Impacts of Control of Natural Sources:** Control of indicator bacteria from natural sources can have negative effects, such as (1) unforeseen changes in aquatic ecosystems, (2) impacts to environmental resources resulting from construction of treatment controls, and (3) significant expenditures by public and private entities without concomitant benefits to public health.
5. **Need for Basin Plan Amendment:** In order to avoid potential negative effects associated with requiring dischargers to control natural sources of indicator bacteria, amendment of the Basin Plan is needed to authorize the San Diego Water Board to account for indicator bacteria from natural uncontrollable sources when implementing indicator bacteria water quality objectives within the context of Total Maximum Daily Loads (TMDLs).
6. **Basin Plan Amendment Components:** Natural sources of indicator bacteria can be accounted for when implementing water quality objectives within the context of TMDLs by using either a “reference system and anti-degradation

- approach” or a “natural sources exclusion approach.” Implementation of indicator bacteria water quality objectives using the “reference system and anti-degradation approach” requires control of indicator bacteria from anthropogenic sources so that bacteriological water quality is consistent with that of a reference system. A reference system is a watershed and the beach to which the watershed discharges that is minimally impacted by anthropogenic activities that can affect indicator bacteria densities in the water body. Implementation of indicator bacteria water quality objectives using the “natural sources exclusion approach” requires that dischargers (1) control all anthropogenic sources of indicator bacteria to a water body, (2) demonstrate that all anthropogenic sources of indicator bacteria to a water body are controlled, and (3) demonstrate that the remaining indicator bacteria densities do not indicate a health risk.
7. **Antidegradation Policy:** This Basin Plan amendment is consistent with State Water Resources Control Board (State Water Board) Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality Waters in California*), the State’s “Antidegradation Policy,” in that the changes to the indicator bacteria water quality objective implementation provisions: (1) consider maximum benefits to people of the state, (2) will not unreasonably affect present and anticipated beneficial uses of waters, (3) will not result in water quality less than that prescribed in applicable policies. Likewise, the amendment is consistent with the federal Antidegradation Policy [40 CFR 131.12].
8. **Scientific Peer Review:** The scientific basis for this Basin Plan amendment has undergone external peer review pursuant to Health and Safety Code section 57004. The San Diego Water Board has considered and responded to all comments submitted by the peer review panel, and has enhanced the Technical Report appropriately. No change to the fundamental approach of the Basin Plan amendment was necessary as a result of this process.
9. **CEQA Requirements:** Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the California Regional Water Quality Control Boards’ basin planning process as a “certified regulatory program” that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, section 21000 et seq.) requirements for preparing environmental documents [14 CCR 15251(g); 23 CCR 3782]. As such, the documents supporting the San Diego Water Board’s proposed basin planning action contain the required environmental documentation under the CEQA and serve as “substitute documents” [23 CCR 3777]. The substitute documents for this project include the environmental checklist, the detailed Technical Report, responses to comments submitted during the public participation phase in the development of the Basin Plan amendment, and this resolution.

10. **Project Impacts:** Overall, the implementation of indicator bacteria TMDLs utilizing the Basin Plan amendment will result in improved water quality. Indicator bacteria loads in water bodies subject to indicator bacteria TMDLs will be significantly reduced. However, when considered in relation to implementation of indicator bacteria TMDLs without the Basin Plan amendment, implementation of indicator bacteria TMDLs utilizing the Basin Plan amendment could result in higher indicator bacteria loads in water bodies subject to indicator bacteria TMDLs. The environmental impacts resulting from these higher indicator bacteria loads will be less than significant. This is because the indicator bacteria loads allowable in water bodies under the Basin Plan amendment will be consistent with indicator bacteria loads attributable to natural uncontrollable nonpoint sources. Indicator bacteria loads at levels that occur naturally in the environment do not create a significant impact to the environment. The Technical Report and environmental analysis provide the necessary information pursuant to state law to conclude that this Basin Plan amendment will not result in a significant adverse effect on the environment.

An additional important result of the Basin Plan amendment is the reduced need for construction and implementation of structural BMPs when implementing TMDLs. Since the need to reduce indicator bacteria loads in order to meet indicator bacteria TMDL wasteload and load allocations is lessened for indicator bacteria TMDLs using the Basin Plan amendment, the number and magnitude of structural BMPs to be constructed and implemented will be lessened as well. This will result in the reduction of potentially significant impacts associated with construction and implementation of structural BMPs.

11. **Department of Fish and Game Filing Fee:** Considering the record as a whole, this Basin Plan amendment will result in no effect, either individually or cumulatively, on wildlife resources.
12. **Economic Analysis:** The San Diego Water Board has considered the costs of implementing indicator bacteria TMDLs in accordance with the Basin Plan amendment. The Basin Plan amendment will result in implementation of fewer non-structural and structural BMPs in order to meet indicator bacteria TMDL wasteload and load allocations. As such, the Basin Plan amendment is expected to reduce the economic impacts of BMP implementation associated with indicator bacteria TMDLs. Costs for monitoring associated with the Basin Plan amendment have also been considered. Implementation of indicator bacteria TMDLs using the Basin Plan amendment will necessitate additional monitoring to demonstrate that all anthropogenic sources of indicator bacteria have been controlled and indicator bacteria densities do not indicate a health risk to those swimming in the water body.
13. **Stakeholder and Public Participation:** Interested persons and the public have had reasonable opportunity to participate in review of the Basin Plan

amendment. Efforts to solicit public review and comment included a public workshop and CEQA scoping meeting on March 13, 2006, numerous (face to face and teleconference) meetings with the Stakeholder Advisory Group, a 75-day public review and comment period, and a public hearing on May 14, 2008. Notices for all public meetings were sent to interested persons including cities and counties with jurisdiction in watersheds draining to the bacteria impaired beaches and creeks. All of the written comments submitted to the San Diego Water Board during the review and comment periods have been considered in Responses to Comments (supporting document 4), Responses to Comments II dated May 9, 2008 (supporting document 7), Responses to Comments (dated May 14, 2008), and an email responding to San Diego Coastkeeper's comments (dated May 14, 2008).

14. **Public Notice:** The San Diego Water Board has notified all known interested persons and the public of its intent to consider adoption of this Basin Plan amendment in accordance with California Water Code section 13244.

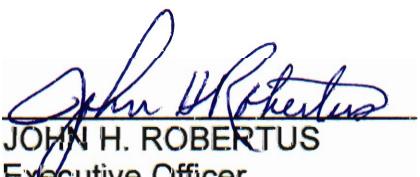
NOW, THEREFORE, BE IT RESOLVED THAT:

1. **Amendment Adoption:** The San Diego Water Board hereby adopts the attached Basin Plan amendment as set forth in Attachment A hereto to incorporate implementation provisions for indicator bacteria water quality objectives to account for loading from natural uncontrollable sources within the context of a TMDL.
2. **Environmental Documents Certification:** The substitute environmental documents prepared pursuant to Public Resources Code section 21080.5 are hereby certified, and the Executive Officer is directed to file a Notice of Decision with the Resources Agency after State Water Board and Office of Administrative Law approval of the Basin Plan amendment, in accordance with section 21080.5(d)(2)(E) of the Public Resources Code and the California Code of Regulations, title 23, section 3781.
3. **Technical Report Approval:** The San Diego Water Board hereby approves the Technical Report entitled *Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Implementation Provisions for Indicator Bacteria Water Quality Objectives to Account for Loading from Natural Uncontrollable Sources Within the Context of a Total Maximum Daily Load*, dated May 14, 2008.
4. **No Effect Determination:** The Executive Officer is authorized to request a "No Effect" determination from the California Department of Fish and Game or to pay the filing fee.

May 14, 2008

5. **Agency Approvals:** The Executive Officer is directed to submit this Basin Plan amendment to the State Water Board in accordance with the requirements of the California Water Code section 13245.
6. **Non-substantive Corrections:** If, during the approval process for this amendment, the San Diego Water Board, State Water Board, or Office of Administrative Law determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the San Diego Water Board of any such changes.

I, John H. Robertus, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the California Regional Water Quality Control Board, San Diego Region, on May 14, 2008.



JOHN H. ROBERTUS
Executive Officer

**ATTACHMENT A
TO RESOLUTION NO. R9-2008-0028**

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE IMPLEMENTATION PROVISIONS FOR INDICATOR BACTERIA WATER QUALITY OBJECTIVES TO ACCOUNT FOR LOADING FROM NATURAL UNCONTROLLABLE SOURCES WITHIN THE CONTEXT OF A TOTAL MAXIMUM DAILY LOAD

This amendment revises Chapters 3 (Water Quality Objectives) and 4 (Implementation) to incorporate implementation provisions for indicator bacteria water quality objectives in the context of a TMDL. Revisions are shown in underline/strikeout format. New text is underlined, while deleted text is crossed out. The revisions are briefly discussed and exhibited below.

1. Revisions to Chapter 3 (Water Quality Objectives)

In the section entitled “*Ocean Waters*,” the subsection entitled “*Ocean Plan and Thermal Plan*” is revised as shown:

OCEAN WATERS

The following objectives shall apply to all ocean waters of the State within the Region:

OCEAN PLAN AND THERMAL PLAN

Ocean Plan and Thermal Plan Water Quality Objective:

The terms and conditions of the State Board’s “Water Quality Control Plan for Ocean Waters of California” (Ocean Plan), “Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California” (Thermal Plan), and any revisions thereto are incorporated into this Basin Plan by reference. The terms and conditions of the Ocean Plan and Thermal Plan apply to the ocean waters within this Region.

Total Maximum Daily Load (TMDL) Implementation Provisions:

For the purposes of a TMDL, the water quality objectives for total coliform, fecal coliform, and/or enterococcus bacteria in ocean waters designated for contact recreation may be implemented using a reference system and antidegradation approach or natural sources exclusion approach.

See Chapter 4 (Implementation) for further discussion of this implementation provision.

In the section entitled, “*Inland Surface Waters, Enclosed Bays and Estuaries, Coastal Lagoons and Ground Water*,” the subsection entitled “*Bacteria – Total and Fecal Coliform*” is reorganized and revised as shown below. Text that has simply been moved for organizational purposes is not highlighted. Revisions to the wording of the text are shown in underline/strikeout format. The revisions are as shown:

INLAND SURFACE WATERS, ENCLOSED BAYS AND ESTUARIES, COASTAL LAGOONS AND GROUND WATERS

The following objectives apply to all inland surface waters, enclosed bays and estuaries, coastal lagoons, and ground waters of the Region as specified below.

THERMAL PLAN

[The text for the “*Thermal Plan*,” “*Agricultural Supply Beneficial Use*,” and “*Ammonia, Un-Ionized*,” sections of Basin Plan, Chapter 3, Water Quality Objectives remains the same].

BACTERIA - TOTAL ~~COLIFORM, AND FECAL COLIFORM, E. COLI, AND ENTEROCOCCI~~

Total coliform, fecal coliform, Escherichia coli (E. coli), and enterococci bacteria are used to indicate the likelihood of pathogens of fecal origin in surface waters. Fecal bacteria (e.g., fecal coliform, E. coli, and enterococci) are part of the intestinal flora biota of warm-blooded animals. Their presence in surface waters is an indicator of potential pollution. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform-bacteria. Water quality objectives for numbers of total coliform, and fecal coliform, E. coli, and enterococci vary with the beneficial uses of the water, as shown described below. The water quality objectives for bacteria are expressed in units of organisms per 100 milliliters of water.

- (1) Waters Designated for Contact Recreation (REC-1) Beneficial Use

Fecal Coliform Water Quality Objective for Contact Recreation:

~~In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 milliliters (ml), nor shall more than 10 percent of total samples during any 30-day period exceed 400/100 ml.~~

The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200 organisms per 100 ml.

In addition, the fecal coliform concentration shall not exceed 400 organisms per 100 ml for more than 10 percent of the total samples during any 30-day period.

Enterococci and E. Coli Water Quality Objectives for Contact Recreation
Enterococci and E. coli:

The USEPA published *E. coli* and enterococci bacteriological criteria applicable to waters designated for contact recreation (REC-1) in the Federal Register, Vol. 51, No. 45, Friday, March 7, 1986, 8012-8016.

USEPA BACTERIOLOGICAL CRITERIA FOR WATER CONTACT RECREATION^{1,2} (in colonies per 100 ml)

	Freshwater		Saltwater
	Enterococci	<i>E. coli</i>	Enterococci
<i>Steady State</i>			
(all areas)	33	126	35
<i>Maximum</i>			
(designated beach)	61	235	104
(moderately or lightly used area)	108	406	276
(infrequently used area)	151	576	500

¹ The criteria were published in the Federal Register, Vol. 51, No. 45/Friday, March 7, 1986 /8012-8016. The criteria are based on:

Cabelli, V. J. 1983. Health Effects Criteria for Marine Recreational Waters. U. S. Environmental Protection Agency, EPA 600/1-80-031, Cincinnati, Ohio.

Dufour, A. P. 1984. Health Effects Criteria for Fresh Recreational Waters. U. S. Environmental Protection Agency, EPA 600/1-84-004, Cincinnati, Ohio.

² The USEPA criteria apply to water contact recreation only. The criteria provide for a level of protection based on the frequency of usage of a given water contact recreation area. The criteria may be employed in special studies within this Region to differentiate between pollution sources or to supplement the current coliform objectives for water contact recreation.

Total Coliform Water Quality Objective for Contact Recreation for Bays and Estuaries:

~~In bays and estuaries, the most probable number of coliform organisms in the upper 60 feet of the water column shall be less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 (100 per ml).~~

In bays and estuaries, the most probable number of total coliform organisms in the upper 60 feet of the water column shall be less than 1,000 organisms per 100 ml (10 organisms per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 organisms per 100 ml (10 per ml); and provided further that no single sample as described below is exceeded.

The most probable number of total coliform organisms in the upper 60 feet of the water column in no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 organisms per 100 ml (100 organisms per ml).

- (2) Waters Designated for Non-Contact Recreation (REC-2) Beneficial Use

Fecal Coliform Water Quality Objective for Non-contact Recreation:

In waters designated for non-contact recreation (REC-2) and not designated for contact recreation (REC-1), the average fecal coliform concentrations for any 30-day period, shall not exceed ~~2,000/100 ml~~ 2,000 organisms per 100 ml nor shall more than 10 percent of samples collected during any 30-day period exceed ~~4,000/100 ml~~ 4,000 organisms per 100 ml.

- (3) Waters Where Shellfish May Be Harvested for Human Consumption (SHELL and COMM) Beneficial Use

Total Coliform Water Quality Objective for Shellfish Harvesting:

In waters where shellfish harvesting for human consumption, commercial or sports purposes is designated (SHELL and COMM), the median total coliform concentration throughout the water column for any 30-day period shall not exceed ~~70/100 ml~~ 70 organisms per 100 ml nor shall more than 10 percent of the samples collected during any 30-day period exceed ~~230/100 ml~~ 230 organisms per 100 ml for a five-tube decimal dilution test or ~~330/100 ml~~ 330 organisms per 100 ml when a three-tube decimal dilution test is used.

BACTERIA – E. COLI AND ENTEROCOCCI

(14) San Diego Bay Waters Used for Whole Fish Handling

E. Coli Water Quality Objective for Whole Fish Handling for San Diego Bay: E. coli:

In San Diego Bay where bay waters are used for whole fish handling, the density of E. coli shall not exceed 7 organisms per ml in more than 20 percent of any 20 daily consecutive samples of bay water.

(5) Total Maximum Daily Load (TMDL) Implementation Provisions

For the purposes of a TMDL, the following provisions may be used to implement bacteria water quality objectives:

The water quality objectives for fecal coliform bacteria for contact recreation may be implemented using a reference system and antidegradation approach or natural sources exclusion approach.

The water quality objectives for enterococci and/or E. coli in freshwater and/or saltwater may be implemented using a reference system and antidegradation approach or natural sources exclusion approach.

The water quality objectives for coliform organisms in bays and estuaries may be implemented using a reference system and antidegradation approach or natural sources exclusion approach.

The water quality objectives for fecal coliform bacteria for non-contact recreation may be implemented using a reference system and antidegradation approach or natural sources exclusion approach.

See Chapter 4 (Implementation) for a further discussion of this implementation provision.

2. Revisions to Chapter 4 (Implementation)

A section is added to Basin Plan Chapter 4 (Implementation) entitled, “*Implementation Provisions for Water Contact Recreation Bacteria Objectives*,” before the section entitled, “*Total Maximum Daily Loads for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region*.”

Implementation Provisions for Indicator Bacteria Water Quality Objectives in the Context of a TMDL:

Water quality objectives for indicator bacteria shall be strictly applied except when otherwise provided for in a TMDL. Within the context of a TMDL, the Regional Board may implement the indicator bacteria water quality objectives by using a “reference system and antidegradation approach” or a “natural sources exclusion approach,” as described in Chapter 3 (Water Quality Objectives).

There are natural sources of bacteria which may cause or contribute to exceedances of water quality objectives for indicator bacteria. It is not the intent of the Regional Board to require treatment or diversion of natural water bodies or to require treatment of natural sources of bacteria. Such requirements, if imposed by the Regional Board, could adversely affect valuable aquatic life and wildlife beneficial uses supported by water bodies in the Region.

Implementation of indicator bacteria water quality objectives using the reference system and antidegradation approach requires control of indicator bacteria from anthropogenic sources so that bacteriological water quality in the targeted waterbody is consistent with that of a reference system. The reference system and antidegradation approach also requires that no degradation of existing bacteriological water quality in the targeted water body occurs when the existing bacteriological water quality is better than that of a water body in a reference system. A reference system is a watershed and the beach to which the watershed discharges that is minimally impacted by anthropogenic activities that can affect bacterial densities in the water body. Under the reference system and antidegradation approach, a certain frequency of exceedances of the indicator bacteria water quality objectives is allowed. The allowed frequencies of exceedances are either the observed frequency of exceedances in the selected reference system or the targeted water body, whichever is less.

Under the natural sources exclusion approach, dischargers must demonstrate they have implemented all appropriate best management practices to control all anthropogenic sources of indicator bacteria to the target water body such that they do not cause or contribute to exceedances of the indicator bacteria water quality objectives. The requirement to control all sources of anthropogenic indicator bacteria does not mean the complete elimination of all anthropogenic sources of bacteria as this is both impractical as well as impossible. Dischargers must also demonstrate that the residual indicator bacteria densities are not indicative of a human health risk. After all anthropogenic sources of indicator bacteria have been controlled such that they do not cause exceedances of the indicator bacteria water quality objectives, and natural sources have been identified and quantified,

exceedances of the indicator bacteria water quality objectives may be allowed based on the residual exceedances in the target water body. The residual exceedances shall define the background level of exceedance due to natural sources.

The Regional Board will evaluate the appropriateness of these approaches and the specific exceedances or exceedance frequencies to be allowed under each within the context of TMDL development or recalculation for a specific water body. If appropriate, the Regional Board may select to use one or both of these approaches during initial TMDL calculation or during subsequent recalculation following TMDL implementation.

These implementation provisions may only be used within the context of a TMDL addressing municipal storm water (including discharges regulated under statewide municipal NPDES waste discharge requirements), discharges from concentrated animal feeding operations, and discharges from non-point sources. These implementation provisions shall not be applied within the context of a TMDL addressing individual industrial storm water discharges, or general industrial and construction storm water discharges.

3 Graphics and Editorial Updates

This amendment will revise the indices, table of contents, glossary, page numbers, and graphics in Chapter 3 (Water Quality Objectives) and Chapter 4 (Implementation) to reflect updates to text. The photographic images below will be added as graphics as well.



Aliso Beach, Orange County (2002)
by Christina Arias



Surfer at Ocean Beach,
San Diego County (2003)
by Ed Chan



Grunion run at Ocean Beach,
San Diego County (2004)
by Linda Pardy



Elegant tern and seagull south
of Children's Pool,
San Diego County (2006)
by Linda Pardy