



**California Regional Water Quality Control Board  
Colorado River Basin Region**

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**Linda S. Adams**  
*Secretary for  
Environmental Protection*

73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260  
(760) 346-7491 • Fax (760) 341-6820  
<http://www.waterboards.ca.gov/coloradoriver>

**Arnold Schwarzenegger**  
*Governor*

**TO:** Gerald Bowes, Ph.D.  
Staff Toxicologist (Sup.)  
Manager, Toxicology and Peer Review Section  
Division of Water Quality  
State Water Resources Control Board  
1001 I Street, Sacramento, CA 95814

Telephone: (916) 341-5567  
FAX: (916) 341-5463  
Email: [gbowes@waterboards.ca.gov](mailto:gbowes@waterboards.ca.gov)

**FROM:** Nadim Zeywar, Ph.D. (original signed by Francisco Costa)  
TMDL Unit Chief  
COLORADO RIVER BASIN  
REGIONAL WATER QUALITY CONTROL BOARD

Telephone: (760) 776-8942  
FAX: (760) 341-6820  
Email: [nzezwar@waterboards.ca.gov](mailto:nzeywar@waterboards.ca.gov)

**DATE:** January 17, 2008

**SUBJECT: REQUEST FOR EXTERNAL PEER REVIEW FOR DISSOLVED OXYGEN  
TMDL – BASIN PLAN AMENDMENT FOR NEW RIVER**

Dear Dr. Bowes,

By transmittal of this memorandum, the Colorado River Basin Regional Water Quality Control Board renews its request that the State Board identifies and selects reviewers to provide external scientific peer review of a New River Dissolved Oxygen (DO) Total Maximum Daily Load (TMDL) proposal.

An earlier request for external peer review was submitted on May 18, 2004. That draft was never submitted for external review because additional work to the TMDL report was needed. In this case, USEPA requested the use of a computer model to assist linkage analyses and allocations. This TMDL is now a priority, and has been updated.

The proposed TMDL addresses New River DO impairments and requires peer review pursuant to the *Cal/EPA External Scientific Peer Review Guidelines, November 2006*. Expertise needed for peer review include:

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***California Environmental Protection Agency***

- a bacteriologist/microbiologist familiar with aquatic microbiology and bacteria growth and die-off dynamics in the aquatic environment;
- a biologist familiar with the effects of low dissolved oxygen on warm water aquatic habitat, and
- a hydrologist familiar with soluble organic matter transport and the QUAL2K computer model.

The New River DO TMDL document will be available for peer review in early March 2008. Reviewers will have 30 days upon receipt to review and comment on the document. The TMDL will be presented to the Regional Board for consideration for adoption in June 2008.

Attachments 1, 2, and 3 provide (1) summary information on the New River DO TMDL, (2) an outline of the scientific elements of the TMDL in need of peer review, and (3) a list of scientific professionals involved in the development of documents to be reviewed. A map of the study area is included in Attachment 4.

Should you have questions, please contact Dr. Francisco Costa at (760) 776-8937 or me at (760) 776-8942.

FC:hs

Attachments: as noted above

File: NR DO TMDL

cc: Tom Vandenberg, SWRCB, OCC

## ATTACHMENT 1

### PROPOSED DISSOLVED OXYGEN TOTAL MAXIMUM DAILY LOAD (TMDL) FOR THE NEW RIVER

#### Summary of Proposed Action

This Total Maximum Daily Load (TMDL) proposal describes water quality impairments for dissolved oxygen (DO) in the New River, and establishes procedures to control impairments. Under the federal Clean Water Act (CWA), water quality standards (WQSs) consist of designated beneficial uses, numeric or narrative water quality criteria (a.k.a. water quality objectives (WQOs), California Water Code (CWC), Section 13241) that protect beneficial uses, and an antidegradation policy requirements. CWA, Section 303(d) requires states to identify impaired surface waters that do not meet WQSs, and to establish TMDLs for pollutants causing impairments. A TMDL is the total amount of a given pollutant that a given waterbody can assimilate without violating WQOs, and is equal to the sum of pollutant allocations for point and nonpoint sources, including natural sources and a margin of safety to address uncertainties.

The New River originates approximately 20 miles south of the International Boundary with Mexico, and flows northward across the border for about 60 miles until it empties into the Salton Sea. Average yearly flows of the New River in cubic feet per second (cfs) from 2003 to 2006 are as follow:

Year	Average Flow of New River @ International Boundary (cfs)	Average Flow of New River into Salton Sea (cfs)
2003	153	569
2004	152	580
2005	177	631
2006	163	594

The New River is the second largest tributary to the Salton Sea, contributing about 32% of the Sea's total inflow. The New River is comprised of agricultural return flows from Imperial Valley and Agricultural, Municipal and Industrial wastes from Mexico.

The New River is on the CWA, Section 303(d) List because of impairments including low DO that violates WQOs established in the Water Quality Control Plan (Basin Plan) for the Colorado River Basin Region. Recent water quality analyses of the New River indicate low concentrations of DO (< 5 mg/l). Historically, the two major sources of dissolved organic matter to the New River, which cause lower DO, have been: (1) NPDES facilities (waste water treatment plants) that discharge wastes, and (2) the municipality of Mexicali, Mexico, which has an inadequate sewage infrastructure that discharges raw and partially treated sewage to the New River and its tributaries in Mexico. Other sources and activities that contribute to the soluble organic matter load in the New River include agricultural discharges, storm water runoff, and trash discharged to the River in Mexico and the United States. These concentrations violate: (1) narrative and numeric standards in the *Water Quality Control Plan for the Colorado River Basin Region* (Basin Plan) (Colorado River Basin Regional Water Quality Control Board 2006), and (2) narrative standards in Minute No. 264 of the Mexican-American Water Treaty (*Recommendations for solution of the New River border sanitation problem at Calexico, California/Mexicali, Baja Norte*, 1980). The violation of these standards indicates the impairment to designated beneficial uses for the New River due to low DO levels that endanger aquatic life, wildlife and public health.

To restore New River beneficial uses regarding DO, the proposed TMDL establishes a numeric target for DO as no less than 5 mg/l. Loading of wastes which increase biological oxygen demand (BOD) and ammonia (NH<sub>3</sub>) to the New River from all point and nonpoint sources should not cause the DO levels to be below the numeric target at any day of the year.

This TMDL proposal requests cooperation from Mexico to implement actions to prevent wastewater discharges into the New River in Mexicali from producing conditions that violate the TMDL, and the assistance of the U.S. federal government to work with Mexico in this endeavor.

This TMDL also recommends actions for other third party cooperating agencies and organizations with an interest in New River water quality. Regional Board staff will track TMDL implementation, monitor water quality progress, enforce provisions, and propose modifications of the TMDL to the Regional Board if necessary, in accordance with a time schedule.

## ATTACHMENT 2

### PROPOSED DISSOLVED OXYGEN TOTAL MAXIMUM DAILY LOAD (TMDL) FOR THE NEW RIVER

#### SCIENTIFIC COMPONENTS OF THE TMDL TO REVIEW

##### Background

The following table describes the components of a TMDL.

<b>Component</b>	<b>Purpose</b>
Problem Statement (Project and Watershed Description)	Identifies the basis for TMDL development, Water Quality Standards (WQSs) issues and impairments that prompted TMDL development
Data and Source Analysis	Characterizes the amount of pollutants entering the receiving water from various sources (e.g., point, nonpoint, and natural sources of pollution)
Critical Conditions and Seasonal Variations	Describes the critical condition/seasonality with the strongest impact on pollutant loading.
Numeric Target	Identifies specific in-stream goals and endpoints for the TMDL which ensure attainment of applicable WQSs
Linkage Analysis	Specifies the critical quantitative link between applicable WQSs and the TMDL. Loading capacity reflects the amount of a pollutant that may be delivered to the waterbody and still achieve WQSs (as the WQSs are interpreted through the Numeric Target)
TMDL Calculation and Allocations (Load Allocations, Waste Load Allocations, Margin of Safety)	Provides the calculations for total allowable loads and allocation of these loads among different sources such that applicable WQSs are attained, while accounting for seasonal variation and uncertainty in the analysis of the data
Implementation and Monitoring Plan	Specifies nonpoint source Management Practices, point source controls, a Monitoring Plan to assesses TMDL implementation and provide for TMDL adjustment as needed, and other actions necessary to implement the TMDL

**“The statute mandate for external scientific peer review (Health and Safety Code Section 57004) states that the reviewer’s responsibility is to determine whether the scientific portion of the proposed rule is based upon sound scientific knowledge, methods, and practices.**

**We request that you make this determination for each of the following issues that constitute the scientific basis of the proposed regulatory action. An explanatory statement is provided for each issue to focus the review.”**

## **Required Issues to be addressed in Peer Review**

1. **Problem Statement (Project and Watershed Description)** - The DO impairment is described within the context of the New River watershed. Low levels of dissolved oxygen (DO) in the water column threatens fish and wildlife communities that utilize New River habitat downstream of the International Boundary.
2. **Data and Source Analysis** – The source analysis for this TMDL identifies and quantifies natural and human-related Biological Oxygen Demand (BOD) and Ammonia (NH<sub>3</sub>) sources to the New River. Data and information used in the source analysis were obtained from the Regional Board, the United States Geological Survey (USGS), the Imperial Irrigation District (IID), the United States International Boundary and Water Commission (IBWC), Wastewater Treatment Plants, and others.
3. **Critical Conditions and Seasonal Variations** - This section describes the critical condition/seasonality with the strongest impact on organic matter loading. Identifying these conditions is important to achieve DO WQOs and TMDL numeric targets.
4. **Numeric Targets** – The numeric target for dissolved oxygen for this TMDL was developed to protect all beneficial uses of the New River, and is equal to the Water Quality Objectives (WQOs) set forth in the Regional Board's Basin Plan. To satisfy human health criteria and adequately protect aquatic habitats, management practices that reduce organic waste will be utilized to implement this TMDL.
5. **TMDL Calculation and Allocations and Linkage Analysis** - This TMDL assigns allocations for BOD and NH<sub>3</sub> to all point and nonpoint sources of waste into the New River expressed as kilogram per day, to ensure protection of beneficial uses. These allocations were based on a QUAL2K water quality computer model that links BOD, NH<sub>3</sub>, and DO, and was developed by Tetra Tech Inc. for the USEPA. Allocations are applicable throughout the New River drain system.
6. **Implementation Plan** – This implementation is different from other TMDLs because it relies on the assistance of U.S. Federal Government to deal with another country (Mexico). The implementation plan requests cooperation from Mexico to implement actions to prevent wastewater discharges into the New River in Mexicali from producing conditions that violate the TMDL. The implementation plan also requires the three (3) waste management facilities located along the banks of the New River in Calexico, Brawley and Imperial, and the eight (8) NPDES facilities discharging to the New River watershed, to maintain compliance with their Regional Board Orders (permits).
7. **Monitoring Plan** - Regional Board staff will track TMDL implementation, monitor water quality progress, enforce provisions, and propose modifications of the TMDL to the Regional Board if necessary, in accordance with a time schedule. Two types of monitoring will be performed; water quality monitoring, and implementation tracking.

## **OVERARCHING QUESTIONS**

Reviewers are not limited to addressing only the specific issues presented above, and are asked to contemplate the following “big picture” questions.

- (a) In reading the staff technical reports and proposed implementation language, are there any additional scientific issues that are part of the scientific basis of the proposed rule not described above? If so, please comment with respect to the statute language given above.
- (b) Taken as a whole, is the scientific portion of the proposed rule based upon sound scientific knowledge, methods, and practices?

Reviewers should also note that some proposed actions may rely significantly on professional judgment where available scientific data are not as extensive as desired to support the statute requirement for absolute scientific rigor. In these situations, the proposed course of action is favored over no action.

The preceding guidance will ensure that reviewers have an opportunity to comment on all aspects of the scientific basis of the proposed Board action. At the same time, reviewers also should recognize that the Board has a legal obligation to consider and respond to all feedback on the scientific portions of the proposed rule. Because of this obligation, reviewers are encouraged to focus feedback on the scientific issues that are relevant to the central regulatory elements being proposed.”

### **ATTACHMENT 3**

## **PROPOSED DISSOLVED OXYGEN TOTAL MAXIMUM DAILY LOAD (TMDL) FOR THE NEW RIVER**

### **SCIENTIFIC PROFESSIONALS INVOLVED IN GUIDING TMDL DEVELOPMENT**

Amrhein, Christopher. University of California, Riverside.

Anderson, Michael. University of California, Riverside.

Bali, Khaled. University of California Cooperative Extension.

Barnum, Douglas. U.S. Geological Survey.

Black, Glenn. Department of Fish and Game.

Crayon, Jack. Department of Fish and Game. Bermuda Dunes.

Gao, Peng. University of California Cooperative Extension.

Guerrero, Juan. University of California Cooperative Extension.

McGrew, Ed. United States Filter Corporation.

Pasternack, Gregory. University of California, Davis.

Robertson, Dale. U.S. Geological Survey.

Robertson, Robert. Coachella Valley Water District.

Rodriguez, Cheryl. United States Bureau of Reclamation.

Schladow, Geoffrey. University of California, Davis.

Setmire, James. U.S. Geological Survey, Retired

Wallender, Wesley. University of California, Davis.

ATTACHMENT 4

PROPOSED DISSOLVED OXYGEN TOTAL MAXIMUM DAILY LOAD (TMDL) FOR THE NEW RIVER

SALTON SEA TRANSBOUNDARY WATER SHED MAP

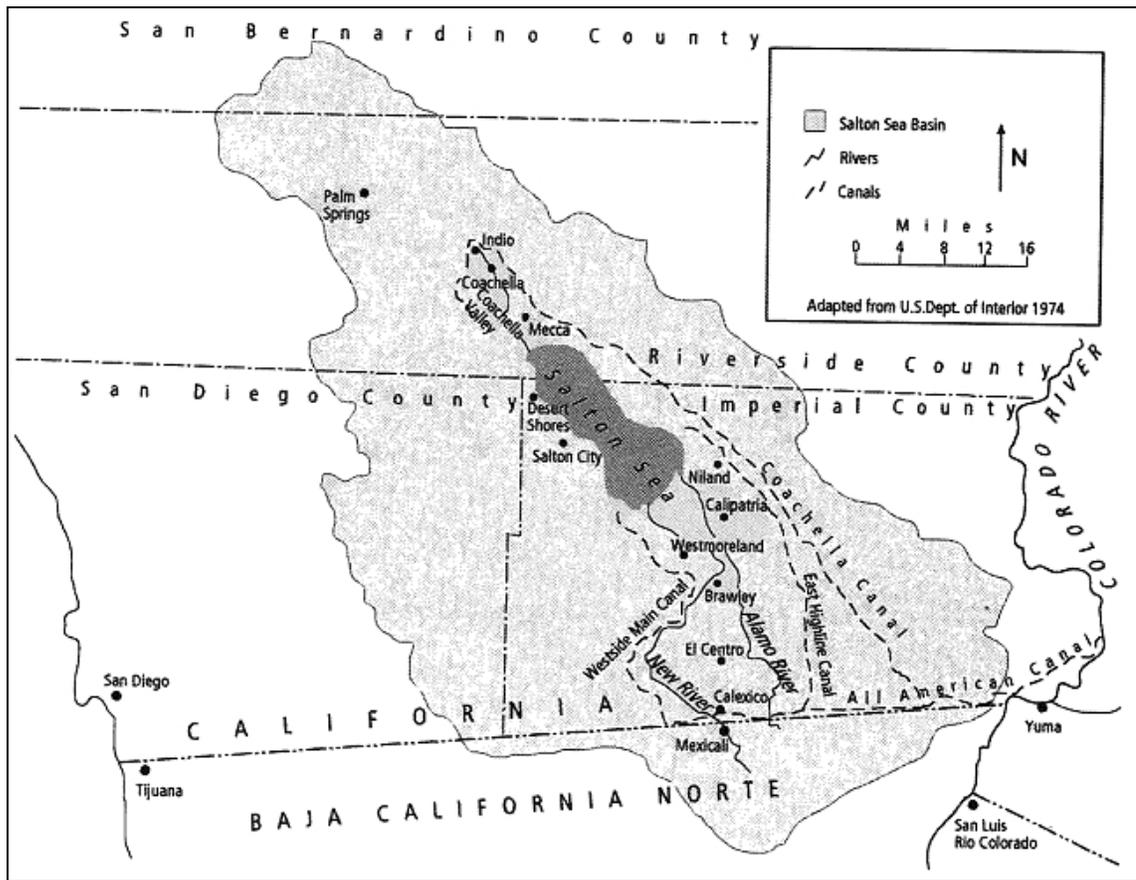


Figure 1