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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
NORTH COAST REGION**

**RESOLUTION NO. R1-2010-0025**

**Amending the Water Quality Control Plan for the North Coast Region  
to Revise**

**Table 3-1  
to Incorporate a Recalculated  
Site Specific Dissolved Oxygen Objective  
for the Klamath River in California**

WHEREAS, the California Water Quality Control Board, North Coast Region (Regional Water Board) finds that:

1. The *Water Quality Control Plan for the North Coast Region* (Basin Plan) designates the beneficial uses of waterbodies within the North Coast Region. The Basin Plan also establishes water quality objectives (objectives) in the North Coast Region including objectives for dissolved oxygen. The beneficial uses of waterbodies, water quality objectives, and implementation programs such as the state and federal antidegradation policies, together, constitute water quality standards.
2. Table 3-1 of the Basin Plan contains site specific water quality objectives (SSOs) for dissolved oxygen (DO) in the mainstem Klamath River from the Oregon-California state line to the Pacific Ocean that were incorporated in the Basin Plan in 1975 and are based on monthly, daytime, grab sample data collected during the 1950s and 1960s. These are given as daily minima and an annual median of the monthly means, and have not been updated or revised since their initial calculation in 1975.
3. Since the 1990s, ambient DO monitoring in the Klamath River has often been conducted using data probes which are left in the water for extended periods of time, ranging from hours to days, electronically recording DO concentrations from various time intervals ranging from every 15 minutes to up to 1 hour. These data often depict the 24-hour DO cycle (diel cycle) which follows a typical pattern in which DO is low in the morning, rises through the day, and falls again during the night.
4. Barometric pressure, water temperature, and salinity are the three factors by which the capacity of a water body to physically hold oxygen in solution is calculated. Generally, the higher the DO, the better the water quality conditions for aerobic aquatic organisms. Analyzing these factors, Regional Water Board staff has determined that the physical capacity of the Klamath River to hold oxygen in solution is sometimes less than that currently required by the Basin Plan.
5. The Klamath River is listed on the current 2006 303(d) List, as updated May 29, 2008, due to several impairments. The portion of the Klamath River within

California (Middle Hydrologic Area [HA] - Oregon to Trinity River, and Lower HA – Klamath Glen Hydrologic Subarea) is listed due to elevated water temperatures, elevated nutrients, and organic enrichment/low dissolved oxygen. The Klamath River Lower Hydrologic Area (Klamath Glen Hydrologic Subarea) is listed due to sedimentation/siltation. The portion of the Middle Klamath River Hydrologic Area that incorporates Copco 1 Reservoir, Copco 2 Reservoir, Iron Gate Reservoir, and the riverine reach between the three reservoirs is listed due to the blue-green algae toxin microcystin. In addition, on June 3, 2009, the Regional Water Board adopted the 2008/2010 303(d) List which, once approved by the USEPA, will expand the sediment and microcystin listings in the Klamath River within California.

6. Regional Water Board staff has developed a Total Maximum Daily Load (TMDL) for the control of elevated temperature, elevated nutrients/organic matter, low DO, and microcystin using a series of computer water quality and hydrologic models to represent conditions in the Klamath River (*Klamath TMDL model*). When configured to represent natural conditions, the *Klamath TMDL model* generates simulated data that depicts DO concentrations which are less than those currently required by the Basin Plan.
7. The Regional Water Board worked cooperatively with the Oregon Department of Environmental Quality (ODEQ) and USEPA Regions 9 and 10 to develop TMDLs for the water quality impaired waterbodies in the Klamath River from Link River in Oregon to the Pacific Ocean.
8. Regional Water Board staff prepared a detailed technical document that analyzes and describes the specific necessity and rationale for the development of this amendment (DO Staff Report). The DO Staff Report was included as an Appendix to the staff report describing the scientific basis for the Klamath TMDLs (Klamath TMDL Staff Report) and shares several sections in common with the Klamath TMDL Staff Report, including chapters on implementation, economics, monitoring, public participation, and environmental review. The DO Staff Report and applicable portions of the Klamath TMDL Staff Report are an integral part of this Regional Water Board action and these documents were reviewed, considered and accepted by the Regional Water Board before acting on March 24, 2010.
9. This Basin Plan Amendment revising SSOs for DO in the Klamath River in California (attached to this Resolution as Appendix 1) will incorporate updated SSOs for DO in the Klamath River. The SSOs are protective of all the beneficial uses of the Klamath River in California. The Klamath TMDL implementation plan constitutes the program to achieve SSOs pursuant to Water Code section 13242. That plan describes the nature of actions which are necessary to achieve objectives, a time schedule for actions to be taken, and monitoring to determine compliance with the objective. Implementation of DO objectives generally occurs through best management practices that also address temperature, nutrient and sediment for nonpoint source activities. For impoundments and/or point source discharges, compliance measures are incorporated into the appropriate permit.

10. Regional Water Board staff has used the simulated DO data generated by the *Klamath TMDL model*, configured to represent natural conditions, to recalculate the SSOs for DO in the Klamath River. The revised SSOs for DO in the Klamath River require that DO conditions be maintained at levels representative of natural conditions including the inter-annual variation that naturally occurs as a result of varying climatic conditions. As such, the recalculated SSOs for DO can be achieved under natural conditions and can be compared to either instantaneous or continuous DO data. The revised SSOs for DO in the Klamath River are expressed as percent DO saturation requirements based on natural receiving water temperatures. Natural receiving water temperatures are also simulated by the *Klamath TMDL model* and are used as the basis for calculating the DO concentrations associated with the percent DO saturation requirements at given locations in the Klamath River in California.
11. The percent DO saturation criteria will be applied by calculating the corresponding DO concentration associated with the given criteria using site-specific barometric pressure, site-specific salinity, and an estimate of the natural receiving water temperature as given by the T1BSR run of the *Klamath TMDL model*. It is understood that new temperature data may be developed and/or the *Klamath TMDL model* refined in such a way as to produce improved or updated estimates of natural receiving water temperature in the future. Without any alteration to the Basin Plan, improved or updated estimates of natural receiving water temperature may be used to calculate the DO concentrations associated with the percent saturation objectives given in the Basin Plan. After opportunity for public comment, any update or improvements to the estimate of natural receiving water temperature must be reviewed and approved by Executive Officer.
12. The scientific basis of the Basin Plan Amendment has been reviewed by external scientific peer reviewers in accordance with Section 57004 of the California Health and Safety Code. Regional Water Board staff submitted a *Peer-Review Draft Staff Report for the Revision of Dissolved Oxygen Water Quality Objectives* in February 2009. Regional Water Board staff composed the *Staff Report for the Proposed Site Specific Dissolved Oxygen Objectives for the Klamath River in California* incorporating many of the suggestions of the peer reviewers and providing a written response explaining the basis for not incorporating the remaining suggestions. Also in February 2009, Regional Water Board staff submitted a peer review draft Klamath TMDL Staff Report describing, among other things, the modeling approach by which water quality conditions in the Klamath River was simulated, including natural conditions. Regional Water Board staff incorporated many of the suggestions of the peer reviewers and provided written responses that explained the basis for not incorporating the remaining suggestions.
13. The revised SSOs for DO for the Klamath River in California are consistent with the DO objectives contained in the Hoopa Valley Tribe's Basin Plan for the portion

of the Klamath River within their jurisdiction (i.e., above the confluence with the Trinity River).

14. In 2004, the Yurok Tribe adopted a Basin Plan for their jurisdiction which also includes DO objectives; however, the Plan is not yet approved by USEPA. The revised SSOs for DO on the Klamath River contain a caveat that where the Regional Water Board lacks jurisdiction, the objective is intended as a recommendation to the implementing authority.
15. The Basin Plan Amendment was developed in coordination with USEPA Region 9, including staff from both the unit responsible for approving TMDLs and the unit responsible for approving water quality standards (e.g. the SSOs for DO).
16. Since February 2004, Regional Water Board staff has involved a wide spectrum of stakeholders in the development of the Klamath TMDL through extensive public outreach and numerous opportunities for public comment, including but not limited to, eighteen public meetings, twelve presentations to the Regional Water Board, seventeen presentations at other organization's meetings and conferences, creation and updating of an informational webpage, informational e-mails, correspondences, and formal duly noticed public comment periods. These public outreach activities have often included discussion of the *Klamath TMDL model*, a tool of importance to the recalculation of the SSOs for DO in the Klamath River.
17. The Draft Basin Plan Amendment, DO Staff Report, Klamath TMDL Staff Report, and CEQA environmental analysis were made available for public review and comment on two separate occasions: July 9, 2009 and December 23, 2009. The public comment period commenced on July 9, 2009 was closed on August 27, 2009, allowing a 50-day review and comment period. The public comment period commenced on December 23, 2009 was closed on February 9, 2010, allowing a 47-day review and comment period.
18. In accordance with Water Code section 13244, notice of Public Hearing was given to all interested parties and published on December 26, 2009 in the *Herald & News* out of Klamath Falls, OR; on December 24, 2009, in the *Press Democrat* out of Santa Rosa, CA; on December 24, 25, and 26, 2009, in the *Sacramento Bee* out of Sacramento, CA; on December 23, 24, and 28, 2009 in the *Siskiyou Daily News* out of Yreka, CA; and on December 22, 23, and 24, 2009, in the *Times-Standard* out of Eureka, CA.
19. Regional Water Board staff received and responded to over 300 comment letters on the Klamath TMDL and this amendment; however, only a few included comments pertaining to the proposal to revise the SSOs for DO in the Klamath River.

20. On March 24, 2010, the Regional Water Board held a public hearing to consider adoption of the Basin Plan Amendment for the revision of the SSOs for DO for the Klamath River in California.
21. In amending the Basin Plan to incorporate SSOs for DO, the Regional Water Board considered the requirements set forth in Water Code sections 13240, 13241 and 13242. Section 13241 factors are set forth and considered in the DO Staff Report.
22. The Regional Water Board has considered the costs of implementing the Basin Plan Amendment, and finds these costs to be reasonable and minimal relative to the benefits derived from implementing the Amendments.
23. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 68-16). Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR § 131.12). The revised objectives do not result in a relaxed standard, but in fact, result in an improved standard providing greater protection of beneficial uses, particularly the spawning and incubation of salmonids – the most sensitive beneficial use.
24. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) requirements for preparing environmental documents. (Cal. Code Regs., tit. 14, § 15251, subd. (g); Cal. Code Regs., tit. 23, § 3782.) As such, the basin planning documents together with the Environmental Checklist, are the "substitute documents" that contain the required environmental documentation under CEQA. (Cal. Code Regs., tit. 23, § 3777.) The substitute environmental documents include the DO Staff Report, the environmental checklist and analyses, the comments and responses to comments, and the Basin Plan amendment language. They also include the Klamath TMDL Staff Report sections on economics, implementation, monitoring, and the environmental analysis.
25. Consistent with the California Code of Regulations, title 23, sections 3778-80, Regional Water Board staff consulted with Tribes, stakeholders in the Region, and other potentially affected parties about the proposed action, and considered and addressed all comments.
26. In preparing the accompanying substitute environmental documents, the Regional Water Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and intends the substitute environmental documents to serve as a tier 1 environmental review. Many of the compliance obligations will be undertaken or approved by public agencies that will have separate obligations under CEQA. Project level impacts

will need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2.

27. The adoption of the Basin Plan Amendment is a regulatory action subject to the requirements of section 21159 of the Public Resources Code. Consistent with the requirements of that section, the CEQA environmental analysis includes an analysis of environmental impacts, mitigation measures to reduce or avoid those impacts, and alternative means of compliance that would avoid or eliminate environmental impacts (Pub. Resources Code, § 21159, subd. (a)(1)-(3); Cal. Code Regs., tit. 14, §§ 15187, subds. (b), (c)(1)-(3), 15189.) The CEQA analysis takes into account a reasonable range of environmental, economic, and technical factors. The analysis determined that with respect to the revised SSOs for DO, the Basin Plan Amendment will not have a significant adverse effect on the environment. The Regional Water Board has reviewed and considered the supplemental environmental documents and finds that the analyses comply with the requirements of the State Water Board's certified regulatory CEQA process.
28. After considering the documents and comments received during the public review process, the Regional Water Board hereby determines that the proposed project, with the identified mitigation measures, will not have a significant effect on the environment. The Regional Water Board hereby certifies the substitute environmental documents prepared by Regional Water Board staff pursuant to section 21080.5 of the Public Resources Code. The documents and materials that constitute the record supporting the Regional Water Board's decision are located at the Regional Water Board office, maintained in a public file.
29. The Basin Plan Amendment must be submitted for review and approval by the State Water Resources Control Board, the State Office of Administrative Law, with final approval provided by the USEPA.
30. The CEQA filing fee will be paid to the California Department of Fish and Game following final review of the Basin Plan Amendment by the Office of Administrative Law. The Basin Plan Amendment will become effective upon approval by the USEPA.
31. Occasionally during its approval process, Regional Board staff, State Board or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity and consistency. Under such circumstances, the Executive Officer should be authorized to make such changes, provided that the Board is informed of any such changes.

NOW, THEREFORE BE IT SO RESOLVED THAT, after considering the entire record, including oral testimony at the hearing,

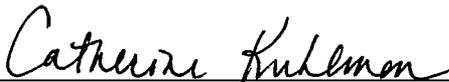
1. Pursuant to section 13240 and 13242 of the Water Code, the Regional Water Board hereby adopts, as an amendment to the Basin Plan, the *Site Specific*

*Dissolved Oxygen Objectives for the Klamath River in California* as set forth in the attachment to this Resolution and as supported by the substitute environmental documents.

2. The Executive Officer is hereby directed to forward copies of the Basin Plan Amendment and the administrative record to the State Water Resources Control Board in accordance with the requirements of section 13245 of the California Water Code.
3. The Regional Water Board hereby requests the State Water Resources Control Board approve the Basin Plan Amendment in accordance with sections 13245 and 13246 of the Water Code, and forward the Amendment to the Office of Administrative Law and the USEPA.
4. If, during the approval process, the State Water Resources Control Board or the Office of Administrative Law determines that minor, non-substantive corrections to the language of the Basin Plan Amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Regional Water Board of any such changes.
5. The Executive Officer is hereby directed to file a Notice of Decision after the Basin Plan Amendment is approved by the Office of Administrative Law, in accordance with Section 21080.5(d)(2)(E) of the Public Resources Code and the California Code of Regulations, title 23, section 3781.

#### **CERTIFICATION**

I, Catherine Kuhlman, 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, North Coast Region, on March 24, 2010.



Catherine Kuhlman  
Executive Officer

*[In Table 3-1 of the Basin Plan, ~~strikeout 6 separate dissolved oxygen (DO) objectives and replace with a footnote directing the reader to a new Table 3-1a including Site Specific Objectives for DO for the mainstem Klamath River. The DO objectives to be struck include:~~*

*Middle Klamath River HA*

*Klamath River above Iron Gate Dam including Iron Gate and Copco Reservoirs*

*7.0 mg/L minimum*

*10.0 50% lower limit*

*Klamath River below Iron Gate Dam*

*8.0 mg/L minimum*

*10.0 mg/L 50% lower limit*

*Lower Klamath River HA*

*Klamath River*

*8.0 mg/L minimum*

*10.0 mg/L 50% lower limit]*

*New Footnote to Table 3-1*

*“The Site Specific Objectives (SSOs) for dissolved oxygen (DO) have been recalculated for the mainstem Klamath River and are presented separately in Table 3-1a.”*

*Recalculated SSOs for DO in mainstem Klamath River*

*“Table 3.1a<sup>1</sup>*

<b>Location<sup>2</sup></b>	<b>Percent DO saturation based on natural receiving water temperatures<sup>3</sup></b>	<b>Time period</b>
Stateline to the Scott River	90%	October 1 through March 31
	85%	April 1 through September 30
Scott River to Hoopa	90%	Year round
Downstream of Hoopa-California boundary to Turwar	85%	June 1 through August 31
	90%	September 1 through May 31
Upper and Middle Estuary	80%	August 1 through August 31
	85%	September 1 through October 31 and June 1 through July 31
	90%	November 1 through May 31
Lower Estuary	For the protection of estuarine habitat (EST), the dissolved oxygen content of the lower estuary shall not be depressed to levels adversely affecting beneficial uses as a result of controllable water quality factors.	

- \*<sup>1</sup> States may establish site specific objectives equal to natural background (USEPA, 1986. Ambient Water Quality Criteria for Dissolved Oxygen, EPA 440/5-86-033; USEPA Memo from Tudor T. Davies, Director of Office of Science and Technology, USEPA Washington, D.C. dated November 5, 1997). For aquatic life uses, where the natural background condition for a specific parameter is documented, by definition that condition is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans (Davies, 1997). These DO objectives are derived from the T1BSR run of the Klamath TMDL model and described in Tetra Tech, December 23, 2009 *Modeling Scenarios: Klamath River Model for TMDL Development*. They represent natural DO background conditions due only to non-anthropogenic sources and a natural flow regime.
- <sup>2</sup> These objectives apply to the maximum extent allowed by law. To the extent that the State lacks jurisdiction, the Site Specific Dissolved Oxygen Objectives for the Mainstem Klamath River are extended as a recommendation to the applicable regulatory authority.
- <sup>3</sup> Corresponding DO concentrations are calculated as daily minima, based on site-specific barometric pressure, site-specific salinity, and natural receiving water temperatures as estimated by the T1BSR run of the Klamath TMDL model and described in Tetra Tech, December 23, 2009. *Modeling Scenarios: Klamath River Model for TMDL Development*. The estimates of natural receiving water temperatures used in these calculations may be updated as new data or method(s) become available. After opportunity for public comment, any update or improvements to the estimate of natural receiving water temperature must be reviewed and approved by Executive Officer before being used for this purpose.