



State Water Resources Control Board



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Arnold Schwarzenegger
Governor

SEP 23 2008

Cory Scott
Klamath Licensing Manager
PacifiCorp
825 N.E. Multnomah, Suite 1500
Portland, Oregon 97232

Dear Mr. Scott:

RESPONSE TO PACIFICORP'S LETTER REGARDING STATE WATER BOARD COMMENTS ON THE 2008 WATER QUALITY STUDY PLAN AND INFORMATION REQUEST FOR THE KLAMATH HYDROELECTRIC PROJECT (FERC PROJECT NO. 2082)

Thank you for your July 29, 2008 letter that includes responses to the comments provided by the State Water Resources Control Board (State Water Board) in our letter dated June 20, 2008 regarding PacifiCorp's 2008 Water Quality Study Plan for the Klamath Hydroelectric Project (FERC Project No. 2082). We would like to offer the following additional comments.

1) Periphyton Sampling

The State Water Board requested that PacifiCorp amend its 2008 Water Quality Study Plan to include sampling for periphyton (i.e. benthic algae or attached macroalgae) in the Klamath River downstream of Iron Gate Dam to the confluence of the Trinity River. This request was made, in part, due to the need for PacifiCorp to show compliance with the Hoopa Valley Tribe Water Quality Control Plan, which specifies a water quality objective for periphyton of 150 mg Chlorophyll *a* per square meter of streambed. Compliance with these standards is required for the segment of the Klamath River that passes through the Hoopa Valley Tribal Reservation, located at the confluence with the Trinity River. Additionally, the Total Maximum Daily Load (TMDL) that is being developed for the Klamath River utilizes target values for periphyton as a way to measure river conditions under the framework described in the Nutrient Numeric Endpoints assessment completed by Tetra Tech.¹

We are disappointed that periphyton sampling was not added to the study plan for 2008. The Klamath Hydroelectric Project has the potential to affect downstream periphyton growth through potential effects on the substrate, available nutrients and temperatures. We look forward to working with PacifiCorp to develop a sampling plan for 2009 that includes the collection of data on periphyton distribution and abundance.

We would also like to clarify something that was raised in your letter. You expressed concern that staff were confused regarding the location of a disease node downstream of Iron Gate Dam. Staff recognizes that this disease node is not located immediately below the dam, but rather closer to the confluence with Beaver Creek.

¹ Tetra Tech (2008) Nutrient Numeric Endpoint Analysis for the Klamath River, CA. Prepared for U.S. EPA Region 9 and North Coast Regional Water Quality Control Board. Tetra Tech, Inc., Research Triangle Park, North Carolina

2) Monitoring for Microcystis

The State Water Board requested that PacifiCorp increase their 2008 sampling effort for the toxic cyanobacteria *Microcystis aeruginosa* (MSAE) to include additional sampling sites along the Klamath River below Walker Bridge, the furthest downstream sample site that was included in PacifiCorp's 2008 Water Quality Study Plan. The level of effort requested by the State Water Board is similar to the level of effort included in PacifiCorp's 2007 Water Quality Study Plan element entitled "Field Study of Blue-Green Algae Presence and Distribution in the Klamath River System", which provided for additional sampling locations along the Klamath River below Walker Bridge at Seiad Valley, Orleans, Weitchpec, and Turwar. PacifiCorp's July 29, 2008 letter states that supplemental sampling for MSAE was conducted in the lower river during the fall of 2007 in response to high cell counts and microcystin (the toxin produced by MSAE) concentrations in the lower river. The letter also states that PacifiCorp sees no reason to duplicate the sampling efforts of the Karuk and Yurok tribes, already planned for 2008 in the lower portion of the Klamath River.

The State Water Board is aware of and supports the high degree of collaboration among stakeholders on the Klamath River regarding water quality sampling, in particular blue-green algae sampling. The State Water Board is not averse to using the data collected by the Karuk and Yurok tribes in 2008 instead of data collected by PacifiCorp, as long as the information collected by all three entities remains comparable. Please forward to the State Water Board the Karuk and Yurok study plans, and the results of all three studies as soon as possible.

It is worth noting that the Klamath River between Iron Gate Dam and Seiad Valley was recently posted to warn people about potential health risks associated with exposure to MSAE.² The posting was based on both high cell counts of MSAE and high concentrations of microcystin observed in Klamath River water samples collected by the Karuk Tribe. Based on the impact to beneficial uses that accompanies the presence of MSAE in the Klamath River, the State Water Board would like to reiterate that future water quality monitoring efforts for MSAE must include sampling locations downstream of Walker Bridge, whether through PacifiCorp's own efforts or through coordinated effort with other entities. In the last Klamath Blue-Green Algae Working Group conference call on September 9, 2008, representatives of the Karuk and Yurok tribes expressed uncertainty regarding the level of sampling that future funding will permit them to perform in 2009. It is important that this monitoring continue at the same level, regardless of which entity ultimately takes responsibility for the effort.

3) Fish Tissue Sampling for Cyanotoxins

We appreciate the submittal of the study plan entitled "Sampling and Analysis Plan for Investigation of Microcystins in Tissues of Resident Fish in the Vicinity of the Klamath Hydroelectric Project" that accompanied PacifiCorp's July 29, 2008 letter, and appreciate PacifiCorp's actions to investigate potential cyanotoxin bioaccumulation in fish both in reservoirs and in the Klamath River downstream of Iron Gate Dam. However, we are

² North Coast Regional Water Quality Control Board September 9, 2008 press release warning against Klamath River blue-green algae.

concerned that the sampling plan does not include the collection and analysis of freshwater mussel tissue, as we requested in our June 20, 2008 letter. As filter-feeding organisms, mussels are especially prone to exposure to and subsequent bioaccumulation of cyanobacterial toxins. Additionally, there is evidence of human consumption of mussels in the area.

The State Water Board requests that the study plan be modified to include sampling and analysis of mussel tissue. Moreover, due to the current condition of the Klamath River, where MSAE cell counts and toxin concentrations are sufficiently high to warrant posting to warn the public about potential adverse health impacts associated with exposure to MSAE, we urge PacifiCorp to plan for the collection of mussel samples as soon as possible while bloom conditions exist.

The State Water Board appreciates that PacifiCorp intends to undertake sampling efforts both during and after the occurrence of algal blooms in the Klamath Hydroelectric Project (Project) reservoirs. Further sampling, as part of PacifiCorp's plan to assess fish tissue concentrations in November after bloom conditions have subsided, should also include the collection and analysis of mussels. If the mussel and/or fish tissue samples collected during the November sampling effort show elevated levels of microcystin, we request that PacifiCorp undertake an additional sampling effort to assist in evaluation of how quickly the fish and/or mussels can expel the accumulated toxin.

4) Continuous Temperature Monitoring

The State Water Board appreciates your clarification that continuous temperature monitoring as described in the 2007 study plan is still, for the most part, ongoing. We also appreciate your addition of a continuous water temperature monitoring device below the Iron Gate powerhouse tailrace.

5) Algaecide Testing

The State Water Board appreciates PacifiCorp's further description of the investigations it is undertaking regarding Sodium Carbonate Peroxyhydrate (PAK-27). The State Water Board would appreciate assurance that the initial review will be completed early enough that, should PacifiCorp determine that this avenue is worth additional exploration, ecological risk assessment would be completed and reviewed by the Board before any in situ testing begins in 2009.

6) Solar-Powered Circulator Testing

The State Water Board looks forward to receiving the findings of PacifiCorp's studies regarding the effectiveness of solar-powered circulators to reduce the impact of algal blooms in Project reservoirs. However, our interest in the effectiveness of each individual unit remains. We reiterate our request that PacifiCorp undertake the necessary testing to determine the spatial extent over which impacts are expected and would like this testing to be implemented during the remainder of the current algae season, and also in planning for any 2009 testing of solar circulators that PacifiCorp plans to undertake.

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7) Timeline

We request that PacifiCorp provide a timeline for completing the data collection and analysis for each element of the 2008 Water Quality Study Plan. Such timelines assist the State Water Board in planning for review of different elements of the water quality certification.

In addition to the comments listed above, we would also like to respond to PacifiCorp's second letter, also sent on July 29, 2008, which addresses an information request we made on July 3, 2008.

8) Reservoir Sediment Composition

We appreciate the response that PacifiCorp provided wherein specific data and information related to sediment composition collected as part of the Project relicensing studies were identified. We will have ENTRIX review this information when work resumes on the CEQA analysis.

9) Microcystin Bioassays

Our July 3, 2008 letter included a request for information regarding the effects of the algal toxin microcystin on anadromous fish; however we believe that PacifiCorp may have misinterpreted our request. We are aware of the sampling efforts that have been or are currently being undertaken to address cyanotoxin bioaccumulation in fish and potential impacts to human health from ingestion of fish. The request made in our July 3, 2008 letter instead focuses on the potential for adverse health impacts to the fish themselves due to exposure to MSAE both in Project reservoirs and in the Klamath River downstream of Iron Gate Dam. Our letter requested that PacifiCorp provide data from bioassays conducted with anadromous fish to assess impacts on fish health caused by exposure to MSAE and that the results include the measurement of stress hormones in those fish. The State Water Board reiterates the need for this type of information and welcomes the opportunity to work with PacifiCorp to either identify existing information about health impacts to fish associated with exposure to microcystin or to develop a laboratory or in situ study plan to address this request.

10) Cumulative Impacts to Fish Health from MSAE and Parasites

The State Water Board requested that PacifiCorp provide information that addresses whether exposure to MSAE alters the susceptibility to infection by the myxosporean fish parasites *Ceratomyxa shasta* and *Parvicapsula minibicomis* in anadromous fish in the Klamath River. PacifiCorp responded by identifying past research conducted by Oregon State University (OSU) that was funded by PacifiCorp during Project relicensing. PacifiCorp also suggests reviewing additional research conducted by OSU in conjunction with the U.S. Fish and Wildlife Service, and the Karuk and Yurok tribes.

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Again, we believe that PacifiCorp misinterpreted our request. The information we requested in our letter focuses on the potential for cumulative impacts on fish health due to exposure to both MSAE and the disease organisms present in the Klamath River. The studies cited in PacifiCorp's July 29, 2008 letter do not specifically address this issue. The State Water Board welcomes the opportunity to work with PacifiCorp to identify relevant existing information. If no information exists, the State Water Board will need to rely on best professional judgment to evaluate cumulative impacts to fish health.

11) Distribution and Abundance of Fish Parasites between Iron Gate Dam and Shasta River

The State Water Board requested information regarding fish parasite concentrations at locations directly below Iron Gate Dam, at Bogus Creek, at Shasta River and on the mainstem Klamath River between Iron Gate and the Shasta River. PacifiCorp recommends reviewing the same research discussed above, in 10. Once ENTRIX has resumed work on the environmental analysis required under CEQA, ENTRIX staff will evaluate the most recent data available.

In closing, we would also like to remind PacifiCorp that we still have not received any of the technical reports associated with the water quality studies conducted during 2007. Please forward these to the State Water Board. We look forward to receiving these reports, as well as the reports that are to be generated based on the 2008 studies. If you have any questions or comments, please contact me at (916) 341-5397 or at jwatts@waterboards.ca.gov.

Sincerely,



Jennifer Watts
Environmental Scientist
Water Quality Certification Unit

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FERC Service List