

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON D.C. 20426
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OFFICE OF ENERGY PROJECTS

Project No. 2144-035-Washington
Boundary Hydroelectric Project
City of Seattle, Washington

Barbara Greene, Relicensing Program Lead
Seattle City Light Department
P.O. Box 34023
Seattle, WA 98124-4023

**Reference: Study Plan Determination for the Boundary Hydroelectric Project
Toxics Analysis**

Dear Mrs. Greene:

Pursuant to 18 CFR § 5.15(c), this letter contains my determination on the City of Seattle's (City's) "Study No. 4, Toxics Assessment: Evaluation of Contaminant Pathways" (Toxics Sampling Plan) for the Boundary Hydroelectric Project.

On August 15, 2008, the City filed the "Interim Report" for the Toxics Sampling Plan as required by my October 25, 2007, study plan determination. The Interim Report at section 6.2 included the City's findings with regard to its toxics sampling conducted to date and a proposal for limited additional sampling at select locations in the reservoir to confirm certain of its findings in the Interim Report. Comments on the Interim Report were filed by Washington State Department of Ecology (Washington Ecology) on August 27, 2008, the U.S. Forest Service on August 29, 2008, and the Kalispel Tribe on September 2, 2008. The City filed a written response to those comments on September 15, 2008. There were no responses to the City's September 15, 2008, filing.

As discussed in Attachment A, staff concurs with the City's conclusions in its Interim Report and September 15, 2008, response filing, as well as the City's basis for further limited sampling at select locations within the reservoir. Staff finds that the data in the Interim Report along with the additional sample results adequately addresses all toxics study needs at this time. I accept staff's findings and approve the City's proposed additional sampling as stipulated in section 6.2 of the Interim Report. A report of the results is due by March 15, 2009, unless extenuating environmental conditions prevent

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sampling until the spring of 2009, then a report of the results are due no later than May 3, 2009 with the City's preliminary licensing proposal.

If you have any questions, please contact David Turner at (202) 502-6091 or david.turner@ferc.gov.

Sincerely,

J. Mark Robinson
Director
Office of Energy Projects

Enclosure: Attachment A

cc: Mailing List
Public Files

**Attachment A – Study Request Issues
Staff’s Findings/Response to Comments on Toxics Sampling Plan****Consultation on the Interim Report**

The Forest Service and Washington Ecology claim that SCL did not allow the relicensing participants to comment on and provide an evaluation of the Interim Report and proposed additional sampling as stipulated in the Toxics Sampling Plan. SCL states that it provided a draft of the report to the relicensing participants on July 1, 2008, held a meeting with the participants on July 15, 2008, and accepted written comments from the participants through July 31, 2008. The Forest Service and Ecology filed additional comments and an evaluation of the study results on two occasions each in August and September 2008. We find that the City has followed the consultation procedures and schedule approved in Commission’s October 25, 2007 study determination and that the relicensing participants, therefore, have been given adequate opportunity to place comments and recommendations for additional studies in the project record.

Sampling Outside of the Fluctuation Zone

The Forest Service claims that SCL should have taken samples from outside the fluctuation zone of the reservoir “in order to obtain a more representative view of toxics concentration and movement in the reservoir.”

The approved Toxic Sampling Plan identified sampling locations based on, among other things, the likelihood for the long-term presence of fine sediments (*i.e.*, sediment size most likely to be contaminated). A hydraulic routing model developed by SCL showed that such long-term deposition most likely occurs in the Boundary dam forebay and other deep pools about 1 to 2 miles upstream (see Exhibit B of the Toxics Sampling Plan). Other areas further upstream, such as deeper water adjacent to sampling locations 5 and 8, do not retain fine sediments over time to a substantial degree.¹ Accordingly, the Toxic Sampling Plan selected the reservoir forebay, in part, as a reference location for fine sediment deposition and proposed sediment sampling to occur in this area below the fluctuation zone. We, therefore, find that the Toxics Sampling Plan provided samples that are representative of sediment, pore water, and water column conditions within the reservoir.

¹ According to Exhibit B.1 of the Toxics Sampling Plan, at flows of 20,000 cubic feet per second, coarse gravels settle out across the river at site 5 and coarse gravel or cobbles settle out at site 8. Smaller materials, such as silts and sands, are carried and deposited further downstream. This is consistent with SCL’s Interim Report at p. 64 where they noted that they had difficulty finding suitable sediments (silt) at sites 5 and 8.

Additional Sampling

SCL's Proposal for Additional Study

SCL proposes to re-sample the water column, sediment pore water, and sediment (three replicates each) at sampling locations 5 and 8 in order to validate its sample results obtained in the fall 2007 and spring 2008. Sampling within the two locations would be expanded longitudinally (*i.e.*, upstream and downstream) to test SCL's theory that the presence of toxics in the earlier samplings is localized and due to activities unrelated to project operations. Additional samples would also be taken at site 1 (Boundary dam forebay) and site 14 (Boundary reservoir headwaters) to serve as reference samples.

All sampling would be conducted starting in October 2008, or earlier if possible. Should weather conditions make sampling in the fall of 2008 unsuitable, then SCL would begin the sampling in the spring of 2009. The results would be reported in the Updated Study Report (USR), or an addendum to the USR should sampling not begin until the spring of 2009.

Relicensing Participants Requests for Additional Study

The Forest Service argues that further sampling beyond that conducted and proposed by SCL is needed because: (1) toxics sample timing for the studies conducted to date was too limited in scope to capture variability in such parameters important to bioavailability such as water temperature, pH, dissolved oxygen (DO), and hardness; (2) there were exceedances of toxics criteria at some of the sample sites; and (3) the results of the sampling shows that project operations cause toxics to become bioavailable. The Kalispel Tribe recommended further sampling based item (2) above.²

Staff's Conclusions on the Need for Additional Study

The approved Toxics Sampling Plan was developed after an extensive evaluation of the potential contaminant pathways within Boundary reservoir as guided by a

² In a July 31, 2008, filing, Washington Ecology commented on a draft of the Interim Report by stating that bioassays are necessary to "definitively demonstrate that dam operations do or do not pose a risk to ecological receptors," such as resident fish species and aquatic macroinvertebrates. Washington Department of Fish and Wildlife (Washington DFW) supported Washington Ecology's approach in its July 31, 2008, filing. Washington Ecology did not repeat its request for bioassays in its August 27, 2008, comments on the final Interim Report, and Washington DFW filed no comments on the final Interim Report.

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substantial and comprehensive literature review discussing the current knowledge of toxics availability and transport. With regard to participant's reason (1) above, the literature review and evaluation conducted in the Toxics Sampling Plan shows that the most important water quality parameters determinative of the toxicity and bioavailability of zinc, cadmium, lead, and mercury (the target metals in the study) are pH, hardness, and DO. Water temperature plays a secondary role associated with driving the chemical reactions that govern the transfer of toxics between media and controlling the metabolic rate (and thus ingestion of or exposure to toxics) of target organisms.

According to the Interim Report, hardness, pH, and DO showed little variability among sample sites and depths during March 2008. Hardness was consistently near 80 mg CaCO₃/L, pH near 8, and DO near 12 mg/L. Water quality sampling during the warmer months of July and August 2007 similarly showed low variability among sites and depths with regard to hardness, pH, and DO and very similar values to sampling done in March 2008. Hardness was near 75 mg CaCO₃/L, pH near 8.5, and DO about 7.5-9.0 mg/L (see Study No. 5 Interim Report filed on March 14, 2008). These results show consistently high hardness, pH, and DO values across seasons and depths resulting in reservoir conditions where toxics bioavailability is limited. Therefore, water temperature at Boundary reservoir plays no role in determining toxics bioavailability. Because water quality sampling shows low seasonal variability among relevant water quality parameters, we find that additional sampling in other months is not needed.

With regard to reasons (2) and (3) above for conducting further study, we note that the goal of the approved Toxics Sampling Plan was to assess changes in bioavailability of toxics of concern due to project operations (reservoir surface fluctuations). Water column, pore water, and sediment sampling were all conducted as a way to document any toxics concentrations within these media as well as to identify any transport of toxics from sediments or associated pore water within the fluctuation zone to the water column where the toxics would be available to a greater number of organisms.

Our review of the Interim Report shows that although some of the toxics criteria were exceeded at certain of the sampling locations (*e.g.*, sampling sites 5 and 8), these exceedances were isolated to a few replicates or a single medium. In no instance did the results show exceedances of toxics in both sediments and the water column at the same site, which would have suggested that reservoir fluctuations caused a disruption of sediments resulting in the dispersal of the sediments and associated toxics into the water column. In addition, exceedances that did occur were isolated to only a few of the sites, suggesting localized sources of the toxics unrelated to project operations (*e.g.*, groundwater or overland flow).

For the above reasons, we find that the participants have not shown good cause why additional sampling should be required (18 CFR § 5.15(d) and (e)). We agree with

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SCL's proposal to further investigate toxics concentrations documented at sites 5 and 8 for purposes of validating its findings that these are likely localized exceedances associated with an upland or groundwater source rather than project operations. We find that further study beyond SCL's proposal is not needed at this time.

Document Content(s)

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