

Final Second Supplemental Environmental Impact Statement

Ecology Publication #09-12-017

January 21, 2010



CONDIT DAM REMOVAL FINAL SECOND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

This report is available on the Department of Ecology Web site at:
<http://www.ecy.wa.gov/programs/wr/cwp/condit.html>

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Refer to Publication Number 09-12-017

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Fact Sheet

Project Title

Condit Dam Removal

Proponent

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Proposed Action

PacifiCorp proposes to remove the Condit Hydroelectric Project on the White Salmon River in accordance with the Condit Hydroelectric Project Settlement Agreement, as amended in 2005. Removal of the project would enable the river and watershed to return to the conditions of a free-flowing river. Originally completed in 1913, Condit Dam has since accumulated sediment and blocked fish passage. Removing the dam is expected to provide access to as much as 32.4 miles of river and tributary habitat for anadromous steelhead and salmon, and restore connectivity to foraging, spawning, rearing, and overwintering habitat for bull trout in the lower White Salmon River. The removal also would restore natural bed load movement processes in the river. Combined with a stable and natural flow regime, dam removal would result in increased salmonid (steelhead, salmon, and bull trout) production potential.

The proposed action includes draining the reservoir through a tunnel that would be constructed through the dam, removing the dam, removing the wood stove pipeline, the surge tank and the two penstocks, and filling in the tail race at the power house to the extent that it does not fill in naturally. Concrete from the dam would be disposed of on property near the dam.

Previous National Environmental Policy Act (NEPA) environmental impact statements were prepared by the Federal Energy Regulatory Commission (FERC), but were found by the Washington State Department of Ecology (Ecology) to not adequately cover all State Environmental Policy Act (SEPA) issues. Ecology issued a Final Supplemental Environmental Impact Statement (SEIS) to address the environmental impacts of removal of the Condit Dam, which was prepared pursuant to SEPA. The Final SEPA SEIS evaluated one alternative: the proposed action to remove the Condit Dam and associated facilities.

Ecology elected to issue this Second Supplemental EIS because of the discovery that mercury concentrations in the sediments in Northwestern Lake were higher than originally thought and because of changes in the location of concrete disposal.

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Permits, Certifications, and Licenses, and Other Required Actions or Approvals

Clean Water Act Section 404 permit from the US Army Corps of Engineers

Clean Water Act Section 401 Water Quality Certification from Ecology

Construction Stormwater General National Pollutant Discharge Elimination System permit

The Federal Power Act would preempt state and local permits, (see FERC's May 18, 2006 declaratory order) except laws adjudicating proprietary water rights. It does not prevent FERC from ordering PacifiCorp to implement decommissioning requirements proposed by state and local agencies, including requirements that such agencies would include in state or local permits if such permits are not preempted.

Date of Issue of Draft SEPA SEIS

September 30, 2005

Date of Issue of Final SEPA SEIS

March 23, 2007

Date of Issue of Draft Supplement to Final SEPA SEIS

June 4, 2009

Date of Issue of Final Supplement to Final SEPA SEIS

January 21, 2010

Document Availability

Information regarding the availability of this Final Supplement to the Final SEPA SEIS will appear in the Goldendale Sentinel, Skamania County Pioneer, and the White Salmon Enterprise newspapers. The Final Supplement to the Final SEPA SEIS can be viewed online at: <http://www.ecy.wa.gov/programs/wr/cwp/condit.html>.

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or at the following libraries:

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ACRONYMS AND ABBREVIATIONS

AR	access road
BMP	best management practice
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
LCR	Lower Columbia River
LOS	level of service
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
µg/L	micrograms per liter
NEPA	National Environmental Policy Act
NTU	nephelometric turbidity unit
ppm	parts per million
RM	river mile
SA	staging area
SEIS	Supplemental Environmental Impact Statement
SEPA	State Environmental Policy Act
SR	State Route
TSS	total suspended solids
WAC	Washington Administrative Code

1.0 SUMMARY

1.1 INTRODUCTION

The Condit Hydroelectric Project, located on the White Salmon River in Klickitat and Skamania Counties, Washington, was constructed in 1912 and 1913 and has produced electricity since it was completed. PacifiCorp is proposing to cease electricity generation at the Condit Hydroelectric Project on October 1, 2010, and commence removal of the dam later the same month. The Washington State Department of Ecology (Ecology) conducted an environmental review under the State Environmental Policy Act (SEPA) comparing the effects of continued operation of the dam (the no-action alternative) with the removal of the dam (proposed action). This process culminated with a Final Supplemental Environmental Impact Statement (SEIS) published in March 2007, which supplemented earlier National Environmental Policy Act (NEPA) environmental impact statements (EISs) produced by the Federal Energy Regulatory Commission (FERC) in 1996 and 2002. After the Final SEPA SEIS was published, additional sediment sampling reported mercury levels in Northwestern Lake sediment that exceed screening guidelines, thus warranting further analysis. This brought into question the conclusions of the Final SEPA SEIS concerning contaminants in the sediment and effects of releasing them. To resolve the questions, Ecology elected to produce a Supplement to the Final SEPA SEIS (the Draft and Final Second Supplemental EIS or Draft and Final Second SEIS). In addition, the proposed location for disposal of the concrete from the dam has been changed. Disposal is now proposed to occur in the area where the wood-stave flowline will be removed, which is between the dam and the surge tank, roughly parallel to the White Salmon River.

1.2 ADOPTION OF NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTS

The Final SEPA SEIS supplemented the following NEPA documents:

- Condit Hydroelectric Project Final Environmental Impact Statement, FERC No. 2342-005, Washington (FERC 1996)
- Final Supplemental Final Environmental Impact Statement, Condit Hydroelectric Project, Washington, FERC Project No. 2342 (FERC 2002)

These documents identified and evaluated a range of reasonable alternatives to the proposal, identified probable significant impacts associated with the proposal and its alternatives, and addressed mitigation measures to be imposed by FERC. The NEPA documents were evaluated to verify, from Ecology's perspective, whether a reasonable range of alternatives were considered and whether all probable significant adverse impacts associated with the proposal were adequately identified and assessed. It was determined that, while these documents form a substantial basis for environmental review of the project and largely meet Ecology's environmental review standards, some supplemental evaluation of probable significant adverse impacts would be needed to satisfy the requirements of SEPA (Chapter 43.21C Revised Code of Washington) and SEPA Rules (Chapter 197-11 Washington Administrative Code [WAC]).

In the SEPA SEIS, Ecology adopted the aforementioned NEPA documents, pursuant to the provisions of WAC 197-11-610 and 630, to partially satisfy its requirements for SEPA compliance. This Final Second Supplemental EIS further supplements the Final SEPA SEIS.

1.3 FOCUS OF THIS FINAL SECOND SEIS

The primary focus of this Final Second SEIS is on the potential effects of mercury in sediments that would be released into the White Salmon and Columbia Rivers, and on the effects of disposing of the concrete in a new location. (See Section 2.4 for a complete list of issues addressed in this Supplement.) The analysis of the impacts of dam removal was set forth in the 2007 Final SEIS, and this second supplement does not intend to change the underlying analysis except as it relates to the two new issues. [Note that WAC 197-11-620 states, “The SEIS should not include analysis of actions, alternatives, or impacts that is in the previously prepared EIS.”] Responses to comments on the Draft Second Supplemental EIS are given in Appendix A of this document.

1.4 DESCRIPTION OF PROPOSED ACTION

The existing Condit Hydroelectric Project includes a concrete dam, an approximately 1.8-mile-long reservoir, a 13.5-foot-diameter wood-stave pipeline of approximately one mile in length, a reinforced-concrete surge tower, two 650-foot-long penstocks (one steel and one wood), and a powerhouse structure housing two turbines with an installed capacity of 14,700 kilowatts.

The proposed action includes draining the reservoir through a tunnel that would be constructed through the dam, removing the dam, removing the wood stave pipeline, the surge tank, and the two penstocks, and filling the tail race at the power house to the extent that it does not fill in naturally. Concrete from the dam originally was to be hauled to a storage/disposal area located a few thousand feet upstream of the dam and owned by PacifiCorp. The revised plan is to dispose of the concrete in the existing flowline alignment between the dam and the surge tank. Details of the proposed action are described in the Project Removal Design Report (PacifiCorp Energy 2009a), which supersedes the 2004 Project Description (PacifiCorp 2004). The Project Description included numerous plan documents designed to minimize or eliminate potential impacts related to the project. These plans also have been updated and are referenced in other sections of this Supplement.

1.5 SCHEDULE

The Settlement Agreement was entered into in 1999 to resolve all issues in the proceeding for relicensing the project by FERC. It was amended in 2005. Under the Settlement Agreement and upon FERC approval, PacifiCorp would continue to operate the project under the terms of its existing FERC license on a year-by-year basis until the dam removal could begin, whereupon PacifiCorp would cease generating power at the project. This is now proposed to be October 1, 2010.

Project removal activities would commence in August 2010 if all necessary permits (including the final resolution of any appeals), easements, and contracts have been obtained sufficiently in advance of that date to practicably begin construction. If all necessary permits, easements, and

contracts are not obtained in sufficient time, the commencement of construction would be deferred to the following August because the scheduled seasonal timing of removal activities minimizes their environmental effects. The demolition and removal of Condit Dam and other project facilities are estimated to take about one year. Monitoring would then continue until performance criteria are met.

1.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

1.6.1 Impacts and Mitigation Measures

Impacts and mitigation measures relating to mercury in the sediments and the revised concrete disposal area are summarized by element of the environment in Table 1.

1.6.2 Significant Unavoidable Adverse Impacts

Geology, Soils, and Sediments

The Final SEPA SEIS already identified the release of sediment as causing unavoidable adverse impacts in the lower White Salmon River and in the Underwood In Lieu Fishing Access Site at the mouth of the White Salmon River.

The simultaneous release of the mercury in the sediments could cause the deposition of sediment with higher concentrations of mercury than screening guidelines. Sediment concentrations in samples from the Underwood In Lieu Fishing Access Site indicate that the mercury levels there are similar to the levels found in Northwestern Lake fine sediments. The effects of deposition of the sediment are not expected to significantly rise from existing levels for aquatic organisms or for people.

Water Resources

Significant unavoidable adverse impacts identified in the Final SEPA SEIS with respect to surface water include massive turbidity and sediment transport as part of the dam breaching and removal. Total suspended solids (TSS) within the six hours after the dam breach could range from 100,000 to 250,000 parts per million (ppm) and turbidity values could range from 50,000 to 127,000 nephelometric turbidity units (NTUs). Elevated TSS and NTU are expected episodically throughout the first year following the dam breach, as bank and river channel stabilization occurs. Turbidity levels are expected to be elevated in the White Salmon River, at the confluence of the White Salmon and the Columbia River, and in the Bonneville pool. Clay particles will likely remain suspended in the Columbia River, thus temporarily increasing turbidity all the way to the mouth of the Columbia River.

After the Final SEPA SEIS was published, additional sediment sampling reported mercury levels in Northwestern Lake sediment that exceed screening levels, i.e., levels beyond which additional evaluation of health and environmental risks may be warranted. Additional analysis (GEC 2009a) concluded that the movement of reservoir sediments downstream following the breaching of the dam would likely cause mercury concentrations in the water column to exceed Ecology's acute and chronic water quality criteria for the protection of aquatic life in the White Salmon River for 20 and 49 days, respectively, following dam removal. Mercury concentrations would be sufficiently diluted once entering the Columbia River so that the Ecology acute criterion for

the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life likely would be exceeded for 17 days in the Bonneville Pool, and for seven days at Quincy, Oregon. A Drain Tunnel Blocking Investigation (GEC 2009b) found that partial blockage of the tunnel (even up to 90% blockage) would not likely change that predicted range, and that would especially be true with the active sediment management measures proposed.

Most of the days of mercury criteria exceedence would be consecutive days following the start of draining the reservoir, but an isolated day or days corresponding with storm/high-flow events or active management could occur through the fall, winter, and spring following breaching of the dam. Exceedences are not expected after that period, given planned active management of sediments as needed depending on weather and river flow.

Significant unavoidable adverse impacts were not identified with respect to groundwater or from the concrete disposal.

Aquatic Resources

The Final SEPA SEIS stated that all fish and aquatic macroinvertebrates within the White Salmon River channel downstream of the dam will likely be killed or displaced by the load of suspended solids that will occur during dam breaching. The populations of macroinvertebrates will likely take several years to fully reestablish. In the Columbia River, the effects would be substantially less and would diminish downstream of the mouth of the White Salmon River.

The lack of acute mercury exceedence and the relatively short durations of chronic mercury exceedence in the Columbia River suggest that the dam breaching is not likely to result in long-term impacts to aquatic organisms in the Columbia River associated with mercury toxicity. Any fish likely to be affected by acute mercury exceedence in the White Salmon River after the breaching of Condit Dam would have been killed or displaced by the high levels of suspended sediments present in the river immediately following the breaching of the dam and continued high levels of suspended sediments present during the period of elevated concentrations of mercury present in the lower White Salmon River.

The lack of correlation between mercury concentrations present in sediments and the tissues of juvenile salmonids collected in tributaries of the Bonneville Pool, as well as the relative health and abundance of salmonids in the White Salmon River despite the elevated levels of mercury in the basin's sediments, both suggest that dam breaching is unlikely to result in long-term impacts associated with mercury bioaccumulation to fish or their forage base in the Columbia River.

The deposited sediments would be deep enough (up to five feet) at the Underwood In Lieu Fishing Access Site and the adjacent Columbia River/Bonneville Pool that most of the volume would be effectively isolated from the organisms that might bioaccumulate the mercury. The clay and fine silt fraction would either be carried out to the Pacific Ocean or would be deposited over a broad area and diluted by other sediments being carried by the Columbia River and its tributaries. In addition, the shallow sediment would be in aerobic conditions where demethylation is favored, thus reducing its bioaccumulation potential.

Wetland Resources

No additional unavoidable adverse wetland impacts are expected as a result of the changes in the project since the Final SEPA SEIS.

Terrestrial Resources

There will be no significant unavoidable adverse impacts.

Transportation

With the implementation of the identified mitigation measures, no significant unavoidable adverse transportation or traffic impacts are expected to occur as a result of the project changes.

Air Quality

There are unlikely to be any significant unavoidable adverse impacts from demolition of the Condit Dam as a result of the project changes if the mitigation measures are implemented fully and in a timely fashion.

Land Use/Critical Areas

If the PacifiCorp Sediment Assessment, Stabilization, and Management Plan (PacifiCorp Energy 2008a), Revegetation and Wetland Management Plan (PacifiCorp Energy 2009b) and Erosion Control Plan (PacifiCorp Energy 2008b) are implemented, no long-term unavoidable significant adverse impacts to land use/critical areas are anticipated. There would be short-term unavoidable impacts to sites along or near the reservoir that would be used for work areas, construction staging or for disposal, and from the access roads that would be built in several locations.

Aesthetics and Scenic Resources

No additional unavoidable adverse impacts are expected as a result of the changes in the project since the Final SEPA SEIS.

Public Safety

If the proposed mitigation measures for public safety are implemented, no significant unavoidable impacts are expected as a result of the project changes.

Public Services

If the Public Safety and Traffic Control Plan (PacifiCorp Energy 2009c) is implemented, no significant unavoidable adverse impacts are expected as a result of the project changes.

1.6.3 Secondary and Cumulative Effects

Secondary or indirect effects are those that are caused by the proposed project that are later in time or farther removed in distance than direct impacts, but which are still reasonably foreseeable. A theoretical example might be the development of mercury bioaccumulation affecting aquatic species at some time months or years after the sediment containing the mercury is deposited.

Cumulative effects are impacts on the environment that result from the incremental consequences of a project when added to other past or reasonably foreseeable future actions (regardless of who would take the future action). The cumulative effects may be undetectable when viewed individually, but add to other disturbances and eventually lead to a measurable

change. No cumulative adverse effects are expected for this project as a result of the project changes.

Aquatic Resources

The primary consideration for cumulative effects on aquatic resources is concern whether anadromous salmonid stocks that are already depressed by the effects of dams and reservoirs on the Columbia River and other influences will be significantly harmed by the sediment released from Northwestern Lake during the breaching of Condit Dam. The mitigation proposed (with concurrence by NMFS and USFWS) to protect the fall Chinook salmon is trapping adults and releasing them upstream of the project area. Although the Biological Opinions (NMFS 2006, USFWS 2005) approved trapping and hatchery-rearing one year-class, an addendum to the biological opinion (NMFS 2008) and a concurrence e-mail (USFWS 2008) have approved the trap-and-release approach. This mitigation appears to address the concern for that species. Long-term effects on salmonids are viewed as beneficial.

Transportation

The proposed project would cause a small increase in trips on local roads, but is not anticipated to create traffic congestion or a diminution of the level of service (LOS) at any affected intersection. Other projects in the area (if any) are not anticipated to have overlapping construction and/or demolition periods. It is anticipated that construction/demolition vehicles for overlapping projects traveling into or out of Washington State would be via State Route (SR) 14 and would not result in cumulative impacts on SR 141 or Powerhouse Road.

Land Use/Critical Areas

No additional unavoidable adverse impacts are expected as a result of the changes in the project since the Final SEPA SEIS.

**Table 1
Summary of Impacts and Mitigation Measures**

Impacts	Mitigation
Geology, Soils, and Sediments	
<p>Woody debris released from the reservoir sediment might clog the drain tunnel and interfere with draining the reservoir.</p>	<p>The tunnel has been redesigned to have a shape less conducive to clogging and to have a vent hole that would allow explosives to be used to clear it. Measures to prevent clogging, such as removing debris from near the tunnel, and means of clearing clogs (crane, blasting) will be implemented as needed.</p>
<p>Mercury concentration in deposited sediment is assumed to be the average of 0.617 milligrams/kilogram and would be above the sediment guidelines.</p>	<p>Only the coarser fraction will be deposited, while the finest (the fraction where most of the methylmercury is associated) component will go to the ocean and be diluted and will be exposed to conditions favoring demethylation . In the Underwood In Lieu Fishing Access Site and nearby Columbia River, only the surface few inches of the deposit will be accessible to biota and demethylating bacteria. Further downstream, thin deposits will be mixed with sediment from other sources and covered within a few months and will also be exposed to demethylating bacteria. Sediment monitoring will be conducted to compare areas with deposits to other areas in the Columbia River.</p>
Water Resources	
<p>There is potential for water leached from concrete disposal to increase pH of the White Salmon River or groundwater.</p>	<p>Concrete will be in rubble or blocks with relatively low surface area and will be covered with soil. Water will be directed away from it, and soil has buffering capacity. Long-term water quality monitoring in the river is proposed, including pH.</p>
<p>The mercury level in the water column will exceed the acute water quality guideline in the White Salmon River for an estimated 20 days, probably mostly consecutive days following dam breaching. The chronic water quality guideline would be exceeded in the White Salmon River for up to 49 days and in the Columbia River for 17 days, also probably mostly consecutive days.</p>	<p>The mercury acute screening exceedences in the White Salmon River will be limited to the times when TSS level is high.</p>
<p>The potential for water quality effects will extend past the initial activities planned for dam removal and sediment stabilization.</p>	<p>Monitoring of applicable water quality parameters, including turbidity, TSS, and pH, as well as observation and documentation of banks and fish passage, will continue from a month before the commencement of dam removal activities until such time that performance criteria are met (PacifiCorp 2009). In addition, PacifiCorp would conduct turbidity monitoring in the Bonneville pool for four weeks after the dam is breached and conduct turbidity monitoring at two locations in the White Salmon River for a period based on observed conditions.</p>

**Table 1 (Continued)
Summary of Impacts and Mitigation Measures**

Impacts	Mitigation
Aquatic Resources	
<p>The disposal of concrete in the flowline alignment parallel with the White Salmon River might allow water leaching through the concrete to increase the pH to the point (above pH 9) where it might adversely affect aquatic biota.</p>	<p>The erosion control and revegetation measures to be implemented are expected to prevent any chance of the pH rising in the White Salmon River.</p>
<p>The sediment from the reservoir with its included mercury will raise the mercury level in the water during the flushing of sediment from the reservoir above acute toxicity guidelines for an estimated 20 days.</p>	<p>The biota (receptors) in the White Salmon River are all expected to be dead or displaced from the high initial TSS concentrations, thus negating concerns with acute levels of mercury.</p>
<p>The chronic water quality guidelines would be exceeded in the White Salmon River for up to 49 days and in the Columbia River for 17 days, probably not consecutively.</p>	<p>Because of the relatively short duration at chronic levels, populations of biota are not expected to change as a result of the mercury.</p>
<p>The sediment newly deposited downstream of the dam (mostly in the Underwood In Lieu Fishing Access Site and in the Columbia River up to one mile downstream of the mouth of the White Salmon River) would have a mercury concentration assumed to be the average of 0.617 milligrams/kilogram.</p>	<p>Since most of the clay and fine silt particles will not be deposited in the Bonneville Pool, and the coarser material will be deposited up to five feet deep, relatively little mercury will be bioavailable or available to demethylating bacteria. Also, very little fish diet in the Bonneville Pool comes from benthic organisms from areas where the deposits would occur. Therefore, no measurable effects on aquatic organisms of the food chain or higher trophic levels are expected.</p>
<p>Salmon trying to enter the White Salmon River to spawn while the mass of sediment is passing would be killed or displaced and no reproduction of anadromous fish will occur until levels of suspended solids fall below lethal levels and migration to suitable spawning gravels above the upstream end of the reservoir becomes possible.</p>	<p>To prevent the loss of a Chinook year-class, the White Salmon Working Group has proposed to capture the fall Chinook returning to the White Salmon River before the dam is breached in October, and transport them upstream of the project area. The dam will be breached in October to minimize the risk of harm to seasonal fish runs. The timing would take advantage of the rainy season, when there will be fewer adverse effects on recreation and aquatic life. The high flows of the season will aid in transporting sediment from the reservoir. The successful capture and transport of adult fish was demonstrated in 2008.</p>
<p>The old cofferdam in the reservoir upstream of the dam is expected to be a barrier to upstream migration by anadromous fish. If the removal is delayed, the removal may cause a spike in TSS and mercury downstream.</p>	<p>Cofferdam removal will occur as soon as practicable after dam removal during the period when turbidity is expected to be elevated and prior to the upstream migration period of anadromous fish..</p>
Transportation	
<p>Approximately 1,000 truck loads of sediment hauled from the drained reservoir to cover the concrete removed from the dam will travel on SR 141 to the Powerhouse Road.</p>	<p>The change in traffic numbers is too small to change LOS or other metrics. Mitigation measures already planned for traffic safety should cover the additional truck trips.</p>

**Table 1 (Continued)
Summary of Impacts and Mitigation Measures**

Impacts	Mitigation
Land Use/Critical Areas	
<p>The new location for concrete disposal is mostly within 200 horizontal feet of the White Salmon River, within the Shoreline Management zone.</p>	<p>The soil covering and revegetation would restore more of a natural character to the environment instead of an industrial character with the flowline in place. The disposal area is within the FERC project boundary. The Shoreline Management Act is preempted by the Federal Power Act.</p>

2.0 PROJECT BACKGROUND

2.1 INTRODUCTION

The Condit Hydroelectric Project, located on the White Salmon River in Klickitat and Skamania Counties, Washington (Figure 1), was constructed in 1912 and 1913 and has produced electricity since that time. PacifiCorp is proposing to remove the Condit Hydroelectric Project following the proposed October 1, 2010 cessation of electricity generation. Ecology conducted a SEPA environmental review comparing the effects of continued operation of the dam (the no-action alternative) with the removal of the dam (proposed action), which culminated with a Final SEPA SEIS published in March 2007. After the Final SEPA SEIS was published, additional sediment sampling reported mercury levels in Northwestern Lake sediment that exceed regulatory screening criteria. This brought into question the conclusions of the Final SEPA SEIS concerning contaminants in the sediment and effects of releasing them. This Supplement to the Final SEPA SEIS (Final Second Supplemental EIS or Final Second SEIS) was produced to resolve these questions.

In addition, the proposed location for disposal of the concrete from the dam has been changed. Disposal is now proposed to occur in the area where the wood-stave flowline will be removed, which is nearer the White Salmon River.

2.2 PROJECT BACKGROUND SUMMARY

On December 27, 1991, PacifiCorp submitted an application for a new license to continue operating the Condit Hydroelectric Project. That began a long process that led to the decision to remove the Condit Dam and surrender the license. The highlights of the process from 1991 to 2009 are summarized in the chart below.

Date	Event
December 27, 1991	PacifiCorp applied to FERC for a new license to continue operating the Condit Hydroelectric Project
October 1996	FERC issued a Final NEPA EIS that analyzed five alternatives. In the 1996 Final NEPA EIS, FERC staff recommended PacifiCorp’s licensing proposal with modifications that included fish passage facilities and several other changes to benefit fish.
October 29, 1999	PacifiCorp applied to extend the current license term to October 1, 2006, and to incorporate the terms and conditions of a Settlement Agreement that provided for removal of the dam.
June 2002	FERC issued a Final Supplemental Final NEPA EIS that assessed the effects of surrendering the dam operating license, including dam removal.
November 16, 2004 to February 8, 2005	The parties to the Settlement Agreement all signed a Memorandum of Agreement modifying the Settlement Agreement and changing the date for dam removal from 2006 to 2008, subject to permits.
February 2005	PacifiCorp filed to amend the FERC decommissioning application to be consistent with the terms of the Memorandum of Agreement.
March 2007	Ecology issued a Final SEPA SEIS.
March 2007	Mercury was reported in additional sediment samples, triggering concerns about water quality and toxicity and other potential effects of

Date	Event
	deposited sediments.
July 2007 to October 2009	PacifiCorp consultants performed additional sampling, characterization, and assessment of mercury levels, forms, origin, concentrations, and bioaccumulation potential.
May 2008 to May 2009	PacifiCorp updated various removal and management plans.

2.3 NEED FOR STATE ENVIRONMENTAL REVIEW

Ecology is both the Lead Agency for SEPA and the regulatory decision maker for permits that require SEPA documentation to support permit decisions. Pursuant to WAC 197-11-620, Ecology prepared a SEPA SEIS focusing on issues that were not covered adequately in either of the NEPA documents (the 1996 Final EIS or the 2002 Final Supplemental Final EIS), both by FERC.

The SEPA SEIS built on previous environmental documents. The 1996 FERC Final EIS on relicensing Condit Dam described and analyzed the effects of a no-action alternative, which would continue operation of the Condit Hydroelectric Project under the terms and conditions of the existing license. That analysis of the no-action alternative and other pertinent information was adopted as part of the SEPA SEIS.

Since the Final SEPA SEIS, PacifiCorp has produced additional documents and updated others that are pertinent to this additional Supplement to the Final SEPA SEIS. The following additional documents have been produced and were used to complete this Final Second SEIS (the complete documents can be found in the CD inside the back cover of this document):

- Various plans:
 - Project Removal Design Report (PacifiCorp Energy 2009a)
 - Revegetation and Wetlands Management Plan (PacifiCorp Energy 2009b)
 - Aquatic Resources Protection Plan (PacifiCorp Energy 2008c)
 - Sediment Assessment, Stabilization, and Management Plan (PacifiCorp Energy 2008a)
 - Dust Control Plan (PacifiCorp Energy 2008d)
 - Woody Debris Management Plan (PacifiCorp Energy 2008e)
 - Erosion Control Plan (PacifiCorp Energy 2008b)
 - Recreation Facility Removal and Improvements Plan (PacifiCorp Energy 2009d)
 - Spill Prevention, Control and Countermeasure Plan (SPCC Plan) (PacifiCorp Energy 2008f)
 - Public Safety and Traffic Control Plan (PacifiCorp Energy 2009c)
 - Quality Control and Inspection Program (PacifiCorp Energy 2008g)
 - Environmental Monitoring Plan (PacifiCorp Energy 2009e)
- Sediment Sampling and Analysis Report (Kleinfelder 2007a)
- Supplemental Evaluation of Mercury in Sediments Report (Kleinfelder 2007b)

- Updated Evaluation of Mercury Bioaccumulation, Underwood In Lieu Fishing Access Site, Northwestern Lake (Kleinfelder 2008a)
- Estimated Mercury Concentrations and Turbidity Resulting from Removal of Condit Dam (GEC 2009a)
- Drain Tunnel Blocking Investigation (GEC 2009b)

2.4 SCOPE OF THIS FINAL SECOND SEIS

This Final Second SEIS focuses on the issues that have arisen since the Final SEPA SEIS publication in March 2007. The issues identified by Ecology that require additional assessment as part of the SEPA process are listed below.

Water Resources

- Impacts to water quality in the White Salmon River and the Columbia River from potentially toxic amounts of mercury in released sediment.
- Impacts to ground or surface water quality from leachate resulting from disposal of concrete and other construction debris.

Aquatic Resources

- Impacts to salmonids if increased turbidity and/or pH results from the new proposed concrete disposal site near the White Salmon River.
- Impacts to salmonids from potentially toxic amounts of mercury when the sediment is released into the water with dam breaching.
- Impacts to aquatic resources from increases in mercury concentrations in sediment deposited in the White Salmon and Columbia Rivers.

Transportation

- Impacts to traffic from hauling sediment to new concrete disposal site.

Land Use/Critical Areas

- Concrete disposal within 200 feet of White Salmon River, a Shoreline of the State.

3.0 PROPOSED ACTION

PacifiCorp proposes to remove the Condit Hydroelectric Project on the White Salmon River in accordance with the Condit Hydroelectric Project Settlement Agreement, as amended. Restoring undammed river flow would provide access to as much as 15.3 to 32.4 miles of river and tributary habitat for anadromous salmon and steelhead, respectively, and would restore connectivity to foraging, spawning, rearing, and overwintering habitat for bull trout in the lower White Salmon River. Dam removal would result in increased salmonid (steelhead, salmon, and bull trout) production potential.

The existing Condit Hydroelectric Project includes a concrete dam, an approximately 1.8-mile-long reservoir, a 13.5-foot-diameter wood-stave pipeline of approximately one mile in length, a reinforced-concrete surge tower, two 650-foot-long penstocks (one steel and one wood), and a powerhouse structure. All of these except the powerhouse are proposed to be removed.

The proposed action includes draining the reservoir through a tunnel that would be constructed through the dam; removing the dam, wood stave pipeline, surge tank, and the two penstocks; and filling in the tail race at the power house to the extent that it does not fill in naturally. The conceptual design of the drain tunnel through the dam has been enhanced to optimize the hydraulic efficiency of the tunnel. This includes the addition of an air vent, which is a vertical hole from the tunnel to the top of the dam. The purpose of the air vent is to allow air pressure to equalize in the tunnel and also provide access to the drain tunnel to lower a charge if needed to loosen debris in the tunnel. Concrete from the dam would be disposed of in a new location: the existing flowline alignment between the dam and the surge tank (Figures 2 through 4). Also, wood and metal from the flowline would be temporarily stored at a location different than in the 2007 Final SEPA SEIS. Details of the proposed action are described in the Project Removal Design Report (PacifiCorp Energy 2009a).

3.1 DAM REMOVAL ACTIVITIES

In order to implement the terms of the Settlement Agreement and perform the removal and associated restoration work, temporary work areas, staging areas (SAs), and access roads (ARs) would need to be established and utilized. All locations were chosen to minimize potential impacts by establishing them in or near previously used access roads and work areas when possible.

3.1.1 Staging Areas and Disposal Areas

The concrete to be removed from the dam would be placed in the flowline alignment between the dam and the surge tank instead of at SA-3 as previously proposed. The flowline location is essentially a bench cut into the hillside above the White Salmon River and is approximately 35 feet wide by 5,100 feet long (Figures 2 through 4). After the flowline is removed, small ephemeral streams would be culverted. The concrete blocks and rubble would be hauled along the flowline alignment as far as the northernmost flowline trestle (Figure 3) and placed so that the overall shape of the hill would blend with the natural

contours once the concrete is covered and vegetated. Concrete to be placed nearer the surge tank would be hauled along the Powerhouse Road and on the access road to the surge tank, then along the flowline alignment as far as the northernmost trestle. Concrete from the surge tank also would be placed in this area rather than in the spillway below the surge tank. The spillway would be left in place and public safety protections installed. The concrete deposited along the flowline alignment would be protected as needed from rainfall leaching during the wet season and then during the dryer seasons covered with sediment that would be hauled in from the drained reservoir, possibly supplemented with soil material originally removed from the flowline alignment and placed in adjacent berms. The surface of the soil cover would be stabilized and revegetated according to specifications in the Erosion Control Plan (PacifiCorp Energy 2008b) and the Revegetation and Wetlands Management Plan (PacifiCorp Energy 2009b).

While concrete recycling is the preferred disposal method, it is unlikely to occur. If it does, it would occur at a recycling site not yet identified that is assumed to be independent of the Condit project and to have or acquire its own permits. For analysis purposes in the Final SEPA SEIS, the site was assumed to be within 30 miles of Condit Dam and to require hauling the concrete on SR 14 and SR 141. The concrete crushing for recycling would occur at the recycling site.

A temporary disposal/storage area for the wood and metal from the wood-stave flowline and penstock would be established on the site where the operator's houses would be removed (SA-6 on Figure 4), rather than on property owned by the Becker family located a few hundred feet east of the flowline. The Becker site was designated SA-5 in the Final SEPA SEIS. This site will not be used and therefore there would be no associated impacts.

The wood from the flowline may go to a facility to be remilled for use in other wood-stave pipelines, remilled as lumber, or disposed of off site if not suitable for reuse. The steel from the flowline hoops and other facility components may be stored temporarily at the site where the operator's houses would be removed or other staging locations before it is hauled away for recycling. Under the new removal plan, SA-4 would not be used and therefore there would be no associated impacts.

At the conclusion of the proposed dam removal actions, all temporarily disturbed areas, including the staging areas, would be regraded and revegetated consistent with the proponent's revegetation plan.

3.1.2 Access Roads

Access roads (ARs) throughout the project area are necessary to perform the removal operations defined by the Settlement Agreement and the associated reclamation and monitoring activities. Although most of the work areas can be accessed using established roads, some areas would require reestablishing roads that have become overgrown and others would require new segments of road to be built to access specific facilities. Most of the ARs were discussed in the Final SEPA SEIS. With the changes since the Final SEPA SEIS, AR-3 to SA-3 would be widened to 30 feet (Figure 2), as would AR-7 and AR-8 to the surge tank and flowline (Figure 4). Up to three additional ARs between Powerhouse Road and the

flowline alignment may be required for placement of concrete blocks and rubble and the covering soil. AR-13, as proposed in the Final SEPA SEIS, would not be needed or built, and therefore there would be no associated impacts.

3.2 DAM BREACHING AND REMOVAL

3.2.1 Concrete Dam Removal, Storage, and Disposal

Approximately 34,000 cubic yards of concrete from the dam would be disposed of in the flowline alignment. Up to about 2,500 cubic yards of steel-reinforced concrete would be removed from the surge tank. Concrete blocks and rubble remaining from the dam would be hauled to the existing flowline alignment between the dam and the surge tank, and rubble from the surge tank would also be disposed of in the flowline alignment. Sediment from the drained reservoir and soil from berms adjacent to the flowline would be used to cover the concrete. The area would be contoured for drainage and revegetated.

3.2.2 Upstream Cofferdam Removal and Disposal

Historic photographs and drawings show that a cofferdam system was used in the original construction of the dam and was left behind in the reservoir and subsequently flooded. This cofferdam would be removed as soon as practicable after draining of the reservoir following dam breaching. It would be important to remove the cofferdam as soon as practicable so that it would not hold back fine sediments that could kill fish and exceed water quality criteria after the river has been reoccupied by fish and so that it would not block upstream fish passage. Removal of the cofferdam may require explosives and would be conducted under the blasting plan to be required of the contractor.

3.2.3 Monitoring

Monitoring is proposed to demonstrate that performance criteria are met for several of the management plans and to provide useful information for other dam-removal projects in the future. Monitoring would continue during the post-removal management period. The proposed monitoring would include:

- Continuous turbidity and pH monitoring at a minimum of two new water quality monitoring sites using electronic data loggers
- Monitoring for mercury in sediments at the mouth of the White Salmon River and in three places in the Columbia River
- Visual inspection of all fugitive dust sources and effectiveness of dust control methods
- Monitoring revegetation and presence of noxious weeds
- Topographic sediment mapping to assess progress of sediment removal and bank stabilization

- Visual inspection of stormwater erosion control measures and their effectiveness
- Identification and monitoring of wetland establishment areas
- Fish passage evaluation and record keeping

The duration of the monitoring is variable, but would generally continue until specific performance criteria are met.

3.3 SCHEDULE

Project removal activities would commence in August 2010 if all necessary permits (including the final resolution of appeals), easements, and contracts have been obtained sufficiently in advance of that date to practicably begin construction. The dam would be breached in October 2010. If all necessary permits, easements, and contracts are not obtained in sufficient time, the commencement of construction and dam breaching would be deferred to the following August and October, respectively, because the scheduled seasonal timing of removal activities minimizes their environmental effects. The demolition and removal of Condit Dam and other project facilities are estimated to take one year. There are no plans to remove the powerhouse. Removal is scheduled to be completed by fall of 2011. The project schedule is outlined in Table 2.

**Table 2
Proposed Project Schedule**

Time Period	Action
May	Mobilization
June – September	Water line relocation and bridge protection
August – October	Site layout – setup and clearing staging areas, set up barge in reservoir
August – September	Construction of access roads, including road to spillway slab below dam
September	Construct drain tunnel
September – October	Remove spillway gates and tailrace wall
September - October	Remove reservoir decks, docks, and log boom, clear sediment and debris upstream of drain tunnel
October	Remove final drain tunnel plug and commence reservoir sluicing
October - November (post-breach)	Remove upstream cofferdam
November (Year 1)	Demolish headworks
November– July (Year 1)	Demolish dam
October – May (Year 1)	Remove flowline, surge tank, penstocks, and powerline
May – July (Year 1)	Haul sediment from drained reservoir and cover concrete
February – April (Year 1)	Modify powerhouse and fill tailrace, as required
August (Year 1)	Demobilization from dam removal activities

Source: PacifiCorp Energy (2009a)

Note: Years noted are sequenced from the time of reservoir drawdown. Year 1 is the yearlong period following the drawdown and breaching of the dam.

4.0 AFFECTED ENVIRONMENT, IMPACTS, MITIGATION MEASURES, AND SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

4.1 GEOLOGY, SOILS, AND SEDIMENTS

4.1.1 Affected Environment

At the time of dam removal, an estimated 2.4 million cubic yards of sediment (2.3 million cubic yards according to Finley Engineering Co. [2006]), primarily clay, silt, and sand with some gravel, would have accumulated in Northwestern Lake since the construction of Condit Dam in 1913. More than 7,500 feet upstream from the dam, the size of reservoir sediments is predominantly in the sand (.075–4.75 mm) and gravel (4.75–75 mm) range, the coarsest fraction especially upstream from Northwestern Lake Bridge. Closer to the dam, the sediments are primarily sand and silt (.0039–.075 mm), and finally silt and clay (<.0039 mm) nearest the dam. Tributary streams to the reservoir have formed deltas into the reservoir with sand and gravel as well as cobbles (75–300 mm). The fine-grained portion of the river's suspended load has either passed through the dam to the lower reaches of the river or collected in the reservoir basin behind the dam.

Laboratory analysis of the lake sediments indicated a limited distribution of low to trace concentrations of chlorinated pesticide residue and selected metals. Metals were generally present at concentrations consistent with established background levels. Volatile organic compounds, polynuclear aromatic hydrocarbons, dioxins, and polychlorinated biphenyls were not detected in the lake sediment samples (FERC 1996). A 2007 laboratory analysis of the fine sediments in Northwestern Lake indicated that they contain an average concentration of mercury of 0.72 mg/kg (Kleinfelder 2007a). The maximum concentration of mercury detected was 2.03 mg/kg. These values are beyond the screening guidelines contained in the *Sediment Evaluation Framework for the Pacific Northwest* (USACE et al. 2009). The mercury concentration in a sediment sample from the Underwood In Lieu Fishing Access Site at the confluence of the White Salmon and Columbia Rivers also was found to be 0.72 mg/kg. The elevated mercury concentrations are attributed to natural volcanic processes and are within the range of background concentrations reported in the literature. The fine sediments contained behind Condit Dam would get flushed downstream when the dam is removed and could adversely impact water quality and aquatic resources downstream (see Sections 4.2 and 4.5).

4.2 WATER RESOURCES

The water resources discussed in this section include surface water features such as rivers, streams, and lakes, as well as groundwater that might be affected by activities associated with removal of Condit Dam, the resulting actions during removal, or the absence of the reservoir. Adjacent areas that might affect the water also are discussed.

4.2.1 Affected Environment

The affected environment for surface water resources includes Northwestern Lake, the White Salmon River downstream from Condit Dam, and the portion of the Columbia River downstream from the confluence with the White Salmon River. Upland areas where work would occur that could affect water resources include the area immediately surrounding Condit Dam, access roads to work areas and staging areas, the tailrace from the power plant, the corridor occupied by the wood stave pipeline where concrete from the dam would be disposed of, and the spillway from the surge tank to the White Salmon River.

4.2.2 Impacts

Dam Breaching and Removal

Dam breaching and removal would result in water quality impacts (suspended sediment) in the White Salmon River and the Columbia River downstream from the mouth of the White Salmon River. Elevated mercury levels in the fine sediment to be released from Northwestern Lake also could affect downstream water resources. Management of the concrete from the dam would include disposal of the concrete debris on the existing flowline alignment between the dam and the surge tank. The concrete debris would be covered by sediment removed from the drained reservoir and possibly excavated fill from the original flowline construction. Potential surface water and groundwater quality impacts include increased sediment load and changes to pH.

Impacts Associated with Elevated Mercury Levels in Fine Sediments

The fine sediments in Northwestern Lake contain an average concentration of mercury of 0.72 mg/kg (Kleinfelder 2007a). The maximum concentration of mercury detected was 2.03 mg/kg. These values are beyond the screening guidelines contained in the *Sediment Evaluation Framework for the Pacific Northwest* (USACE et al. 2009). The elevated concentrations are attributed to natural volcanic processes and are within the range of background concentrations reported in the literature (Kleinfelder 2007b). The mercury in the fine sediments contained behind Condit Dam would get flushed downstream when the dam is removed and would adversely affect downstream water quality.

In January 2009, GEC (*Supplemental Mercury Sediment Analysis*) evaluated mercury concentrations in the White Salmon River and the Columbia River resulting from dam removal (GEC 2009a). Three scenarios were evaluated. Scenario 1 assumed that all of the 876,000 cubic yards of fine-grained sediment in the reservoir would be eroded over a period of three months. This is considered the worst-case, as the high TSS levels would persist for the longest time period. Scenario 2 assumed that only 75 percent of the fine-grained sediment would be eroded into the river with a relatively slow release. Scenario 3 also assumed that only 75 percent of the fine-grained sediment would be eroded into the river, but it also assumed a high initial TSS and about 50 percent of the fine-grained material being eroded in the first day. The third scenario is stated as the most likely to occur.

In an October 2009 *Drain Tunnel Blocking Investigation* (GEC 2009b) the analysis concluded that the range of TSS and mercury concentrations over time during the sediment flushing from the reservoir is well bracketed by the three scenarios. It also concluded that if

partial blockage of the drain tunnel occurs, it would not occur until at least two hours after the opening of the drain tunnel. Even if a worst-case scenario of 90 percent blockage occurred and was not cleared, the fine sediment would drain within one week. Because plans for removal of blockages that will be required of the contractor are likely to be effective, a short drainage time is much more likely, and Scenario 3 is still the most likely to occur.

Mercury concentrations were estimated at four locations: 1) in the White Salmon River immediately downstream from Condit Dam, 2) in Bonneville Pool, 3) downstream of Bonneville Pool, and 4) in the lower Columbia River near Quincy, Oregon. In Scenario 3, mercury concentrations would likely exceed Ecology's acute and chronic water quality criteria for the protection of aquatic life in the White Salmon River for 20 and 49 days, respectively, following dam removal. Most of those days of exceedence would be consecutive days following the start of draining the reservoir, but an isolated day or days corresponding with storm/high-flow events or active management could occur through the fall, winter, and spring following breaching of the dam. Exceedences are not expected after that period. Mercury concentrations would be sufficiently diluted once entering the Columbia River that the Ecology acute criterion for the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life would likely be exceeded for 17 days in the Bonneville Pool, and for seven days at Quincy, Oregon.

In Scenario 2, mercury concentrations would likely exceed Ecology's acute and chronic water quality criteria for the protection of aquatic life in the White Salmon River for 33 and 93 days, respectively, following dam removal. Mercury concentrations would be sufficiently diluted once entering the Columbia River that the Ecology acute criterion for the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life would likely be exceeded for 22 days in the Bonneville Pool, and for four days at Quincy, Oregon.

In Scenario 1, mercury concentrations would likely exceed Ecology's acute and chronic water quality criteria for the protection of aquatic life in the White Salmon River for 40 and 117 days, respectively, following dam removal. Mercury concentrations would be sufficiently diluted once entering the Columbia River that the Ecology acute criterion for the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life would likely be exceeded for 39 days in the Bonneville Pool, and for six days at Quincy, Oregon.

In all three scenarios, most of the days of mercury criteria exceedence would be consecutive days following the start of draining the reservoir, but an isolated day or days corresponding with storm/high-flow events or active management could occur through the fall, winter, and spring following breaching of the dam. Exceedences are not expected after that period in any of the scenarios, given planned active management of sediments as needed depending on weather and river flow.

People are not likely to ingest water from the White Salmon River during the time the mercury levels would be elevated because of the associated high suspended sediment load and turbidity. Wildlife species that are not already assumed to be severely affected by the

initial high sediment concentrations would have other choices of water for drinking and would not be likely to ingest enough mercury from drinking muddy water to be affected by it.

Concrete Disposal

Approximately 34,000 cubic yards of concrete from the dam would be disposed of on site. Approximately half of the dam could be removed in large blocks (4 feet by 6 feet by 10 feet). The remaining portion would be blasted into smaller rubble. The concrete would be transported by truck and placed along the existing flowline alignment between the dam and the surge tank. This alignment is an approximately 5,100-foot-long by 35-foot-wide bench cut into the hillside above the White Salmon River. The flowline is generally within 200 feet of the river, but elevated 80 to 100 feet above it.

There is no toxic byproduct associated with the concrete. However, a potential concern with on-site disposal of concrete is changes to the pH of local waters as a result of contact with fine concrete rubble and debris. Lime (CaCO_3), the common binder in cement, when in solution, has the ability to increase the pH of water beyond the range tolerable for most biota. This is normally a concern in concrete mixing operations, where the washout water can approach a pH of 12. The primary concern is the potential for water leaching off the concrete with an elevated pH and running into waters where effects on aquatic biota might occur.

The proposed method of dam demolition would result in large blocks and large-dimension rubble from cutting and blasting. The amount of surface area of fresh concrete faces would be limited. Only a very small amount of concrete powder would be expected to adhere to the larger pieces of debris (see Final SEPA SEIS Section 4.2-10). In addition, very little water would move past the concrete, since all streams and seeps would be separated from the concrete, and the soil covering would be contoured to avoid concentrating infiltration where the concrete is placed. As a result, changes to the pH of water in the vicinity of the disposal site are expected to be minimal.

The natural buffering capacity of the native soils also would minimize any adverse effects of the concrete disposal. The native soils in the vicinity of the disposal site are mapped as Hood loam (Haagen 1990). This is a very deep, well drained soil that formed in silty or loamy lacustrine deposits. The disposal site is on a lacustrine terrace escarpment with 30 to 65 percent slopes. Hood soils typically are fine to loamy-textured (loams or silt loams with 18 to 25 percent clay.) They are slightly to moderately acid (pH 5.7 to 6.2) and have moderately-high cation exchange capacities. Based on their texture, organic matter content, mineralogy, and acidity, these soils would be expected to have a moderately high ability to buffer increases in soil pH.

The nature of the concrete disposal site would limit potential adverse effects. Rather than being placed in a single large pile, where leachate can concentrate, disposal would occur along a linear bench. Alkaline leachate from the debris would not concentrate in a single location, but would be dispersed along the entire length of the disposal site. The small amount of flow in contact with fine concrete debris would easily infiltrate downslope of the disposal site and be buffered. Therefore, there should be no change in pH in the White Salmon River as a result of the concrete disposal along the flowline alignment.

To further limit the potential of alkaline runoff reaching the White Salmon River, disposal zones would be kept a minimum of 100 feet (horizontal distance) from the ordinary high water mark of the river. Appropriate disposal zones would be marked along the flowline alignment. This 100-foot buffer currently contains mature forested vegetation that would greatly minimize any potential water quality impacts to the White Salmon River. In addition, streams and seeps that cross the flowline alignment would be culverted and separated by membrane material from the concrete. These features have been mapped in the vicinity of the flowline alignment and are shown on the Erosion Control Plan (PacifiCorp Energy 2008b). Based on preliminary calculations, the flowline alignment would provide an adequate area for disposal of all concrete from the dam and surge tank.

The concrete blocks and rubble would be capped with approximately 18 inches of soil/sediment excavated from the drained reservoir and possibly from the original flowline excavated fill. Excavation areas would be chosen where fine to medium-grained sediment is available. Depending on the nature of this sediment, additional topsoil or soil amendments may be required on top of the sediment to promote establishment of vegetation. The disposal area would be contoured for drainage and seeded as per the Revegetation and Wetlands Management Plan (PacifiCorp Energy 2009b). Additional erosion and sedimentation controls are listed in the Erosion Control Plan and include silt fencing, culverting and protection of stream crossings, surface roughening, and mulching (PacifiCorp Energy 2008b). No bare soil would be left exposed during the rainy season. The Revegetation and Wetlands Management Plan recommended the use of bonded-fiber matrix composed of wood fiber mulch and tackifier to stabilize reservoir sediments (PacifiCorp Energy 2009b). Sediments can be seeded prior to placement of the bonded-fiber matrix and the plants can emerge through the material. The use of unconsolidated reservoir sediments to cap the concrete disposal site may require the use of this material or erosion control blankets, especially in steeply sloping areas. These measures would also reduce the potential for the soil/sediment cover to be moved by wind. Since mercury in the sediment is not leached (mobilized by water moving through the sediment), no impacts from the mercury are anticipated.

The Erosion Control Plan provides for maintenance and monitoring of the erosion control measures (PacifiCorp Energy 2008b). In addition, water quality monitoring in the White Salmon River has been proposed in the Environmental Monitoring Plan (PacifiCorp Energy 2009e). These sites would continuously measure turbidity and pH using electronic data loggers. If runoff from the concrete disposal site is increasing the pH in the river, this would be detected at the monitoring sites. In this unlikely event, contingency measures to deal with the alkaline runoff would be proposed. These could include redirecting water or chemically treating the runoff on site to reduce pH.

The concrete in the spillway below the surge tank is a somewhat different situation from the flowline alignment. The lower end of the concrete spillway is within about 50 feet horizontally and 50 feet vertically from the White Salmon River. Mostly exposed bedrock lies between the end of the spillway and the river. The slope where the spillway is located is very steep, falling more than 80 feet in a horizontal distance of about 140 feet. The impacts of leaving the spillway in place (primarily safety risks to be managed) appear to be lower

than trying to fill and obliterate it. Therefore, leaving it in place and establishing fencing, signage, and other measures to protect public safety is now the proposed approach.

4.2.3 Mitigation Measures

Concrete Disposal Areas

Implement the best management practices (BMPs) as described in the Erosion Control Plan (PacifiCorp Energy 2008b) and Dust Control Plan (PacifiCorp Energy 2008d). Proper implementation of these BMPs should minimize turbidity in stormwater runoff related to disturbance of soil in the upland areas and changes in pH.

Dam Breaching

The dam-removal contractor will be required to have a detailed plan in place for quickly removing blockages under various conditions that may occur in the drain tunnel during flushing of the reservoir.

Sediment Removal

The objectives of the Sediment Assessment, Stabilization, and Management Plan have been modified to clearly state that reducing the duration of sediment impacts is one of the primary objectives. A range of measures has been identified that can be applied during the sediment removal process to accomplish the objective of reducing the potential for drawn-out impacts resulting from stranded sediment that would move in later years. Depending on how rapidly the fine-grained material moves as the reservoir drains, some measures, for example, ones similar to those used to safely trigger snow avalanches, may be applied within the first few days after the reservoir drains to dislodge unstable deposits of fine-grained sediment. Some active removal methods may best be applied when flows are high within the first few weeks. The choices of methods and timing will depend on several factors that cannot be known beforehand, such as weather conditions, river flows, and how the moving materials respond to the forces in play.

To avoid the potential for fine sediment lodged behind the cofferdam from being released late and causing a separate spike in turbidity levels and associated impacts, the cofferdam will be removed as soon as practicable after the initial draining of the reservoir and while turbidity levels are elevated from the sediment moving out of the reservoir area. Explosives may likely be required to accomplish the removal.

With these measures, the predicted most likely scenario for sediment removal (GEC 2009a) will be made even more likely and can be managed to fit within the bounds set by the modeled assumptions.

4.2.4 Significant Unavoidable Adverse Impacts

Significant unavoidable adverse impacts with respect to surface water include massive turbidity and sediment transport as part of the dam breaching and removal, as previously identified in the Final SEPA SEIS. After the Final SEPA SEIS was published, additional sediment sampling found mercury levels in Northwestern Lake sediment that exceed screening guidelines, warranting further review. Additional analysis concluded that mercury concentrations would likely exceed Ecology's acute and chronic water quality criteria in the

White Salmon River for 20 and 49 days, respectively, following dam removal (GEC 2009a). Mercury concentrations would be sufficiently diluted once entering the Columbia River that the acute water quality criterion would not be exceeded within and downstream of Bonneville Pool. The Ecology chronic water quality criterion would likely be exceeded for 17 days in the Bonneville Pool, and for seven days at Quincy, Oregon. The impacts from mercury would be unavoidable, but would not rise to the level of a significant impact on organisms.

4.3 AQUATIC RESOURCES

Aquatic resources in this document are the fish, aquatic insects, and other aquatic invertebrates that live in the waters of the project, as well as the habitat elements within and adjacent to the waters that they rely upon. Other organisms, including amphibians and some reptiles, birds, and mammals, spend significant parts of their life cycles in the water or have critical linkages to the water. These organisms could be considered aquatic resources, but in this document, they are primarily covered in the wildlife section.

4.3.1 Affected Environment

The affected environment for aquatic resources includes Northwestern Lake, the White Salmon River below Condit Dam, the Columbia River downstream of the mouth of the White Salmon River, the river and stream channels inundated by Northwestern Lake, and the White Salmon River and its tributaries above Condit Dam up to the maximum extent upstream that anadromous and fluvial salmonids may be expected to migrate. The aquatic resources would be affected by removal of the dam and reservoir and may be affected by activities in the area immediately surrounding Condit Dam, the access roads, and the work areas and staging areas.

Because the release of reservoir sediments following the breaching of Condit Dam is expected to kill or displace all fish and eggs in gravel present in the White Salmon River and temporarily eliminate anadromous spawning in the lower White Salmon River, a mitigation measure long agreed to is the capture and relocation of Chinook salmon spawners to maintain a population base. The Biological Opinion (NMFS 2006) approved trapping and hatchery rearing. However, a decision was made in early 2008 by the White Salmon Working Group (which includes the National Marine Fisheries Service, US Fish and Wildlife Service, and the Yakama Indian Nation) to perform adult Lower Columbia River (LCR) fall Chinook salmon out-planting upstream of Condit Dam during the year of dam removal in lieu of adult collection and subsequent hatchery propagation (Engle and Skalicky 2009). That process was conducted as a pilot study in fall 2008. The Washington Department of Fish and Wildlife estimated a 2008 White Salmon River spawning escapement of 775 LCR fall Chinook salmon, of which 296 were of hatchery origin and 479 were not externally marked. A capture goal of 500 LCR fall Chinook salmon was established to seed spawning habitat in the White Salmon River from the head of Northwestern Lake upstream to Husum Falls (Engle and Skalicky 2009).

A genetic analysis of juvenile Chinook salmon naturally produced in the lower White Salmon River downstream of Condit Dam (Allen and Connolly 2006) identified two

populations of juveniles, with the earlier group genetically similar to LCR fall Chinook and the later group genetically similar to upriver bright fall Chinook (Smith et al. 2007). The genetic analysis also found the LCR fall Chinook salmon from Spring Creek National Fish Hatchery to be genetically similar to the LCR fall Chinook salmon juveniles captured in the White Salmon River (Smith et al. 2007).

In September 2008, to assess the feasibility of capturing and out-planting LCR fall Chinook, biologists tested several capture methods in the lower White Salmon River. Beach seines were adopted for the capture of Chinook spawners based on catch efforts and the difficulties in deploying and maintaining gill nets. Ninety hatchery-origin LCR fall Chinook salmon (37 male and 53 female) were captured in the lower river and 333 Chinook (162 male and 171 female) were collected from the Spring Creek National Fish Hatchery, for a total of 423 adult Chinook spawners. These fish were transported and released upstream of Condit Dam (Engle and Skalicky 2009).

LCR Chinook salmon were released at one of two sites in the upper White Salmon River above Condit Dam. The first site was located at the head of Northwestern Lake at the public boat ramp located at river mile (RM) 4.9. The second site was located at RM 7.5 and is just downstream of Husum Falls at a whitewater rafting take-out site. A total of 249 fish were released at the Northwestern Lake Boat Ramp and 174 fish were released near Husum Falls (Engle and Skalicky 2009).

A total of 35 of the planted fish were radio-tagged to track their movements, 25 at Northwestern Lake and 10 near Husum Falls. Radio-tagged fish at the Husum Falls release site demonstrated a strong fidelity to that area, while radio-tagged fish released at the Northwestern Lake site showed a large, variable amount of movement, with most fish showing an exploratory movement period between the upper and lower portions of Northwestern Lake (Engle and Skalicky 2009). No tagged fish were detected above Husum Falls. Fish from both release sites moved large distances, so the ability of LCR fall Chinook salmon to move within the river channel between RM 4.9 and RM 7.9 (Husum Falls) does not appear to be restricted.

Based on three redd surveys, a total of 80 redds was estimated, suggesting that the transport of spawners can be successful. A number of adjustments in the process were recommended, and presumably a similar transport of spawners would occur prior to breaching the dam in the fall of 2010.

4.3.2 Impacts

Impacts Associated with Elevated Mercury Levels in Fine Sediments

The duration of elevated mercury concentrations from suspended sediments in the White Salmon River would likely cause harm to aquatic organisms. However, it is already assumed that all fish and aquatic macroinvertebrates within the White Salmon River channel downstream of the dam would likely be killed or displaced by the load of suspended solids released during dam breaching. A study of the effects of exposure to high levels of suspended sediments on juvenile Chinook salmon indicated that mortalities over a 36-hour period begin to occur at 1,400 µg/L and that mortality reaches 90% at 39,000 µg/L.

(Newcombe and Flagg 1983). The concentration of suspended sediments in the White Salmon River following the breaching of the dam is predicted to exceed acute levels for a longer period than the concentration of water-borne mercury (GEC 2009a). Therefore, the elevated mercury concentrations would not contribute to additional mortality within the White Salmon River. During the high flows immediately following the breaching of the dam, the White Salmon River would comprise approximately 7% of the average flow of the Columbia River (G&G Associates 2004a and 2004b, GEC 2009a). As a result of the dilution in the Columbia River, total mercury concentrations within and downstream of the Bonneville Pool are not expected to exceed the Ecology acute mercury water quality criterion of 2.1 µg/L (GEC 2009a). Downstream of Bonneville Pool, the Ecology chronic criterion (0.012 µg/L) would likely be exceeded for seven to eight days. Within Bonneville Pool, the Ecology criterion would likely be exceeded for 17 days.

The mercury in the sediment in Northwestern Lake is likely under anaerobic conditions because of the depth of the water and sediment. Anaerobic conditions favor methylation of the mercury primarily at the sediment/water interface.

Most of the mercury present in the water-borne sediments would be inorganic mercury, rather than methyl mercury, (methyl mercury is far more toxic to fish). In a 2002 study, de Oliveira Ribeiro et al. (2002) exposed Arctic char (*Salvelinus alpinus*), a close relative of the native bull trout (*S. confluentus*), to a 96-hour acute concentration (15 µg/L) of inorganic mercury. Histopathological effects to gill tissue were observed within 12 hours and modifications of cilia of ciliated olfactory cells appeared after 24 hours. A partial recovery was seen in both tissues by the end of the 96-hour exposure period. The liver was little affected by the exposure to water-borne inorganic mercury. The maximum predicted concentration of mercury from water-borne sediments would be 28.768 µg/L in the White Salmon River, 0.056 µg/L in the Bonneville Pool, and 0.019 µg/L downstream of the Bonneville Pool.

Huckabee and Griffith (1974) found that the lowest concentration of water-borne mercury that had a significant effect on the hatchability of carp eggs was 3 mg/L. The concentration of water-borne mercury in the lower White Salmon River would be far below this level before spawning salmonids are able to utilize the lower White Salmon River for spawning.

Exposure to sublethal mercury concentrations of 1.0, 0.5, and 0.1 µg/L have been demonstrated to impair the ability of mosquito fish to avoid predation by largemouth bass (Kania and O'Hara 1974). Assuming that juvenile salmonids would be similarly affected, at predicted mercury concentrations following the breaching of Condit Dam (GEC 2009a), the ability of juvenile salmonids within the discharge plume in the Bonneville Pool may be slightly impaired for approximately 3 days and none downstream of the Bonneville Pool.

Juvenile salmon exposed to sublethal concentrations of water-borne mercury did not display elevated mercury concentrations when returning to spawn after four years at sea (Amend 1970).

The lack of acute mercury exceedance and the relatively short durations of chronic mercury exceedance in the Columbia River suggest that the dam breaching is not likely to result in

long-term impacts to aquatic organisms in the Columbia River associated with mercury toxicity. Any fish likely to be affected by acute mercury exceedance in the White Salmon River after the breaching of Condit Dam would have been killed or displaced by the high levels of suspended sediments present in the river immediately following the breaching of the dam and continued high levels of suspended sediments present during the period of elevated concentrations of mercury present in the lower White Salmon River.

Mercury in Stream and Bonneville Pool Substrate Sediments

The bioaccumulation and toxicity of mercury is influenced by several factors and the complex interactions among them. Kleinfelder (2008b) provides a technical summary of mercury cycling and toxicity to aquatic organisms. Mercury in water largely occurs in the inorganic form, mercury sulfide, which is insoluble and less harmful to fish. Under certain conditions, this can be converted into the more soluble organic form (methylmercury), which can accumulate to toxic levels in fish. Spangler et al. (1973) demonstrated that the methylation of mercury in sediments may be obviated by demethylation reactions by microbes, resulting in small or possibly zero net methylmercury release to the water. It is not possible to know the fate of mercury in the fine sediment that would be flushed into the Columbia River without more detailed and site-specific studies. Bioassays conducted on fine sediment from Northwestern Lake showed that mercury was in a form that could bioaccumulate in the food chain, though the sediment had no adverse effect on the life cycles of test species. The different and dynamic environments in the Columbia River would determine if and how much of the mercury enters the food chain.

The mercury in the fine sediments in Northwestern Lake and the lower White Salmon River downstream of Condit Dam is most likely from a natural source and is within the range of background concentrations reported in the literature (Kleinfelder 2008a). The expected mercury concentrations in the Columbia River are at the low end of the toxicity scale. Documented mercury concentrations in sediments of the Bonneville Pool and its tributary streams outside of the vicinity of the White Salmon River basin vary between 0.014 and 0.2 mg/kg (Table 3). The average documented mercury concentrations in sediments of the White Salmon River basin are 0.142 mg/kg, with 0.72 to 1.2 mg/kg reported from the Underwood In Lieu Fishing Access Site and the mouth of the river, and 0.02 to 2.03 mg/kg (0.724 mg/kg average) reported from Northwestern Lake sediments. Hence, the expected sediment mercury concentrations of fine sediments from Northwestern Lake that would be deposited in the lower White Salmon River and Bonneville Pool in the vicinity of the mouth of the White Salmon River, following the breaching of the dam, would be unlikely to exceed the existing mercury concentrations in sediments currently present.

The concentrations of mercury in walleyes collected in Franklin D. Roosevelt Lake and the upper Columbia River had no significant correlation to mercury concentrations of the sediments present at their collection locations (Munn and Short 1997). This was attributed to the bioavailability of mercury varying due to local differences in the physical and chemical environment and the preferred foraging locations of the fish. Mercury concentrations in the tissue of non-hatchery rainbow trout collected from Northwestern Lake range from 0.185 to 0.295 mg/kg (Table 3). Mercury concentrations from Bonneville tributary streams have ranged from 0.1 to 0.5 mg/kg (Table 3). Mercury concentrations in fish tissue collected from 18 lakes and 2 rivers in 13 counties of Washington State averaged 0.217 mg/kg (Ecology

2003). The mercury concentration in fish tissues of juvenile salmonids collected throughout tributaries of the Bonneville Pool is within the range of mercury concentrations of juvenile salmonids from Northwestern Lake, despite the elevated level of mercury in sediments of the White Salmon River basin relative to other stream basins draining into the Bonneville Pool.

The lack of correlation between mercury concentrations present in sediments and the tissues of juvenile salmonids collected in tributaries of the Bonneville Pool, as well as the relative health and abundance of salmonids in the White Salmon River despite the elevated levels of mercury in the basin's sediments, both suggest that the dam breaching is not likely to result in long-term impacts associated with mercury bioaccumulation to fish or their forage base in the Columbia River.

In addition, the deposited sediments would be deep enough (up to five feet) at the Underwood In Lieu Fishing Access Site and the adjacent Columbia River/Bonneville Pool that most of the volume would be effectively isolated from the organisms that might bioaccumulate the mercury. The clay and fine silt fraction would either be carried out to the Pacific Ocean or would be deposited over a broad area and diluted by other sediments being carried by the Columbia River and its tributaries.

Concrete Disposal

Water in contact with fine concrete particles at the concrete disposal site may have an elevated pH. If the pH rises too much, aquatic organisms can be adversely affected, and levels above pH 9 are likely to be increasingly lethal to salmonids, especially if the increase is rapid (Wagner et al. 1997). The likelihood of such a rise in pH is low (unlikely) because of dilution and buffering. Downstream from the powerhouse, the pH would be monitored continuously and compared with background levels. Any runoff of high pH water from the disposal sites is expected to be very limited, and would be diluted below harmful levels once reaching the river.

Beneficial Effects of Dam Removal on Fish

Potentially, 32.4 miles of new steelhead habitat and 15.3 miles of new salmon habitat may be accessed by anadromous salmonids after dam removal, increasing the run size and long-term viability of anadromous salmonid populations in the White Salmon River and increasing the availability of salmon and steelhead angling opportunities in the White Salmon River basin. The benefits of restoring access to anadromous and migratory salmonid habitat in the White Salmon River through the removal of Condit Dam are discussed in the Water Resource Inventory Area 29 limiting factors report (WCC 1999) and the White Salmon River subbasin summary report (Rawding 2000), and are part of the larger recovery effort for Endangered Species Act-listed salmonids in the lower Columbia River. New thermal refuge habitat for migrating Columbia River anadromous salmonids from other sub-basins also would be accessible after the removal of Condit Dam. Additional stream habitat for resident fish would be created in the lakebed of the former reservoir. Additionally, the small increase in water temperature below Condit Dam from the discharge of warmed reservoir surface water would be eliminated, improving the quality of thermal refuge, and the recruitment of gravel and large woody debris from sources above the dam site would be reestablished. Foraging, wintering, refuge habitat, and possibly spawning habitat would be created for Columbia River bull trout. Juvenile anadromous salmonids would provide forage for bull trout, and

salmon carcasses in the watershed above the Condit Dam site would provide an additional source of marine-derived nutrients to the watershed. There would be more suitable substrate for stream-dwelling aquatic macroinvertebrates after the stream substrate has stabilized.

4.3.3 Mitigation Measures

Drain Tunnel

Concrete rubble from construction of the tunnel would be captured and prevented from entering the river. After dam breaching, any blocks of concrete that get in the stream would be removed. Downstream from the powerhouse, pH would be monitored continuously and compared with background levels.

Sediment Transport

The dam will be breached in late autumn to take advantage of the rainy season when there will be fewer adverse effects on aquatic life.

Dislodging unstable sediment and woody debris would help ensure that the reservoir sediment is transported downstream over the predicted three- to five-year period and does not affect long-term water quality, pool depths, or spawning gravels.

Heavy equipment would be used to cut channels through tributary lake sediment delta at Mill Creek as needed to hasten the creation of a stable stream channel and prevent fish passage blockage by the sediment. The sediment assessment following reservoir draining will determine specific needs.

The White Salmon Working Group has proposed to capture the fall Chinook returning to the White Salmon River before the dam is breached in October, and transport them upstream of the project area to prevent the loss of a Chinook year-class.

Dam and Appurtenance Removal

Use of BMPs will avoid or minimize impacts associated with the use of haul roads, staging areas, and disposal sites.

Cofferdam removal would occur as soon as practicable after dam removal and probably be accomplished by blasting while suspended sediment levels exclude upstream migrating fish.

4.3.4 Significant Unavoidable Adverse Impacts

The duration of elevated mercury concentrations in the White Salmon River would likely harm aquatic organisms. However, it is already assumed that all fish and aquatic macroinvertebrates within the White Salmon River channel downstream of the dam would likely be killed or displaced by the load of suspended solids released during dam breaching. Therefore, the elevated mercury concentrations would not contribute to additional mortality within the White Salmon River.

4.4 WILDLIFE

Wildlife that might be affected by the project, especially the release of mercury in the sediment, include amphibians and some reptiles, birds, and mammals. Some spend significant parts of their life cycles in the water or have critical linkages to the water.

4.4.1 Affected Environment

Most of the wildlife species that might be affected by the mercury in the released sediment are those that would be found in or along the White Salmon River below the dam or at the In Lieu Fishing site at the confluence of the White Salmon and Columbia Rivers.

4.4.2 Impacts

Species and individuals (such as salamanders and frogs) that might be in the water at the time of the dam breaching are expected to be killed or displaced by the initial high sediment load. Ones that use the area occasionally or seasonally (other than the fall and winter when the highest turbidity is expected) would likely not ingest or absorb enough mercury to cause notable impacts.

4.4.3 Mitigation Measures

No additional mitigation measures are needed.

4.4.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to wildlife are expected.

4.5 TRANSPORTATION

Changes that affect transportation have been made in the project since the Final SEPA SEIS. The first change is that the proposed location for concrete disposal has been moved to the flowline alignment from SA-3. That means that the trucks hauling concrete would not travel on access road AR-3 or on Tamarack Lane (now known as Forester Lane). The new location for the concrete disposal also necessitates hauling soil material from the drained reservoir and possibly from original excavated fill from flowline construction to use as a topsoil cover over the concrete so that revegetation would be successful. If it required 1,000 truckloads of soil material and one assumed that the material was hauled over a period of three months, then about 15 loads per day would move over Northwestern Lake Road, SR 141, and Powerhouse Road, as well as the local access roads at each end.

4.5.1 Affected Environment

The roadways potentially affected by the proposed project were described in the Final SEPA SEIS, including SR 141, SR 14, Powerhouse Road, Graves Road, Northwestern Lake Road, and Cabin Road. Existing traffic volumes were reported, and based on the volumes, the roads were determined to be at LOS A. With expected growth, the LOS would still be at LOS A at the time the project is underway.

4.5.2 Impacts

The analysis in the Final SEPA SEIS showed that the number of vehicle trips (both employee vehicles and trucks) generated by the project would not change the LOS or operation of any of the roads. That would be true even if concrete recycling required trucks to haul the concrete off site. With the proposed changes, including the addition of trucks hauling sediment from the reservoir to cover the concrete in the new disposal area, the same result would occur. In other words, the increase in traffic is so slight that there would be no change in level of service or other operational measures.

4.5.3 Mitigation Measures

The mitigation measures listed in the Final SEPA SEIS would be unchanged.

4.5.4 Significant Unavoidable Adverse Impacts

With the implementation of the mitigation measures identified above, no significant unavoidable adverse impacts are expected to occur to transportation or traffic.

4.6 LAND USE/CRITICAL AREAS

This section evaluates land use and critical areas that could be affected as a result of the proposed action. Recreational impacts and mitigation measures were addressed in previous FERC documents and are not addressed in this section. Other discussions related to land use/critical areas were included in Water Resources (Section 4.2), Aquatic Resources (Section 4.3), Public Safety (Section 4.11) and Public Services (Section 4.12) of the Final SEPA SEIS (Ecology 2007).

The Federal Power Act would preempt state and local permits, as noted in FERC's May 18, 2006 declaratory order (except laws adjudicating proprietary water rights). It does not prevent FERC from ordering PacifiCorp to implement decommissioning requirements proposed by state and local agencies, including requirements that such agencies would include in state or local permits if such permits were not preempted.

4.6.1 Affected Environment

For the proposed action (dam removal), the affected area analyzed would be the area from the Northwestern Lake Bridge extending to the Underwood In Lieu Fishing Access Site adjacent to the Columbia River. Both Klickitat and Skamania Counties, on the east and west sides of Northwestern Lake and the White Salmon River, have land use jurisdiction. The US Forest Service manages lands upstream from the reservoir as part of the Lower White Salmon National Wild and Scenic River area. The US Forest Service also manages the Columbia River Gorge National Scenic Area, which extends over the entire area below the Condit Dam. The discussion below includes land use and critical areas.

Under Klickitat County's Shoreline Master Program, proposed construction activities within 200 feet of a jurisdictional shoreline (such as Northwestern Lake) would require a shoreline substantial development permit were the permit not preempted by federal law. This program

lists the proposed action area as a conservancy environment. The purpose and intent of a conservancy environment is to protect, conserve and manage existing natural resources and/or unique, valuable, aesthetic, historic and cultural areas in order to achieve sustained resource utilization and provide recreational opportunities.

4.6.2 Impacts

The primary action not previously analyzed would be the use of the flowline alignment to deposit the concrete from the dam, rather than at the originally proposed Staging Area 3. After the flowline is removed, the concrete blocks and rubble removed from the dam would be hauled and deposited along the flowline alignment and then covered with sediment hauled from the drained reservoir (possibly supplemented with material originally excavated from the flowline alignment and left in adjacent berms) and revegetated. During the better part of a year, construction activities would occur within the 200-foot shoreline zone designated as a conservancy area.

However, construction BMPs would apply stringent erosion control measures to protect the river from sedimentation or other effects. When the work is completed and the area restored to native vegetation, the natural resources that were compromised by the construction of the dam and flowline would be on a trajectory of recovery to natural conditions. The project and its results should be well within the guidelines of the conservancy designation. With less activity needed at SA-3, it should have fewer impacts on neighbors and facilities than were originally proposed.

4.6.3 Mitigation Measures

PacifiCorp has updated several plans and proposed construction BMPs to address impacts from the proposed action. Some of those measures address impacts to land use and critical areas. No new mitigation measures are proposed.

4.6.4 Significant Unavoidable Adverse Impacts

If the PacifiCorp Sediment Assessment, Stabilization, and Management Plan (PacifiCorp Energy 2008a), Erosion Control Plan (PacifiCorp Energy 2008b) and Revegetation and Wetlands Management Plan (PacifiCorp Energy 2009b), and other mitigation measures are implemented, no long-term unavoidable significant adverse impacts to land use/critical areas are anticipated. There would be short-term significant unavoidable adverse impacts to sites along or near the reservoir that would be used for work areas, construction staging or for disposal, and from the access roads that would be built in several locations.

Table 3
Mercury Concentrations in Columbia River Basin Salmonids and Stream Sediments
in the Vicinity of the White Salmon River and Bonneville Pool

Sample Location	State	River Mile ^a	Reference ^b	Total Organic Carbon (%)	Mercury Concentrations (mg/kg) in Sediment and Fish Tissue				
					Sediment	Fish	Chinook	Steelhead	Rainbow
Fifteen Mile Creek Basin	OR	192.0	Inouye 1991			0.219			
Mayer State Park	OR	180.8	Inouye 1991	0.6–2.3	0.03–0.09				
Klickitat River Mouth	WA	180.4	EIM 2008			0.266–0.51			
Klickitat River Mouth	WA	180.4	Inouye 1991				0.1–0.5	0.05–0.12	
Bingham Boat Basin and Marina	WA	170.8	Inouye 1991	1.3–1.7	0.08–0.13				
Port of Hood River	OR	169.0	Inouye 1991	1.2–2.5	0.05–0.09				
Hood River Marina	OR	169.0	Inouye 1991	0.74–0.76	0.03				
Hood River	OR	169.0	Inouye 1991				0.1–0.19		
White Salmon River Basin	WA	168.3	Kleinfelder 2007b		0.142 (avg.)				
White Salmon River Mouth	WA	168.3	Inouye 1991		0.72				
White Salmon River In Lieu Site	WA	168.3	Kleinfelder 2008a	1.2	0.72–1.20 (0.96 avg.)				
Northwestern Lake	WA	168.3	EIM 2008						0.295
Northwestern Lake	WA	168.3	EIM 2008						0.243
Northwestern Lake	WA	168.3	Inouye 1991		0.78				0.185–0.308
Northwestern Lake	WA	168.3	Kleinfelder 2007b	0.86–1.64	0.02–2.03 (0.724 avg.)				
Little White Salmon River	WA	162.6	Inouye 1991		0.014		0.08–0.15		
Wind River Boat Ramp	WA	154.7	Inouye 1991	1.5–3.7	0.04–0.05				
Wind River Mouth	WA	154.7	Inouye 1991	0.1–1.4	0.03–0.05				
Wind River	WA	154.7	Inouye 1991		0.054		0.08–0.15		
Government Cove	OR	151.6	Inouye 1991	1.7–3.7	0.08–0.13				
Herman Creek	OR	150.7	Inouye 1991	1.0–6.0	0.02–0.08				
Rock Creek Mouth	WA	150.0	Inouye 1991	0.2–5.8	0.04–0.07				
Bonneville Dam	OR	146.5	Inouye 1991	1.5–1.6	0.2				

a. River Mile represents the Columbia River Mile where sediments were collected or where the tributaries drain into the Columbia River.

b. See Section 5.0, References

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**APPENDIX A
RESPONSES TO COMMENTS**

LIST OF COMMENTORS AND LETTER NUMBERS

Agencies and Organizations

Letter Number	Commentor
A1.	American Rivers
A2.	Columbia River Inter-Tribal Fish Commission (CRITFC)
A2a.	CRITFC 2009
A2b.	CRITFC 2005
A3.	Friends of the Columbia Gorge and Gifford Pinchot Taskforce
A4.	Friends of the White Salmon River
A5.	Klickitat & Skamania Counties
A5a.	Foster Pepper
A5b.	Associated Earth Sciences, Cedarock Consultants, and A.C. Kindig & Co
A6.	PacifiCorp Energy
A7.	Port of Klickitat
A8.	Northwest Pipeline
A9.	United States Department of the Interior
A10.	Washington State Department of Natural Resources

Individuals

I1.	Henry Balsiger
I2.	Jack Fee
I3.	Rachel Haymon
I4.	Dawn Stover
I5.	Thomas C. Tasto

Letter A1. American Rivers

A1-1.

While we support the findings in the SEIS, we do have a couple specific comments on the analysis. First, although the SEIS focuses solely on the additional impacts associated with mercury concentrations and concrete disposal changes, the document is not consistently clear regarding this limitation. For example, in the Summary of Impacts and Mitigation Measures; Significant Unavoidable Adverse Impacts section, the SEIS makes findings ranging from “no additional unavoidable adverse impacts are expected as a result of the changes in the project” to “there are unlikely to be significant unavoidable adverse impacts from demolition of the dam.” The first statement clearly focuses on the two issues that are the subject of the SEIS, while the later seems to focus on dam removal generally. Ecology should make clear that the bulk of the dam removal analysis is set forth in the previous March 2007 SEIS and that this document is not intended to change that underlying analysis, except as it relates to the two limited issues.

Response: Clarifications were made in the text based on the comment.

A1-2.

Second, in Section 4.2 Water Resources, the SEIS discusses possible contingency measures in the event that pH from the concrete disposal site is detected in the river. These include redirecting water or chemically treating the runoff as two possible options. The mitigation measures, however, focuses on implementation of BMPs, but do not specify the role that the contingency play in ensuring that the impacts from the mercury would not rise to the level of significant impact.

Response: The contingency measures are intended to address only possible issues with pH. No contingencies are known to address mercury levels.

A1-3.

Finally, we urge Ecology to finalize this SEIS in as expeditious a manner as possible. As you know, a final SEIS is a prerequisite to Ecology being able to issue a final Clean Water Act section 401 certification which is critical to keeping dam removal on track for Fall of 2010. Issuance of a final CWA 401 certification will then allow the Federal Energy Regulatory Commission to take action on the pending Surrender Application and issue a dam removal order. As such, it is critical to move this forward to allow PacifiCorp to implement the dam removal Settlement Agreement that was reached ten years ago.

Response: Comment noted.

Letter A2. Columbia River Inter-Tribal Fish Commission (CRITFC)

Letter A2a. Columbia River Inter-Tribal Fish Commission 2009

A2a-1.

We concur with the draft Second SEPA that the sampling conducted revealed there are no significant differences between the range of inorganic mercury² accumulated in the Northwestern Lake sediments and sediments found in the Underwood Tribal In-lieu Site and that they are both of natural origin. Further, we concur that little if any of these small amounts of mercury will be transported to the Columbia River. The draft Second SEPA notes that impacts in the White Salmon River would be between 20 and 49 days, depending on the amount of sediment entrained into river flows.

Any effects on aquatic biota are likely to be minimal. The majority of the Columbia River adult salmon and steelhead runs would be well upstream at the time the dam would be removed. Thus, resultant sediment flows moving downstream from dam removal that may contain trace amounts of mercury would not affect these anadromous salmon runs.

Response: Concurrence noted.

A2a-2.

The second focus of the second draft Second SEPA document is changing the deposit of concrete rubble from the dam to the flow alignment instead of a staging area. We concur with the draft Second SEPA that placing the smaller rubble in this area along a bench some 80-100 feet above the river and then covering it with native soils. The distribution of the rubble and the distance from the river of the rubble placement within native soils should minimize or eliminate concerns about increases in river pH from rubble contact with groundwater. Erosion control methods and revegetation will be used as additional methods to eliminate the possibility of rubble or water that comes in contact with rubble to reach the White Salmon River.

Response: Concurrence noted.

A2a-3.

We encourage Ecology to expedite release of the 401 Certificate to fulfill the Settlement Agreement and meet the schedule of removing Condit Dam in late October 2010.

Response: Comment noted.

Letter A2b. Columbia River Inter-Tribal Fish Commission 2005

A2b-1.

While there is much good information in the draft SEPA, we find that there are several conclusions that are speculative and not justified by data or scientific analyses. The lack of inclusion or reference of the White Salmon Subbasin Management Plan (NWPPC 2005) is a significant omission. There is much information in this plan that should be utilized in the final SEPA on fish stock status, habitat restoration projects and fish restoration assuming Condit Dam removal. In addition, the Joint Agency/Tribal Plan for Ecosystem Restoration of the White Salmon River has many elements that would be useful for inclusion in the final SEPA (CBFWA 1995) as well as references to important literature of the ecology of rivers (Vannote et al. 1980; Ward and Stanford 1989; ISG 1996). We generally concur with the comments on the draft SEPA filed by NMFS and American Rivers.

Response: We apologize for missing the November 18, 2005 comment letter. We acknowledge that the additional references would have made the SEIS more complete in its documentation. Since conclusions reached in the FSEIS are not being changed in this Second Supplement, no additions are being made at this time.

A2b-2.

There are not likely to be turbidity spikes during the late summer and early fall due to lack of runoff after the dam is removed when most of the Columbia and Lower Snake adult salmon runs are passing by the White Salmon River, based upon historical run timing data (Corps 2004).

Response: Observations noted. Conclusions would not change.

A2b-3.

The FERC 2002 Final Supplemental Environmental Impact Statement notes that while the R.W. Beck Report predicts that pH levels would generally be increased, the high organic content and associated acidity of the reservoir sediments could limit an increase in pH. To categorically state that the pH levels would be increased is speculative.

Response: We also noted the rapid buffering effect of the water and sediment.

A2b-4.

It is also speculative to state that “all fish and aquatic macro-invertebrates within the White Salmon River channel downstream of the dam will likely be killed by the load of suspended solids...”. Lloyd (1987) cites studies showing that adult chinook salmon avoid and adult coho salmon are displaced by waters containing sediment amounts that are in the range expected in the White Salmon after removal of Condit Dam. Thus, it is

possible that adult fish in the lower White Salmon or Bonneville pool will migrate away from the sediment plume as it is established. The fishery managers timed the dam removal for the period after the nearly all of the fall chinook, coho and steelhead runs in the Columbia River had passed the White Salmon River (Beck 1998).

Response: The language has been changed to include “or displaced”.

A2b-5.

Further, macroinvertebrate populations may be reestablished within one or two years after dam removal as noted in dredging disturbance studies in the Lower Snake River by Bennett et al. (1992).

Response: We also noted rapid reestablishment of macroinvertebrates being expected.

A2b-6.

Any chum salmon that enter the White Salmon are most likely strays from the Hamilton Creek metapopulation below Bonneville Dam. This metapopulation below Bonneville Dam will not likely be impacted by sediments from dam removal. Chum salmon have a difficult time ascending the Bonneville fish ladders.

Response: These comments reinforce conclusions made in the SEIS.

A2b-7.

The draft SEPA fails to note that increased turbidity from the dam removal could increase juvenile salmon survival through the Bonneville pool and downstream Bonneville Dam. Higher levels of turbidity have been correlated with increased juvenile survival and overall salmon productivity as it assists them in avoiding predators (Junge and Oakley 1966; NMFS 2005; Connor et al 2003). Further, Bisson et al. (1988) noted increased juvenile salmon coho growth rates in rivers impacted from the Mount St. Helens eruption. Thus, other factors, such as sediment distributions through watersheds, may increase food forage bases. In addition, it is reasonable to expect that additional distribution of large woody debris in the lower White Salmon after dam removal will increase salmon rearing habitat and productivity.

Response: These factors are acknowledged. They may serve to reduce the effects or speed the recovery.

Letter A3. Friends of the Columbia Gorge and Gifford Pinchot Task Force

A3-1.

Friends and the GP Taskforce strongly support PacifiCorp's proposal to remove Condit Dam from the White Salmon River. We generally agree with the conclusions of the DSEIS and provide more specific comments below.

Response: Comment noted.

A3-2.

Of equal importance, we are concerned about the length of time it has taken to complete SEPA review of the proposed project. We encourage the Department of Ecology to put SEPA review on a fast track for completion so that the Department can render a decision on water quality certification. This will allow the Federal Energy Regulatory Commission to complete its review and ensure expedient removal of the dam.

Response: Concern acknowledged.

A3-3.

The DEIS primarily analyzes the potential consequences of draining the reservoir behind Condit and releasing sediments laden with elevated levels of mercury. The DSEIS properly acknowledges that there will be short-term adverse impacts from releasing sediment with elevated levels of mercury. The DSEIS also acknowledges that the elevated mercury levels correspond to natural background mercury levels in the area and that water quality standards will be impaired for only a short period of time. As such, the release of sediments will not lead to long-term direct impacts, much less indirect or cumulative impacts. The short-term impacts of causing elevated mercury levels in the water column over a short period of time do not outweigh the well-documented long-term benefits of restoring anadromous fish passage to the White Salmon River.

Response: Concurrence noted.

A3-4.

The Department should provide more analysis of the likely impacts of depositing concrete and sediment to restore the contours of the flow line. The DEIS does not analyze the potential impacts of using sediments with elevated mercury levels to cap the concrete deposited in the flow line. While mercury levels are consistent with background levels within the basin, the Final EIS should analyze the potential impacts of using the sediments as topsoil. This should include risks of dispersal through wind and water erosion.

Response: Analysis was added.

A3-5.

The abandoned flow line may be an appropriate location for a recreational trail in the future. The Final EIS should acknowledge this potential and analyze whether the proposed restoration plan would adversely impact potential recreational uses.

Response: While the attractiveness of a relatively flat bench for a trail may be recognized, one might question the viability of the flowline alignment for a trail, since it would only be a mile long, and it would provide no access to the river or any other likely destination. Disposal of the concrete in the alignment would not preclude future location of a trail there, but it would make the bench on the slope much less pronounced. Also, revegetation would not tend to favor an open corridor conducive to easy trail creation.

Letter A4. Friends of the White Salmon River

A4-1.

Friends of the White Salmon River is a signatory to the Settlement Agreement to decommission and remove Condit Dam. We feel that the possible environmental impacts of dam removal have been thoroughly studied. We urge the Washington State Department of Ecology (DOE) to complete the SEPA review and issue the water quality certification quickly.

Response: Comment acknowledged.

A4-2.

On the issue of mercury in the sediment, the DSSEIS concludes that the mercury is within the range of background levels and that acute and chronic toxicity effects from the release of sediment are negligible. We appreciate the facts and analysis provided to support this conclusion, and we agree with the conclusion.

Response: Agreement noted.

A4-3.

On the issue of the placement of concrete along the flow time, the DSSEIS concludes that “the erosion control and revegetation measures to be implemented are expected to prevent any chance of the pH rising in the White Salmon River.” We find the analysis presented to be convincing, we believe that the management plans are careful and thorough, and we support the conclusion that the concrete does not pose a risk to water quality.

Response: Concurrence noted.

A4-4.

We would like the relevant management plan (Erosion Control or Revegetation, whichever it may be) to consider whether the sediment should be in contact with the concrete or whether the concrete should first be covered by the soils native to this site, which would be expected to have some ability to buffer increases in soil pH.

Response: It is acknowledged that the local soil would be expected to have higher buffering capacity than the sediment, but the actual difference is unknown at this time. The location of the buffering capacity is most important where water may collect that has passed through the concrete rubble. The large amount and distance of native soil downslope is therefore most important.

A4-5.

We would prefer that the concrete be recycled, and we would like PacifiCorp to actively pursue this option. We will express our opinion to PacifiCorp and other signatories on this matter, but we understand that recycling depends on finding a recycler capable of and willing to do the job, and we understand that this may not come about. Absent recycling, we believe that placing the concrete along the flow line is acceptable with the protection measures and practices described in the DSSEIS.

Response: Comment and preference noted.

Letter A5. Klickitat & Skamania Counties

Letter A5a. Foster Pepper Re: Klickitat & Skamania Counties' Comments on Ecology's June 4, 2009 Draft Second Supplemental Environmental Impact Statement: Condit Dam Removal Project.

A5a-1.

The Counties' consultant team, Andrew C. Kindig, Ph.D., Principal Biologist, A.C. Kindig & Co., Curtis Koger, P.G., P.E.G., P.Hg., Principal Geologist/Hydrogeologist, and Carl G. Hadley, B.A., Principal Fisheries Biologist, have prepared the attached technical memorandum outlining the Counties' specific comments on the DSSEIS. The Counties' conclusion is that the DSSEIS fails to provide reasonable assurance that all environmental impacts have been disclosed, fails to adequately analyze adverse environmental impacts that have been disclosed, and fails to identify appropriate mitigation measures to address impacts to the environment.

The impact of the sediment and debris torrent that may result following the breaching of Condit Dam continues to be inadequately studied and underestimated in terms of severity and duration of impacts to habitat, water quality, and listed species and their critical habitat. The associated release of mercury into the environment below Condit Dam has not been fully identified, analyzed, or properly mitigated.

Response: Opinion noted. Specific comments in Exhibit B are addressed below.

A5a-2.

PacifiCorp's revised proposal to dispose of concrete dust and debris along the flowline alignment parallel with the White Salmon River is unprecedented in terms of its careless attention to impacts to the terrestrial and aquatic environments. Not only is such a proposal inconsistent with the Shoreline Management Act, Chapter 90.58 RCW, and adopted local master programs, it is inconsistent with adopted Comprehensive Plans, Klickitat County's Solid Waste Management Plan, Skamania County's Solid and Moderate Risk Waste Management Plan, and interlocal agreements between the Counties regarding the handling and disposal of waste generated by the removal of Condit Dam. (See attached "Interlocal Agreement Between Klickitat County and Skamania County" dated January 6, 2009 ("Interlocal Agreement")).

The Interlocal Agreement specifies that all solid waste arising from the Condit Dam project, including, but not limited to, dredge spoils, construction and demolition waste, and other solid waste, shall be disposed at the Klickitat-designated landfill at Roosevelt, Washington. Adherence to this requirement would avoid the needless destruction of riparian habitat and eliminate the on-going water quality risks that would be created by the use of a riparian buffer for disposal of harmful contaminants, i.e., mercury laden sediments, and concrete.

Response: Opinion noted. The impact assessment based on facts and analysis as presented in the FSEIS and the SSEIS are adequate under SEPA. Legal issues associated with compliance with the water quality and shoreline regulations would be addressed in the 401 Certification process. If the Federal Power Act preempts state and local laws and regulations in this matter, then the arguments would be moot.

Letter A5b. Associated Earth Sciences, Cedarock Consultants, and A.C. Kindig & Co. Technical Review of the Condit Dam Removal Draft Second Supplemental EIS.

A5b-1. It is our opinion the 2nd Draft SEIS fails to provide reasonable assurance that all impacts are disclosed, or that appropriate mitigating measures are provided, or that Ecology guidelines and requirements for protection of state water quality standards, including those regulating wetlands, are met.

Response: Opinion noted. Specific new comments are addressed below. The responses to DSEIS comments in the FSEIS were apparently not considered when these comments were developed. Issues raised in the current comment letter were previously raised in the comment letter on the 2005 DSEIS and were addressed in the FSEIS Comments and Responses Appendix. Therefore, responses to those comments are not repeated here. The reader is specifically directed to FSEIS comment responses A6-12 through A6-89. The purpose and scope of the SSEIS was to address issues that arose after the 2007 FSEIS, specifically the potential effects of mercury in sediments that would be released into the White Salmon and Columbia Rivers, and the effects of disposing of the concrete from demolition of the dam in a new location.

The 2nd Draft SEIS fails to consider the potential impacts of the following:

A5b-2.

1. The water quality impacts of the new proposed expansion of dredging and disposal of about 5,500 cubic yards of reservoir sediment prior to blasting the dam plug;

Response: The 5,500 cubic yards represents only 0.6 percent of the fine-grained sediment in the reservoir. The number of days of mercury exceedence of the screening criteria calculated in the GEC (2009a) analysis did include accounting for this sediment, even though it would be released directly before the breach of the dam. Therefore, the DSSEIS did address the impacts of release of this sediment.

A5b-3.

2. The potential of lowered water velocities (the reason for the expanded sediment dredging) to lessen sediment entrainment during the initial draining that would extend the duration of sediment and mercury toxic impacts downstream beyond those stated;

Response: The fundamental controlling forces for flushing the fine sediment from the reservoir are not dependent on velocity. While the reservoir is draining, the velocity of water and sediment moving toward the drain tunnel will be low except for directly in front of the tunnel. Slumpages of sediment will also have limited velocity when they occur in the water of the reservoir. In addition, waterlogged wood pieces buried in sediment will have substantial inertia and will require significant tractive force to move them laterally. For those reasons, not much woody debris is expected to move to the tunnel opening until the reservoir is largely drained and the water is acting more like a river. That is one of the reasons the trash rack is no longer proposed. Nevertheless, the “Drain Tunnel Blocking Investigation” (GEC, October 9, 2009 – see Appendix Z) explains the movement of fine-grained sediment (and mercury) under various scenarios of tunnel blockage. The FSSEIS text discusses the effects under different scenarios.

It is important to recognize that it is the fine sediment that is expected to be released in the first six hours, not the entire sediment deposit in the reservoir. The fine sediment is also where most of the mercury is associated. Even if the drainage tunnel becomes partially blocked, that is very unlikely to happen in less than 2 hours, during which much of the fine-grained material would move out. With partial blockage, the period of release of fine material would be increased to only additional hours or a few days. Even with 90% blockage, the fine material would be released within 7 days. The methods available for removing blockages and the requirements that will be placed on the dam-removal contractor will ensure that any blockage that occurs will be short-lived, so the range for fine sediment is still likely to be a matter of hours, even if partial blockage occurs.

The sediment that remains in the reservoir beyond the initial draining of the reservoir will be subject to all of the other factors discussed and described in the various sediment analysis reports, including river and floodplain forces, mass wasting, and weather and river flow changes. It will also be subject to active management to speed the removal.

The finest grained sediment was sorted by the reservoir to be nearest the dam. The logical highest priority for active management would be the most unstable remaining deposits, with the fine-grained ones first. The deposits with high likelihood of being removed by the river (and those with least consequences of waiting) would be the lowest priority. Ongoing management of the tunnel to keep it clear of woody debris clogs will likely be needed for months after the reservoir is drained.

A5b-4.

3. The potential for large woody debris blockage of the tunnel to extend the period of initial drawdown and thus lower the energy to remove reservoir sediments, extending the value and duration of sediment and mercury toxic impacts beyond those stated;

Response: The “Drain Tunnel Blocking Investigation” (GEC, October 9, 2009 – see Appendix Z) discusses the potential for large woody debris blockage and the effects on the duration of sediment (and mercury) effects. The report concludes that the durations of effects are well covered by the scenarios evaluated in the Supplemental Mercury Sediment Analysis (GEC, January 2009). The FSSEIS text discusses the effects under the different scenarios.

A5b-5.

4. The probability that the combination of active sediment management in the drained reservoir bed and acknowledged unstable slopes where reservoir sediment will be disposed will increase turbidity and mercury exceedances of water quality standards beyond the predicted values and durations;

Response: The timing of the active sediment management is important. All the active management that occurs during the period of already-high turbidity will not add any days of exceedence of guidance levels of mercury, and the impacts would not increase or only marginally increase. Active management after that would typically focus on unstable sediments that would be subject to movement during mass wasting or in larger flood events later, so the overall effect would be managed into a shorter timeframe. A key purpose and the expected result of active management are to reduce the duration and uncertainty of the effects.

The quantity of sediment that would come into the river from surface erosion has already been estimated in the GEC reports to be a small component of the overall material entering the river and therefore not a major contributor to turbidity levels. The concrete disposal area is a small component of the overall surface area subject to surface erosion, and is subject to management via the BMPs.

In addition, the disposal plan for the concrete from the surge tank has been changed to include it with the concrete from the dam to be placed in the flowline alignment instead of the spillway. The upper end of the spillway will be fitted with protective devices to keep people out of it, and the spillway will be left in place. Therefore, the issues with fill materials and covering soil on a steep slope will be avoided.

A5b-6.

5. The sediment, turbidity, mercury, and habitat impacts from the active winter season trenching and fill of the approximately mile-long trench for concrete rubble burial using heavy equipment;

Response: The “trench” (better recognized as a bench) is already there and currently occupied by the wood stave flowline. Little or no excavation will be needed in order to place the concrete. The concrete can be placed and protected from winter rain by covering it with plastic sheeting (a common BMP). Covering with soil and planting would occur in the spring or summer.

A5b-7.

6. The effect of the sediment retained behind the cofferdam during initial drawdown on turbidity and mercury exceedances of water quality standards beyond the predicted values and durations;

Response: The change in timing of the cofferdam removal from “by May” to “as soon as possible” was made specifically to make the spike in sediment (and mercury) released with it coincide with periods already expected to have high turbidity and mercury levels. This timing will also prevent that spike from affecting incoming steelhead that may have access to upriver habitat late in the spring. Other diversion features are not in the direct flow path of the river and can be addressed during low-flow periods with minor effects on the river.

A5b-8.

7. Monitoring for pH and turbidity that could detect a difference from background and a water quality impact beyond those disclosed, but could not lead to any reasonably feasible adaptive management response;

Response: Monitoring for pH would allow “source control” contingency measures to be implemented if needed, although the likelihood of measurable effects is very low.

Turbidity monitoring would be conducted primarily to better understand the progress of the dam removal process and to provide information valuable to the understanding of expected effects for other dam removal projects in the future. There has never been any intention that turbidity monitoring would trigger adaptive management measures.

A5b-9.

8. The reasonable expectation that log barrier(s) to fish passage will relocate in the narrow bedrock canyon below the dam now that large woody debris removal beyond one year has been withdrawn as mitigation, which could re-establish the anadromous barrier below the dam, eliminating the expanded anadromous habitat benefits claimed for the project;

Response: Any manipulation of woody debris after the dam removal would be under decisions of the agencies responsible for managing the fish resources. The reason for the

change in wording is that it would be presumptuous to predetermine actions that would be affecting such a complicated situation.

A5b-10.

9. The impacts of withdrawing fisheries mitigation proposed in the Draft SEIS and/or required by the Biological Opinion on ESA-listed fish species;

Response: This is not a SEPA issue. It is an ESA issue and is being addressed by the appropriate agencies.

A5b-11.

10. The lost wetland function reasonably anticipated by the proposal to mitigate wetland losses by waiting to and how many wetland acres redevelop over time that have a combination of suitable fine-grained soils and appropriate hydrology to support wetlands vegetation that naturally invades (no planting by the project applicant is proposed), and with the only mitigation performance criteria being a 1:1 replacement area and vegetation which could consist entirely of reed canarygrass or yellow iris.

Response: One of the trade-offs of converting a reservoir environment back to a free-flowing river environment is that the water edges, and hence fringe wetlands, will be in different places. Active compensatory mitigation might arguably produce more wetland acreage, but not without impacts. The decision to wait and see how wetlands redevelop is an appropriate decision under the state's wetland regulations because of the other expected benefits of removing Condit Dam to allow the restoration of the natural environment. Ecology continues to believe that the proposed mitigation is appropriate given the unique circumstances, including the type of wetlands to be lost. Weed control is addressed in the Revegetation and Wetlands Management Plan.

Letter A6. PacifiCorp Energy

A6-1.

1. Fact Sheet, Proposed Action section, second paragraph – To more accurately reflect PacifiCorp's proposal, PacifiCorp recommends appending the phrase "to the extent that it does not fill in naturally" after the phrase "filling in the tail race at the power house."

Response: The change was made.

A6-2.

2. Fact Sheet, Permits, Certifications, and Licenses, and Other Required Actions or Approvals, fourth paragraph – PacifiCorp recommends replacing the phrase “including those for state permits or permits from Klickitat or Skamania County” with the phrase “including requirements that such agencies would include in state or local permits if such permits were not preempted.” This change clarifies the apparent intent of the sentence.

Response: The change was made.

A6-3.

3. Pg 1-1, last paragraph – As discussed in the Draft Second SEIS, the FPA preempts all state and local law concerning the decommissioning of Condit dam (with the exception of state law adjudicating proprietary water rights). PacifiCorp reserves the right to argue that the Federal Power Act preempts SEPA.

Response: Comment noted.

A6-4.

4. Pg 1-2, fourth paragraph and last paragraph – In the first sentence of the fourth paragraph, please delete the word “partially” and append to the sentence the phrase “to the extent that it does not fill in naturally.” As discussed in comment 1, above, PacifiCorp expects the tailrace to fill in naturally but will fill it in if that does not occur.

Response: The change was made.

A6-5.

In the last paragraph on page 1-2, the commencement date for Project removal activities is projected to be August 2010. However, as provided in the Settlement Agreement, removal will not begin until the August following receipt of all necessary permits and authorizations in their fully adjudicated and final form. In order to accurately recognize the possibility of a delay in the projected August 2010 commencement date, PacifiCorp recommends the following revisions:

Project removal activities would commence in August 2010 if all necessary permits (including the final resolution of any appeals), easements, and contracts have been obtained sufficiently in advance of that date to practicably begin construction. If all necessary permits, easements, and contracts are not obtained in sufficient time, the commencement of construction would be deferred to the following August because the scheduled seasonal timing of removal activities minimizes their environmental effects. The demolition and removal of Condit Dam and other project facilities are estimated to take about one year. Monitoring would then continue until performance criteria are met.

Response: The change was made.

A6-6.

5. Pg 1-3, last paragraph – (1) It is important to emphasize that the sediment “regulatory thresholds” referred to in this paragraph are screening levels, not regulatory levels. (2) In addition, EPA’s acute and chronic “criteria” are for the protection of aquatic life, not human health. Moreover, these “criteria” are guidelines that have no regulatory force in Washington. Because Washington has its own, EPA-approved, mercury criteria for the protection of aquatic life, the SEPA document should refer only to the Washington criteria. (3) Finally, EPA’s human health criterion for mercury is 0.14 micrograms per liter and, unlike EPA’s aquatic life mercury “criteria,” is applicable in Washington. 40 C.F.R. § 131.36(d)(14). The GEC report does not analyze potential exceedances of the human health criterion, but the number of days of exceedances would be fewer than those for the much more stringent chronic aquatic life criterion. Moreover, because human health criteria are based on long-term exposures, brief exceedances of the human health mercury criterion would not pose any significant risk to human health.

In light of these comments and to clarify this issue, PacifiCorp suggests the following language for the paragraph:

After the Final SEPA SEIS was published, additional sediment sampling reported mercury levels in Northwestern Lake sediment that exceed screening levels, *i.e.*, levels beyond which additional evaluation of health and environmental risks may be warranted. Additional analysis (GEC 2009) concluded that the movement of reservoir sediments downstream following the breaching of the dam would likely cause mercury concentrations in the water column to exceed Ecology’s acute and chronic water quality criteria for the protection of aquatic life in the White Salmon River for 20 and 49 days, respectively, following dam removal. Mercury concentrations would be sufficiently diluted once entering the Columbia River so that the Ecology acute criterion for the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life likely would be exceeded for 17 days in the Bonneville Pool, and for seven days in the Columbia River adjacent to Quincy, Oregon.

Response: The change was made.

A6-7.

6. Page 1-4, Aquatic Resources, second paragraph – For consistency with the rest of the Draft Second SEIS, the phrase “would have been killed by the high levels of suspended sediments” should be revised to state “would have been killed or displaced by the high levels of suspended sediments”.

Response: The change was made.

A6-8.

7. Page 1-7, Table 1 – The second row of cells in Table 1 includes the phrase “and would be above the sediment criteria.” PacifiCorp recommends revising this language to state “and would be above the sediment screening criteria.” This change clarifies that the criteria in question are screening criteria not regulatory criteria.

Response: An equivalent change was made.

A6-9.

8. Page 1-7, Table 1 – The fifth row of cells in Table 1 addresses PacifiCorp’s 2004 water quality monitoring plans. PacifiCorp recommends revising this language to reference the newer Environmental Monitoring Management Plan proposed by PacifiCorp in 2009. Under this newer proposal, there will be two monitoring stations on the White Salmon River rather than three stations and termination of monitoring will be based on observed conditions rather than the expiration of a 10-year period.

Response: The change was made.

A6-10.

9. Page 1-9, Table 1 – The 13th row of cells in Table 1 addresses land use aspects of concrete disposal and includes the following language: “The disposal is within the FERC project boundary and may be deemed exempt from the Shoreline Management Act.” PacifiCorp believes that FERC has clearly held that the Federal Power Act preempts state and local law concerning the decommissioning of Condit dam, including the Shoreline Management Act. PacifiCorp recommends that the language in question be revised to state: “The Shoreline Management Act is preempted by the Federal Power Act.”

Response: The change was made.

A6-11.

10. Page 2-1, Introduction, second sentence – The sentence states: “PacifiCorp is proposing to remove the Condit Hydroelectric Project following the October 1, 2010 cessation of electricity generation under its license extension with FERC.” This sentence incorrectly implies that PacifiCorp has received a time limited license extension from FERC and must cease generation on October 1, 2010. PacifiCorp currently operates the Project under annual licenses and will continue to do so until FERC concludes that PacifiCorp has fully complied with any FERC surrender order. PacifiCorp proposes to cease generation on October 1, 2010 but may continue to generate past that date if all required permits and authorizations to decommission are not received in their fully adjudicated and final form by that date. In order to accurately reflect these facts, PacifiCorp recommends the following language for the sentence in question: “PacifiCorp is proposing to remove the Condit Hydroelectric Project following the proposed October 1, 2010 cessation of electricity generation.”

Response: The change was made.

A6-12.

11. Page 2-1, Table in Section 2.2, March 2007 row – PacifiCorp recommends the following language revisions for this row (proposed revisions in **bold**) to improve clarity: “Mercury was reported in additional sediment samples, triggering concerns about water quality and the bioaccumulation and toxicity **and other potential effects** of deposited sediments.”

Response: The change was made.

A6-13.

12. Page 2-2, Need for State Environmental Review, first paragraph – PacifiCorp recommends revising the first sentence to state: “Ecology is both the Lead Agency for SEPA and the regulatory decision maker for permits that require SEPA documentation to support permit decisions.” PacifiCorp recommends deletion of the phrase “some of the” because PacifiCorp believes FERC has clearly held that the Federal Power Act preempts the other state and local permits that might otherwise rely on the SEPA review. In addition, PacifiCorp reiterates its reservation of the right to argue that the Federal Power Act preempts SEPA.

Response: The change was made.

A6-14.

13. Page 2-3, Water Resources, first bullet – Because the Draft Second SEIS addresses mercury in both the White Salmon River and the Columbia River, PacifiCorp recommends that the first bullet be revised to state: “...the White Salmon River and **the Columbia River...**”

Response: The change was made.

A6-15.

14. Page 3-1, Proposed Action, third paragraph – As discussed in comment 1, above, PacifiCorp recommends appending the phrase “to the extent that it does not fill in naturally” to the end of the first sentence. This is to make clear that PacifiCorp expects the tailrace to fill in naturally, but it will fill in the tailrace if that does not occur. Also note that PacifiCorp did not redesign the drain tunnel through the dam; rather, the conceptual design has been enhanced to optimize the hydraulic efficiency of the tunnel. This includes the addition of an air vent which is a vertical hole from the tunnel to the top of the dam. The purpose of the air vent is to allow air pressure to equalize in the tunnel and also provide access to the drain tunnel to lower a charge if needed to loosen debris in the tunnel.

Response: The change was made.

A6-16.

15. Page 3-2, last paragraph, second sentence – PacifiCorp recommends the following language revisions to increase clarity (proposed revisions in **bold**): “Although most of the work areas can be accessed using established roads, some areas would require reestablishing roads that have become overgrown and others **would require** new segments of road **to** be built to access specific facilities.”

Response: The change was made.

A6-17.

16. Page 3-4, Schedule, first paragraph – For the same reasons discussed in comment 4 above, PacifiCorp recommends that the paragraph be revised to state:

Project removal activities would commence in August 2010 if all necessary permits (including the final resolution of any appeals), easements, and contracts have been obtained sufficiently in advance of that date to practicably begin construction. The dam would be breached in October 2010. If all necessary permits, easements, and contracts are not obtained in sufficient time, the commencement of construction and dam breaching would be deferred to the following August and October, respectively, because the scheduled seasonal timing of removal activities minimizes their environmental effects. The demolition and removal of Condit Dam and other project facilities are estimated to take one year. There are no plans to remove the powerhouse. Removal is scheduled to be completed by fall of 2011. The project schedule is outlined in Table 2.

Response: The change was made.

A6-18.

17. Page 4-1, second paragraph, fifth and sixth sentences – PacifiCorp recommends inserting the word “screening” into these sentences so that they read: “The maximum concentration of mercury detected was 2.03 mg/kg. These values are beyond the screening criteria contained in the *Interim Final Northwest Regional Sediment Evaluation Framework* (USACE et al. 2006).” The purpose of this proposed change is to clarify that the criteria in question are screening criteria not regulatory criteria.

Response: The change was made.

A6-19.

18. Page 4-1, second paragraph, sixth sentence – In the same sentence discussed in comment 18 above, the text references the *Interim Final Northwest Regional Sediment Evaluation Framework* (USACE et al. 2006), which was the most up to date sediment reference document at the time the In Lieu sample report was published. There is now a newer version of this guidance document and PacifiCorp recommends that the reference in the Draft Second SEIS be revised to refer to this newer version of the guidance document. The new version is – *Sediment Evaluation Framework for the Pacific Northwest*, prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Washington Department of Ecology, Washington Department of Natural Resources, Oregon Department of Environmental Quality, Idaho Department of Environmental Quality, National Marine Fisheries Service, and U.S. Fish and Wildlife (May, 2009).

Response: The change was made.

A6-20.

19. Page 4-2, second paragraph, first sentence – PacifiCorp recommends that the sentence be revised as follows to recognize that water quality impacts will occur in both the White Salmon River and the Columbia River (proposed revision in **bold**): “Dam breaching and removal would result in water quality impacts (suspended sediment) in the White Salmon River **and the Columbia River downstream from the mouth of the White Salmon River.**”

Response: The change was made.

A6-21.

20. Page 4-2, third paragraph, third sentence – The sentence in question refers to mercury criteria and references the regional sediment evaluation framework. As in comments 5, 7, and 17 above, this sentence should be revised to include the word “screening” before the word “criteria”, and, as in comment 18 above, the sentence should be revised to refer to the newer evaluation framework identified in comment 18.

Response: The change was made.

A6-22.

21. Page 4-2, last paragraph, first sentence – PacifiCorp recommends inserting the word “evaluated” between the terms “GEC” and “mercury” in order to make the sentence grammatically complete.

Response: The change was made.

A6-23.

22. Page 4-2, end of last paragraph – For the same reasons as those stated in comment 5 above, PacifiCorp recommends (1) that the sentence that begins, “The EPA acute and chronic water quality guidelines . . . ,” be deleted; and (2) that the following language be inserted to replace the end of the paragraph starting with the sentence that begins “Mercury concentrations would be sufficiently . . .”:

Mercury concentrations would be sufficiently diluted once entering the Columbia River that the Ecology acute criterion for the protection of aquatic life would not be exceeded within or downstream of Bonneville Pool. The Ecology chronic water quality criterion for the protection of aquatic life would likely be exceeded for 17 days in the Bonneville Pool, and for seven days in the Columbia River adjacent to Quincy, Oregon.

Response: The change was made.

A6-24.

23. Page 4-5, second paragraph (first full paragraph) – PacifiCorp maintains that the current Project Removal Design Report and Erosion Control Plan provides appropriate practices to reduce the potential of the surge tank materials slipping into the White Salmon River.

Response: The disposal plan for the concrete from the surge tank has been changed to include it with the concrete from the dam to be placed in the flowline alignment instead of the spillway. The upper end of the spillway will be fitted with protective devices to keep people out of it, and the spillway will be left in place. Therefore, the issues with fill materials and covering soil on a steep slope will be avoided.

A6-25.

24. Page 4-5, Significant Unavoidable Adverse Impacts – The paragraph contains a sentence that reads: “The Ecology chronic water quality criterion would likely be exceeded for 17 days in the Bonneville Pool, and for seven days at Quincy, Oregon.” PacifiCorp recommends revising this sentence as follows to increase its clarity: “The Ecology chronic water quality criterion would likely be exceeded for 17 days in the Bonneville Pool, and for seven days in the Columbia River adjacent to Quincy, Oregon.”

Response: The change was made.

A6-26.

25. Page 4-6, second paragraph (first full paragraph), first sentence - Given that water quality criteria will briefly be exceeded downstream of Bonneville Dam, the affected aquatic environment also should include the river downstream of Bonneville Dam. PacifiCorp recommends revising the first sentence to read:

The affected environment for aquatic resources includes Northwestern Lake, the White Salmon River below Condit Dam, the Columbia River downstream of the mouth of the White Salmon River, the river and stream channels inundated by Northwestern Lake, and the White Salmon River and its tributaries above Condit Dam up to the maximum extent upstream that anadromous and fluvial salmonids may be expected to migrate.

Response: The change was made.

A6-27.

26. Page 4-6, third paragraph (second full paragraph), first sentence – For consistency with the rest of the Draft Second SEIS, the sentence should be revised to state that “the breaching of Condit Dam is expected to kill **or displace** all fish and eggs in gravel . . .”. (Suggested revision in **bold**.)

Response: The change was made.

A6-28.

27. Page 4-7, fourth paragraph, third sentence –The suspended sediment data is stated in micrograms, but the data likely are in milligrams. In addition, consistent with PacifiCorp’s prior comments, PacifiCorp recommends the following revisions to the last sentences of the paragraph:

As a result of the dilution in the Columbia River, total mercury concentrations within and downstream of the Bonneville Pool are not expected to exceed the Ecology (2.1 µg/L) acute mercury water quality criterion (GEC 2009). Downstream of Bonneville Pool, the Ecology chronic mercury criterion (0.012 µg/L) would likely be exceeded for seven to eight days. Within Bonneville Pool, the Ecology chronic criterion would likely be exceeded for 17 days.

Response: The change was made.

A6-29.

28. Page 4-8, third paragraph – PacifiCorp questions whether this paragraph should be referring to micrograms rather than milligrams. If milligrams, these concentrations would not occur in the Bonneville Pool. In addition, given the very conservative water quality criteria and assumptions used to calculate water column concentrations, the last sentence of the paragraph should be revised to state (proposed revision in **bold**):

Assuming that juvenile salmonids would be similarly affected, at predicted mercury concentrations following the breaching of Condit Dam (GEC 2009), the ability of juvenile salmonids within the Bonneville Pool **may** be slightly impaired for approximately 38 days and approximately 11 days downstream of the Bonneville Pool.

Response: The change was made.

A6-30.

29. Page 4-8, fifth paragraph, second sentence – For consistency, PacifiCorp recommends revising the sentence to state “killed or displaced” rather than just “killed”.

Response: The change was made.

A6-31.

30. Page 4-11, fifth paragraph, first sentence – The first sentence seems stronger than is warranted by the evidence. Modest, temporary exceedances of conservative water quality criteria may cause harm, but would not “undoubtedly” cause harm. PacifiCorp recommends using the term “likely” rather than the term “undoubtedly”.

Response: The change was made.

A6-32.

31. Page 4-12, Land Use/Critical Areas, second paragraph – PacifiCorp recommends replacing the phrase “including other state permits or permits from Klickitat or Skamania County” with the phrase “including requirements that such agencies would include in state or local permits if such permits were not preempted.” This change clarifies the apparent intent of the sentence.

Response: The change was made.

A6-33.

32. Page 4-12, last paragraph, first sentence – The sentence in question states: “Under Klickitat County’s Shoreline Master Program, proposed construction activities within 200 feet of a jurisdictional shoreline (such as Northwestern Lake) would require a shoreline substantial development permit.” In order to make this sentence consistent with the previous statements in the Draft Second SEIS regarding Federal Power Act preemption, PacifiCorp recommends that the sentence be modified to state: “Under Klickitat County’s Shoreline Master Program, proposed construction activities within 200 feet of a jurisdictional shoreline (such as Northwestern Lake) would require a shoreline substantial development permit were the permit not preempted by federal law.”

Response: The change was made.

A6-34 through A6-51.

33. Figures on the Condit Dam Files website – Please see the following comments:

Response: No changes made, as these do not relate directly to the DSSEIS.

Letter A7. Port of Klickitat

A7-1.

I am not commenting on the sediment issue directly. Instead, I simply wanted to let you know that the Port of Klickitat (in Bingen, WA) is able to take clean fill. As a result, in the event there is need to remove and dispose of some sediment (assuming it has not been contaminated), we are a relatively close option.

Response: The Port’s ability to take clean fill is noted.

Letter A8. Northwest Pipeline

A8-1.

Northwest owns and operates a 26" high pressure natural gas pipeline which crosses the White Salmon River approximately 1.9 miles upstream of the Condit Dam. Although the original crossing was installed in the 1950's, a replacement pipeline was installed in 1976.

The Northwest crossing was identified as a resolved issue in section 2.3.1 of the 2007 SEPA Final SEIS as follows: "Issue 1: The natural gas pipeline crossing the upper end of the reservoir could be impacted by erosion and scour following removal of the dam. Resolution: Available information and drawings regarding the gas pipeline indicate that it is buried in a trench through bedrock. It is therefore not expected to be affected by scour."

Recently, Northwest obtained new information that gives us reason to suspect that the 1976 pipe might be located in alluvium (silt, sand and gravel) even though our internal 1976 records indicate the 1976 replacement was laid in bedrock. As such, Northwest cannot easily verify the section 2.3.1 conclusion or our relatively recent concern.

Northwest has focused on the White Salmon River crossing as part of an independent feasibility study. That study included geophysics testing, which did not yield conclusive results.

If the pipeline is installed in alluvium, it may be subject to exposure from head-cut erosion due to the dam removal. Although the exact timing and impact to the line is difficult to predict, it could include an immediate and catastrophic failure or rupture. Damage and exposure to public safety and the environment could be significant.

Northwest believes borehole investigation technology is the best alternative to determine whether or not the Condit Dam Removal Project is a threat to its pipeline. The process is challenging and costly. Northwest requested that PacifiCorp fund such an evaluation and any subsequent mitigation, but the request was denied.

Northwest respectfully requests that the Department of Ecology require that the potential impact of the Condit Dam Project on Northwest's pipeline facilities be confirmed and mitigated prior to further activities advancing PacifiCorp's project.

Response: One key piece of necessary information to understand the potential for scour (if the pipe is not in bedrock) is the depth of the pipe burial relative to pre-reservoir sediment (the 1912 channel elevation) that may be over the top of the bedrock. The river is not likely to scour deeper than the original river depth. While the consequences of a pipeline rupture would be potentially catastrophic, it is unlikely that the scour that could cause it to occur would progress rapidly in that vicinity and without warning. Given that the pipeline crossing is at the very upper end of the reservoir where the deposited sediment particle size is relatively large (primarily gravel and cobbles) and the deposited sediment is shallow, the likelihood of rapid head-cut erosion is low. Even in the unlikely event that head cutting were to occur, it would likely take a substantial time to progress from further downstream, where it may be more likely, to the vicinity of the pipeline

crossing. Routine pipeline inspections already being conducted by Northwest should give plenty of warning for Northwest to take appropriate preventative actions.

Letter A9. United States Department of Interior

A9-1.

The Department of the Interior has reviewed the Draft Second Supplemental Environmental Impact Statement for the Condit Dam Removal Project, White Salmon River, a tributary of the Columbia River, Washington. The Department does not have any comments to offer.

Response: Thank you for informing us that you have no comments.

Letter A10. Washington Department of Natural Resources

A10-1.

General Comments

- The State of Washington owns, and DNR manages, the SOAL where a majority of this material released from behind dam will eventually settle.
- DNR applauds the effort currently underway to properly investigate, characterize, and evaluate risk posed by contaminants found at this site (naturally occurring or otherwise) and we support the enhancement to habitat this action will create.
- DNR has concern with the potential effects of releasing this amount of mercury laden fine sediment without knowing for certain what the fate of mercury within the Columbia River will be.
- Although this is naturally occurring inorganic mercury it is of a higher level than levels found in the majority of the receiving waters of the Columbia River and will be released at a higher rate than what occurs naturally.
- Models have predicted that there will be no areas of significant deposition that will not be covered or mixed with sediment to levels below toxic concern and that dilution is expected to occur very quickly. We have requested a copy of and wish to comment on the sediment analysis plan (SAP) to ensure this risk is properly evaluated in the short and long term.
- If any highly concentrated depositions sites develop on SOAL DNR will be involved in any discussions regarding remediation of these sites. If remediation is required on SOAL damages would be pursued.
- If further detailed site specific studies can be accomplished that will help determine the fate and transport of mercury in fine released sediment they should be completed and results provided to DNR for review prior to removal of dam.

Response: Concerns acknowledged. Since the Washington Department of Natural Resources is one of the agency-preparers of the *Sediment Evaluation Framework for the*

Pacific Northwest (USACE, et al, 2009), it would appear that your agency should have access to the information.

Letter I1. Henry Balsiger

I1-1.

My concern would be that the silt behind all the dams is being stored, thus causing changes in river traffic and weather. The Condit dam has a great deal of silt that will probably block the river when it is allowed to flow and connect with that of the Hood River blockage. I have not heard of this concern being addressed, and when asked by my wife, one of the presenters of the dam being blown said they had never experienced blowing a dam before.

Response: This question was addressed in the RW Beck 1998 *Summary Report Engineering Considerations*. The shipping channel nearest the mouth of the White Salmon River is 1,800 feet wide with its centerline about 1,200 feet from the shore. The sediment released from Condit Dam is calculated to fill the In-Lieu Fishing site at the mouth of the White Salmon River and be deposited up to five feet deep in the Bonneville pool just downstream for about a mile. At the edge of the shipping lane, there should not be a detectible difference in depth.

Letter I2. Jack Fee

I2-1.

I think we should do everything possible to remove the dam as soon as possible. There is no more time to waste!

Response: Comment acknowledged.

Letter I3. Rachel Haymon

I3-1.

I think it is preferable that the concrete be recycled, rather than deposited near the river. But I agree that the sizes of the concrete blocks and rubble will limit the rate of calcium carbonate dissolution by reducing surface area, and that most dissolved carbonate will be buffered by the acidity of the natural groundwater and soils. I strongly recommend that the concrete be buried with a layer of acidic soil that will buffer the pH and isolate the concrete from the lake sediments.

Response: Preference for recycling acknowledged. It is also acknowledged that the local soil would be expected to have higher buffering capacity than the reservoir sediment, but the actual difference is unknown at this time. The location of the buffering capacity is most important where water may collect that has passed through the concrete rubble. The large amount and distance of native soil downslope is therefore most important.

I3-2.

The mercury sulfide compounds in the lake sediments are not polluting the lake waters or fish at harmful concentrations right now, and I agree that the dam removal will cause only a temporary elevation of mercury that will coincide with downstream morbidity of organisms from initially high levels of turbidity. Thus there will be little opportunity for living organisms to take up excess mercury before the mercury levels in the White Salmon River drop back down to low concentrations. It is also evident that the dilution factor of the Columbia River will be more than enough to eliminate concern about elevation of mercury in the Columbia River.

Response: Concurrence noted.

Letter I4. Dawn Stover

I4-1.

Please move as quickly as possible to approve this project. My community has been waiting a LONG time for Condit Dam to come out so that we can have restored fish passage in the White Salmon River and its tributaries. I started attending hearings on this around 15 years ago and at the time we expected the dam to come out in 2000. The FERC license expired years ago, and it has been a decade since a Settlement Agreement was reached. Enough already! Condit must go, and "blow and flow" is the best approach.

Response: Comment acknowledged.

Letter I5. Thomas C. Tasto

I5-1.

I believe the No Action alternative to be the best choice. Please note the following reasons why the dam should not be removed.

A design for a fish ladder involving large diameter p.v.c. pipe has been completed for the Condit Dam by the University of Washington. The fish ladder could be installed for about \$2,000,000. Since the main alleged reason for removal of Condit Dam is lack of fish passage, this fish ladder design is a win-win alternative! Plus, installing it would be considerably less costly than removal and disposal of the concrete.

The best place for existing sediments is where they are located: right behind the dam. “Green power” is highly sought after – if the Condit Dam Hydro-electric project is not “green power”, I sure don’t know what is...?

So, in brief summary: It is crucial to strongly consider the already existing fish ladder design alternative. Are political forces at work to try to squelch this really good idea!?

Response: FERC considered the alternative of installing a fish ladder approved by NMFS and USFWS in the original EIS. It was concluded that the cost of installing and maintaining a fish ladder approved by the agencies would far exceed the value of ongoing power generation and that downstream passage of smolts would be problematical. No information on a fish ladder such as that mentioned in the letter is available to Ecology or to PacifiCorp at this time. Considering the requirement of establishing anadromous salmonid populations above the dam, removal has been determined to be the best balance between costs and benefits.