

Bonneville Second Powerhouse Corner Collector Bypass System

Tier I Sediment Evaluation

Project Dredging Activity

The Bonneville Second Powerhouse Corner Collector Bypass System location is within the Columbia River on the Washington side near the shoreline of Cascade Island, immediately downstream, and at distances of approximately 400 feet and 2000 feet from the existing Second Powerhouse outfall. The system will discharge water containing juvenile salmonids at the downstream tip of Cascade Island.

The Project Plan estimates the 31,000 cubic yards of material to be dredged from the Plunge Pool Site (see Figure) are to be placed in the half mile section of river downstream from River Mile (RM) 145, which contains material substantially the same as the dredge material. This length of river has more than enough depth to place the dredge material.

The (1) surface grab sample and the 8 inwater subsurface (borings) within the plunge pool consist of overburden materials and bedrock. In addition to the inwater samples, 41 upland sites (borings and test pits) were also collected from the proposed upland construction site downstream of the Second Powerhouse and contain similar material. The overburden consists of fill (500 CY of riprap), alluvium, slide debris material and a poorly graded alluvial material referred to as “crystal sands” (poorly graded micaceous silty sand to sand). All the samples recovered from the drillings and surface sample is considered native material derived primarily from historical and prehistorical slides in the area prior to any man made activity in the area. The bedrock unit consists of the sedimentary Weigle Formation.

The dredging will only consist of overburden. The samples collected from the in-water area at the site of the proposed plunge pool dredging indicate the majority of the material to be disposed of consists of 80% gravel, 18% sand with fines representing <2% of total material with an estimate of <1% volatile solids.

Authority

The Clean Water Act (CWA) of 1977 as amended regulates dredging activities and requires sediment quality evaluation, prior to dredging. Guidelines to implement 40 CFR Part 230-Section 404(b)(1) regulations of the CWA, the national Inland Testing Manual (ITM) and the regional Dredge Material Evaluation Framework for the Lower Columbia River Management Area (DMEF) have adopted a tiered testing approach for the evaluation of dredge material. Evaluation under the DMEF allows material with gradations >80% sand and <5% volatile solids and “no reason to believe” contamination or a contamination source is present, to be exempted from chemical testing (ref. DMEF chapter 5).

Previous Studies

In September 1991 three (3) samples were collected in the area below the navigation lock (see figure). The material consisted of 24.2% gravel, 49.2% sand and 26.6% fines with, 12.1 mg/g total organic carbon. No chemicals of concern were detected above their corresponding screening levels. All material represented by this sampling event was determined to be suitable for in-water placement without further characterization.

In July 1997 seven (7) sediment samples were collected from Bonneville Second Powerhouse forebay and water supply conduits (see figure). Two of the samples were taken from the downstream portion of the south Auxiliary Water Supply (AWS) conduit by divers inspecting the inside of the south AWS. Three additional samples were taken from the surface of the sediment deposits at the north end of the forebay. The final two samples were collected from the sediment and woody debris removed from the north AWS intake trash rack by clamshell and stockpiled on Cascade Island, at the south end of the Elevation 90 Deck crane way extension. Physical analysis, run on four sediments, indicated the material ranges from gavel to very fine sand, with largest fractions in the coarse to medium sand range. Chemical analysis, run on five sediments, included metals, pesticides/polychlorobiphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), total organic carbon (TOC), acid volatile sulfide (AVS), phenols and dioxin screen (P450). No screening levels were exceeded and the material was determined to be suitable for inwater placement. The portion of the sample submitted to the lab is representative of the material that was dredged, except for the woody debris. Since the wood was waterlogged and would not be a navigation hazard, covered under the Clean Water Act (CWA), it was placed in-water with the sediment as requested by the National Marine Fisheries Service (NMFS).

In May 2001 nine (9) sediment samples were collected near the East End of Bradford Island where a cleanup of a former dumpsite is in progress (see figure). A draft report indicates PCBs were detected at levels exceeding the SL of the Dredge Material Evaluation Framework (DMEF), ranging from <0.01 to 1.24 mg/kg.

In December 2001 three (3) sediment samples were collected from the (fish) outfall of the fish ladder on the south side of Bradford Island (see figure). No chemicals of concern listed in the DMEF exceeded their respective screening levels (SL).

Conclusion

The majority of the material to be disposed of consists of gravel (80%) and sand (18%), with fines representing <2% of total material with an estimate of <1% volatile solids. This material is consistent with native material in the area and the newly exposed surface will be similar material or bedrock. There is no reason to believe that the material associated with the plunge pool dredging is contaminated. Material from the area of contamination at the East End of Bradford Island does not show any evidence of migration toward the second Powerhouse (sampling event in July 1997 described above, see figure). This dredging activity meets the requirements outline

above and in Table 5-2 of the DMEF. This Tier I report considers all material suitable for unconfined, inwater placement without further characterization.

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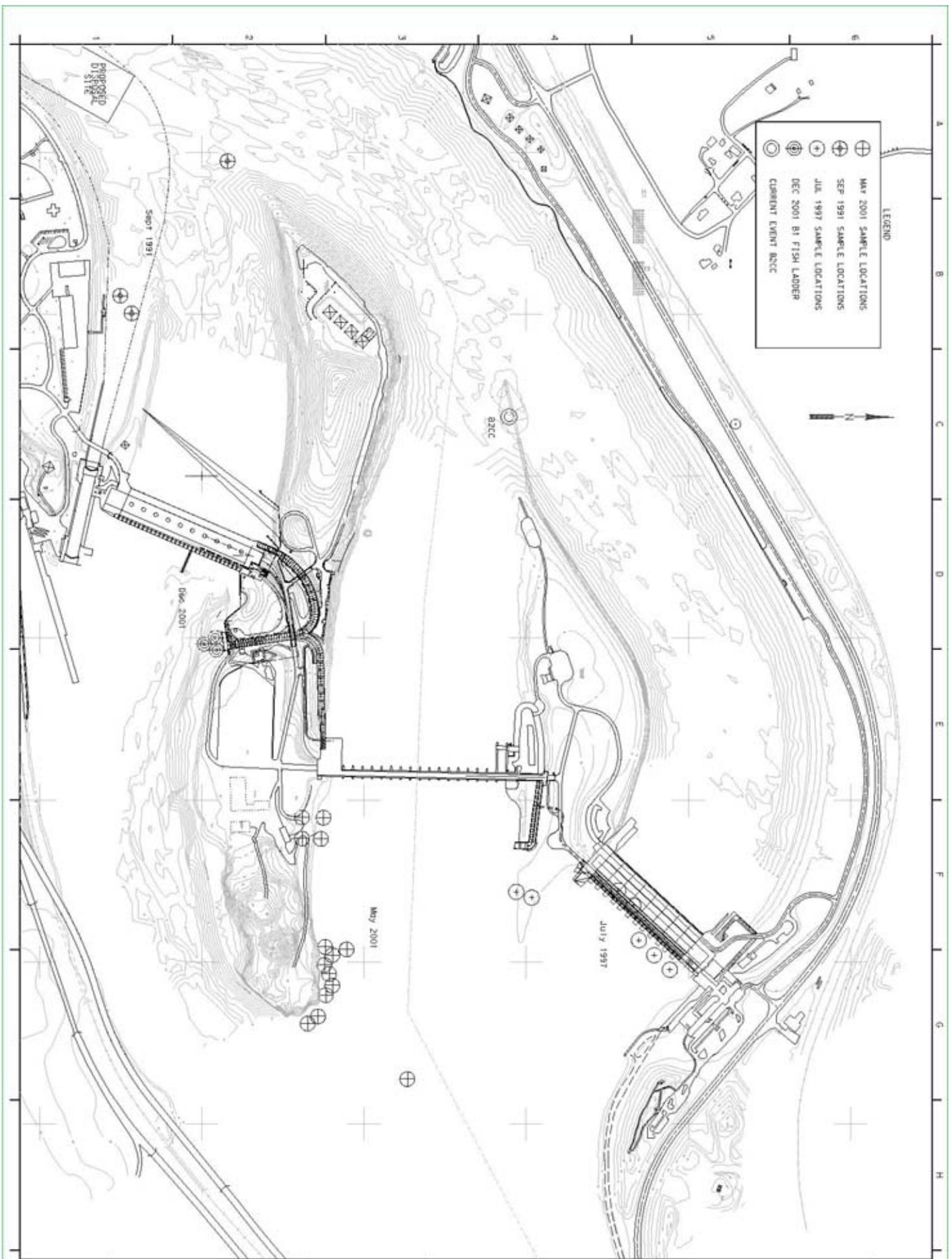
This Tier I evaluation document has been distributed for a 20-day coordination review of the Regional Management Team as described in the DMEF. If no comments are received within 20 days from the distribution date below, it will be considered final. Please, direct comments to Tim Sherman by return e-mail or at (503) 808-4884. (If contractor schedule requires construction start prior to the end of the 20-day response period, contact the Corps POC).

References

1. Briton J. U.S. Army Corps of Engineers, Portland District. September 1991. Bonneville Navigation Lock Sediment Evaluation.
2. U. S. Army Corps of Engineers, Portland District. October 1991. Columbia River Pool Lowering (MOP).
3. Sherman T.J. U.S. Army Corps of Engineers, Portland District. October 1997. Bonneville Second Powerhouse Sediment Evaluation.
4. U.S. Army Corps of Engineers, Portland District and Seattle District; U.S. Environmental Protection Agency, Region 10; Oregon Department of Environmental Quality; Washington State Department of Natural Resources and Department of Ecology. 1998 Final. Dredge Material Evaluation Framework for the Lower Columbia River Management Area.
5. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. February 1998. Evaluation of Dredged Material Proposed for Discharge in Inland and Near Coastal Waters - Testing Manual (referred to as the "Inland Testing Manual").
6. Clean Water Act, 40 CFR 230 (b)(1).
7. Cornforth Consultants Inc. U.S. Army Corps of Engineers, Portland District. May & November 2001. Bonneville Second Powerhouse Corner Collector Bypass System.
8. URS Consultants Inc., for U.S. Army Corps of Engineers, Portland District. September 2001. Bradford Island Landfill Cascade Locks, Oregon. URS Portland Oregon.

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LEGEND

- ⊕ MAY 2001 SAMPLE LOCATIONS
- ⊕ SEP 1991 SAMPLE LOCATIONS
- ⊕ JUL 1997 SAMPLE LOCATIONS
- ⊕ DEC 2001 BY FISH LADDER
- ⊙ CURRENT EVENT B2CC



COLUMBIA RIVER OREGON - WASHINGTON
 BONNEVILLE DAM AND RESERVOIR
 SECOND POWERHOUSE
 B2CC SURFACE FLOW BYPASS SYSTEM
 PRIOR SAMPLING EVENTS

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 PORTLAND, OREGON

