

United States Government

Department of Energy
Bonneville Power Administration

memorandum

DATE: June 30, 2011

REPLY TO
ATTN OF: KEC-4

SUBJECT: Environmental Clearance Memorandum

TO: James Irish
Project Manager – PGF-6

Proposed Action: Assessment of Potential Effects: Research Project TI#233: Field Evaluation of Foul-Release Coatings

Budget Information: 00003863-01

Categorical Exclusions Applied (from Subpart D, 10 C.F.R. Part 1021): **B3.3** Field and laboratory research, inventory, and information collection activities that are directly related to the conservation of fish or wildlife resources and that involve only negligible habitat destruction or population reduction; **B3.8** Outdoor ecological and other environmental research (including siting, construction, and operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis) in a small area (generally less than five acres) that would not result in any permanent change to the ecosystem; **B3.11** Outdoor tests and experiments for the development, quality assurance, or reliability of materials and equipment (including, but not limited to, weapon system components), under controlled conditions that would not involve source, special nuclear, or byproduct materials. Covered activities may include, but are not limited to, burn tests (such as tests of electric cable fire resistance or the combustion characteristics of fuels), impact tests (such as pneumatic ejector tests using earthen embankments or concrete slabs designated and routinely used for that purpose), or drop, puncture, water-immersion, or thermal tests.

Location: Port of Camas-Washougal, Clark County, Washington State; Lake Mead Fish Hatchery, Clark County, Nevada

Proposed by: Bonneville Power Administration (BPA); Pacific States Marine Fisheries Commission (PSMFC); and Portland State University (PSU)

Description of the Proposed Action: The Bonneville Power Administration (BPA) plans to fund research implementation by Portland State University (PSU) to conduct experiments in Washington and Nevada in order to determine the effective service life of several foul-release coatings and test the coatings' resistance to quagga mussel attachment. Portland State University (PSU) will conduct experiments in Washington and Nevada to determine the effective service life of several foul-release coatings and test the coatings' resistance to quagga mussel attachment. The zebra mussel, *Dreissena polymorpha*, and the quagga mussel, *D. rostriformis bugensis*, are invasive freshwater mussels that can clog pipes and vulnerable infrastructure in hydroelectric facilities in the Columbia River Basin (Basin). Should invasive mussels establish themselves in the Basin, combating the impacts of these mussels could require an integrated management plan. Prior to agreeing on a management plan, detailed cost analyses are needed to compare various mussel control options available to Columbia River hydroelectric facilities. One control option is the use of specialized, non-toxic foul-release coatings to reduce mussel settlement and growth on vulnerable surfaces such as trash racks. The effective lifespan of three foul-release coatings will be evaluated in this proposed research study in support of developing a cost analysis for the management plan.

PSU will conduct a 36-month duration experiment to determine the effective service life of the foul-release coatings by evaluating the physical coating damage and fouling of three foul-release coatings, and test the coatings' resistance to quagga mussel attachment. The U.S. Army Corps of Engineers (USACE) currently uses protective coatings on immersed concrete and steel of Columbia River infrastructures. The performance of foul-release coatings will be compared to the USACE utilized products and to bare uncoated concrete after immersion in the Columbia River. (The foul-release coatings to be evaluated may include the following: Bioclean ECO (Chugoku Marine Paints), Smart Surfaces/ Sher-Release (Fuji Hunt Smart Surfaces/ Sherwin Williams), Intersleek 900 (International Marine Paints), or Hempasil X3 (Hempel). The experimental controls include an acrylic sealer, Crystal Seal (Rasmussen Paint Company/ Conspec), Corps of Engineers vinyl resin V-766e (Simco Coatings Inc.), and bare concrete.)

There will be 1,080 panels deployed in the Columbia River at the Port of Camas-Washougal, attached to support frames and submersed in the upper 2.0 meters of the water column for varying time durations. Panels will be evaluated biannually for three years (0, 6, 12, 18, 24, 30, and 36 mo.) with five replicates per treatment. As coated concrete, coated steel, and bare concrete panels are removed for inspection of durability at the PSU laboratory, companion panels will be removed at the same time from the Columbia River and will be transported to the Nevada Department of Wildlife Lake Mead Fish Hatchery.

The panels transported to the Lake Mead Fish Hatchery will be evaluated for the coatings' resistance to quagga mussel attachment. Adult quagga mussels will be collected in Lake Mead, and mussels will be tethered by a stainless steel wire onto each panel and allowed to reform byssal threads for mussel attachment. After byssal formation and attachment, the wire will be attached to a digital force gauge to measure the shear force required to remove the mussels.

The Columbia River research location is at the Port of Camas-Washougal, Washington. The frames will be immersed along the south side of the Port's breakwater dock, and will be positioned parallel to the Columbia River's flow. Frames/ panels will create an approximate end-to-end series of underwater structures for approximately 77 m, occupying 3.5 m^3 . The maximum depth of the study location is 2.0 m. The underwater surface area of the study location is 69 m^2 and the study location occupies 3.5 m^3 . Foul-release coatings will be applied to 38 m^2 . Coatings may contain non-toxic polydimethylsiloxane (PDMS) fluids that migrate to the coating surface and exude into the environment.

The Lake Mead Fish Hatchery research location will be located fully within hatchery facilities. There is no direct or indirect connection to the external environment in the experimental design. Quagga mussels will be brought to the hatchery. Discharge water from the hatchery enters two settling ponds, which are periodically dredged, then exits to an overland creek drainage system.

At the end of this 36-month experiment, of the original 1,080 panels, there will be 324 remaining panels deployed at the Port of Camas-Washougal which could be left in the Columbia River to facilitate future coating evaluations over time periods greater than 36 months. It is important to determine the effective service life of these coatings under Columbia River field conditions, and it is likely these coatings will be effective longer than the three years being studied. A major deterrent to the use of coatings is the initial application costs associated with labor and materials, but these costs may be offset by reductions in maintenance and disposal costs over the lifespan of the coating versus other control options such as hydroblasting/water jet blasting. The deployment of these additional panels allows for coating evaluations on longer time intervals (e.g. 48, 60, and 72 mo.) should the interest and resources warrant this in the future.

Federally Listed Species and Critical Habitat

Under the Endangered Species Act (ESA) of 1973 as amended, there are a total of 37 federally endangered, threatened, and candidate listed species, and 18 listed, in development, and proposed critical habitats that may be affected by this proposed research project. A No Effect determination has been made for all listed and candidate species and the proposed project should not destroy or adversely modify critical habits. Supporting documentation is in the official project file.

There will be no disturbance due to proposed project, as designed, to sediment, surrounding habitats, or hydrology for any of the identified taxon or critical habitats. There are no effects on migration corridors caused by the proposed research activity because the study location is small, and the frames are deployed against an existing underwater structure oriented parallel the flow in the surface waters. Frame size, placement and design limit the change to the underwater environment, predator refugia, and the likelihood of fish encounters. There are no effects of non-toxic polydimethylsiloxane (PDMS) fluids affecting juvenile spawning and rearing habitat due to the small surface area of coatings exposed to the environment, study location, fish and mammal behavior, and limited PDMS transport in the water column. There are no effects of PDMS contaminants on egg and larval development because the study location does not overlap with spawning sites and PDMS partitions rapidly to sediment. Juvenile *Oncorhynchus* spp. feed primarily on insects in the water column, larger juveniles and adults feed mainly on other fish, and effects on benthic feeding are localized and limited to high PDMS concentrations, thus there are no effects by PDMS induced changes to the abundance and distribution of benthic organisms and juvenile fish benthic feeding behaviors.

National Historic Preservation Act – Section 106

As designed, the proposed project should not, in any way, result in the alteration of an existing structure or result in any ground disturbing activity. In Washington at the Port of Camas-Washougal breakwater dock, support frames would be deployed onto the dock's river side and are planned to be secured using three galvanized wire ropes. The support frames would extend down from the top of the dock to a maximum depth of two meters, well above sediment. In Nevada at the Lake Mead Fish Hatchery, all proposed project activities would be conducted inside the existing structure utilizing existing equipment without alterations. No ground disturbance would be undertaken. Under the National Historic Preservation Act of 1966, this proposed project has no potential to affect historic properties that may be eligible for the National Register of Historic Places.

Other Considerations

Due to no physical overlap of the study areas with the following use areas, this proposed research project would have no impacts to: floodplains or wetlands; areas of special designation; prime agricultural lands; or special sources of water.

The Washington State Department of Ecology manual, *Resource Manual for Pollution Prevention in Marinas* (May 1998, Publication #9811) will be used as the guide for best management practices relating to health and safety, state and local laws and regulations, and pollution control at the Port of Camas-Washougal. By following these established guidelines for the Port's dock, and facility guidelines in place at the Lake Mead Fish Hatchery, the proposed research project should have no impacts to human health or pollution, and should be accordance with specific laws and regulations.

Findings: BPA has determined that the proposed action complies with Section 1021.410 and Appendix B of Subpart D of the Department of Energy's (DOE) National Environmental Policy Act (NEPA) Regulations (57 FR 15144, Apr. 24, 1992, as amended at 61 FR 36221-36243, July 9, 1996; 61 FR 64608, Dec. 6, 1996). The proposed action does not present any extraordinary circumstances that

may affect the significance of the environmental effects of the proposal. The proposal is not connected [40 C.F.R. 1508.25(a)(1)] to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts [40 C.F.R. 1508.25(a)(2)], and is not precluded by 40 C.F.R. 1506.1 or 10 C.F.R. 1021.211. Moreover, the proposed action would not (i) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, (ii) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities, (iii) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation and Liability Act-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases, or (iv) adversely affect environmentally sensitive resources.

This proposed action meets the requirements for the Categorical Exclusion referenced above. We therefore determine that the proposed action may be categorically excluded from further NEPA review and documentation.

/s/ Sandra Ackley
Sandra Ackley
Environmental Project Manager

Concur:

/s/ Katherine S. Pierce
Katherine S. Pierce
NEPA Compliance Officer

Date: July 1, 2011

Attachment:
Environmental Checklist for Categorical Exclusions

cc:
Mr. Steve Wells, Research Assistant
Center for Lakes and Reservoirs, ESM
Portland State University

Environmental Checklist for Categorical Exclusions

Name of Proposed Project: Assessment of Potential Effects: Research Project TI#233: Field Evaluation of Foul-Release Coatings

Work Order #: 00003863-01

This project has been found to not adversely affect the following environmentally sensitive resources, laws, and regulations:

Environmental Resources	No Adverse Effect	No Adverse Effect With Conditions
1. Cultural Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. T & E Species, or their habitat(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Floodplains or wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Areas of special designation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Health & safety	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Prime agricultural lands	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Special sources of water	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Consistency with state and local laws and regulations	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Pollution control at Federal facilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Other - none	<input type="checkbox"/>	<input type="checkbox"/>

Supporting documentation is in the official project file.

- Effects Determination for T&E Species.

Signed: /s/ Sandra Ackley

Date: June 30, 2011