



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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March 31, 2005

REGISTERED MAIL

Ms. Karen Durham-Aguilera
Director, Programs Directorate
U.S. Army Corps of Engineers, NW Division
PO Box 2870
Portland, Oregon 97208-2870

Mr. Daniel H. Diggs
Assistant Regional Director
Fisheries Resources
U.S. Fish and Wildlife Service
911 NE 11th Avenue
Vancouver, WA 987232-4181

Dear Ms. Durham-Aguilera and Mr. Diggs:

On January 14, 2005, the U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service (USF&WS) requested approval to adjust the Total Dissolved Gas (TDG) criteria to spill water at Corps dams on the Columbia and Snake Rivers in Washington to assist downstream migration of juvenile salmonids. We require approval of gas abatement plans under Washington State Water Quality Standards WAC 173-201A-060(4)(b) in order to apply the adjusted TDG standards to the Columbia River.

The Corps submitted a gas abatement plan (Water Quality Plan for Total Dissolved Gas and Water Temperature in the Mainstem Columbia and Snake Rivers, December, 2003) to Ecology. The Corps and USF&WS also submitted the following.

- TDG physical monitoring plans.
- Biological monitoring plans.

The Washington State Department of Ecology approves the gas abatement plan. This approval is based on the following findings:

1. Failure to act will result in more salmonid passage through the hydroelectric dam turbines. Estimated mortality from juvenile salmonids passing through turbines is between ten and fifteen percent; juvenile salmonid passage mortality over dam spillways is between two to three percent.



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2. Exposure to elevated TDG as a result of spill is harmful to fish. However, anadromous salmonids experience less harm when exposed to limited concentrations of TDG than the harm experienced by passing through turbines. A risk analysis was performed by the United States National Oceanographic and Atmospheric Administrations Fisheries in 1996 and updated in 2002. Based on this risk analysis, Ecology water quality standards allow higher levels of TDG upon approval of gas abatement plans.
3. The Corps is providing structural and operational improvements at both dams.
4. The forebay monitoring stations discovered negligible TDG bubble trauma in juvenile salmonids.

This approval is subject to the following conditions:

1. This approval shall extend through February 2008, and apply to Corps dams on the Columbia and Snake Rivers in Washington State.
2. This approval means that spill may raise the dissolved gas levels above 110% saturation to aid fish passage but not to exceed 125% saturation as a one hour average. Gas saturation may not exceed 120% in the tailrace and 115% in the forebay of the next dam downstream as measured at the fixed monitoring stations as an average of the twelve highest readings in any one day.
3. The Corps is expected to conduct the following activities:
 - a. Investigate and pursue TDG reduction and monitoring improvements as new information becomes available.
 - b. Investigate biological effects data gaps for total dissolved gas for all species, especially between the end of the aerated zone and the fixed tailrace monitor at each dam. Plan for studies identified during this investigation. Provide yearly progress reports. Forebay biological monitoring for juvenile salmonids is not required.
 - c. Investigate TDG reduction improvements to the outfall of the Bonneville corner collector. Provide a yearly report on the results of this investigation;
 - d. Make reasonable attempts to reduce gas entrainment during all flows during the spill season.
 - e. Plan maintenance schedules and activities as much as possible to minimize TDG production resulting from spill to within water quality standards. Plan turbine outages as much as possible for outside the high flow season when this will not cause more harm to the environment or to the structural integrity of the dam.
 - f. Notify Ecology within 48 hours of initiation of spring, summer and other spills for fish. The notification may be electronic or written.

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- g. Provide Ecology with an annual written report by December 31 of each year for the activities outlined in this letter and detailing the following:
- Flow and runoff descriptions for the spill season.
 - Spill quantities and duration.
 - Quantities of water spilled for fish versus spill for other reasons for each project.
 - Data from the physical and biological monitoring programs including a summary of exceedances for each dam, and a description of what was done to correct the exceedance.
 - Progress on TDG abatement implementation measures.

This gas abatement approval does not limit the conditions placed in future permits, orders, and certifications, issued by this Department.

Please contact me at (360) 407-6405, or Chris Maynard of my staff at (360)407-6484, if you have any questions or comments regarding this approval.

Sincerely,



David C. Peeler
Water Quality Program Manager

cc: Agnes Lutz, ODEQ
Columbia River Water Quality Team
Ecology Regional Water Quality Managers