

APPENDIX F

**NORTHWESTERN DIVISION POLICY ON
SPILL AND TOTAL DISSOLVED GAS**

Water Management Division
Environmental Resources Division
Operations and Construction Division

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North Pacific Division Policy
on Spill and Total Dissolved Gas

IMPLEMENTATION GUIDELINES

1. Instances that could lead to spill and potential high levels of TDG include but are not limited to the following:

- special reservoir operations associated with endangered species or water quality elements
- scheduled and unscheduled unit outages
- flood control or dam safety operations
- pre-approved research studies
- special operational constraints allowed/required for construction or maintenance
- contract work.

In those instances, types of remedial and/or preventive actions that may be considered include the following:

- storing excess runoff at upstream reservoir(s);
- minimizing the number of nonfunctioning turbine units;
- distributing the spill over longer hours;
- spreading spill to other projects;
- operating turbines outside the 1% peak efficiency flow range;
- changing spillway gate settings and/or spill patterns;
- avoiding spill that produces excess TDG during fish passage periods;
- revising or rescheduling activities to occur during low flow periods.

2. When there is a voluntary or planned spill operation that is likely to cause high TDG levels, the states and other affected parties will be kept informed in a timely manner directly or through existing management processes (such as Technical Management Team).

Information to be provided will include:

- spill location(s) and amount(s);
- time duration and area coverage;
- predicted dissolved gas levels;

- monitoring plan(s); and
- preventive measure(s) planned or already in place.

If the spill operation mentioned earlier has also the potential for impacting ESA-listed fish species, information will be provided to the National Marine Fisheries Service and/or the U.S. Fish and Wildlife Service (depending on which agency has jurisdiction), and other interested federal and regional agencies or offices via direct communication or existing mechanism (such as the Technical Management Team). This information will be updated periodically as long as conditions warrant. Coordination through established forums (e.g. Technical Management Team) will be extended to all other state, tribal, Federal and regional agencies that are interested in the effects of spill on aquatic resources, including but not limited to ESA-listed stocks.

3. During periods of high runoff or other circumstances that require spilling over several or all projects in the hydropower system, a spill priority list will be developed in coordination with the Technical Management Team and other entities and implemented. The spill priority list will specify the order in which the projects should spill and the spill caps at each of those projects. The overall objective is to avoid creating localized detrimental dissolved gas concentrations where ESA-listed species and other resident species are present.

4. To minimize the cumulative effects of dissolved gas supersaturation, consideration will be given to spilling at the lower Columbia River projects before spilling at the upper Columbia and lower Snake Rivers projects. Projects that show the least propensity to create high TDG levels will be given first consideration. All projects in the Columbia River Basin, including appropriate Willamette River projects, may be placed on the spill priority.

5. Although water quality monitoring is a year-round responsibility, it is recognized that currently dissolved gas monitoring instruments are usually not in operation in the winter and that not all sites are monitored on a continuous basis. To carry out this water quality policy, both short and long-term actions will be implemented as explained below.

a. For the short-term, the Corps plans to respond quickly to meet data collection, analysis and additional monitoring requirements. Adequate inventory of data collection and transmission equipment will be maintained to allow for rapid installation at critical points along the river. The necessary predictive modeling capability will also be developed and maintained to evaluate operational scenarios. Data from short-term sampling stations will be correlated with the data from the regular network to fill in data gaps.

b. For the long-term, a small skeleton network will be established for year-round monitoring of dissolved gas at projects where spill is most likely to occur and where conditions exist for controlling spill. The Corps will also continue to evaluate and monitor

various aspects of water quality management and its effects on the ecosystem in the framework of overall water resources management, and ensure that the results are shared with all interested parties.

6. Functional elements responsible for carrying out this policy and their respective roles are as follows:

North Pacific Division

Reservoir Control Center:

- develop and update the spill priority list to reflect fish movement or input received from the Districts;
- coordinate field monitoring with the districts;
- perform data analysis and model prediction;
- coordinate with Division and District Environmental Resources staff on biological constraints and requirements and any potential ESA implications;
- plan and coordinate real-time operation with BPA, the districts and the projects and other project owners;
- assure implementation of the Fish Passage Plan or coordinate necessary deviations;
- issue operational instructions to the projects;
- monitor actual implementation of these instructions and make adjustments as needed; and
- provide status reports to other Division and District elements and outside agencies.

Environmental Resources:

- coordinate necessary deviations of the Fish Passage Plan as needed;
- in consultation with District elements, provide biological support, including determination if an action has the potential for affecting an ESA-listed stock or result in adverse modification of critical habitat;
- coordinate or participate in coordination with NMFS and/or U.S. Fish and Wildlife Service and District staff as needed on ESA issues involving listed stocks;
- make recommendations on biological constraints (e.g. in-water work windows) and requirements, in consultation with the Districts

Operations and Construction:

- coordinate planned actions (e.g. maintenance) developed by the districts with appropriate Division elements;
- assure that any operations that may impact ESA-listed stocks have been coordinated prior to implementation; and
- provide an after-the-fact documentation for emergency actions.

Pacific Salmon Coordination Office:

- provide guidance on policy decisions; and
- provide regional interface on spill-related issues at the policy level

Office of Counsel:

- provide legal advice and support as needed.

Alaska, Portland, Seattle and Walla Walla Districts

Districts Water Quality/Water Management Elements:

- install, operate and maintain dissolved gas monitoring stations;
- collect and transmit total dissolved gas and other data to the Reservoir Control Center;
- conduct TDG abatement studies;
- evaluate station accuracy in representing TDG conditions in the river/reservoir;
- advise and recommend operations to minimize high dissolved gas levels to the RCC, and
- coordinate planning and scheduling of special reservoir operations with the Reservoir Control Center and other District elements.

District Operations and Construction Division:

- develop schedules for maintenance and service of project facilities and equipment that potentially require spill;
- coordinate planning and scheduling of special reservoir operations required by maintenance and schedule and construction activities with the Reservoir Control Center, other District elements; and contractors; and
- advise and recommend operations to minimize high dissolved gas levels.

District Environmental Resources Section

- in consultation with Division's Environmental Resources staffs, provide biological support, including determination if an action has the potential for affecting an ESA-listed stock or result in adverse modification of critical habitat;
- in coordination with Division Environmental Resources, assure implementation of the Fish Passage Plan or coordinate necessary deviations;
- coordinate or participate in coordination with NMFS and/or U.S. Fish and Wildlife Service and Division Environmental Resources staff as needed on ESA issues involving listed stocks;
- make recommendations on biological constraints (e.g. in-water work windows) and requirements, in consultation with the Division Environmental Resources staff, and.
- in cooperation with the Projects, provide reports on emergency operations that may have impacted aquatic resources (particularly ESA-listed stocks) and estimated duration and extent of effects.

District Office of Counsel:

- provide legal advice and support as needed, especially for ESA/NEPA issues, and
- provide litigation support.

Projects:

- identify maintenance requirements as far in advance as possible to enable proper advance coordination;
- carry out reservoir operations as instructed by the Reservoir Control Center;
- report back on operational and other problems needing attention, including fish conditions affected by TDG;
- advise and recommend operations to minimize high TDG levels;
- identify and recognize ESA requirements in implementing reservoir operations; and
- provide reports on emergency operations that may have impacted aquatic resources (particularly ESA-listed stocks) and estimated duration and extent of effects.