

**Memorandum of Agreement  
Columbia/Snake Rivers Total Maximum Daily Load  
for Total Dissolved Gas and Temperature  
October 16, 2000**

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**Introduction and Purpose:**

The purpose of this Memorandum (MOA) is to document a mutual understanding on the approach and roles among Idaho DEQ, Washington DOE, Oregon DEQ, EPA Region X, and the Columbia Basin Tribes to complete a total dissolved gas and temperature Total Maximum Daily Load (TMDL)<sup>1</sup> for the mainstem Columbia and Snake Rivers to RM 188. Expected roles of non-signatory agencies are also included.

The environmental purpose of this effort is to understand the sources of total dissolved gas and temperature loadings and to allocate those loadings based on numeric water quality criteria (see Appendix 1) in order to meet water quality standards. This is a task that will require careful coordination, cooperation, and management by all parties involved in this effort.

The complexity of the governance system is profound, involving Federal agencies, state agencies, Tribes, private entities, and Public Utility Districts (PUDs). No single agency or Tribe can assert its jurisdiction and achieve a successful outcome. For example, total dissolved gas travels across international borders, through tribal and state jurisdictions, and is increased by passage over Federal, PUD, and private dams. Its one commonality is that it is harmful to fish and aquatic life at certain percentages of saturation. Temperature exceedances are perhaps even more complex with respect to assessing causes and solutions.

The MOA signatories also recognize a high degree of uncertainty in the Basin. The MOA signatories do not know the outcome of decisions regarding breaching of dams, outcomes of

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<sup>1</sup> Section 303(d) of the Clean Water Act and its implementing regulations define a TMDL as a quantitative assessment of pollutants that cause water quality impairments. A TMDL specifies the amount of a particular pollutant that may be present in a waterbody, allocates allowable pollutant loads among sources, and provides the basis for attaining or maintaining water quality standards. TMDLs are established for waterbody and pollutant combinations for waterbodies impaired by point sources, non-point sources, or a combination of point and non-point sources.

litigation or adjudications; flows that may be required to be adjusted, future appropriations, and other uncertainties. Yet the MOA signatories must make decisions while acknowledging incomplete information and uncertainty.

**Scope:**

The geographic scope of the TMDL addressed by this agreement includes the Mainstem Snake River from RM 188 to its confluence with the Columbia River. Joint Oregon-Idaho TMDLs for Snake River-Hells Canyon extending from RM 409 at about Adrian, Oregon to RM 188 immediately above the Salmon River inflow, will be a stand-alone effort, but will be coordinated with and complementary of the downstream effort. For the Mainstem Columbia River, the TMDL will reach from the Canadian Border to the Astoria Bridge.

The pollutants to be addressed by these TMDLs are total dissolved gas and temperature. The MOA signatories recognize the importance of other pollutants that are 303(d) listed, but these are beyond the scope of this MOA. TMDLs for pollutants other than total dissolved gas and temperature should proceed on a parallel track, and be coordinated with this effort under the direction of the state(s).

The MOA signatories further recognize that the relative contribution of pollutants from the tributaries, particularly temperature, is uncertain. For the purpose of this MOA, tributaries include river segments upstream of the identified boundaries. The MOA signatories fully recognize the value and importance of the tributaries in terms of habitat and water quality, and the effort that will be required to produce TMDLs on those waters.

However, the Columbia-Snake Rivers TMDL will not reach into the tributaries. The Clearwater TMDL to be prepared by the State of Idaho, Nez Perce Tribe, and the Environmental Protection Agency will be a stand-alone effort, but will be coordinated with the TMDL work in the Columbia Basin because of the importance of Dworshak Dam for temperature and total dissolved gas issues. The MOA signatories will make various assumptions and scenarios about the contributions of the tributaries in order to focus their efforts on the mainstem issues and recognize that the MOA signatories may need to adjust the mainstem goals over time based on their ability to achieve tributary targets. The purpose is to understand and remediate the contribution of dams and other in-river factors to total dissolved gas and temperature, and to ensure that there is equity in loading reductions between tributaries and the mainstem. In other words, problems and loading reductions necessary in the mainstem will not be passed on to the tributaries and vice-versa.

In developing a TMDL, the target must be the existing water quality standards. To perform a TMDL analysis, the river must be modeled with existing dams in place and the natural river scenario. The MOA signatories envision that there will be solutions to water quality problems, both operational and structural. This analysis does not presume to drive decisions on dam breaching or leaving dams in place. If the analysis demonstrates that water quality standards cannot be met with dams in place after all reasonable measures have been

implemented, a decision on a final proposed plan of action will be made with affected states and Tribes as part of the TMDL implementation plan, as applicable.

EPA would only issue a TMDL unilaterally if required to do so by the Settlement Agreement(s) particular to each state signing this TMDL. The goal is to have consensus on both the analysis and the implementation plan.

**Vision and Final Products:**

- An equitable allocation of pollutant reductions that accurately reflects relative contribution, and favors no one state, Tribe, or dam operator
- A TMDL that informs decision-makers as to the real causes of the water quality standards violations and the resultant loadings and feasible reductions and that has public participation
- A TMDL that recognizes and complements the other work in habitat and hydropower
- A TMDL that is approvable, withstands appeal, and meets the requirements of the Clean Water Act and state TMDL legal settlements and decisions
- A TMDL that includes an implementation plan. (See below)
- A TMDL that has the support of the participants (i.e., no surprises)
- A TMDL that promotes real improvements in water quality and fish habitat and meets water quality standards
- A cooperative venture which recognizes the expertise, jurisdiction, authorities, and efforts of all participants

**MOA Signatories:**

- US Environmental Protection Agency, Region X
- Washington DOE
- Oregon DEQ
- Idaho DEQ

**Requested to Participate in Implementation:**

- Columbia Basin Tribes (see Appendix for list of Tribes)
- PUDs:
  - Grant County PUD
  - Douglas County PUD
  - Chelan County PUD
  - Seattle City Light
  - Avista
  - Pend Orielle PUD
- Columbia Power
- BC Hydro

- Idaho Power
- Bonneville Power Administration (BPA)
- US Army Corps of Engineers (USACE)
- US Bureau of Reclamation (USBOR)
- US Fish and Wildlife Service (FWS)
- US National Marine Fisheries Service (NMFS)

**Coordinate with:**

- FERC
- Department of Justice
- Others agencies as necessary

**Conceptual Approach:**

EPA will produce:

- A TMDL for temperature for the Snake/Columbia Mainstem using the model developed by Dr. John Yearsley. The Snake River- Hells Canyon TMDL being done by Oregon and Idaho using a variety of mechanisms, including CE-Qual-W2 and Mike 11 models, will be coordinated with EPA's work. This will be done in cooperation with states, Tribes and Federal agencies. The Yearsley model will also be useful for total dissolved gas in coordination with other modeling efforts.
- A separate model for Lake Roosevelt.

Each State will produce:

- The TMDL for total dissolved gas for their waters in cooperation with the dam operators within their boundaries. Idaho DEQ and Oregon DEQ will jointly address total dissolved gas in the Snake River – Hells Canyon TMDL for interstate Snake River waters. Idaho DEQ, EPA, and the Nez Perce Tribe will jointly produce a TMDL for the Clearwater River. Washington DOE will produce the total dissolved gas TMDL from the Grand Coulee Dam to Astoria, Washington, and from the confluence of the Clearwater River to the confluence with the Columbia River. EPA will work with the Colville Tribe, the Spokane Tribes, and Washington DOE for the portion of the dissolved gas TMDL within Reservation boundaries. Oregon DEQ and Washington DOE will collaborate on the total dissolved gas TMDL for the interstate portions of the Columbia River.
- Each state will help EPA produce significant portions of the implementation plans for the temperature TMDL, particularly those sections relating to actions needed to reduce non-point sources.



EPA will participate in the states' total dissolved gas TMDLs for consistency of approach, assistance in coordinating a system-wide approach, and assisting in assuring an approach to realize water quality benefits. EPA will also assist with Federal project implementation, approvability of the final product, and securing the cooperation of applicable Federal agencies. Regarding the Canadian water use planning and hydropower licensing process, EPA will work with Washington DOE to seek a mechanism to incorporate United States and Tribal water quality standards in Canadian licenses so that those standards are met at the United States/Canadian border. The States and Tribes are encouraged to engage Federal, private, and PUD dam operators in their TMDL development process as essential partners.

The Federal Action Agencies (USBOR, USACE, and BPA) will be asked to provide data, technical/financial assistance and general support for the state and EPA efforts. The Federal Action Agencies have resources and expertise essential to the success of this effort. The USACE total dissolved gas model is an essential piece to be shared with the states and Tribes. The parties to this MOA acknowledge that spill over dams is both voluntary (for fish passage and flood control) and involuntary (volume of water exceeds capacity).

Interested and affected Tribes are invited to participate and lend their expertise to the effort. The MOA process will be flexible in its implementation to acknowledge and incorporate information and guidance resulting from the Tribe's promulgation of water quality standards and receipt of standing as "Treatment as a State." EPA will coordinate tribal involvement. EPA will provide the leadership with the states and Tribes to collaborate and cooperate on mainstem TMDL public involvement including the production of the Clearwater River TMDL and the Columbia River TMDL within the Reservation boundaries.

Each dam operator will be expected to implement the TMDL through construction or operational changes consistent with needs for fish passage. The implementation mechanisms will vary, but may include FERC licenses, Biological Opinions, consent decrees, water quality standards, waivers/variances, habitat conservation plans, or other agreements. Where Congressional appropriations are required, Action agencies will be expected to seek funding in good faith.

## **Roles of MOA Signatories:**

### **EPA:**

- Lead for temperature TMDL (except Snake River-Hells Canyon TMDL)
- Connect work to the Snake River-Hells Canyon TMDL and coordinate with total dissolved gas TMDL
- Coordinate Tribal participation
- Coordinate Federal participation per Biological Opinion
- Exercise Trust responsibility to the Columbia River Tribes by inviting their participation, seeking their advice and expertise, and keeping them informed on critical issues related to TMDL development
- Coordinate development of the total dissolved gas TMDL for the Clearwater River within the boundaries of the Nez Perce reservation
- Coordinate development of the total dissolved gas TMDL for the Upper Columbia River within the boundaries of the Colville and Spokane reservations
- Connect work to the Clearwater River TMDL
- Lead on a single public involvement effort
- Coordinate with Provincial and Federal governments of Canada, Washington DOE, and the Tribes on addressing total dissolved gas standards at the US/Canadian border

**A critical role of EPA will be to ensure coordination of the entire TMDL development effort between all involved parties.**

### **Oregon DEQ:**

- Co-lead for Snake interstate waters with Idaho DEQ
- Co-lead on Mainstem Columbia total dissolved gas TMDL with Washington DOE
- Participate in EPA's temperature TMDL
- Participate in public involvement efforts

### **Idaho DEQ:**

- Co-lead for Snake interstate waters with Oregon DEQ
- Engage Idaho Power Company
- Participate in EPA's temperature TMDL
- Participate in public involvement efforts
- Coordinate the development of the total dissolved gas TMDL, working with the Nez Perce Tribe and EPA

### **Washington DOE:**

- Lead for total dissolved gas TMDL from Grand Coulee to Astoria, Washington
- Co-lead on Mainstem Columbia total dissolved gas TMDL with Oregon DEQ
- Participate in EPA's temperature TMDL
- Engage PUDs in the TMDL development process
- Participate in public involvement efforts

Columbia Basin Tribes:

- Work with EPA and the states to prepare TMDLs and consult on decisions

**Expected Roles of Cooperating Agencies and Tribal Governments:**

- Federal Action Agencies (USACE, BOR, BPA): Provide data and information, financial/technical assistance, models, modeling, and general support
- PUDs/Private Dams: Provide data and information, technical/financial assistance; assist in TMDL development and implementation
- FERC: Condition future licenses with TMDL implementation plans as part of 401 certification by states and Tribes
- NMFS: Assist in resolution of fish passage, temperature, and total dissolved gas issues
- FWS: Assist in resolution of fish passage, temperature, and total dissolved gas issues
- Columbia Basin Tribes: Consult on a government-to-government basis. The Tribes will be invited to participate to provide their views and perspectives and lend their expertise to the effort

**Resources:**

## EPA:

- \$80,000 for application of temperature model
- 0.4 FTE Yearsley
- 0.1 FTE from TMDL unit
- 0.5 FTE Soscia
- 0.5 FTE Tortorici
- 0.1 FTE Woodruff
- 0.3 FTE Olson
- 0.4 FTE Martin
- 0.1 FTE Cole

## Oregon:

- 0.75 FTE Columbia Total Dissolved Gas TMDL
- 1.0 FTE Snake River-Hells Canyon TMDL
- 0.5 FTE ESA coordination, comment, and review

## Idaho:

- 2 FTE for Snake River-Hells Canyon TMDL
- 1 FTE for Clearwater TMDL
- 0.25 FTE for Snake (Salmon to Clearwater TMDL)
- 0.5-1.0 FTE on ESA on the river segments and to coordinate, review and comment on the lower Snake and Columbia TMDLs
- \$200,000 in contract support of the above listed projects

## Washington:

- 1 FTE

**Schedule:**

The TMDL for the Lower Columbia and Snake Rivers will be completed by December 2001 (Phase I). The TMDL for the Upper Columbia River will be completed by December 2002 (Phase II). The states will be responsible for issuing the final TMDL, in close coordination with EPA. In order to meet the schedule, the agencies are committed to acquiring the resources necessary to implement this MOA. It is recognized that the ability to meet the commitments in this MOA are dependent on adequate resources. Upon signature of the MOA, the first step will be to develop a more detailed role paper laying out more specific responsibilities of the signatory agencies.

**MOA Modifications:**

Parties to this MOA are encouraged to review and periodically update this MOA to ensure its relevance to changing situations for the life of the project. Any party may withdraw from the MOA with 90 days notice to the other parties while stating the reasons. The other parties may attempt to accommodate the concerns expressed by the withdrawing state in order to maintain the MOA.

**Signatures:**

For the US Environmental Protection Agency, Region X

\_\_\_\_\_

For the State of Oregon \_\_\_\_\_

For the State of Idaho \_\_\_\_\_

For the State of Washington \_\_\_\_\_

## Appendices:

### 1. Water Quality Standards for Columbia River Total Dissolved Gas and Temperature

Total Dissolved Gas - For Total Dissolved Gas, the goal is to reach the Total Dissolved Gas standard, which is currently 110% in the Columbia and Snake River mainstems.

Temperature - For water temperature, the long-term goal is standard attainment in the Columbia and Snake River mainstems. For the Columbia River, the temperature criteria to be attained from the Canadian border to Grand Coulee Dam is 16°C /60.8°F. For Grand Coulee Dam to Priest Rapids Dam, the temperature criteria is 18°C/64.4°F (instantaneous maximum). For Priest Rapids Dam to Pacific Ocean, the temperature criteria is 20°C/68.0°F (instantaneous maximum). For the Snake River, from the Salmon River to Washington/Oregon border the temperature criteria is 17.8°C/64°F, with a 7-day average of daily maximum temperatures [12.8°C/55°F 7-day average of daily maximum temperatures from October 1 through June 30]. At the Washington/Oregon border to confluence with Columbia River, the temperature criteria is 20°C/68°F (instantaneous maximum).

### 2. Clean Water Act section 303(d) listed waters on the Columbia/Snake Mainstems Clean Water Act section 303(d) listed waters on the Columbia/Snake Mainstems can be found on the following websites:

State of Oregon - <http://waterquality.deq.state.or.us/wq/303dlist/303dpage.htm>

State of Washington - <http://www.ecy.wa.gov/programs/wq/303d/index.html>

State of Idaho - <http://www2.state.id.us/deq/water/water1.htm>

### 3. TMDL development consent decrees and/or settlement agreements

(See attached)

### 4. FCRPS Biological Opinion issued by NMFS on the FCRPS

A CD-ROM of the Biological Opinion is available from NMFS which can be obtained by calling their Hydropower Division Office located in Portland, Oregon (503/230-5414).

### 5. Federal Agency Water Quality Plan for Mainstem Columbia System

The Federal Agency Water Quality Plan for Mainstem Columbia System is located in the NMFS FCRPS Biological Opinion, Appendix D.

### 6. List of Columbia Basin Tribes

Burns Paiute Tribe of the Burns Paiute Indian Colony of Oregon  
Coeur d'Alene Tribe of the Coeur D'Alene Reservation, Idaho  
Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana  
Confederated Tribes of the Colville Reservation, Washington  
Confederated Tribes of the Umatilla Indian Reservation, Oregon  
Confederated Tribes of the Warm Springs Reservation of Oregon  
Confederated Tribes and Bands of the Yakama Nation, Washington  
Kalispel Indian Community of the Kalispel Reservation, Washington  
Kootenai Tribe of Idaho  
Nez Perce Tribe, Idaho  
Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho  
Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada  
Spokane Tribe of the Spokane Reservation, Washington

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