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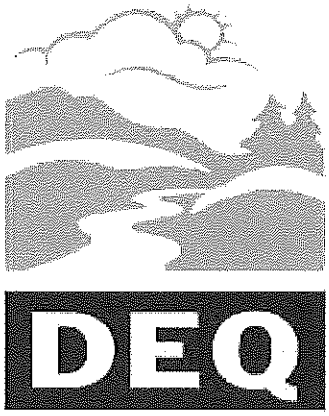
OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 03/11/2003



State of Oregon
Department of Environmental Quality

Environmental Quality Commission Special Phone Meeting
March 11, 2003, 9:00 a.m.
DEQ Headquarters, Room 10A

Meeting notes

The following Environmental Quality Commission members were present for the special phone meeting on March 11, 2003.

Mark Reeve, Chair[1]
Tony Van Vliet, Vice Chair
Harvey Bennett, Member
Deirdre Malarkey, Member

Paul Slyman, DEQ Deputy Director, served as acting director for Stephanie Hallock. Larry Knudsen (Assistant Attorney General), DEQ staff, representatives of federal agencies, and members of the public were also present.

Vice Chair Van Vliet called the meeting to order at approximately 9:00 a.m. Agenda items were taken in the following order.

A. Action Item: Request from U.S. Army Corps of Engineers for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River

Vice Chair Van Vliet asked Russell Harding, DEQ Columbia River Coordinator, to introduce this item. Dr. Harding summarized a request from the U.S. Army Corps of Engineers for a variance to Oregon's total dissolved gas (TDG) water quality standard to enable water to be spilled at Lower Columbia River dams to assist salmon smolts migrating to the ocean. Dr. Harding noted that the Commission had granted similar waivers to Corps in previous years, and in making this request, the Corps sought a multi-year variance from the Commission. Dave Ponganis, from the Army Corps of Engineers, explained the request and answered questions from the Commission.

Commissioner Malarkey asked whether Oregon and Washington had different procedures for approving a request for a waiver to the TDG standard, and asked whether reporting to the two states on the result of the spill would be coordinated. Mr. Ponganis answered that the procedures are slightly different, but that the Corps was coordinating reporting requirements, and expected to receive a five year waiver for spill from Washington beginning in 2004.

Vice Chair Van Vliet asked whether operation of the turbines at the dams would be reduced because of less activity from aluminum smelters in the region, and whether idle turbines would assist fish passage through dams. Mr. Ponganis responded that turbine operation varied greatly at each dam over the year, depending on power demand and flow conditions, and that idle turbines do not spin and do assist fish passage.

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[1] Chair Mark Reeve joined the meeting at approximately 9:15 a.m.

Vice Chair Van Vliet asked whether monitoring has shown smolt mortality as a result of smolts hitting flow deflectors recently installed at dams. Mark Schneider, from NOAA Fisheries, responded that in general, smolt mortality from hitting fish deflectors is low, approximately 1 percent. He added that deflectors had been installed at almost all mainstem Lower Columbia River dams, with the exception of The Dalles Dam, because of its configuration.

Vice Chair Van Vliet asked Dr. Harding to discuss the Corps request for a multi-year variance. Dr. Harding stated that in October 2002, the Commission had given the Department guidance that it would be open to considering a multiyear variance since biological and physical monitoring reports on the results of past spills have not proven concerning to fish passage, fish survival or water quality. At that time, the Commission suggested a three year waiver. The Department solicited public input on the Corps proposed multiyear waiver and received two comments, both in favor of granting a multiyear waiver. In considering the number of years over which to grant a variance, Dr. Harding mentioned upcoming evaluation deadlines for the 2002 NMFS Biological Opinion for the Columbia River, including 2003, 2005 and 2008 evaluations. Dr. Harding suggested that if the Commission chose to approve a five year variance to the TDG standard, a report back from the Corps evaluating the result of the five year spills could be coordinated with the 2008 assessment of the Biological Opinion. If the Commission chose this option, it could direct the Corps to continue annual evaluation reports to the Department, which would be available to the Commission. Vice Chair Van Vliet requested that if the annual reports raised any concerns, the Department would let the Commission know. Commissioner Malarkey requested annual informational briefings to the EQC on the results of the Corps spill program, in order to maintain awareness of the progress of the program.

Vice Chair Van Vliet said he would entertain a motion to act on the Corps request. Mr. Knudsen suggested that based on the Commission's discussion, the Commission could adopt the findings in Attachment E of the staff report for Item A and approve the draft order with an amendment to enable a five year variance, provided that annual reports to the Department and informational briefings to the Commission were given. Specifically, the Commission could amend the draft order to add the following underlined language at 2 (ii): "the revised criteria will apply for 2003, 2004, 2005, 2006 and 2007;" and at 2 (ix): "The Corps shall provide the Commission with an annual report, and if requested the Corps shall appear before the Commission to report on any of the above matters relating to total dissolved gas as the Commission may determine;".

Chair Reeve moved that the Commission adopt the findings required for the variance as requested by the Army Corps of Engineers to enable water to be spilled at Lower Columbia River dams to assist salmon smolts migrating to the ocean, and adopt the draft order as presented in Attachment E of the staff report for Item A as modified by counsel. Commissioner Malarkey seconded the motion and it passed with four "yes" votes. Mikell O'Mealy, Assistant to the Commission called the roll.

Chair Reeve asked Dr. Harding to present the next item.

B. Action Item: Request from U.S. Fish and Wildlife Service for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River

Dr. Harding explained that on March 10, 2003, the U.S. Fish and Wildlife Service (USFWS) sent a letter to the Department and Commission officially withdrawing their request for a variance to Oregon's total dissolved gas water quality standard to enable water to be spilled at Bonneville Dam to assist fish released from Spring Creek National Fish Hatchery. Dr. Harding explained that the USFWS intended to conduct some spill to assist the hatchery release, but the spill was not projected to exceed the 110 percent TDG standard.

Howard Schaller, project manager for the USFWS, explained that because of low water conditions in the Columbia Basin and the difficult financial situation facing the Bonneville Power Administration, the decision was made to reduce the amount of water spilled to assist the hatchery. Commissioner Malarkey asked how the smolt migration would happen without greater spill. Dr. Schaller responded that smolts will migrate with the assistance of some water spilled, which began this week.

Chair Reeve asked Dr. Harding whether he had anything to add. Dr. Harding stated that the process of evaluating the late waiver request from the USFWS this year has been difficult for the Department to manage, and the staff work that was invested in seeking public input on the request now has proven to be unnecessary because not enough water exists in the system to enable the spill. Dr. Harding suggested that the Commission might direct the DEQ Director to write a letter to the USFWS suggesting they explore the possibility of eliminating the March hatchery release (the Spring Creek Hatchery usually spills water in March, April and May to move smolts out to enable growth of remaining smolts), or coordinate their request for a waiver with the Corps. Chair Reeve responded that Dr. Harding made good points with regard to the burden placed on the Department by this request this year, and suggested the Commission leave it up to the Department about how to work with the Corps to improve the situation in future years. All other Commissioners voice agreement with the Chair. Chair Reeve asked Mr. Schaller to take the Commission's concerns regarding DEQ staff resources and process back to the USFWS.

Hearing no further comments, Chair Reeve concluded this item.

Deputy Director Slyman updated the Commission on the schedule for the Legislative Ways & Means Natural Resources Subcommittee hearings on DEQ's 2003-2005 budget request. He stated that Director Hallock was focusing on preparing for making presentations in those hearings, which were set to begin on March 17 and continue through the afternoons of March 18, 19 and 20, in addition to a work session and public comment opportunity scheduled for March 24. Director Hallock and a number of DEQ executive managers planned to be in the Salem Capitol for those meetings. Deputy Director Slyman also discussed the status of state budget issues and DEQ budget needs.

Deputy Director Slyman let Commissioners know that the "GASP III" (Umatilla) trial recommenced yesterday, and is scheduled to continue for three weeks. If the trial does not conclude in three weeks, it would be recessed until August 2003. The Army and Washington Demilitarization Company are in the process of calling their witnesses.

Finally, Deputy Director Slyman stated that DEQ's biggest budge issue for the 2003-2005 biennium was funding for DEQ's Laboratory, which must vacate the Portland State University building and which is in dire need of upgrading to support analysis for potential, credible chemical agent threats. Mary Abrams, Lab Administrator, plans to travel to Washington D.C. in April to seek federal funds to support a new facility for both the DEQ lab and the state Public Health Lab.

C. Commissioners' Reports

Commissioner Malarkey reported on her recent attendance at a Lane Regional Air Pollution Authority presentation on field burning, and suggested that a similar presentation be made to the EQC sometime in the future. She said that Scott Downey from EPA and an Oregon Department of Agriculture meteorologist were part of the presentation.

Commissioner Malarkey reported on her recent attendance at an Association for Clean Water Agencies meeting, at which Kevin Masterson, DEQ water quality staff, gave an excellent presentation. She also reported that she would soon be speaking at a DEQ-sponsored conference on Environmental Partnerships for Oregon Communities.

Commissioner Bennett reported that in the process of balancing its budget for the next few years, the Umpqua Community College has had to cut $3 million of its $15 million budget, and that long term thinking for how to support education and other services is needed in light of the current economy.

Chair Reeve adjourned the meeting at approximately 9:50 a.m.

State of Oregon
Department of Environmental Quality Memorandum

To: Environmental Quality Commission **Date:** February 28, 2003

From: Mikell O'Mealy

Subject: March 11 EQC Meeting Materials

Enclosed are materials for the March 11, 9:00 a.m., Commission meeting, which you may connect by calling the toll-free conference number below. Our agenda is quite short, and I expect we will finish within an hour or so.

Tuesday, March 11, 9:00 a.m.
Call: 1-(888)-285-4585
Dial the participant code: 325110

At this point, Stephanie expects to be working on DEQ's budget presentation to the Legislative Ways & Means Subcommittee, which is scheduled to begin in Salem on March 10. Thus, it is likely that Paul Slyman will be acting as Director in this EQC meeting. Paul, Larry Knudsen, myself, DEQ staff and any members of the public who choose to attend will be in DEQ Headquarters, Room 10A for this meeting. Of course, if you find yourself in Portland, you may join us in Room 10A.

If have any questions about the meeting or if I can assist you in any way, please let me know (503-229-5301 or toll-free at 1-800-452-4011 ext. 5301).

I look forward to seeing you soon.

Special Phone Meeting
of the
Oregon Environmental Quality Commission
March 11, 2003
Beginning at 9:00 a.m.

Oregon Department of Environmental Quality (DEQ)
Headquarters Building, Room 10A
811 SW Sixth Avenue, Portland, Oregon

A. Action Item: Request from U.S. Army Corps of Engineers for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River
The Commission will consider a request from the U.S. Army Corps of Engineers for a variance to Oregon's total dissolved gas water quality standard to enable water to be spilled at Lower Columbia River dams to assist salmon smolts migrating to the ocean. The Commission has granted similar waivers to Corps in previous years.

B. Action Item: Request from U.S. Fish and Wildlife Service for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River
The Commission will consider a request from the U.S. Fish and Wildlife Service for a variance to Oregon's total dissolved gas water quality standard to enable water to be spilled at Bonneville Dam to assist fish released from Spring Creek National Fish Hatchery. The Commission has granted similar waivers in previous years.

C. Commissioners' Reports

Adjourn

Environmental Quality Commission Meetings scheduled for 2003:
March 11, May 8-9, August 14-15, October 9-10, December 4-5
A meeting will also be held in June or July of 2003.

Agenda Notes
There will be no public forum at this meeting.

Copies of staff reports for individual agenda items are available by contacting Andrea Crozier in the Director's Office of the Department of Environmental Quality, 811 SW Sixth Avenue, Portland, Oregon 97204; telephone 503-229-5990, toll-free 1-800-452-4011 extension 5990, or 503-229-6993 (TTY). Please specify the agenda item letter when requesting reports. If special physical, language or other accommodations are needed for this meeting, please advise Andrea Crozier as soon as possible, but at least 48 hours in advance of the meeting.

Environmental Quality Commission Members

The Environmental Quality Commission is a five-member, all volunteer, citizen panel appointed by the governor for four-year terms to serve as DEQ's policy and rule-making board. Members are eligible for reappointment but may not serve more than two consecutive terms.

Mark Reeve, Chair
Mark Reeve is an attorney with Reeve Kearns in Portland. He received his A.B. at Harvard University and his J.D. at the University of Washington. Commissioner Reeve was appointed to the EQC in 1997 and reappointed for a second term in 2001. He became Chair of the EQC in 2003. Commissioner Reeve also serves as Co-Chair of the Oregon Watershed Enhancement Board.

Tony Van Vliet, Vice Chair
Tony Van Vliet received his B.S. and M.S. in Forest Production at Oregon State University. He has a Ph.D. from Michigan State University in Wood Industry Management. Commissioner Van Vliet served sixteen years as a member of the Public Lands Advisory Committee, has been a member of the Workforce Quality Council, served sixteen years as a State Representative on the Legislative Joint Ways and Means Committee, and served eighteen years on the Legislative Emergency Board. He currently resides in Corvallis. Commissioner Van Vliet was appointed to the EQC in 1995 and reappointed for an additional term in 1999.

Harvey Bennett, Commissioner
Harvey Bennett is a retired educator. He has taught and administered at all levels of education, concluding as president emeritus of Rogue Community College. Commissioner Bennett has a B.S., M. Ed. and Ph.D. from the University of Oregon. Commissioner Bennett was appointed to the EQC in 1999 and he currently resides in Grants Pass.

Deirdre Malarkey, Commissioner
Deirdre Malarkey is a graduate of Reed college, with graduate degrees from the University of Oregon. She has served previously on two state natural resource boards and on the Water Resources Commission and retired as a land use planner. Commissioner Malarkey was appointed to the EQC in 1999 and lives in Eugene.

Vacant, fifth Commission position

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State of Oregon

Department of Environmental Quality Memorandum

Date: February 28, 2003

To: Environmental Quality Commission

From: Stephanie Hallock, Director S. Hallock

Subject: Agenda Item A, Action Item: Request from U.S. Army Corps of Engineers for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River, March 11, 2003 EQC Meeting

Proposed Action

The U.S. Army Corps of Engineers (Corps) has petitioned the Commission for a variance to the State's total dissolved gas water quality standard to enable water to be spilled at all four Lower Columbia River dams (McNary, John Day, The Dalles and Bonneville) to assist outmigrating threatened and endangered salmonid smolts. The petition requests a variance from the standard of 110 percent of saturation relative to atmospheric pressure, between April 1 and August 31. For this period, the Corps is seeking a total dissolved gas standard of 115 percent saturation as measured in the forebay of each of the dams, and 120 percent saturation as measured in the tailrace.

The Corps is also seeking to have this variance begin in 2003 and extend for a number of years without annual approval.

The petition is evaluated in Attachment A.

Key Issues

Summary of 2002 Spill Season

The precipitation during the 2002 water year was 93 percent of normal (1971-2000) above Grand Coulee Dam, 82 percent of normal in the Snake River upstream from Ice Harbor Dam, and 89 percent of normal in the Columbia River above The Dalles Dam. This followed the 2001 year which was the second lowest runoff since 1928. Generally, flows in the basin were below average until April, with the peak occurring in June. At The Dalles Dam, there was second peak in June which produced very high flows, resulting in involuntary spill. The spring spill program began on April 10 for the four lower river dams and continued until June 20. The summer spill program was characterized by high flows which resulted in spill continuing at McNary Dam until August 1. Summer spill continued until August 31 at John Day, The Dalles and Bonneville Dams.

There were three special spill operations in 2002. A removable spillway weir was tested at Lower Granite Dam. This new technology may enable fish to be passed while spilling less water, with an attendant improvement in total dissolved gas levels. Spill tests were conducted at Bonneville and John Day dams to assess fish passage at varying spill levels. No spill occurred at Lower Monumental Dam due to safety concerns. Parts of the tailrace have been eroding. Repairs were made in 2002 to prevent further erosion.

Exceedances of the variance granted by the Commission last year were low, except at McNary dam, where the 12 hour average was exceeded on 45 days. This is attributable to two causes: high flows resulting in involuntary spill, and unmixed water entering the McNary forebay separately from the mid-Columbia and the lower Snake rivers.

Gas Bubble Trauma Monitoring

A total of 13,477 juvenile salmonids were examined between April and August 2002. Of these, 155 (1.2 percent) showed some signs of gas bubble disease. In the lower Columbia River, 9,986 fish were examined, with 74 (0.7 percent) exhibiting signs. This compares with 0.1 percent in 2001 (a low flow/low spill year), and 4.2 percent in 1996 (a high flow/high spill year). Gas bubble signs continue to be well correlated with spill quantity and total dissolved gas levels.

Lower Columbia River TDG TMDL

On November 18, 2002, the Environmental Protection Agency approved a TMDL for total dissolved gas for the lower Columbia River. This TMDL was jointly prepared and submitted by the States of Washington and Oregon. It contained load allocations to each dam, and an implementation plan. The TMDL was reviewed by NOAA Fisheries and US Fish and Wildlife Service under The Endangered Species Act and was found to be unlikely to impact listed species adversely.

Public Input

The Department issued a notice to the public of receipt of this application on January 15, 2003. Public comment was solicited until February 19, 2003, and a public hearing was held on February 19, 2003. The public comments received are summarized in Attachment D.

EQC Action Alternatives

The EQC has two alternatives for action:

1. Approve the request with or without conditions. In order to take this action, the Commission must make the four affirmative findings detailed in Attachment B;

2. Decline to approve the petition. In this case, the Commission could decide that alternative methods of fish migration are available, such as barge transportation.

Department Recommendation

The Department recommends that the Commission grant this petition by adopting the findings, and imposing the conditions contained in the Draft Order at Attachment E.

Attachments

A. Summary of Application and Supporting Documentation
B. Oregon Administrative Rule Relating to the Total Dissolved Gas Water Quality Standard
C. Map of Columbia River Showing Locations of Federal Hydropower Projects
D. Summary of Public Comments Received
E. Draft Order Approving the Corps of Engineers' Request for a Variance

Available Upon Request

U.S. Army Corps of Engineers' Request
Lower Columbia River Total Dissolved Gas TMDL

Approved:

Section: Gregory K. Aldrich

Division: Gregory K. Aldrich for Michael Llewelyn

Report Prepared By: Russell Harding
Phone: (503) 229-5284

ATTACHMENT A

Summary of Application and Supporting Information

U.S. Army Corps of Engineers

In late 1991 and early 1992, the National Marine Fisheries Service (NMFS) determined that three species of salmon from the Snake River Basin were endangered or threatened under the Endangered Species Act (ESA). The listed species were sockeye salmon, spring/summer chinook, and fall chinook. On March 2, 1995, an ESA Section 7 Biological Opinion on the operation of the federal Columbia River Power System was issued. The Biological Opinion established a set of reasonable and prudent alternatives (RPA's) with the objective of improving the operation and configuration of the federal power system to meet the "no jeopardy" requirement of the ESA, and to fulfill the United States' commitment to uphold Indian treaty rights.

On May 14, 1998, NMFS issued a Supplemental Biological Opinion. The Supplemental Biological Opinion was developed in part to address the needs of the newly listed threatened Snake River and Lower Columbia River steelhead, and endangered Upper Columbia River steelhead which were listed in August 1997, and March 1998 respectively.

On December 21, 2000, NMFS released a new Biological Opinion relating to the federal hydropower system. This Biological Opinion superceded all prior opinions and supplemental opinions. RPA #54 of the December 2000 Biological Opinion calls for spilling water to facilitate passage of juvenile salmonids outmigrating in the Snake and Columbia rivers. Spilling water has been part of the operation of the federal hydropower system since 1995.

There are four methods by which downstream migrating salmonids can pass dams. These passage methods are via the turbines, transportation by barge, through the screened fish by-pass system, and over the spillway. Each of these passage routes has a level of mortality associated with it. The National Marine Fisheries Service's biological opinion significantly changed the metric for fish passage. Rather than an eighty percent fish passage efficiency (80 percent of fish passing dams other than via turbines), the 2000 biological opinion substituted a survival performance measure. These will be assessed in 2005 and 2008. The performance measures are detailed in Table 1.

Due to the dry conditions with associated low stream flows and curtailment of the fish passage spill program in 2001, progress on the performance standards is in a deficit. Additional efforts will need to be made over the next three years to make up for this.

Table 1: Biological Performance Measures from the National Marine Fisheries Service's 2000 Biological Opinion

ESU	Adult Survival Rate		Juvenile Survival Rate		
	FCRPS System	Per FCRPS Project[1]	FCRPS Inriver Only		FCRPS Combined[2] (Transport + Inriver + Differential Mortality of Transported Fish)
			System	Per Project[1]	
Chinook Salmon					
SR spring/summer	85.3	98.1	49.6	91.6	57.6
SR fall	74.0	96.3	34.3	78.4	42.7
UCR spring	92.2	98.3	66.4	90.3	66.4
UWR	N/A	N/A	N/A	N/A	N/A
LCR	98.3	98.3	90.7	90.7	90.7
Steelhead					
SR	80.3	97.3	51.6	92.3	59.8
UCR	89.3	97.3	67.7	90.7	67.7
MCR	89.3	97.3	67.7	90.7	67.7
UWR	N/A	N/A	N/A	N/A	N/A
LCR	97.3	97.3	90.8	90.8	90.8
CR chum salmon	N/A	N/A	N/A	N/A	N/A
SR sockeye salmon	88.7	98.5	N/A	N/A	N/A

SR – Snake River UCR – Upper Columbia River UWR – Upper Willamette River LCR – Lower Columbia River

Total Dissolved Gas Abatement

The Corps began a comprehensive Dissolved Gas Abatement Study (DGAS) in 1994. The study was completed in 2001. Incidentally, this study formed the technical basis of the Lower Columbia River Total Dissolved Gas TMDL. In the course of undertaking the study, a number of structural and operational improvements were identified. Rather than awaiting the completion of the study, the Corps implemented these on a fast-track basis. Of particular note is the installation of flow deflectors (flip lips) at Ice Harbor and John Day Dams. A number of further modifications have been incorporated into the National Marine Fisheries Service's 2000 biological opinion, and into the TDG TMDL.

Lower Columbia River Total Dissolved Gas TMDL

On November 18, 2002, the US Environmental Protection Agency (EPA) approved a TMDL for total dissolved gas for the lower Columbia River. This TMDL specified load allocations for each dam and detailed a number of implementation actions that are

consistent with the National Marine Fisheries Service's 2000 biological opinion and the Corps' gas abatement study.

Period of Variance

The Corps of Engineers has requested that this variance extend for a greater period than one year. This request is based on discussions between the Department and the Corps, and rests on three bases:

1. that with nine years of physical and biological monitoring data, there is a level of comfort and confidence that migrating juvenile salmonids and returning adults are adequately protected, and the risks of injury or mortality from elevated total dissolved gas levels are low relative to the benefits for fish passage;

2. that with tight budgets and limited staff resources, especially at the State level, but also in the federal government, staff can be released for the time to prepare and process these requests each year onto higher priority work; and

3. the Lower Columbia River Total Dissolved Gas TMDL provides a framework within which a multi-year variance could be considered, in exchange for a commitment to implementing actions that will lead to greater gas abatement without sacrificing fish passage.

At its meeting of October 4, 2002, the Commission indicated a willingness to consider a multi-year variance and suggested three years as a possible option.

ATTACHMENT B

Oregon Administrative Rule, OAR 340-41- 525 (2)(n)

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

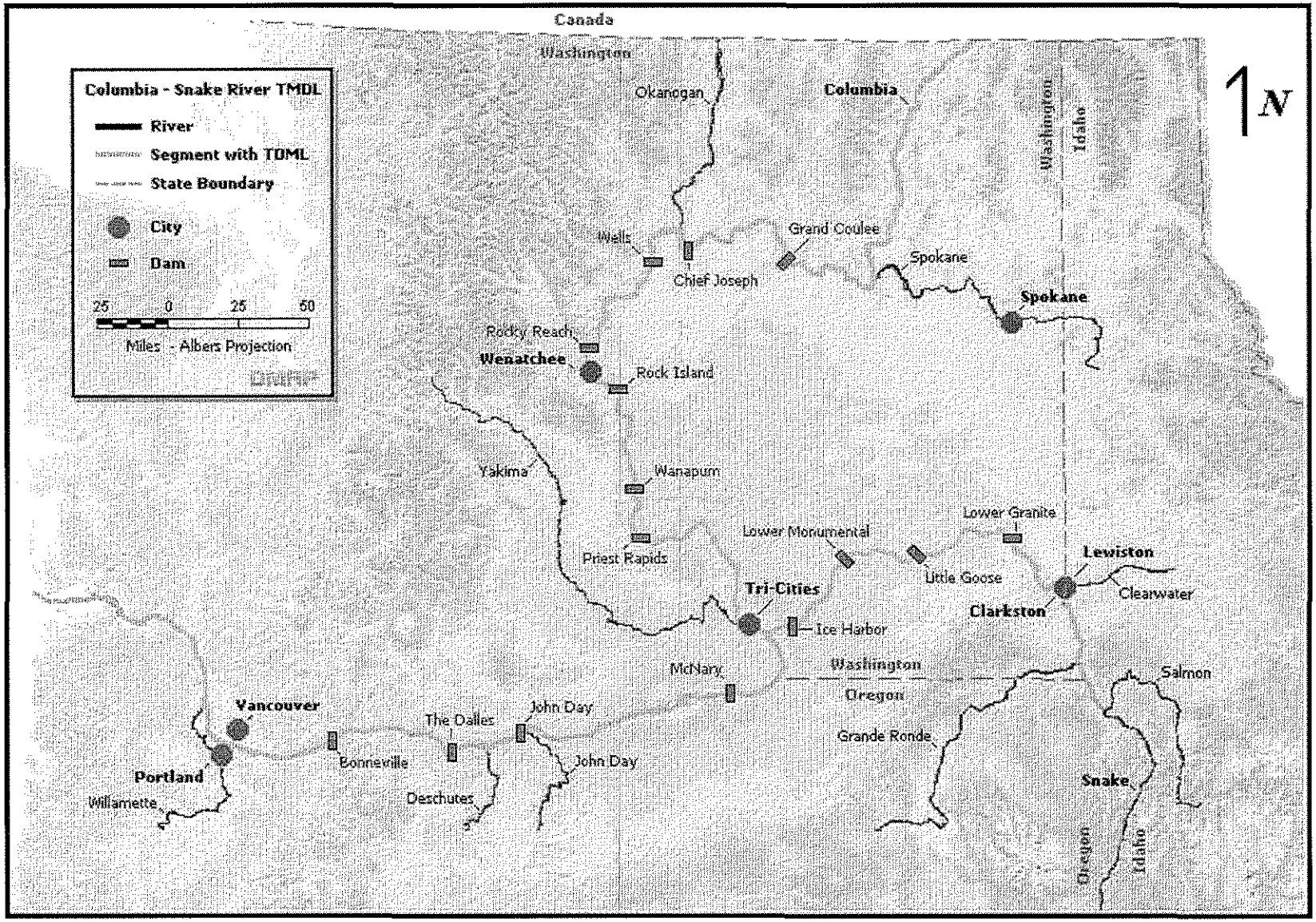
(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

Columbia Basin Map



ATTACHMENT C

ATTACHMENT D

Summary of Public Comments Received on the Petition from the US Army Corps of Engineers for a Variance to the State of Oregon's Total Dissolved Gas Water Quality Standard

The Department issued a Public Notice on January 15, 2003 opening a public comment period on the above petition. A public hearing was held at 10:00 a.m. on February 19, 2003 in room 120B of the State Office Building at 800 NE Oregon Street, Portland, OR 97232. Written comments were due at 5:00 p.m. on February 19, 2003.

No one attended the public hearing. Two written comments were received in the comment period. These are summarized here.

1. Chuck Coutant, PhD.

It has been some time since the Independent Scientific Advisory Board and its predecessor, the Independent Scientific Group reviewed studies to advise on the appropriateness of the water quality variance for fish passage. Since that time, evidence has accumulated supporting the biological acceptability of annual variances.

This comment supports granting the variance and suggests that it should extend for a five year period, with an option to reopen if contra-indicatory evidence is presented. This support is based upon the biological acceptability of the requested variance levels, and the importance of spill as a fishery management option to assist migrating juvenile salmonids.

Dr. Coutant offers his services and that of the Independent Scientific Advisory Board to review documentation either now or at the end of a multi-year variance period.

2. Richard Cassidy, US Army Corps of Engineers

Now that the Lower Columbia River Total Dissolved Gas TMDL has been approved establishing load allocation in terms of delta pressure above ambient, rather than percent saturation, the Corps is recommending that both measures be recorded through the physical monitoring sites. The Corps seeks the Department's position on this.

The TMDL provides for the use of the current fixed monitoring stations, but envisions a time when compliance with the TMDL will be based on locations at the edge of the aerated zone. The Corps will begin developing costs and timeframes for migrating to this alternative monitoring site.

The Corps wants to know if the variance will be in percent saturation (as in the past) or delta pressure above ambient.

Late Comments

Two comments were received outside the public comment period:

Columbia River InterTribal Fish Commission;
Wesley J. Ebel, Ph.D.

Neither of these comments has been evaluated.

Response to Comments

1. The Department appreciates Dr. Coutant's comments and particularly his offer to review studies or documents related to the spill program.

   The Department agrees that a variance period of longer than one year is appropriate.

2. The Department believes that it will be beneficial to have total dissolved gas levels specified both in terms of percent saturation and delta pressure above ambient from the Corps' fixed monitoring network.

   The variance for this period will continue to be specified as percentage of saturation. This is the unit that is used in the water quality standard for which the variance is sought.

Order Approving the U.S Army Corps of Engineer's Request for a Variance to the State's Total Dissolved Gas Water Quality Standard

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

In the matter of the U.S. Army Corps	(	
of Engineers' request to spill water	(	ORDER
to assist out-migrating threatened	(	
and endangered salmon smolts	(	

WHEREAS the Department of Environmental Quality received a request from the U.S. Army Corps of Engineers dated December 23, 2002, to adjust the Total Dissolved Gas Standard as necessary to spill water over McNary, John Day, The Dalles and Bonneville Dams on the Lower Columbia River to assist out-migrating threatened and endangered salmon smolts, for the period from April 1 to August 31; and

WHEREAS the application sought approval for multiple years; and

WHEREAS the public was notified of the request on January 15, 2003, and given the opportunity to provide testimony at 10:00 a.m. on February 19, 2003 and the opportunity to provide written comments until 5:00 p.m. on February 19, 2003; and

WHEREAS the Environmental Quality Commission met on March 11, 2003 and considered the request, justification and public comment.

THEREFORE the Environmental Quality Commission orders as follows:

1. Acting under OAR 340-41-205, 445, 485 and 525(2)(n), the Commission finds that:

   (i) failure to act will result in more salmonid passage via hydroelectric dam turbines. Estimated mortalities from fish passing through turbines is between 10 and 15 percent. Fish passing over spillways as a result of spill experience two to three percent mortality;

   (ii) the balance of risk of impairment to migrating salmonids, resident fish, and other aquatic life due to elevated dissolved gas levels needs to be balanced against migrating juvenile salmonid mortality from turbine passage. Resident fish and aquatic invertebrates in the Columbia River downstream of Bonneville Dam were monitored by NMFS for signs of gas bubble disease in 1993, 1994, 1995, 1996, 1997 and 1998. There was a low incidence of gas bubble disease (less than one percent) in resident fish

examined in 1993 and 1995 while in 1994, 1997 and 1998 none of the fish observed had signs of gas bubble disease. There were no signs of gas bubble disease observed in the aquatic invertebrates examined. Signs of gas bubble disease were prevalent in 1996 but this was a high flow year with large volumes of involuntary spill and total dissolved gas levels above 115 percent in the forebays and 120 percent in the tail races of dams. There is a low incidence of gas bubble disease in migrating juvenile and adult salmonids when the total dissolved gas levels are at or below 115 percent in the dam forebays and 120 percent in the tailraces. The low incidence of gas bubble disease observed has been regarded as a low risk for mortality from gas bubble disease. Total dissolved gas levels of between 130 to 140 percent from involuntary spill, resulted in an increased incidence of gas bubble disease and is regarded as an increased risk of mortality from gas bubble disease. Given the past monitoring of gas bubble disease, the levels requested in this petition seem to be a reasonable balance between increased survival due to reduced turbine mortality and the risk of mortality from gas bubble disease;

(iii) The Corps has submitted a physical monitoring plan. Physical monitoring will be conducted at Camas/Washougal, and the Bonneville Dam forebay and in the forebay and tailraces of McNary, John Day, and The Dalles Dams. Hourly data will be available on the Corps' Internet World Wide Web pages. Implementation of the physical monitoring plan will ensure that data will exist to determine compliance with the standards for the voluntary spill program; and

(iv) The Corps has submitted a biological monitoring plan. Juvenile salmonids will be collected at Bonneville and McNary Dams and examined for signs of gas bubble disease on non-paired fins, eyes, and lateral lines.

2. The Environmental Quality Commission approves a modification to the Total Dissolved Gas standard for spill over McNary, John Day, The Dalles and Bonneville Dams on the Lower Columbia River, subject to the following conditions:

(i) a revised total dissolved gas standard for the Columbia River for the period from midnight on April 1 to midnight on August 31;

(ii) the revised criteria will apply for 2003, 2004, 2005, 2006 and 2007;

(iii) a total dissolved gas standard for the Columbia River of a daily (12 highest hours) average of 115 percent as measured in the forebays of McNary, John Day, The Dalles, and Bonneville Dams and at the Camas/Washougal monitoring stations;

(iv) a cap on total dissolved gas for the Columbia River during the spill program of 120 percent measured in the tailraces of McNary, John Day,

The Dalles, and Bonneville Dams' monitoring stations, based on the highest 12 highest hourly measurements per calendar day; and

(v) a cap on total dissolved gas for the Columbia River during the spill program of 125 percent, based on the highest two hours during the 12 highest hourly measurements per calendar day during these times;

(vi) a requirement that if 15 percent of the juvenile fish examined show signs of gas bubble disease in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles or that contra-indicatory evidence suggests that fish are being harmed, the Director will terminate the variance; and

(vii) a requirement that the Corps provide written notice to the Department within 24 hours of any violations of the conditions in the variance as it relates to voluntary spill. Such notice shall include actions proposed to reduce total dissolved gas levels or the reason(s) for no action;

(viii) no later than December 31 for each year of this variance, the Corps shall provide a written report to the Department detailing the following:

a) flow and runoff descriptions for the spill season;
b) spill quantities and durations;
c) quantities of water spilled for fish versus spill for other reasons for each project;
d) data from the physical and biological monitoring programs, including incidences of gas bubble disease;
e) progress on implementing the measures contained in the Lower Columbia River Total Dissolved Gas TMDL.

(ix) the Corps shall provide the Commission with an annual written report and, if requested the Corps shall appear before the Commission to report on any of the above matters, or such other pertinent matters relating to total dissolved gas as the Commission may determine;

(x) the Commission reserves the right to terminate or modify this variance at any time during its currency.

Dated: 3-14-03

ON BEHALF OF THE COMMISSION

Stephanie Hallock
Director

ATTACHMENT E

Draft Order Approving the U.S Army Corps of Engineer's Request

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

In the matter of the U.S. Army Corps	(	
of Engineers' request to spill water	(	ORDER
to assist out-migrating threatened	(	
and endangered salmon smolts	(	

WHEREAS the Department of Environmental Quality received a request from the U.S. Army Corps of Engineers dated December 23, 2002, to adjust the Total Dissolved Gas Standard as necessary to spill water over McNary, John Day, The Dalles and Bonneville Dams on the Lower Columbia River to assist out-migrating threatened and endangered salmon smolts, for the period from April 1 to August 31; and

WHEREAS the application sought approval for multiple years; and

WHEREAS the public was notified of the request on January 15, 2003, and given the opportunity to provide testimony at 10:00 a.m. on February 19, 2003 and the opportunity to provide written comments until 5:00 p.m. on February 19, 2003; and

WHEREAS the Environmental Quality Commission met on March 11, 2003 and considered the request, justification and public comment.

THEREFORE the Environmental Quality Commission orders as follows:

1. Acting under OAR 340-41-205, 445, 485 and 525(2)(n), the Commission finds that:

   (i) failure to act will result in more salmonid passage via hydroelectric dam turbines. Estimated mortalities from fish passing through turbines is between 10 and 15 percent. Fish passing over spillways as a result of spill experience two to three percent mortality;

   (ii) the balance of risk of impairment to migrating salmonids, resident fish, and other aquatic life due to elevated dissolved gas levels needs to be balanced against migrating juvenile salmonid mortality from turbine passage. Resident fish and aquatic invertebrates in the Columbia River downstream of Bonneville Dam were monitored by NMFS for signs of gas bubble disease in 1993, 1994, 1995, 1996, 1997 and 1998. There was a low incidence of gas bubble disease (less than one percent) in resident fish examined in 1993 and 1995 while in 1994, 1997 and 1998 none of the fish

observed had signs of gas bubble disease. There were no signs of gas bubble disease observed in the aquatic invertebrates examined. Signs of gas bubble disease were prevalent in 1996 but this was a high flow year with large volumes of involuntary spill and total dissolved gas levels above 115 percent in the forebays and 120 percent in the tail races of dams. There is a low incidence of gas bubble disease in migrating juvenile and adult salmonids when the total dissolved gas levels are at or below 115 percent in the dam forebays and 120 percent in the tailraces. The low incidence of gas bubble disease observed has been regarded as a low risk for mortality from gas bubble disease. Total dissolved gas levels of between 130 to 140 percent from involuntary spill, resulted in an increased incidence of gas bubble disease and is regarded as an increased risk of mortality from gas bubble disease. Given the past monitoring of gas bubble disease, the levels requested in this petition seem to be a reasonable balance between increased survival due to reduced turbine mortality and the risk of mortality from gas bubble disease;

(iii) The Corps has submitted a physical monitoring plan. Physical monitoring will be conducted at Camas/Washougal, and the Bonneville Dam forebay and in the forebay and tailraces of McNary, John Day, and The Dalles Dams. Hourly data will be available on the Corp's Internet World Wide Web pages. Implementation of the physical monitoring plan will ensure that data will exist to determine compliance with the standards for the voluntary spill program; and

(iv) The Corps has submitted a biological monitoring plan. Juvenile salmonids will be collected at Bonneville and McNary Dams and examined for signs of gas bubble disease on non-paired fins, eyes, and lateral lines.

2. The Environmental Quality Commission approves a modification to the Total Dissolved Gas standard for spill over McNary, John Day, The Dalles and Bonneville Dams on the Lower Columbia River, subject to the following conditions:

(i) a revised total dissolved gas standard for the Columbia River for the period from midnight on April 1 to midnight on August 31;

(ii) the revised criteria will apply for 2003, 2004 and 2005;

(iii) a total dissolved gas standard for the Columbia River of a daily (12 highest hours) average of 115 percent as measured in the forebays of McNary, John Day, The Dalles, and Bonneville Dams and at the Camas/Washougal monitoring stations;

(iv) a cap on total dissolved gas for the Columbia River during the spill program of 120 percent measured in the tailraces of McNary, John Day,

The Dalles, and Bonneville Dams' monitoring stations, based on the highest 12 highest hourly measurements per calendar day; and

(v) a cap on total dissolved gas for the Columbia River during the spill program of 125 percent, based on the highest two hours during the 12 highest hourly measurements per calendar day during these times;

(vi) a requirement that if 15 percent of the juvenile fish examined show signs of gas bubble disease in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles or that contra-indicatory evidence suggests that fish are being harmed, the Director will terminate the variance; and

(vii) a requirement that the Corps provide written notice to the Department within 24 hours of any violations of the conditions in the variance as it relates to voluntary spill. Such notice shall include actions proposed to reduce total dissolved gas levels or the reason(s) for no action;

(viii) no later than December 31 for each year of this variance, the Corps shall provide a written report to the Department detailing the following:

a) flow and runoff descriptions for the spill season;
b) spill quantities and durations;
c) quantities of water spilled for fish versus spill for other reasons for each project;
d) data from the physical and biological monitoring programs, including incidences of gas bubble disease;
e) progress on implementing the measures contained in the Lower Columbia River Total Dissolved Gas TMDL.

(ix) if requested the Corps shall appear before the Commission to report on any of the above matters, or such other pertinent matters relating to total dissolved gas as the Commission may determine;

(x) the Commission reserves the right to terminate or modify this variance at any time during its currency.

Dated: _____ ON BEHALF OF THE COMMISSION

_____
Director

State of Oregon

Department of Environmental Quality Memorandum

Date: February 28, 2003

To: Environmental Quality Commission

From: Stephanie Hallock, Director S. Hallock

Subject: Agenda Item B, Action Item: Request From U.S. Fish and Wildlife Service for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River, March 11, 2003 EQC Meeting

Proposed Action

The U.S. Fish and Wildlife Service has petitioned the Commission for a variance to the State's total dissolved gas water quality standard. This variance will enable water to be spilled at Bonneville Dam to assist outmigrating fall chinook from the Spring Creek National Fish Hatchery. The petition requests a variance from the standard of 110 percent of saturation relative to atmospheric pressure for a ten-day period in March 2003. For this period, the Service is seeking a total dissolved gas standard of 120 percent saturation as measured in the tailrace of Bonneville Dam, and 115 percent as measured at the fixed monitoring station at Camas/Washougal.

This petition is evaluated in Attachment A.

Key Issues

Summary of 2002 Spill

The U.S. Fish and Wildlife Service secured 200,000 acre feet of water above average flow for spilling at Bonneville Dam for the Spring Creek National Fish Hatchery release in 2002. The hatchery released 7.9 million smolts on March 11, 2002. The spill operation commenced at 0900 hours on March 12, 2002 and concluded at 0600 hours on March 15, 2002. During this period, 573,820 fish were counted passing Power House 2.

Biological Monitoring

A total of 336 fish were examined for signs of gas bubble trauma. Of this total, 225 fish were examined on March 12, and 111 on March 13. One northern pike minnow had a single bubble in the caudal fin. This equates to an overall incidence of 0.3 of one percent.

Physical Monitoring

Total dissolved gas levels remained below the variance granted by the Commission last year at all times during this spill operation. The peak measurement at the Warrendale monitoring station was 112.3 percent saturation.

Future Variances

It would help to have the application processes for this spill and the Corps of Engineer's systemwide spill coordinated. The U.S. Fish and Wildlife Service should be encouraged to discuss its next request with the Corps and file an application for 2004 and 2005. Following that, we would request a single integrated application from the federal government.

Public Input

The Department issued a notice to the public of receipt of this application on February 6, 2003. Public comment will be solicited until March 6, 2003, and a public hearing is scheduled for March 6, 2003. The Department will summarize the public input and forward this to the Commission prior to its March 11, 2003 meeting, unless no comments are received.

EQC Action Alternatives

The EQC has two alternatives for action:

1. Approve the request with or without conditions. In order to take this action, the Commission must make the four affirmative findings detailed in Attachment B;

2. Decline to approve the petition. In this case, the Commission could decide that alternative methods of fish migration are available, such as barge transportation, or releasing additional fish from the hatchery. See Attachment A, for a description and analysis of these alternatives.

Department Recommendation

The Department recommends that the Commission grant this petition by adopting the findings, and imposing the conditions contained in the Draft Order at Attachment C.

Attachments

A. Summary of Application and Supporting Documentation
B. Oregon Administrative Rule Relating to the Total Dissolved Gas Water Quality Standard
C. Draft Order Approving the U.S. Fish and Wildlife Service's Request for a Variance

Available Upon Request U.S. Fish and Wildlife Service's Request
Lower Columbia River Total Dissolved Gas TMDL

Approved:

Section: Greg K. Aldrich

Division: Greg K. Aldrich for Michael D. Llewelyn

Report Prepared By: Russell Harding
Phone: (503) 229-5284

State of Oregon
Department of Environmental Quality Memorandum

Date: March 7, 2003

To: Environmental Quality Commission

From: Stephanie Hallock, Director S. Hallock

Subject: Agenda Item B, Action Item: Request from U.S. Fish and Wildlife Service for a Waiver to the Total Dissolved Gas Water Quality Standard on the Columbia River, March 11, 2003 EQC Meeting

Public Input

In its report of February 28, 2003, the Department committed to summarize the public input received in relation to the above petition.

On February 6, 2003, the Department released a public notice advising the public of the receipt of the petition. A public hearing was scheduled for March 6, 2003 at 1:30 p.m. in Portland. The deadline for receiving written comments was 5:00 p.m. on March 6, 2003.

No testimony was offered at the public hearing. Two written comments were received. The following summarizes the written comments:

James D. Ruff, National Marine Fisheries Service (NOAA Fisheries)

NOAA Fisheries supports the request from the U.S. Fish and Wildlife Service. Granting the variance will enable the optimal range of fish passage options to be considered at Bonneville Dam, including spill. Based on monitoring and research, granting this variance poses very little risk to migrating and resident fish populations. NOAA Fisheries is satisfied that the monitoring plan submitted by the U.S. Fish and Wildlife Service will assure that incubating Endangered Species Act listed chum salmon redds will not be adversely affected.

Donald Sampson, Columbia River InterTribal Fish Commission

The value of hatchery versus wild salmon is difficult to determine. The State has an obligation to the Tribes, under which there is no differentiation as between wild and hatchery produced salmon. A failure to approve the variance for the Spring Creek National Fish Hatchery release will result in a significant loss of juvenile salmonids. Denial of the variance in 2002 would have resulted in the loss of 1,654 tule adults to the treaty and non-treaty harvests. A similar loss will occur this year if this variance is not granted.

An agreement has been reached to begin outplanting Spring Creek National Fish Hatchery tule juveniles into under-seeded tributaries in the Bonneville pool, and lower Columbia River. Tule production has been reduced in recent years due to low adult returns to the Columbia River.

Every additional salmon adult available for Tribal harvest is critical from a cultural viewpoint. Tribal members are dependent on these fish for ceremonial and subsistence purposes. Tule fall Chinook are a very important source of winter protein for Tribal members. Much of the salmon has been removed from the Tribes and distributed to others in the form of flood control, navigation, irrigation and municipal development. As a result Tribal people have experienced elevated poverty and death rates relative to the general population.

Both the Independent Scientific Advisory Board and the National Marine Fisheries Service's 2000 biological opinion found that 120 percent saturation of total dissolved gas was conservative and not harmful to salmon in the river. Additional research shows that gas bubble disease incidence was very low at in-river saturations of 125 percent. In terms of delayed mortality from exposure to elevated total dissolved gas levels, estimates at Bonneville Dam for fish that proceeded concurrently via turbines, bypass systems, and spill were 18, 20, and 4 percent respectively. Further, survival improves with increased spill even at levels up to 125 percent saturation. Spawner-to-spawner analyses show that survival improved in years with greater spill quantities.

Approved:

Section: Gregory K. Aldrich

Division:

Report Prepared By: Russell Harding
Phone: (503) 229-5284

ATTACHMENT A

Summary of Application and Supporting Information

U.S. Fish and Wildlife Service

Although the Spring Creek Hatchery fish are not endangered species, they play an important role in helping protect Endangered Species Act listed fish. The 7.5 million juveniles due to be released make up a large proportion of the fish to be caught under the United States/Canada treaty allocations. Additionally, these fish are important for the near-shore fisheries off the coasts of Oregon and Washington, and in the Columbia River, most notably the Buoy Ten fishery.

In the absence of these hatchery fish, a disproportionate number of endangered species can be expected to be taken. The Canadian ocean fisheries are managed under harvest quota, time and area regulations. Because both Spring Creek Hatchery fish and endangered Snake River fish intermingle off the west coast of Vancouver Island, greater numbers of hatchery fish in the United States/Canada Treaty area will result in fewer endangered Snake River fish being caught. Similarly, endangered Snake River fish are at greater risk if there is any reduction in Spring Creek Hatchery production. Historically, Spring Creek Hatchery fish contributed nine percent of the catch off the West Coast of Vancouver Island, and 27 percent of the catch off the Washington and northern Oregon coasts annually. Spring Creek Hatchery fish have contributed as much as 65,600 fish to tribal fisheries and 41,500 fish annually to non-tribal fisheries in the Columbia River in the past. In 1999, fall chinook produced at the hatchery contributed about 26,500 fish to commercial and sport fisheries in the Columbia River. The treaty Indian harvest was about 21,900 fish, and the in-river sport catch was about 4,400 fish. A further 200 fish were taken incidentally in prosecution of the non-Indian commercial sturgeon fishery.

In recent years both federal and state governments have reduced hatchery production for the Columbia River due to Congressional reductions in Mitchell Act funding. These reductions have forced the closure of some hatcheries, with the result that the Spring Creek Hatchery is the sole producer of fall chinook smolts remaining open above Bonneville Dam. These closures make the Spring Creek contribution even more important.

Spill for the Spring Creek Hatchery release was first requested in 1995 because of the low fish guidance efficiency (the number of fish guided away from turbine intakes) at the Bonneville Dam second powerhouse.

Justification for the Variance

A fish passage efficiency of 80 percent is targeted for the Spring Creek Hatchery release. According to NOAA Fisheries calculations, for a river flow of 200 thousand cubic feet per second, spills of 45, 80 and 150 thousand cubic feet per second would result in fish passage efficiencies of 54, 63 and 72 percent respectively. According to the U.S. Army

Corps of Engineers, spills of 45, 80 and 150 thousand cubic feet per second would result in total dissolved gas levels of 110, 115, and 120 percent saturation respectively. These calculations are presented in Table 1.

Table 1: Estimated Bonneville Spillway Flows, Total Dissolved Gas Levels, Fish Passage Efficiency, and Increase in Fish Survival.

Total River Flow (kcfs)	200	200	200	200	200	200
Spill (kcfs)	0	45	80	100	120	150
Tailrace Gas Level (percent)	100	110	114	116	117	120
Fish Passage Efficiency (percent)	33	48	59	63	66	71
Increase in fish survival Compared to no-spill	0	133,500	229,500	258,750	288,750	333,000

During previous spill events, both physical and biological monitoring have occurred. Physical monitoring has been required to ensure compliance with the water quality standard variances. Biological monitoring has been required to demonstrate that the higher total dissolved gas levels have not adversely affected fish. Biological monitoring occurring since 1995 has shown extremely low levels (one to two percent at most) of fish showing any signs of gas bubble disease. Incidences of gas bubble disease can be expected to be low due to the limited exposure time for these fish. They are exposed to elevated total dissolved gas levels for a short duration, and only one episode.

Sub-lethal effects, such as difficulty with the fresh-water/salt-water transition or increased susceptibility to predation from northern pike-minnow have not been documented. But, again, due to the short duration and single episode, significant sub-lethal effects are not expected.

Alternatives and Evaluation

The U.S. Fish and Wildlife Service has considered alternatives to spill at Bonneville Dam. These include transporting smolts below Bonneville Dam, and releasing more fish.

Transporting Juvenile Fish

The alternative of transporting juvenile fish from the hatchery and releasing them downstream from Bonneville Dam has been considered. Potentially, loading fish in barges and releasing them below Bonneville Dam could result in increased survival. Certainly, it would alleviate the effects of turbines, elevated total dissolved gas and predation. However, this has been evaluated, and a very high percentage of adult fish strayed to other hatcheries. Also, adult return rates to the Spring Creek Hatchery were significantly lower from the barged group. The goal for returns to the Spring Creek hatchery is 7,000 fish. This number is required to provide enough fish for spawning. Straying of fish to other streams or facilities may lead to the Spring Creek Hatchery falling short of this target.

The Spring Creek Hatchery has been in operation sufficiently long for its fish to have developed into a unique group. The U.S. Fish and Wildlife Service, along with state and tribal fisheries managers are trying to maintain the genetic integrity of this group. Supplementing the Spring Creek Hatchery with fish from other hatcheries (either of Spring Creek origin, or not) runs the risk of diluting the unique characteristics of these fish.

Releasing More Fish

Based on the notion that there are going to be mortalities at Bonneville Dam if this variance is not approved, the argument has been advanced that the U.S. Fish and Wildlife Service should simply release more fish. In this way, despite increased mortality, the required number of fish could be assured.

Due to the capacity of the hatchery, and hatchery operation, this is not a possibility. The Spring Creek Hatchery makes three releases per year, in March, April and May. Under this schedule, not all fish are released in March. Those that remain behind grow to take over the space vacated by the March release. Similarly, only a portion of the fish is released in April, and the remaining fish grow to occupy the vacated space. This latter group is released in May. This schedule fully utilizes the physical capacity of the hatchery, as well as its water supply and waste treatment facilities. This schedule has been followed to reduce the risk from low returns from any one release. Fish released in April and May are able to pass Bonneville Dam under the auspices of the Corps of Engineers total dissolved gas variance that is being considered separately by the Commission.

Competition Between Spring Creek Hatchery Fish and Endangered Snake River Salmon

Interactions between wild fish and hatchery fish have been blamed for thinning the genetic diversity of wild fish, and for increased competition for food and habitat. Spring Creek Hatchery fish are expected to pose little competitive risk to wild Snake River salmon. The main reason for this is the difference in migration timing. Because passage to the sea for Spring Creek Hatchery fish is short, the timing of the release assures that hatchery fish either completely miss or only slightly overlap with Snake River salmon. Spring Creek Hatchery fish are physiologically ready to migrate and move out of rearing areas in the Columbia River quickly. It is possible that hatchery and wild fish compete with one another for food in the ocean, although the size of the marine environment, coupled with the fact that there are billions of juveniles migrating in the ocean minimize the impact of this interaction.

ATTACHMENT B

Oregon Administrative Rule, OAR 340-41- 525 (2)(n)

(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

ATTACHMENT C

Draft Order Approving U.S. Fish and Wildlife Service's Request

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

In the matter of the U.S. Fish and	(	
Wildlife Service's request to	(	ORDER
spill water to assist out-migrating	(	
Spring Creek Hatchery salmon smolts	(	

WHEREAS the Department of Environmental Quality received a request from the U.S. Fish and Wildlife Service dated January 13, 2003, to adjust the Total Dissolved Gas Standard as necessary to spill water over Bonneville Dam on the Columbia River to assist out-migrating Spring Creek Hatchery tule fall Chinook smolts, for a ten-day period in March 2003;

WHEREAS the public was notified of the request on February 6, 2003, and given the opportunity to provide testimony at 1:30 p.m. on March 6, 2003, and the opportunity to provide written comments until 5:00 p.m. on March 6, 2003; and

WHEREAS the Environmental Quality Commission met on March 11, 2003, and considered the request, justification and public comment.

THEREFORE the Environmental Quality Commission orders as follows:

1. Acting under OAR 340-41-205(2)(n)(B), the Commission finds:

   (i) failure to act will result in more salmonid passage via hydroelectric dam turbines. Estimated mortalities from fish passing through turbines is between 11 and 15 percent. Fish passing over spillways as a result of spill experience two to three percent mortality;

   (ii) the balance of risk of impairment to migrating salmonids, resident fish, and other aquatic life due to elevated dissolved gas levels needs to be balanced against migrating juvenile salmonid mortality from turbine passage. Resident fish and aquatic invertebrates in the Columbia River downstream of Bonneville Dam have been monitored for signs of gas bubble disease since 1993. A total of 225 fish were examined in 2002. Of these, 0.3 percent (one fish) showed signs of gas bubble disease. This fish exhibited signs of the lowest rank. No signs were observed in aquatic macroinvertebrates. Low incidences, as reported above, were detected in migrating juveniles and returning adults when total dissolved gas levels were within

variance limits. Higher levels of total dissolved gas saturation resulting from involuntary spill have resulted in increased incidence of gas bubble disease detected. Given data from past monitoring, at the levels requested, there appears to be a reasonable balance between increased survival due to avoidance of turbine and bypass system mortalities;

(iii) the U.S. Fish and Wildlife Service has submitted a physical monitoring plan. The U.S. Geological Survey will conduct physical monitoring at the Bonneville Dam forebay, and at Camas/Washougal. Hourly data will be posted electronically on the U.S. Army Corps of Engineers' Internet World Wide Web pages. Implementation of the physical monitoring plan will ensure that data will exist to determine compliance with the standards for the voluntary spill program; and

(iv) the U.S. Fish and Wildlife Service has submitted a biological monitoring plan. Juvenile salmonids and resident fish will be collected with a beach seine downstream from Bonneville Dam and examined for signs of gas bubble disease on non-paired fins, eyes and lateral lines. Based on evidence from previous years, few signs of gas bubble disease are expected. The sampling will, therefore be confined to two days during the ten-day spill period. No examinations of gill lamellae will occur this year due to the variability of results and increased risk to fish due to handling for this examination.

2. The Environmental Quality Commission approves a modification to the Total Dissolved Gas standard for spill over Bonneville Dam subject to the following conditions:

(i) a revised total dissolved gas standard for Bonneville Dam on the Columbia River for a ten-day period in March 2003;

(ii) a total dissolved gas standard for Bonneville Dam of a daily (12 highest hours) average of 115 percent as measured at the Camas/Washougal monitoring station;

(iii) a further modification of the total dissolved gas standard at Bonneville Dam to allow for a daily (12 highest hours) average of 120 percent as measured at tailrace monitors below the dam;

(iv) a cap on total dissolved gas for Bonneville Dam during the spill program of 125 percent, based on the highest two hours during the 12 highest hourly measurements per calendar day;

(v) if *either* 15 percent of the fish examined show signs of gas bubble disease in their non-paired fins, *or* five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles, whichever is less, the Director will halt the spill program; and

(vi) the U.S. Fish and Wildlife Service is to incorporate the following conditions into its program:

a) written notice must be furnished to the Department within 24 hours of a violation of the conditions of this variance as it relates to voluntary spill. Such notice will include an explanation of the reasons for the violation, actions taken to resolve the situation, or if no action is taken, the reasons for no action;

b) provision of a written report of the 2003 spill program for the Spring Creek National Fish Hatchery release. Such report is to be received by the Department no later than September 30, 2003; and

c) any application for a variance for 2004 and 2005 is to be furnished to the Department in conjunction with the written report prescribed above; and

d) application for any variance beyond 2006 should be coordinated with the U.S. Army Corps of Engineers and should be submitted as a single application on behalf of the federal government.

Dated: _____ ON BEHALF OF THE COMMISSION

_____

Director

Environmental Quality Commission
Record of Attendance

Date of Meeting March 11, 2003		Location Portland DEQ Headquarters 811 SW 6th Avenue
Date Sent to Judy Simmons 3/11/2003		Date Paid 04/01/03
Member's Name & Address	**Amount of Claim**	**Warrant Number**
Mark Reeve 610 SW Alder, Suite 803 Portland, OR 97205	$30	4521996
Deirdre Malarkey 990 Lincoln St Eugene, OR 97401	$30	4521995
Tony Van Vliet 1530 NW 13th Corvallis, OR 97330	$30	4521997
Harvey Bennett 551 Towne St Grants Pass, OR 97527	$30	4521994
Approved Mikell O'Mealy		**Date** 3/11/2003

Received
MAR 12 2003
Payroll

RECEIVED
MAR 12 2003
Accounting Office
Dept. of Environmental Quality