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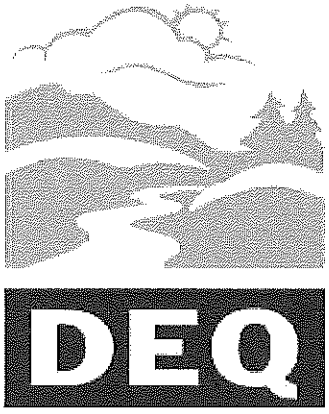
OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 03/30/2001



State of Oregon
Department of Environmental Quality

AGENDA

SPECIAL PHONE ENVIRONMENTAL QUALITY COMMISSION MEETING

March 30, 2001
DEQ Conference Room 10A
811 S. W. Sixth Avenue
Portland, Oregon

Notes: **Public Forum:** There will be no public forum at this meeting.

Beginning at 9:00 a.m.

A. Action Item: US Army Corps of Engineers Request for a Waiver for Total Dissolved Gas for Fish Passage on the Main Stem of the Columbia River

B. Consideration of Tax Credit Requests

†Hearings have already been held on the Rule Adoption items and the public comment period has closed. In accordance with ORS 183.335(13), no comments can be presented by any party to either the Commission or the Department on these items at any time during this meeting.

The Commission has set aside May 3-4, 2001, for their next meeting. It will be held in Portland, Oregon.

Copies of staff reports for individual agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 503-229-5301, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

If special physical, language or other accommodations are needed for this meeting, please advise the Director's Office, 503-229-5301 (voice)/503-229-6993 (TTY) as soon as possible but at least 48 hours in advance of the meeting.

April 17, 2001

State of Oregon

Department of Environmental Quality Memorandum

Date: March 23, 2001

To: Environmental Quality Commission

From: Stephanie Hallock, Director S. Hallock

Subject: Agenda Item A, U.S. Army Corps of Engineers' Request for a Variance to the Total Dissolved Gas Water Quality Standard, EQC Meeting March 30, 2001

Statement of Purpose

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 10, 2001 and August 31, 2001. 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.

Background and Rationale for the Request

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

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

On December 21, 2000, NMFS issued a new Biological Opinion for the federal hydropower system that 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.

Downstream migrating salmonids pass dams via turbines, transportation by barge, through screened fish by-pass systems, and over spillways. The Biological Opinion calls for passing 80 percent of migrating juveniles over the spillway or through the screened bypass system, which results in lower mortality than passage via turbines.

Spilling water for fish passage can generate elevated levels of total dissolved gas which may have detrimental effects on fish. Spill to benefit fish passage and associated mortality due to total dissolved gas must be balanced against mortality of turbine passage. Estimated survivorship associated with increased levels of spill and total dissolved gas (TDG) levels is contained in Table 1.

Table 1. Estimated spring chinook project survivals at two different river flows with tailrace TDG capped at two different levels for each of the lower Columbia River dams. (Source: NMFS SIMPAS model)

River Flow	250 kcfs		300 kcfs	
TDG	110%	120%	110%	120%
	% Survivorship			
Bonneville	92.9	93.4	92.5	93.0
The Dalles	94.9	97.6	94.7	96.9
John Day	95.0	95.3	94.9	95.2
McNary	96.9	97.4	97.1	97.2

Summary of 2000 Spill Season

The following summarizes the water quantity and monitoring results from the 2000 migration season. The Commission granted a variance to the total dissolved gas water quality standard for the 2000 season identical to the one sought this year.

Water Conditions

The water year was characterized by below average flows, with 84 percent of average runoff volume above Lower Granite Dam on the Lower Snake River, and 92 percent of average runoff at The Dalles Dam. The flows that occurred in 2000 rarely exceeded the hydraulic capacity of the projects during the spring migration season. Total dissolved gas levels observed in 2000 reflect lower than average flows.

Physical Monitoring of Total Dissolved Gas

Generally, because of the lower runoff volumes in spring/summer 2000, dissolved gas levels remained within the variance limits set by the Commission, with very few exceptions.

A few minor exceedances of the 115 percent criterion occurred in the McNary Dam forebay in late April and early May, and in the tailrace in April. The John Day Dam 115 percent forebay criterion and 120 percent tailrace criterion were not exceeded. Spill at The Dalles Dam was

maintained at 40 percent of instantaneous flow, which resulted in a few very minor exceedances of the variance during April and May. Few exceedences of the Bonneville Dam 115 percent criterion were recorded, however accuracy of monitoring gauges is under review.

Due to the lower runoff, involuntary spill levels were considerably lower in 2000 than previous years.

Biological Monitoring for gas bubble disease

Monitoring of juvenile salmonids for gas bubble disease was conducted at McNary and Bonneville Dams on the Lower Columbia River, Rock Island Dam on the mid Columbia, and Ice Harbor, Lower Monumental, Little Goose, and Lower Granite on the Snake River. Gas bubble disease, which results from adverse levels of total dissolved gas, is indicated when the surface area of the fin is occluded by gas bubbles. Table 2 summarizes the monitoring results, which reflect similar results for previous years. Generally, signs of bubbles were lower in 2000, reflecting lower flows in the river.

Table 2 2000 Smolt Monitoring Results

Percentage of Fin Occluded	Numbers of Fish (percent)
1 to 5 percent	75 (0.4)
5 to 25 percent	15 (0.1)
Greater than 25 percent	1 (0.01)
Total Number of Fish Sampled	21,391

Physical and Biological Monitoring for the 2001 Spill Season

Physical monitoring in 2001 will be almost identical to that in 2000, and will involve use of the Corps' network of fixed monitors in the forebay and tailrace of each dam. Hourly total dissolved gas, barometric pressure, water elevations and temperatures will be posted to the Corp's web page: http://www.nwd-wc.usace.army.mil/tmt/wqwebpage/mainpage.htm.

Juvenile salmonid monitoring will follow 2000 protocols.

Water Conditions in 2001

As the Commission heard at its meeting of March 8, 2001, flows in the Columbia basin in 2001 are expected to be among the lowest on record due to very low winter precipitation and snowpack basin wide. Even average levels of snow and precipitation during the spring will be insufficient to return flows to average levels. In addition, the demand for electricity is projected to match the full generating capacity of the hydropower system. As a result, it is widely expected that there will be no involuntary spill in 2001. Additionally, voluntary spill for migrating fish will be balanced with other uses, including hydropower generation, irrigation and navigation.

Spill for fish in 2001 will likely be operated as it was at Bonneville Dam in early March for the Spring Creek National Hatchery release. In this instance, a period of time was identified during which water was available beyond demands for electricity. Management of the system this year will require flexibility so that water can be spilled at short notice consistent with other demands.

Past Actions

The Commission has approved variances to the total dissolved gas standard to facilitate salmonid smolt migration every year since 1994, with appropriate conditions. One of those conditions has required NMFS to report the effects of the variance to DEQ. A copy of this report is attached.

Authority of the Commission with Respect to the Issue

The authority of the Commission to address this issue is contained in Oregon Administrative Rules OAR 340-41-205, 445, 485 and 525(2)(n). A copy of the rule is attached at Appendix A.

At its meeting of February 16, 1995, the Commission revised administrative rules to enable modifications of the total dissolved gas standard in the Columbia River for the purpose of assisting juvenile in-river salmon migration.

To grant the requested variance, the Commission must find:

(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.

The rule also enables the Commission to consider alternative modes of migration, at its discretion.

Alternatives and Evaluation

The issue before the Commission is one of balancing the different levels of risk associated with methods of juvenile passage by dams. While studies on transportation by barge are continuing, preliminary findings indicate risks associated with temperature controls and adult straying during spawning. Turbine passage results in 10 and 15 percent mortality. Screened by-pass facilities do not guide all smolts away from turbines and may subject smolts to adverse temperatures. Spill

over dams brings with it the risk of elevated levels of total dissolved gas, which can result in mortalities from gas bubble disease. Mortalities from spill at the levels requested in the Corp's request have been calculated at between two and three percent.

To not approve the variance to the state's total dissolved gas standard will result in more fish migrating via the turbines. In earlier work the Department has determined the level of the requested waiver (115 to 120 percent) to be a relatively conservative approach that would result in protection of migrating salmonids. The Department also determined that waivers at the level of 125 to 130 percent would pose increased risks to fish and between 120 and 125 percent would pose uncertain impacts (in this case, the Department recommend that the Commission adopt the more conservative approach, at which the Department believed the risks inherent in spill were preferable to the risks inherent in other modes of fish passage[1]). Although it appears spill benefits outmigrating juvenile salmonids as compared to turbine passage, there is a low risk of adverse effects occurring from total dissolved gas.

In relation to the four findings required to be made under the total dissolved gas rule, the following are supported by this petition:

(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 is two to three percent mortality. Therefore, the Commission is able to make the first finding.

(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. A low incidence of gas bubble disease (less than one percent) was detected in resident fish in 1993 and 1995, while no signs of disease were detected in 1994, 1997, and 1998. No signs of gas bubble disease were observed in aquatic invertebrates. 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. A low incidence of gas bubble disease occurs in migrating juvenile and adult salmonids when total dissolved gas levels are at or below 115 percent dam forebays and 120 percent in tailraces. A low incidence of gas bubble disease observed is 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. Given past monitoring of gas bubble disease, the levels requested in this waiver seem a reasonable balance between increased survivorship due to reduced turbine mortality and the risk of

[1] This is supported by the National Research Council's publication, *Upstream: Salmon and Society in the Pacific Northwest,* which recommended that risk be spread by facilitating alternative modes of migration. The use of these alternatives is designed to increase survival of outmigrating juvenile salmonids.

mortality from gas bubble disease. Therefore, the Commission is able to make the second finding.

(iii) The Corps has submitted a physical monitoring plan. Implementation of the physical monitoring plan will ensure that data will exist to determine compliance with the standards for the voluntary spill program. Therefore, the Commission is able to make the third finding.

(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. Therefore, the Commission is able to make the fourth finding.

These findings enable the Commission to approve the variation to the total dissolved gas standard as sought by the Corps.

Summary of Public Input Opportunity

On February 15, 2001, the public was notified of the Corps' application and associated public hearing and written comment period.

Public Hearing

A public hearing was held at 7:30 p.m. in room 140 of the Oregon State Office Building at 800 NE Oregon Street. Three people attended the hearing, and one person offered oral testimony. This testimony is summarized below.

Dr. Mark Schneider, National Marine Fisheries Service Hydropower Division

The 2001 water year is projected to be very adverse to salmon, and will pose a challenge to natural resource agencies. The Northwest River Forecast Center projects 2001 to be the second lowest flow year on record. Spilling water for fish migration will be more critical in a low flow year such as this one.

The Independent Scientific Advisory Board to the Northwest Power Planning Council state that spill coupled with total dissolved gas abatement measures most closely mimics a natural route for fish migration.

The last five years have shown that spilling water at or below 120 percent of total dissolved gas saturation results in very few signs of gas bubble disease. For the period 1995 to 1999, a total of 192,832 fish were observed. Of that number, only 1.6 percent showed signs of gas bubble disease. Voluntary spill for fish occurred in three of these five years and involuntary spill occurred for the other two. Of the fish sampled during the three years of voluntary spill, between 0.4 and 0.7 percent showed signs of gas bubble disease.

Fish exposed to water saturated at 120 percent of total dissolved gas show few signs of gas bubble disease. At levels above 120 percent, signs of disease demonstrate increasing severity. The Biological Opinion ranks signs of severity from one through four (one being the lowest). During years of voluntary spill, ranks three and four were not seen. This level of severity is not seen until total dissolved gas saturation reaches levels above 120 percent. Over all years of spill, voluntary and involuntary, severe signs have been detected in 0.5 percent of fish.

Incidence of gas bubble disease detected in juveniles is similar to that observed in adult fish. In 1999, this led Oregon and Washington to dispense with monitoring of adults for signs of gas bubble disease. Resident fish and invertebrates are of concern, although they tend to be more tolerant of elevated total dissolved gas levels than salmonids. These findings are consistent with the scientific literature.

The difference between 110 percent of saturation and the responses seen at 120 percent saturation can be explained by compensatory depth. This has been documented on the Columbia River.

I strongly encourage the Environmental Quality Commission to grant the Corps' request for a variance to the total dissolved gas standard.

Written Comments

The written comment period closed on March 21, 2001. Four written comments were received, and these are summarized below.

Mr. William Shake, U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service supports the application for a waiver to the State's total dissolved gas water quality standard. A waiver will be especially critical in this low-flow year. In such a year, any actions that can be taken to protect salmon will be critical. The Service recognizes that the quantity of water available for spilling may be limited this year, but believes that a waiver will be important regardless of the amount of spill that is able to be provided.

The Service requests that the Commission approve the application.

Wesley J. Ebel, Ph.D

The proposed spill plan should do no harm to fish, either migrating or resident, provided total dissolved gas levels remain at or below 120 percent of saturation in the tailrace of the spilling dam. However, given the projected low-flow year and the fact that reservoirs are drawn down very low, benefits from spill are likely to be minimal.

Collection and transportation should be maximized, and spill should be diverted to John Day Dam and Bonneville Dam. There is no need to spill more than 30 percent of the flow at The Dalles Dam. Studies show that spilling beyond that level showed no increase in survival of juvenile salmonid smolts. Transportation research clearly shows a benefit to transporting fish,

particularly in low-flow years. Why waste spill at McNary Dam, only to place smolts in the predator-infested John Day reservoir?

Brian J. Brown, National Marine Fisheries Service

This letter reiterates the oral testimony provided by Dr. Mark Schneider at the public hearing.

Donald Sampson, Columbia River Inter Tribal Fish Commission (CRITFC)

Granting the Corp's request for a waiver to the State's total dissolved gas water quality standard is essential to allow the spill program for juvenile salmonid smolt migration. Both juvenile and adult salmon survival will be increased if the spill program proceeds up to total dissolved gas levels requested.

All comments provided by CRITFC since 1993 are deemed to be a part of this comment.

No one has a more vital interest in salmon survival than the Tribes. Allowing spill will more effectively protect salmon than forcing them through turbines and screened fish bypass facilities. Juveniles and adults that traverse the screened bypass systems experience temperatures much greater than ambient river temperatures. Temperatures in bypass systems exceed water quality standards for much of the salmon migration season.

In this low-flow year, the temperatures exceedances in the bypass systems will be worse than previous years. The risks from total dissolved gas are less than those imposed by higher temperatures.

The Commission should focus on improving in-river survival. The Clean Water Act does not provide for protection of beneficial uses by removing them from their habitat and transporting them around dams.

CRITFC recommends that the Commission request the Corps to submit a request for a variance to the State's water quality standard for temperature at the dam fish facilities.

For the last six years, the Commission has approved the requested variance level. All monitoring requirements have been complied with, and identical monitoring systems are in place for 2001.

From the Tribes' perspective, every adult salmon available for harvest is important from a cultural perspective. These salmon also provide a critical subsistence resource. Salmon are a mainstay of Tribal religious and cultural practices. The hydropower system has resulted in the wealth that used to be provided to the Tribes by salmon being distributed to non-Tribal parties. The spill program partially redresses this.

The Independent Scientific Advisory Board found that total dissolved gas levels of 120 percent or lower were not harmful to fish. Three years of research have shown low incidences of gas bubble disease in fish exposed to saturation levels up to 125 percent. Severe signs only exhibited

themselves at levels of 126 percent and above. Chinook salmon rarely showed signs of gas bubble disease, even when exposed to water with saturation levels exceeding 130 percent.

The only survival study conducted by NMFS in 1993 at Bonneville Dam showed survival mortality rates of 18, 20 and four percent respectively for passage via turbines, screened bypasses and spill. Further, recent research suggests that survival levels increase with increased spill. Smolt-to-adult survival has been shown to improve with higher flow years, despite elevated total dissolved gas levels.

Increased spill is also expected to protect migrating kelts (repeat spawners) returning to the ocean. It will also protect adults migrating upstream that fall back through the dams. Up to 39.2 percent of fish falling back through the screened bypass system suffered injuries.

CRITFC requests the Commission grant the requested variance.

Conclusions

The Department supports the request for a variance to the total dissolved gas standard at the levels sought, as it has in the past, viewing these levels as being conservative when weighing the potential benefits to fish against the potential harm from elevated total dissolved gas levels.

Department Recommendation

The Department recommends that the Commission grant this petition by adopting the findings contained in the Draft Order attached as Appendix C, subject to implementation of the physical and biological monitoring regime as detailed in the Corps' monitoring plan, and:

(i) Approve a revised total dissolved gas standard for the Columbia River for the period from midnight on April 10, 2001 to midnight on August 31, 2001;

(ii) Approve 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;

(iii) Approve 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;

(iv) Approve 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;

(v) Require 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, the Director will terminate the variance; and

(vi) Require the Corps to incorporate the following conditions into its program:

1. The Corps must 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.

2. The Corps shall provide a report of the spill program for 2001 to the Department by December 31, 2001 and supply information on the levels of total dissolved gas, the fish monitored and incidence and severity of gas bubble disease.

3. The Corps shall submit any request for this operation in 2002 to the Department no later than December 31, 2001.

Attachments

Appendix A: Oregon Administrative Rule Relating to the Total Dissolved Gas Standard.
Appendix B: Map of Columbia River Showing Locations of Federal Hydropower Projects.
Appendix C: Draft Order Approving the Corps of Engineers' Request for a Variance.

Reference Documents (available upon request)

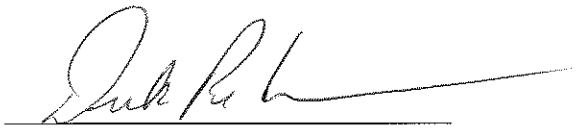
National Marine Fisheries Service (2000) *2000 Annual Report to the Oregon Department of Environmental Quality* December, 2000.

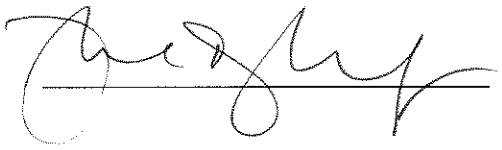
U.S. Army Corps of Engineers (2201) *Request for a Variance to the Total Dissolved Gas Standard*, February 1, 2001.

U.S. Army Corps of Engineers (2201) *Gas Bubble Disease Monitoring Plan, 2001*, January 17, 2001.

National Research Council (1995) *Upstream: Salmon and Society in the Pacific Northwest*, National Academy Press, Washington D.C.

Approved:

Section: 

Division: 

Report Prepared By: Russell Harding

Phone: (503) 229-5284

Date Prepared: March 23, 2001

APPENDIX A

Oregon Administrative Rule, OAR 340-41-205, 445, 485 and 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.

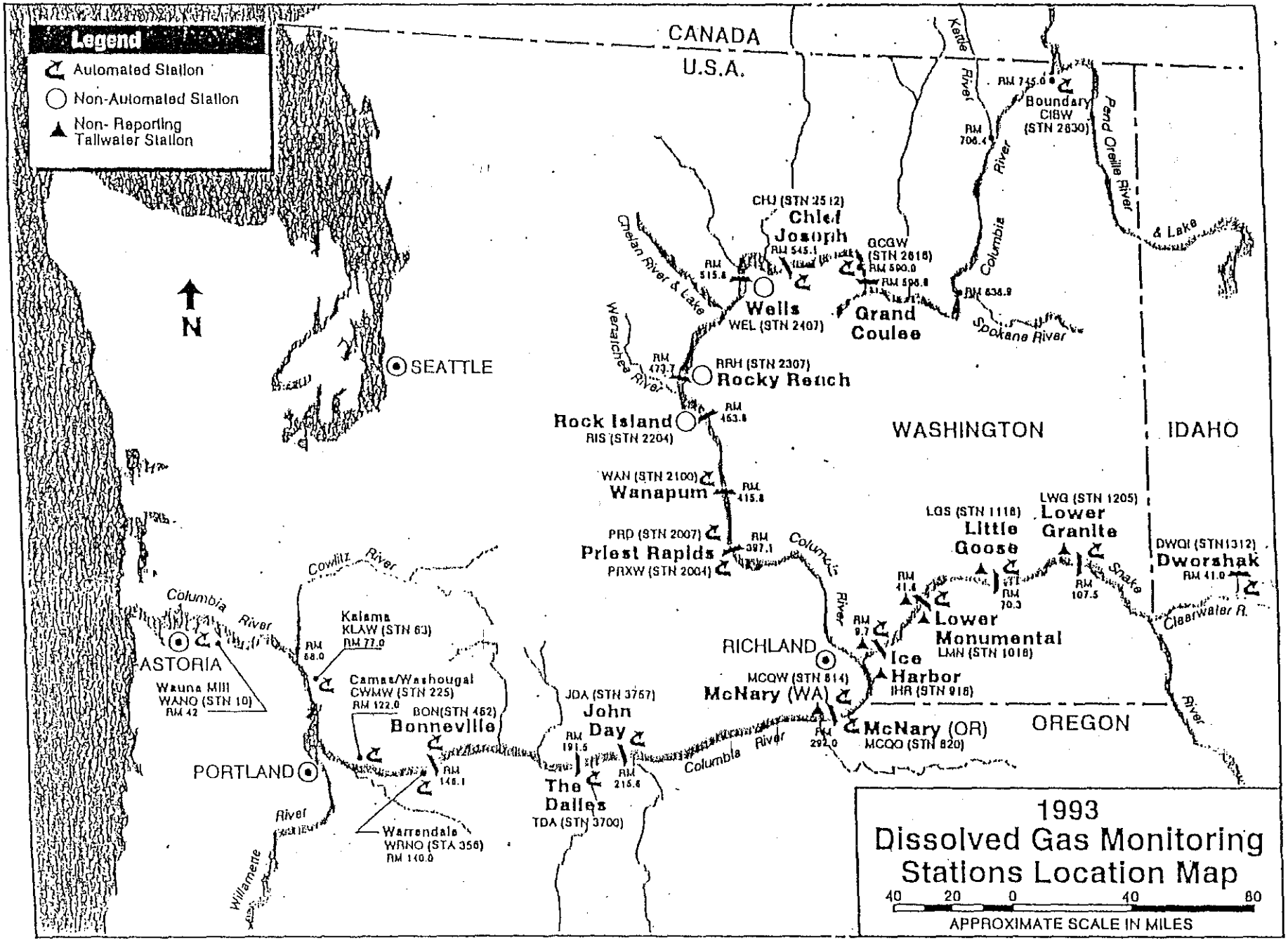


Figure 1. Locations of Dissolved Gas Monitoring Stations.

APPENDIX B

APPENDIX C

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 Engineer's 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 February 1, 2001, 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 10, 2001 to August 31, 2001; and

WHEREAS the Department of Environmental Quality received a report from the National Marine Fisheries Service relating to spill at the four lower Columbia River Federal Hydropower projects during 2000, on December 29, 2000; and

WHEREAS the public was notified of the request on February 15, 2001, and given the opportunity to provide testimony at 7:30 p.m. on March 19, 2001, and the opportunity to provide written comments until 5:00 p.m. on March 21, 2001; and

WHEREAS the Environmental Quality Commission met on March 30, 2001 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 is two to three percent mortality. Therefore, the Commission is able to make the first finding.

(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. A low incidence of gas bubble disease (less than one percent) was detected in resident fish in 1993 and 1995, while no signs of disease were detected in 1994, 1997, and 1998. No signs of gas bubble disease were observed in aquatic invertebrates. 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. A low incidence of gas bubble disease occurs in migrating juvenile and adult salmonids when total dissolved gas levels are at or below 115 percent dam forebays and 120 percent in tailraces. A low incidence of gas bubble disease observed is 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. Given past monitoring of gas bubble disease, the levels requested in this waiver seem a reasonable balance between increased survivorship due to reduced turbine mortality and the risk of mortality from gas bubble disease. Therefore, the Commission is able to make the second finding.

(iii) The Corps has submitted a physical monitoring plan. Implementation of the physical monitoring plan will ensure that data will exist to determine compliance with the standards for the voluntary spill program. Therefore, the Commission is able to make the third finding.

(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. Therefore, the Commission is able to make the fourth finding.

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) Approve a revised total dissolved gas standard for the Columbia River for the period from midnight on April 10, 2001 to midnight on August 31, 2001;

(ii) Approve 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;

(iii) Approve 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;

(iv) Approve 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;

(v) Require 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, the Director will terminate the variance; and

(vi) Require the Corps to incorporate the following conditions into its program:

1. The Corps must 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.

2. The Corps shall provide a report of the spill program for 2001 to the Department by December 31, 2001 and supply information on the levels of total dissolved gas, the fish monitored and incidence and severity of gas bubble disease.

3. The Corps shall submit any request for this operation in 2002 to the Department no later than December 31, 2001.

Dated: _____ ON BEHALF OF THE COMMISSION

_____

Director

Environmental Quality Commission

☐Rule Adoption Item
X Action Item
☐Information Item

Agenda Item B
March 30, 2001 Meeting

Title: Tax Credit Applications

Summary: Staff recommends the following actions regarding tax credits:

	Certified Cost	***Value***
Approve		
Pollution Control Facilities Tax Credit		
Air (1 application)	$271,343	$135,672
Noise (1 application)	$11,950	$5,975
Approve (2 applications)	$283,293	$141,647

Approve issuance of tax credit certificates for the applications presented in Attachment A.

Margaret G. Vandehey — Report Author
Division Administrator
for Director

March 20, 2001

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503) 229-5317/(503) 229-6993 (TTD).

State of Oregon
Department of Environmental Quality **Memorandum**

Date: March 20, 2001

To: Environmental Quality Commission

From: Stephanie Hallock, Director

Subject: Agenda Item B, March 30, 2001, EQC Telephone Meeting
Tax Credit Application Consideration

Statement of the Need for Action
This staff report presents the staff analysis of two Pollution Control Facilities Tax Credit applications and the Department's recommendation for Commission action.

Background APPROVALS: Attachment A
The two applications presented for approval in Attachment A:

1. Meet the eligibility requirements for certification as a pollution control facility according to the Pollution Control Facilities Tax Credit regulations.
2. Do not include any facility that replaced a previously certified facility.
3. Do not represent any preliminary applications.

Conclusions
The recommendations for action on the attached applications are consistent with statutory provisions and administrative rules related to the Pollution Control Facilities Tax Credit program.

Recommendation for Commission Action
The Department recommends the Commission approve certification for the tax credit applications as presented in Attachment A of the Department's Staff Report.

Intended Follow-up Actions
The Department will send original certificates and copies of the Review Reports in Attachment A to the applicant as notification of the Environmental Quality Commission's action. The notification for application number 5536 will be sent by certified mail because the facility cost is less than presented on the application.

Attachments

A. Approvals

Reference Documents (available upon request)

1. ORS 468.150 through 468.190.
2. OAR 340-016-0005 through 340-016-0080.

Approved:

Section:

Division:

Report Prepared by: Margaret Vandehey
Phone: (503) 229-6878
Date Prepared: March 20, 2001

Attachment A

Approvals

State of Oregon
Department of Environmental Quality

Director's Recommendation:	**APPROVE**
Applicant	**Salem Black Top & Asphalt Paving, Inc.**
Application No.	**5535**
Facility Cost	**$11,950**
Percentage Allocable	**100%**
Useful Life	**10 years**

Tax Credit Review Report

EQC 0103b

Pollution Control Facility: Noise
Final Certification
ORS 468.150 -- 468.190
OAR 340-016-0005 -- 340-016-0080

Applicant Identification

Organized as: **C corporation**
Business: **Manufacturer of asphalt hot mix**
Taxpayer ID **93-0711002**

The applicant's address is:

dba Walling Sand & Gravel
P.O. Box 12009
Salem, OR 97309

Facility Identification

The facility is identified as:

Gencor Industries Ultra U II-100 burner

The applicant is the owner of the facility located at:

1815 22nd Street, S.E.
Salem, OR 97302

Technical Information

The claimed facility is a Gencor Ultra II-100 burner installed as part of a larger project that replaced the entire asphalt plant. The burner is designed to be quieter than the standard "open-air" burners similar to the one used in the previously existing asphalt plant. An open-air burner has sound levels that are 17 dB louder than the new installed burner.

The previous burner was located at the open end of the drum. Sound measurements taken at the property line after installation of the new burner complied with the City of Salem sound ordinances. Ambient noise levels ranged from 55 to 68dBA, mostly due to truck traffic, and were not significantly impacted by the claimed facility.

Eligibility

ORS 468.155 (1)(a)(A) The **principal purpose** of the **installation** of the **new** sound **device** is to comply with the requirements in OAR 340-035-0035 to control noise pollution.

ORS 468.155 (1)(b)(C) The pollution control is accomplished by the substantial reduction of noise pollution as defined by rule of the Environmental Quality Commission.

OAR 340-16-025(g)(B) The Environmental Quality Commsion did not certify any element of the previous plant as a noise pollution control facility.

Timeliness of Application

The application was submitted within the timing requirements of ORS 468.165 (6).

Application Received	**2/13/2001**
Additional Information Requested	**3/8/2001**
Additional Information Received	**3/14/2001**
Construction Started	**12/1998**
Construction Completed	**3/6/1999**
Facility Placed into Operation	**3/6/1999**

Facility Cost

Claimed Cost	**$ 11,950**
Eligible Cost	**$ 11,950**

The facility cost does not exceed $50,000; therefore, an independent accounting review was not required. Boldt, Carlisle & Smith, LLC provided an accountanting statement.

The claimed cost is the incremental cost of the low noise burner above the cost of a conventional open-air burner. A letter from Gencor Industries substantiated the incremental cost.

Facility Cost Allocable to Pollution Control

The facility cost does not exceed $50,000. According to ORS.190 (3), the only factor used in determining the percentage of the facility cost allocable to pollution control is the percentage of time the facility is used for pollution control. The facility is used **100%** of the time for pollution control.

Compliance

The applicant states the facility is in compliance with Department rules and statutes and with EQC orders. DEQ issued Air Contaminant Discharge Permit No. 24-5954 to the applicant on 1/13/00.

Reviewers: Lois L. Payne, P.E., SJO Consulting Engineers, Inc.
Dennis E. Cartier, Associate, SJO Consulting Engineers, Inc.
Maggie Vandehey, DEQ

State of Oregon
Department of Environmental Quality

Director's Recommendation:	**APPROVE**
Applicant	**Salem Black Top & Asphalt Paving, Inc.**
Application No.	**5536**
Facility Cost	**$271,343**
Percentage Allocable	**100%**
Useful Life	**10 years**

Tax Credit Review Report

EQC 0103b

Pollution Control Facility: Air
Final Certification
ORS 468.150 -- 468.190
OAR 340-016-0005 -- 340-016-0080

Applicant Identification

Organized as: **C corporation**
Business: **Manufacturer of asphalt hot mix**
Taxpayer ID **93-0711002**

The applicant's address is:

dba Walling Sand & Gravel
P.O. Box 12009
Salem, OR 97309

Facility Identification

The certificate will identify the facility as:

Gencor Ultraflo Baghouse and a Blue Smoke Capture/Control System

The applicant is the owner of the facility located at:

1815 22nd Street, S.E.
Salem, OR 97302

Technical Information

The applicant installed the claimed facility to reduce opacity, and to capture particulate and return it to the hot asphalt mix. The claimed facility consists of the following components:

- A Gencor Ultraflo baghouse with a rated capacity of 72,730 cfm, a 5.04 to 1 air to cloth ratio, and a Model 490-BCS exhaust fan with two 125 horsepower (HP) motor drives. The baghouse is 23 feet high, 12 feet wide, and 26 feet long and has 836 bags. It is installed to control particulate emissions.

- An auger system including two 14-inch augers with associated drives and valves, a surge hopper with high and low indicators and a variable speed vane feeder. It returns the removed particulate back into the hot asphalt mix.

- A blue-smoke-capture system consisting of a steel duct and 20-HP fan. The fan draws the hydrocarbons off of the hot asphalt-loading conveyor and directs it through the duct back to the inlet of the asphalt burner, thus providing for complete incineration.

- A steel shield installed to keep the oil mix away from the burner, thereby reducing the potential for blue smoke.

The applicant installed the new system as part of a larger project to replace the entire asphalt plant. The new plant is a Gencor Ultradrum, which is a counter-flow drum mixer rated at 300 tons per hour. The old asphalt plant at the same site had a PM limit of 0.2 grains per standard dry cubic foot (gr/sdcf) compared to the present limit of 0.04 gr/sdcf. There were previously no controls for blue smoke.

Source testing performed on September 2, 1999 showed a maximum particulate concentration of 0.017 gr/dscf and opacity of 0% for all three tests. Without the claimed facility, particulate and opacity limits would be exceeded.

Eligibility

ORS 468.155 (1)(a)(A) The **principal purpose** of this **new equipment** is to comply with DEQ requirements to **control** air pollution. The requirement is imposed by the applicant's Air Contaminant Discharge Permit No. 24-5954. The permit requires particulate emissions from any single air contaminant source be less than 0.04 grains per dry standard cubic foot and less than 11.1 tons per year or 36 pounds per hour. Opacity must be less than 20% for more than three minutes in one hour.

The primary and most important purpose of the of the auger system is material handling, not pollution control.

ORS 468.155 (1)(b)(B) The **control** is accomplished by the elimination of air pollution and the use of an air cleaning device as defined in ORS 468A.005.

OAR 340-16-025(g)(B) The Environmental Quality Commsion did not certify any element of the previous plant as a pollution control facility.

Timeliness of Application

The application was submitted within the timing requirements of ORS 468.165 (6).

Application Received	**2/13/2001**
Construction Started	**12/1998**
Construction Completed	**3/6/1999**
Facility Placed into Operation	**3/6/1999**

Facility Cost

Claimed Facility Cost	$ 292,886
Auger System	($21,543)
Eligible Facility Cost	**$ 271,343**

The facility cost is greater than $50,000 but less than $500,000; therefore, Boldt, Carlisle & Smith, LLC performed an accounting review according to Department guidelines on behalf of the applicant. The auger system is an ineligible cost because it makes an insignificant contribution to the air pollution control purpose.

Facility Cost Allocable to Pollution Control

The facility cost exceeds $50,000. According to ORS 468.190(1), the factors listed below were considered in determining the percentage allocable to pollution control. The percentage of the facility cost allocable to pollution control is **100%**.

Factor	Applied to This Facility
ORS 468.190(1)(a) Salable or Usable Commodity	The claimed facility recovers dust that is added back to the raw materials for asphalt production. The recovery of 2,000 tons per year of dust has an estimated value of $5 per ton.
ORS 468.190(1)(b) Return on Investment	The useful life of the facility used for the return on investment consideration is 20 years. The applicant estimates the gross annual revenues would be $10,000 and operating costs would be $11,000 for the first four years. The estimated operating costs increased by $31,000 in the fifth year due to estimated cost of bag replacements.
ORS 468.190(1)(c) Alternative Methods	Other brands of asphalt plants were evaluated and Gencor was considered the most versatile with the minimum air quality impact.
ORS 468.190(1)(d) Savings or Increase in Costs	There is an increase in costs associated with the operation of this system.
ORS 468.190(1)(e) Other Relevant Factors	No other relevant factors.

Compliance

The applicant states the facility is in compliance with Department rules and statutes and with EQC orders. DEQ issued Air Contaminant Discharge Permit No. 24-5954 to the applicant on 1/13/00.

Reviewers: Lois L. Payne, P.E., SJO Consulting Engineers, Inc.
Dennis E. Cartier, Associate, SJO Consulting Engineers, Inc.
Maggie Vandehey, DEQ