

**Part 1 of 2**  
**OREGON**  
**ENVIRONMENTAL QUALITY**  
**COMMISSION MEETING**  
**MATERIALS 05/20/2004**



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

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# **Oregon Environmental Quality Commission Meeting**

## **May 20-21, 2004**

Hermiston Community Center, Great Hall  
415 South Highway 395  
Hermiston, Oregon

On Wednesday May 19, the Commission will tour the Umatilla Chemical Agent Disposal Facility from 1:00 to 4:00 p.m. for an on-site inspection of the Department of Environmental Quality's (DEQ) Chemical Demilitarization Program. At approximately 5:00 p.m., the Commission will meet with local, state, national and tribal officials at the Oxford Suites Hotel, located at 1050 North First Street (Hwy 395) in Hermiston. At 6:30, the Commission will join DEQ staff for dinner at the El Cazador, located at 1240 North First Street in Hermiston.

**Thursday, May 20, beginning at 9:00 a.m.** at the Hermiston Community Center, including a working lunch

At 8:00 a.m., prior to the regular meeting, the Commission will hold an executive session to consult with counsel concerning legal rights and duties regarding current and potential litigation against the DEQ. Executive session is held pursuant to ORS 192.660(1)(h). Only representatives of the media may attend, and media representatives may not report on any deliberations during the session.

**A. Approval of Minutes**

The Commission will review, amend if necessary, and approve draft minutes of the April 8-9, 2004, Environmental Quality Commission meeting.

**B. \*Rule Adoption: Water Quality Standards, Including Toxic Pollutants Criteria**

Holly Schroeder, DEQ Water Quality Division Administrator, Bob Baumgartner, DEQ Surface Water Manager, and Martin Fitzpatrick, DEQ Water Quality Standards Specialist, will propose rule amendments to update Oregon's water quality criteria for toxic pollutants. The rules are designed to support DEQ's strategic direction to protect human health and the environment from toxics, and satisfy the federal Clean Water Act requirement to periodically review and update water quality criteria with the latest scientific information. The proposed criteria incorporate recent U.S. Environmental Protection Agency recommendations and provide a framework for the state's efforts to control water pollution by articulating goals and benchmarks for water quality.

**C. Action Item: Dilution Rule Waiver Modification – City of Ashland Wastewater Treatment Facility**

Holly Schroeder and Jon Gasik, DEQ Western Region Water Quality Engineer, will ask the Commission to approve the City of Ashland's request to modify its dilution rule waiver in order to renew the City's wastewater discharge permit. The City of Ashland wastewater treatment facility serves a population of over 20,000 and discharges to Ashland Creek approximately ¼ mile upstream of the confluence with Bear Creek. The modification would extend the waiver through the summer months and eliminate the



requirement to enhance stream flows. Environmental studies and technical analysis show that the water quality standards will be protected in Ashland and Bear Creeks without the application of the dilution rule requirements. The Commission will take action on the proposal at this meeting.

**D. Action Item: Air Toxics Science Advisory Committee**

In October 2003, the Commission adopted rules to create Oregon's first state Air Toxics Program. This program supplements the federal air toxics program that DEQ has implemented since 1990, and targets urban-area air toxic emissions from mobile and various small pollution sources to complement the industrial focus of the federal program. Oregon's program will take a community-based approach by creating a framework for adopting concentration limits for certain pollutants, identifying high-risk areas of the state, and implementing local emission reduction plans. The rules were the result of a five-year process guided by two stakeholder advisory committees. They require DEQ to form an Air Toxics Science Advisory Committee in concurrence with the Commission to provide DEQ, and in its jurisdiction, the Lane Regional Air Pollution Authority, with scientific and technical advice on developing the air toxics program. Andy Ginsburg, DEQ Air Quality Division Administrator, Annette Liebe, DEQ Air Quality Planning and Development Manager, and Bruce Hope, DEQ Air Quality Specialist, will recommend that the Commission concur with the Director's nomination of seven individuals to serve on the committee.

**E. \*Rule Adoption: Proposed Noise Rules for Wind Energy Facilities**

Wind and other renewable energy can reduce the amount of pollution that otherwise would occur by using fossil-fueled power plants. The special characteristics of wind energy facilities were not taken into account when state noise control rules were adopted in 1974, however. As a result, complying with the rules is more complicated and costly for wind energy facilities than for other industrial sources and competing types of electric generating facilities. Mike Grainey, Director of the Oregon Office of Energy, and Larry Knudsen, Assistant Attorney General, will propose changes to the noise regulations designed to streamline the application of noise standards to wind facilities and make the rules easier to administer. The proposed rules would maintain protections for noise sensitive areas without unnecessarily constraining the development of renewable energy sources.

**F. Informational Item: Preparing for the Start of Agent Operations at the Umatilla Chemical Agent Disposal Facility**

The Commission will hear a briefing from Don Barclay, Site Project Manager for the U.S. Army, and Doug Hamrick, Project General Manager for Washington Demilitarization Company, on site activities in preparation for beginning chemical agent operations at the Umatilla Chemical Agent Disposal Facility (UMCDF). Mike Parker, Director of the Army's Chemical Materials Agency, will brief the Commission on the Army Headquarters' review and approval process and its status. In addition, Mark Evans, President of Washington Demilitarization Company, will give a briefing on the path forward to address the issue of mercury in mustard agent.

- G. Informational Item: Update on the Umatilla Chemical Agent Disposal Facility**  
Dennis Murphey, DEQ Chemical Demilitarization Program Administrator, will update the Commission on the status of the UMCDF and preparations to potentially begin agent operations later this year.
- H. Action Item: Umatilla Chemical Agent Disposal Facility Permit Modification for Carbon Filters**  
Dennis Murphey and Sue Oliver, DEQ Senior Hazardous Waste Specialist, will present the staff recommendation that the Commission approve the Class 3 Permit Modification Request (UMCDF-03-041-PFS(3)) to change the point of compliance for incinerator emissions at the UMCDF. The permittees requested the proposed change in September 2003 to modify the UMCDF Hazardous Waste Storage and Treatment permit. If approved, the modification would establish compliance with permit limits using the air pollutant levels as measured after the carbon filter system, the final stage of the UMCDF incinerator pollution abatement systems. As originally issued, the UMCDF permit required that emissions compliance be determined before flue gases passed through the carbon filters. The Commission will act on the request at this meeting.
- I. Informational Item: Approval Process for Start of Agent Operations at the Umatilla Chemical Agent Disposal Facility**  
In preparation for the public hearing that will be held on Thursday evening, Dennis Murphey will provide a briefing on the Commission's approval process for authorizing the start of chemical agent operations at the UMCDF.

On Thursday evening, the Commission will have dinner with DEQ staff at approximately 5:30 p.m. at Fontaine's, 845 North First Street in Hermiston. From 7:00 to 9:00 p.m., the Commission will hold a public hearing to take comments on the proposed start of chemical agent operations at the Umatilla Chemical Agent Disposal Facility. The hearing will be held at the Hermiston Community Center, 415 South Highway 395 in Hermiston.

**Friday, May 21, beginning at 9:00 a.m.** at the Hermiston Community Center, including a working lunch

- J. Director's Dialogue, Stephanie Hallock**  
Stephanie Hallock, DEQ Director, will discuss current events and issues involving the Department and the state with Commissioners.
- K. Action Item: Consideration of Pollution Control Facilities Tax Credit Requests**  
In 1967, the Oregon Legislature established the Pollution Control Facility Tax Credit Program to help businesses meet environmental requirements. The program was later expanded to encourage investment in technologies and processes that prevent, control or reduce significant amounts of pollution. In 1999, facilities that control nonpoint sources of pollution (such as wood chippers) were made eligible for the program. At this meeting,



Helen Lottridge, DEQ Management Division Services Administrator, and Maggie Vandehey, DEQ Tax Credit Program Coordinator, will present recommendations on tax credit applications for facilities that control air and water pollution, recycle solid and hazardous waste, reclaim plastic products, and control pollution from underground fuel tanks.

**L. Temporary Rule Adoption: To Address Inconsistencies between the Pollution Control Facilities Tax Credit Law and Rules**

Helen Lottridge and Maggie Vandehey will propose a temporary rule to address inconsistencies between the pollution control facilities tax credit statutes and rules relating to filing deadlines. The tax credit statutes changed in 2001 to shorten the application filing time from two years to one year after construction of a facility is substantially completed. DEQ rules state that an application must be filed within two years of completion. The proposed temporary rule would eliminate this inconsistency immediately, and if adopted, the DEQ would begin formal rulemaking to make the change permanent.

**M. Informational Item: DEQ's 2005-2007 Budget Request**

Lauri Aunan, DEQ Budget and Legislative Manager, will give the Commission an overview of DEQ's 2005-2007 budget request and solicit policy guidance on key budget issues and priorities. Paul Siebert, from the Oregon Legislative Fiscal Office, will brief the Commission on statewide budget issues and the budget climate his office predicts for the 2005 legislative session.

**N. Informational Item: Update on Performance Partnership Agreement with EPA**

Helen Lottridge, DEQ Management Services Division Administrator, and Karen Tarnow, DEQ Performance Partnership Coordinator, will brief the Commission on the development of DEQ's 2004-2006 Performance Partnership Agreement and Grant (PPA/PPG). DEQ is now negotiating a PPA/PPG with the U.S. Environmental Protection Agency that covers State Fiscal Years 2005 and 2006. The PPA/PPG serves as the work plan for many of the federal grants that support DEQ's air quality, water quality and hazardous waste programs. It describes how DEQ and EPA will work together to protect Oregon's environment. The PPA/PPG will be finalized in June.

**O. Commissioners' Reports**

Adjourn

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Future Environmental Quality Commission meeting dates in 2004 include:

July 15-16, Portland; September 9-10, Bandon; October 28-29, Tillamook; December 9-10, Portland

**Agenda Notes**

**\*Rule Adoptions:** Hearings have been held on Rule Adoption items and public comment periods have closed. In accordance with ORS 183.335(13), no comments may be presented by any party to either the Commission or Department on these items at any time during this meeting.

**Copies of staff reports** for individual agenda items are available by contacting Andrea Bonard 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 Bonard as soon as possible, but at least 48 hours in advance of the meeting.

**Public Forum:** The Commission will break the meeting at approximately 11:30 a.m. on Friday, May 21 to provide members of the public an opportunity to speak to the Commission on environmental issues not part of the agenda for this meeting. Individuals wishing to speak to the Commission must sign a request form at the meeting and limit presentations to five minutes. The Commission may discontinue public forum after a reasonable time if a large number of speakers wish to appear. In accordance with ORS 183.335(13), no comments may be presented on Rule Adoption items for which public comment periods have closed.

**Note:** Because of the uncertain length of time needed for each agenda item, the Commission may hear any item at any time during the meeting. If a specific time is indicated for an agenda item, an effort will be made to consider that item as close to that time as possible. However, scheduled times may be modified if participants agree. Those wishing to hear discussion of an item should arrive at the beginning of the meeting to avoid missing the item.



## **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.

### **Lynn Hampton, Vice Chair**

Lynn Hampton serves as Tribal Prosecutor for the Confederated Tribes of the Umatilla Indian Reservation and previously was Deputy District Attorney for Umatilla County. She received her B.A. at University of Oregon and her J.D. at University of Oregon School of Law. Commissioner Hampton was appointed to the EQC in July 2003 and lives in Pendleton.

### **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.

### **Ken Williamson, Commissioner**

Ken Williamson is head of the Department of Civil, Construction and Environmental Engineering at Oregon State University and serves as Co-Director of the Center for Water and Environmental Sustainability. He received his B.S. and M.S. at Oregon State University and his Ph.D. at Stanford University. Commissioner Williamson was appointed to the EQC in February 2004 and he lives in Corvallis.

**The fifth Commission seat is currently vacant.**

### **Stephanie Hallock, Director**

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*Master Agenda – showing presenters and approximate timing of agenda items*

**May 20-21, 2004 EQC Meeting**  
Hermiston Community Center, Great Hall  
15 S Hwy 395, Hermiston, Oregon  
Phone/Fax: 541-567-6151/ 564-9109

**Wednesday, May 19**

Morning Travel to Hermiston (DEQ van leaves from HQ; Note: Mark may not be able to leave before 10:00 a.m. If not, eat brown bag lunches on the way.)  
noon Working lunch in Hermiston with staff (if DEQ van arrives by noon)  
1:00 – 4:00 Tour Depot  
4:00 Check into Oxford Suites hotel, relax and freshen up  
5:00 – 6:30 Meet and greet with local, state, national and tribal (Congressional reps) officials, Oxford Suites  
6:30 Dinner with DEQ staff

**Thursday, May 20**

8:00 – 9:00 Executive Session; Steve Bushong absent or on phone  
Regular meeting Including a working lunch  
9:00 – 9:05 A. Approval of Minutes  
9:05 – 11:00 B. Rule Adoption: WQ Toxics Standards, Holly Schroeder, Bob Baumgartner, Marty Fitzpatrick  
11:00 – 11:15 Break  
11:15 – 11:45 C. Action Item: City of Ashland Sewage Treatment Plant NPDES Permit Renewal - Dilution Rule waiver, Holly Schroeder, Jon Gasik  
11:45 - noon D. Action Item: Concurrence with Air Toxics Science Advisory Committee members, Andy Ginsburg, Annette Liebe, Bruce Hope  
noon Lunch  
1:00 – 1:30 E. Rule Adoption: Office of Energy Noise Rules, Larry Knudsen and Mike Grainey  
1:30 – 2:30 F. Informational Item: Briefing from the Army and Washington Demilitarization Company on preparations for the start of agent operations at the Umatilla Chemical Agent Disposal Facility and briefing on the path forward to address the issue of mercury in mustard agent, Army and Washington Demilitarization representatives  
2:30 – 2:45 G. Informational Item: Update on the Umatilla Chemical Agent Disposal Facility, Dennis Murphey  
2:45 – 3:45 H. Action Item: UMCDF Permit Modification for carbon filters, Dennis Murphey  
3:45 – 4:00 Break (SR on 4/19)  
4:00 – 4:30 I. Informational Item: Approval Process for Start of Agent Operations at UMCDF, Dennis Murphey  
4:30 – 5:30 relax, freshen up  
5:30 dinner with staff  
7:00 – 9:00 Public Hearing: EQC takes testimony on the start up of agent operations later this year

**Friday, May 21**

9:00 – 9:20 J. Director's Dialogue, Stephanie Hallock  
9:20 – 9:50 K. Action Item: PCTC Requests, Helen Lottridge and Maggie Vandehey  
9:50 – 10:10 L. Temporary Rule Adoption: PCTC Rule to address inconsistencies between the rule and state law, Helen Lottridge and Maggie Vandehey  
10:10 – 10:20 Break  
10:20 – 11:20 M. Informational Item: DEQ's 2005-2007 Budget Request, Lauri Aunan or Stephanie Hallock  
11:20 – 11:40 Public forum  
11:40 – noon N. Informational Item: PPA/PPG with EPA, Helen Lottridge or Stephanie Hallock  
noon – 12:05 O. Commissioners' Reports  
12:05 Working lunch  
1:00 travel home

**\*\*Note:** Craig Campbell attending May 19-20, Paul Siebert attending May 20-21, Lance Clark out of town




State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004

**To:** Environmental Quality Commission

**From:** Stephanie Hallock, Director 

**Subject:** Agenda Item B, Rule Adoption: Water Quality Standards, Including Toxic Pollutants Criteria, OAR Chapter 340, Division 41, May 20-21, 2004, EQC Meeting

**Department Recommendation** The Department recommends that the Environmental Quality Commission (Commission) revise the rules in OAR Chapter 340, Division 041 establishing water quality criteria for toxic pollutants and requirements for implementing water quality standards as presented in Attachment A.

**Background and Need for Rulemaking** The proposed rules update Oregon's water quality criteria for toxic pollutants. This action is being pursued for two reasons. First, it supports the agency's strategic direction to protect human health and the environment from toxics. Second, the federal Clean Water Act (CWA) requires states to periodically review water quality criteria and incorporate the latest scientific information, including the US Environmental Protection Agency (EPA) recommendations. These criteria provide the framework for the nation's efforts to control water pollution by articulating goals and benchmarks for water quality. Waters exceeding criteria are considered "polluted" while those achieving compliance are "clean." Water quality criteria are used for regulatory purposes in National Pollutant Discharge Elimination System (NPDES) point source permits, CWA Section 401 certification decisions, the CWA Section 303(d) impaired waters listing process, and development of total maximum daily loads (TMDLs). If Oregon fails to adopt water quality criteria protective of beneficial uses, then EPA can promulgate water quality criteria for the state.

The Commission adopted Oregon's existing water quality criteria for toxic pollutants in 1991. These criteria were based on national criteria recommended by EPA. EPA has since revised the national recommendations several times, most recently in 2002. The proposed criteria incorporate all of EPA's currently recommended criteria for toxic pollutants except for maintaining Oregon's current criteria for a) mercury, because of concerns that the revised criteria are not protective of threatened or endangered populations of salmonids and b) lindane, silver, and endosulfan because the Department disagrees with the basis for withdrawing them as EPA recommends. The Department used the best and latest scientific information in developing the proposed rule changes. Where the latest research (as incorporated into the EPA national

recommendations) indicated that different criteria are protective of beneficial uses, DEQ changed the criteria, in most cases making them more stringent but in some less stringent.

The proposed amendments also address two implementation issues. First, the proposed rules recognize that some Oregon waters stratify (i.e., divide into layers) either naturally or due to the presence of a dam (e.g. Lake Billy Chinook behind Round Butte dam), and that when this stratification occurs, it may prevent the water body from meeting standards throughout the entire water column. For example, a stratified water body may violate the temperature criteria at or near the surface but be in compliance at depth. Similarly, the water body may violate dissolved oxygen criteria in a bottom layer but be in compliance above. The proposed rule clarifies the Department's intent to consider the water body as not impaired if the sole reason for exceedance is its stratified condition. While the rule recognizes these physical and chemical realities, it also makes clear that sources must maximize the volume of layers that are capable of meeting the applicable criteria and supporting designated beneficial uses.

Second, according to federal law, unless state water quality standards specifically allow for the use of compliance schedules, point sources must immediately comply with new or revised water quality criteria. The proposed rule clarifies that the Department has the authority to include compliance schedules in permits and makes express some requirements that exist under federal law. The compliance schedule rule allows the Department to incorporate reasonable schedules into the permits themselves, thereby limiting the source's legal liability during the schedule and reducing the Department's workload. This tool furthers the Governor's directive to streamline regulatory requirements without weakening environmental protection of the state's waters.

**Effect of Rule**

The proposed amendments to OAR 340-041-0033 revise water quality criteria for over 100 toxic pollutants. Specifically, the proposed rules:

- ◊ Revise 60 criteria for 20 pollutants to protect aquatic life.
- ◊ 218 criteria for 114 pollutants to protect human health.
- ◊ Clarify the distinction between water quality criteria and water quality guidance values.

To implement the new criteria, the Department will develop guidance to permit writers for determining data submission requirements for dischargers at the time sources apply for new or renewed permits. The Department will also develop guidance for implementing the new toxics criteria in TMDLs. The permit evaluation process is called Reasonable Potential Analysis (RPA). Municipalities, industries, and businesses likely to discharge toxics will need to spend an estimated \$2000 to \$3000 every five years (i.e. the usual permit cycle) to provide data to the Department for determining whether effluent



limits for toxics need to be specified in permits. The Department will focus RPA efforts on facilities that the Department anticipates will have toxics in their discharge. For example, major industrial sources or municipalities with pretreatment programs will likely receive a more detailed RPA than minor municipal sources. If RPA indicates further requirements for monitoring or upgrading of treatment facilities to address potential violations of criteria, then these sources might need to spend substantial sums of money to address toxics in their wastestreams. Some funds for capital improvements may be available through the State Revolving Fund. The potential monetary benefit to society due to the protection of beneficial uses (including human health and aquatic life) from toxic pollution has not been quantified.

The proposed amendments to OAR 340-041-0061 and OAR 340-041-0002:

- ◊ Clarify that stratified waters will not be considered impaired for temperature, dissolved oxygen, or pH so long as they comply with water quality criteria in at least one of the strata in order to protect beneficial uses.
- ◊ Clarify the Department's authority to establish compliance schedules in permits allowing permit holders a reasonable period to comply with new or revised water quality criteria.

**Commission  
Authority**

The Commission has authority to take this action under ORS 468.020, ORS 468B.010, ORS 468B.015, ORS 468B.030, ORS 468B.035, and ORS 468B.048.

**Stakeholder  
Involvement**

In December 1999, the Department began working with the Water Quality Standards Policy Advisory Committee (PAC) on revisions to Oregon's water quality standards. The PAC focused intensely on water quality criteria for toxic pollutants in meetings from January 2001 through December 2002 and tracked the Department's progress through November 2003. In addition, the Department worked with a toxics technical advisory committee (TAC) from May 2001 through July 2002 to review EPA-recommended criteria and other scientific literature and to make technical recommendations to the Department and the PAC. Although TAC recommendations were unanimous, consensus recommendations by the PAC were reached only on aquatic life criteria for endosulfan, freshwater chronic lindane, and freshwater chronic silver. The PAC thoroughly debated the ramifications of the remainder of the toxics package but was unable to come to consensus on the issues of 1) updating most aquatic life criteria to the EPA minimum recommendation, 2) total recoverable vs. dissolved metals criteria, 3) toxic equivalency factor criteria for dioxins and furans, and 4) the fish consumption rate used to calculate human health criteria. The rulemaking on stratified waters and on compliance schedules was also discussed with the PAC. Members and reports of the policy and toxics technical advisory committees are identified in Attachment C.

**Public Comment** The Department provided an 88-day formal public comment period and held six public hearings in three locations around the State. The public comment period extended from June 2, 2003, through August 29, 2003, including a four-week extension from the original closing on August 1, 2003, and included public hearings in Bend, Roseburg, and Portland. Fifty persons or organizations submitted written comments. The major comments are reflected in the "Key Issues" below. The final rules were revised to address these and other questions, suggestions, and concerns. A summary of all comments and the Department's responses are provided in Attachment B.

**Key Issues** 1. *Should the human health criteria for toxic pollutants be derived using a fish consumption rate higher than the national recommendation of 17.5 g/day?*

*Recommendation:* The Department recommends adopting criteria for the protection of human health based on the nationally recommended fish consumption rate of 17.5 g/day. There is a lack of solid technical information on fish consumption rates for the general Oregon population and defaulting to the nationally recommended rate is consistent with EPA guidelines for deriving human health criteria. In addition, the use of 17.5 g/day in calculating the proposed criteria achieves a nearly three-fold increase in stringency over the use of 6.5 g/day in current criteria and results in minimally acceptable criteria for EPA approval. Finally, the proposed criteria are within EPA guidelines for acceptable risk to more highly exposed subgroups, such as the Columbia River tribes, which are known to consume fish at a higher rate.

2. *Should the aquatic life metals criteria be expressed as "total recoverable" or "dissolved" concentrations?*

*Recommendation:* The Department recommends metals criteria for aquatic life be expressed as "dissolved," rather than "total recoverable" concentrations. "Dissolved" metal refers to metal in the water column that upon sampling readily passes through a filter. "Total recoverable" metal refers to the "dissolved" portion plus metal in the water column that is bound to sediment or other constituents. "Dissolved" metals criteria are consistent with EPA's latest recommendations, although they are less stringent than "total recoverable" metals criteria. Much more is known about the toxicity of "dissolved" metals than metal bound to sediment or other constituents.

The Department initially proposed "total recoverable" metal for public comment and received much comment from industries and municipalities that the environmental benefit associated with "total recoverable" metals criteria did not justify the cost. The Department agrees with EPA's national recommendation that the "dissolved" metals criteria are adequate to fully protect all designated beneficial uses. Although the EQC has authority to adopt



greater protection, the Department does not believe that increased costs associated with this additional protection are appropriate at this time.

3. *Should the Department maintain the current aquatic life criteria for mercury?*

*Recommendation.* The Department initially proposed for public comment adoption of EPA's latest aquatic life criteria for mercury. However, the Department now believes that issues raised by NOAA-Fisheries and US Fish & Wildlife Service in the Biological Opinion on the 2000 California Toxics Rule resonate in Oregon concerning the protectiveness of these criteria for threatened and endangered salmonids in the state's waters. The Department is aware of efforts by EPA and the federal fisheries services to develop new aquatic life criteria for mercury. Therefore, the Department is proposing to maintain the state's current criteria and review EPA's new criteria for possible adoption in the future.

4. *Should the Department adopt a toxic equivalency factor (TEF) approach for dioxin-like compounds?*

*Recommendation:* Currently, EPA's summary table of recommended criteria only contains criteria for one form of dioxin, 2,3,7,8-TCDD. Consequently, Oregon only has numeric criteria for this one form of dioxin. However, EPA has published a methodology for states to voluntarily adopt criteria for a mixture of 2,3,7,8-TCDD and other dioxin-like compounds based on their relative toxicity to 2,3,7,8-TCDD. If adopted, sources of these compounds would be required to meet a single numeric concentration representing the mixture of dioxin-like compounds.

The scientific community broadly agrees that 1) dioxins and furans often co-exist in wastewater streams; 2) a number of dioxins and furans (as well as other chemicals) cause toxic responses similar to responses to 2,3,7,8-TCDD, although the chemicals vary in their potency; and 3) these chemicals have been detected in environmental samples in Oregon. Nevertheless, few states (e.g. the Great Lakes states) have adopted criteria using a toxic equivalency factor (TEF) approach for dioxins and furans. The Department proposed this TEF approach for comment as an alternative to simply updating the 2,3,7,8-TCDD criteria. The commenters from environmental groups and Native American tribes favor adopting a TEF-approach; however, commenters from industry favor updating the existing criteria rather than adopting the TEF approach. They were concerned that the TEF approach would result in significantly higher costs that should not be borne during the state's general economic downturn.

The Department has concluded that the numeric criteria for 2,3,7,8-TCDD alone used in conjunction with the narrative toxics criteria for other related chemicals is the best approach given the uncertainties surrounding the

availability of adequate resources in both the Department and regulated community to implement the TEF approach. Although EPA acknowledges the validity of the TEF approach in its national recommendations to states, the table of recommended criteria contains values only for 2,3,7,8-TCDD. While the EQC has authority to adopt a criterion that provides greater protection, the Department does not believe that increased resource requirements associated with the TEF approach are appropriate at this time.

*5. Should the Department propose numeric criteria for pollutants, especially pesticides, for which EPA has yet to develop recommendations?*

*Recommendation:* The Department does not recommend adopting numeric criteria for pesticides for which EPA has not recommended criteria because there is insufficient information for deriving such numeric criteria. The Department relies heavily on EPA for recommendations on numeric criteria. The process that EPA uses to derive criteria requires rigorous data; only a few pesticide pollutants satisfy these requirements. The Department is proposing numeric criteria for all pollutants for which EPA has adopted numeric criteria but will continue to rely on the existing narrative toxics criterion to address other pollutants.

*6. Will adoption of the new water quality toxics criteria create an unreasonable implementation burden on permitted sources?*

Adoption of these criteria will not require all NPDES permit holders to test their effluent for the entire set of toxic pollutants, nor will water quality-based effluent limits be set for all parameters. The Department plans to focus testing on dischargers with the greatest potential to have toxic pollutants in their discharge. This is likely to include major industrial facilities and municipalities that receive significant industrial discharges or have a pretreatment program. To the extent that these facilities have not implemented controls or monitoring for the existing toxics criteria, these facilities will bear increased costs to meet the expectations of this rule.

*7. Does the Department anticipate difficulty in securing federal approval for the proposed revisions to the toxics criteria?*

Based on the federal consultation process over compliance of the California Toxics Rule (promulgated in 2000) with the Endangered Species Act, the Department expects that NOAA-Fisheries and the US Fish & Wildlife Service might raise concerns in consultation with EPA on the proposed rulemaking regarding 1) the protectiveness of any of the proposed criteria for aquatic life that are less stringent than current criteria, 2) the protectiveness of dissolved metals criteria for aquatic life and 3) the protectiveness of the selenium criteria for aquatic life, regardless of form. EPA is currently consulting with the NOAA-Fisheries and the US Fish & Wildlife Service on approval of Idaho's



adoption of national recommended water quality criteria from 1992. Given the length of time required for still-pending approval of Idaho's criteria, it is reasonable to assume that some of Oregon's proposed criteria may not receive federal approval for a year or more.

**Next Steps**

Once adopted, these rules will be filed with the Secretary of State. Although the rules on stratified waters and compliance schedules will be effective upon filing, OAR 340-041-0033 provides that the revised toxics criteria will become effective on February 15, 2005. The Department will forward rules pertaining to water quality criteria to EPA for review and approval. Before approving the criteria, EPA will seek consultation under the Endangered Species Act with U.S. Fish and Wildlife Service and NOAA-Fisheries on those portions of the rules that affect threatened and endangered species (e.g. aquatic life criteria for toxic pollutants).

Following adoption of the rules, the Department will develop and present internal and external training on what the new rules cover and how they will be used in regulatory decisions. The rulemaking implementation plan is available on request.

**Attachments**


- A. Proposed Rule Revisions
- B. Summary of Public Comments and Agency Responses
- C. Advisory Committee Membership and Report
- D. Presiding Officer's Report on Public Hearings
- E. Relationship to Federal Requirements Questions
- F. Statement of Need and Fiscal and Economic Impact
- G. Land Use Evaluation Statement
- H. Water Quality Criteria for Toxic Pollutants Issue Paper

**Available Upon Request**

- 1. Legal Notice of Hearing
- 2. Cover Memorandum from Public Notice
- 3. Written Comment Received
- 4. Rulemaking Implementation Plan

Approved:

Section:

  
Robert P. Baumgartner

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**Attachment A**  
**Proposed Rule Revisions**

[Note to Readers: The Environmental Quality commission amended and reorganized OAR chapter 340, division 041 in December 2003. The proposed rule amendments below show changes to rules amended in December (the current proposed changes are underlined). The draft rule amendments published for public comment showed these changes to rules in effect on June 2003, before the December amendments.]

**340-041-0002**  
**Definitions**

Definitions in this rule ~~applicable~~ apply to all basins unless context requires otherwise:—

(1) "401 Water Quality Certification" means a determination made by DEQ that a dredge and fill activity, private hydropower facility, or other federally licensed or permitted activity that may result in a discharge to waters of the ~~State~~ state, has adequate terms and conditions to prevent an exceedance of water quality criteria. The federal permit in question may not be issued without this ~~State~~ state determination in accordance with the Federal Clean Water Act, section 401 (33 USC 1341).

(2) "Ambient Stream Temperature" means the stream temperature measured at a specific time and place. The selected location for measuring stream temperature must be representative of the stream in the vicinity of the point being measured.

(3) "Anthropogenic"—, — when used to describe "sources" or "warming"—, — means that which results from human activity;

(4) "Applicable Criteria" means the biologically-based temperature criteria set out in OAR 340-041-0028(4), the superseding cold water protection criteria as ~~described in OAR 340-041-0028(4211)~~, or the superseding natural condition criteria as described in OAR 340-041-0028(8). ~~In addition, t~~ The applicable criteria may also be site-specific criteria approved by U.S. EPA. A subbasin may have a combination of applicable temperature criteria derived from some or all of these numeric and narrative criteria.

(5) "Appropriate Reference Site or Region" means a site on the same water body, or within the same basin or ecoregion that has similar habitat conditions, and represents the water quality and biological community attainable within the areas of concern.



- (6) "Aquatic Species" means ~~any~~ plants or animals that live at least part of their life cycle in waters of the ~~State~~state.
- (7) "Basin" means a ~~third~~third-field hydrologic unit as identified by the U.S. Geological Survey.
- (8) "BOD" means 5-day, 20°C Biochemical Oxygen Demand.
- (9) "Cold-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cold water, including but not limited to native salmon, steelhead, mountain whitefish, char (including bull trout), and trout.
- (10) "Cold Water Refugia" means those portions of a water body where, or times during the diel temperature cycle when, the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent ~~well~~well-mixed flow of the water body.
- (11) "Commission" means the Oregon Environmental Quality Commission.
- (12) "Cool-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cool waters, including but not limited to native sturgeon, ~~pacific~~Pacific lamprey, suckers, chub, sculpins, and certain species of cyprinids (minnows).
- (13) "~~Core Cold~~Cold-Water Habitat Use" means waters that are expected to maintain temperatures within the range generally considered optimal for salmon and steelhead rearing, or that are suitable for bull trout migration, foraging, and sub-adult rearing that occurs during the summer. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A.
- (14) "Critical Habitat" means those areas that support rare, threatened, or endangered species, or serve as sensitive spawning and rearing areas for aquatic life as designated by the U.S. Fish and Wildlife Service or ~~NOAA~~National Oceanic and Atmospheric Administration-Fisheries pursuant to the Endangered Species Act (16 USC 1531).
- (15) "Daily Mean" ~~for~~ (dissolved oxygen) means the numeric average of an adequate number of data to describe the variation in dissolved oxygen concentration throughout a day, including daily maximums and minimums. For the purpose of calculating the mean, concentrations in excess of 100 percent of saturation are valued at the saturation concentration.
- (16) "Department" or "DEQ" means the Oregon State Department of Environmental Quality.

(17) "Designated Beneficial Use" means the purpose or benefit to be derived from a water body, as designated by the Water Resources Department or the Commission~~commission~~.

(18) "DO" means dissolved oxygen.

(19) "Ecological Integrity" means the summation of chemical, physical, and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region.

(20) "Epilimnion" means the seasonally stratified layer of a lake or reservoir above the metalimnion; the surface layer.

~~(20)~~(21) "Erosion Control Plan" means a plan containing a list of best management practices to be applied during construction to control and limit soil erosion.

~~(21)~~(22) "High Quality Waters" means those waters ~~which~~that meet or exceed ~~those levels~~ that are necessary to support the propagation of fish, shellfish, and wildlife; ~~and recreation in and on the water;~~ and other designated beneficial uses.

(23) "Hypolimnion" means the seasonally stratified layer of a lake or reservoir below the metalimnion; the bottom layer.

~~(22)~~(24) "Industrial Waste" means any liquid, gaseous, radioactive, or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business; or from the development or recovery of any natural resources.

~~(23)~~(25) "In Lieu Fee" means a fee collected by a jurisdiction in lieu of requiring construction of ~~on-site~~onsite stormwater quality control facilities.

~~(24)~~(26) "Intergravel Dissolved Oxygen" (IGDO) means the concentration of oxygen measured in the water within the stream bed gravels. Measurements should be taken within a limited time period, ~~prior to~~ before emergence of fry.

~~(25)~~(27) "Jurisdiction" means any city or county agency in the Tualatin River and Oswego Lake subbasin that regulates land development activities within its boundaries by approving plats, or site plans or issuing permits for land development.

~~(26)~~(28) "Land Development" means any ~~human~~human-induced change to improved or unimproved real estate, including but not limited to construction,



installation or expansion of a building or other structure, ~~land division, drilling, and site alteration such as that due to~~ land surface mining, dredging, grading, construction of earthen berms, paving, improvements for use as parking or storage, excavation, or clearing.

~~(27)~~(29) "Load Allocation (LA)" means the portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading that may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting loading. Whenever possible, natural and nonpoint source loads should be distinguished.

~~(28)~~(30) "Loading Capacity (LC)" means the greatest amount of loading that a water body can receive without violating water quality standards.

~~(29)~~(31) "Low Flow Period" means the flows in a stream resulting primarily from groundwater discharge or base flows augmented from lakes and storage projects during the driest period of the year. The dry weather period varies across the ~~State-state~~ according to climate and topography. Wherever the low flow period is indicated in the Water Quality Management Plans, this period has been approximated by the inclusive months. Where applicable in a waste discharge permit, the low flow period may be further defined.

(32) "Managed Lakes" refers to lakes in which hydrology is managed by controlling the rate or timing of inflow or outflow,

~~(30)~~(33) "mg/l" or "mg/L" means milligrams per liter.

(34) "Metalimnion" means the seasonal, thermally stratified layer of a lake or reservoir that is characterized by a rapid change in temperature with depth and that effectively isolates the waters of the epilimnion from those of the hypolimnion during the period of stratification; the middle layer.

~~(34)~~(35) "Migration Corridors" mean those waters that are predominantly used for salmon and steelhead migration during the summer, ~~and where there is~~ have little or no anadromous salmonid rearing occurring in the months of July and August. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, and 340A.

~~(32)~~(36) "Minimum" ~~(for dissolved oxygen)~~ means the minimum recorded concentration including seasonal and diurnal minimums.



~~(33)~~(37) "Monthly (30-day) Mean Minimum" ~~(for dissolved oxygen)~~ means the minimum of the 30 ~~consecutive~~ consecutive-day floating averages of the calculated daily mean dissolved oxygen concentration.

~~(34)~~(38) "Natural Conditions" means conditions or circumstances affecting the physical, chemical, or biological integrity of a water of the ~~State~~state that are not influenced by past or present anthropogenic activities. Disturbances from wildfire, floods, earthquakes, volcanic or geothermal activity, wind, insect infestation, and diseased vegetation are considered natural conditions.

~~(35)~~(39) "Natural Thermal Potential" means the determination of the thermal profile of a water body using best available methods of analysis and the best available information on the ~~site~~ site-potential riparian vegetation, stream geomorphology, stream flows, and other measures to reflect natural conditions.

~~(36)~~(40) "Nonpoint Sources" means any source of water pollution other than a point source. Generally, a nonpoint source is a diffuse or unconfined source of pollution where wastes can either enter into, or be conveyed by the movement of water, to public waters of the ~~State~~state.

~~(37)~~(41) "Ocean Waters" means all oceanic, offshore waters outside of estuaries or bays and within the territorial limits of the ~~State of Oregon~~.

~~(38)~~(42) "Outstanding Resource Waters" means those waters designated by the ~~Environmental Quality Commission~~ commission where existing high quality waters constitute an outstanding ~~State~~ state or national resource based on their extraordinary water quality or ecological values, or where special water quality protection is needed to maintain critical habitat areas.

~~(39)~~(43) "Pollution" means such contamination or other alteration of the physical, chemical, or biological properties of any waters of the ~~S~~state, including change in temperature, taste, color, turbidity, silt, or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the State ~~which that~~ either by itself or in connection with any other substance present, ~~will or~~ can reasonably be expected to create a public nuisance or render such waters harmful, detrimental, or injurious to public health, safety, or welfare, ~~or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wildlife, fish, or other aquatic life, or the habitat thereof.~~

~~(40)~~(44) "Point Source" means a discernable, confined, and discrete conveyance, including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft, or leachate collection system, from which pollutants are or may be discharged. Point source does not include agricultural storm water discharges and return flows from irrigated agriculture.



(41)(45) "Public Water" means the same as "waters of the State".

(42)(46) "Public Works Project" means any land development conducted or financed by a local, State, or federal governmental body.

(43)(47) "Reserve Capacity" means that portion of a receiving stream's loading capacity which that has not been allocated to point sources or to nonpoint sources and natural background as waste load allocations or load allocations, respectively. The reserve capacity includes that loading capacity which that has been set aside for a safety margin and is otherwise unallocated.

(44)(48) "Resident Biological Community" means aquatic life expected to exist in a particular habitat when water quality standards for a specific ecoregion, basin, or water body are met. This must be established by accepted biomonitoring techniques.

(45)(49) "Salmon" means chinook, chum, coho, sockeye, and pink salmon.

(46)(50) "Salmon and Steelhead Spawning Use" means waters that are or could be used for salmon and steelhead spawning, egg incubation, and fry emergence. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B.

(47)(51) "Salmon and Trout Rearing and Migration Use" means thermally suitable rearing habitat for salmon, and steelhead, rainbow trout, and cutthroat trout as designated on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A.

(48)(52) "Salmonid or Salmonids" means native salmon, trout, mountain whitefish, and char (including bull trout). For purposes of Oregon water quality standards, salmonid does not include brook or brown trout since they are introduced species.

(49)(53) "Secondary Treatment" means the following depending on the context:

(a) For "Sewage wWastes," secondary treatment means the minimum level of treatment mandated by EPA regulations pursuant to Public Law 92-500;

(b) For "Industrial and Other wWaste sSources," secondary treatment means control equivalent to best practicable treatment (BPT).

~~(50)~~(54) "Seven-Day Average Maximum Temperature" means a calculation of the average of the daily maximum temperatures from seven consecutive days, made on a rolling basis.

~~(51)~~(55) "Sewage" means the water-carried human or animal waste from residences, buildings, industrial establishments, or other places together with such groundwater infiltration and surface water as may be present. The admixture with sewage ~~as herein defined~~ of industrial wastes or wastes, as defined in sections ~~(6)~~ and ~~(13)~~ of this rule, may also be considered "sewage" within the meaning of this division.

~~(52)~~(56) "Short-Term Disturbance" means a temporary disturbance of six months or less ~~where~~ when water quality standards may be violated briefly, but not of sufficient duration to cause acute or chronic effects on beneficial uses.

~~(53)~~(57) "Spatial Median" means the value ~~which~~ that falls in the middle of a data set of multiple ~~IGDO~~ intergravel dissolved oxygen (IGDO) measurements taken within a spawning area. Half the samples should be greater than, and half the samples should be less than the spatial median.

~~(54)~~(58) "SS" means suspended solids.

~~(55)~~(59) "Stormwater Quality Control Facility" means any structure or drainage way that is designed, constructed, and maintained to collect and filter, retain, or detain surface water runoff during and after a storm event for the purpose of water quality improvement. It may also include, but is not be limited to, existing features such as wetlands, water quality swales, and ponds ~~which~~ that are maintained as stormwater quality control facilities.

~~(56)~~(60) "Subbasin" means a ~~fourth~~ fourth-field hydrologic unit as identified by the U.S. Geological Survey.

~~(57)~~(61) "Summer" means June 1 through September 30 of each calendar year.

~~(58)~~(62) "Threatened or Endangered Species" means aquatic species listed as either threatened or endangered under the federal Endangered Species Act (16 USC 1531 et seq. and Title 50 of the Code of Federal Regulations).

~~(59)~~(63) "Total Maximum Daily Load (TMDL)" means the sum of the individual waste load allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and background. If receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations



practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.

(64) "Toxic Substance" means those pollutants or combinations of pollutants, including disease-causing agents, that after introduction to waters of the state and upon exposure, ingestion, inhalation, or assimilation either directly from the environment or indirectly by ingestion through food chains will cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in any organism or its offspring.

~~(60)~~(65) "Wasteload Allocation (WLA)" means the portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

~~(61)~~(66) "Wastes" means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive, or other substances ~~which that will or may cause pollution or tend to cause pollution of any water of the State~~state.

~~(62)~~(67) "Water Quality Limited" means one of the following categories:

(a) A receiving stream that does not meet narrative or numeric water quality criteria during the entire year or defined season even after the implementation of standard technology;

(b) A receiving stream that achieves, and is expected to continue to achieve narrative or numeric water quality criteria but ~~utilizes~~uses higher than standard technology to protect beneficial uses;

(c) A receiving stream for which there is insufficient information to determine if whether water quality criteria are being met with higher-than-standard treatment technology, or where, through professional judgment, ~~the~~a receiving stream that would not be expected to meet water quality criteria during the entire year or defined season without higher than standard technology.

~~(63)~~(68) "Water Quality Swale" means a natural depression or wide, shallow ditch that is used to temporarily store, route, or filter runoff for the purpose of improving water quality.

~~(64)~~(69) "Waters of the ~~State~~state" means lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), and

that are located wholly or partially within or bordering the ~~State~~state or within its jurisdiction.

~~(65)~~(70) "Weekly (seven-day) Mean Minimum" ~~(for dissolved oxygen)~~ means the minimum of the seven ~~consecutive~~consecutive-day floating average of the calculated daily *mean* dissolved oxygen concentration.

~~(66)~~(71) "Weekly (seven-day) Minimum Mean" ~~(for dissolved oxygen)~~ means the minimum of the seven ~~consecutive~~consecutive-day floating average of the daily *minimum* concentration. For purposes of application of the criteria, this value will be used as the reference for diurnal minimums.

~~(67)~~(72) "Without Detrimental Changes in the Resident Biological Community" means no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region.

Stat. Auth: ORS 468.020, ORS 468B.010, ORS 468B.015, ORS 468B.035, ORS 468B.048.

Stats. Implemented: ORS 468B.035, 468B.048

### **340-041-0033**

#### **Toxic Substances**

(1) Toxic substances may not be introduced above natural background levels in the waters of the ~~S~~state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare, or aquatic life, wildlife, or other designated beneficial uses;.

(2) Levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20, 33A, and 33B, which were based on criteria established by EPA and published in *Quality Criteria for Water* (1986), unless otherwise noted; Table 33A and 33B, adopted on (date), update Table 20 as described in this section.

(b) Each value for criteria in Table 20 is effective until the corresponding value in Tables 33A or 33B becomes effective.

(A) Each value in Table 33A is effective on February 15, 2005, unless EPA has disapproved the value before that date. If a value is subsequently disapproved, any corresponding value in Table 20 becomes effective immediately. Values that are the same in Tables 20 and 33A remain in effect.

(B) Each value in Table 33B is effective upon EPA approval.



(c) The department will note the effective date for each value in Tables 20, 33A, and 33B as described in this section.

~~(3) The criteria in section (2) of this rule must apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site-specific basis. To establish permit or other regulatory limits for toxic substances for which criteria are not included in Tables 20, 33A, or 33B, the department may use the guidance values in Table 33C. Where no published EPA criteria exist for a toxic substance, public health advisories, and other published scientific literature, may be considered and used, if appropriate, to set guidance values;~~

~~(4) If the Department determines may also require or conduct bio-assessment studies that it is necessary to monitor the toxicity to aquatic life of complex effluents, other suspected discharges, or chemical substances without numeric criteria, to aquatic life, then bio-assessment studies may be conducted. Laboratory bioassays or in-stream measurements of indigenous biological communities, properly conducted in accordance with standards testing procedures, may be considered as scientifically valid data for the purposes of section (3) of this rule. If toxicity occurs, the Department will evaluate and implement necessary measures to reduce or eliminate the toxicity on a case-by-case basis.~~

Stat. Auth.: ORS 468.020, ORS 468B.030, ORS 468B.035, ORS 468B.048

Stats. Implemented: ORS 468B.030, ORS 468B.035, ORS 468B.048

### **340-041-0061**

#### **Other Implementation of Water Quality Criteria**

~~(1) No A waste treatment and disposal facilities facility may not be constructed or operated, and no wastes may not be discharged to public waters, without obtaining a permit from the Department department as required by in accordance with ORS 468B.050.~~

~~(2) Water Quality quality Variancesvariances. The Commissioncommission may grant point source variances from the water quality standards in this Division where the following requirements are met:.~~

~~(a) The water quality variance may applies-apply only to the point source for which the variance is requesting-requested the variance and only to the pollutant or pollutants specified in the variance; the underlying water quality standard otherwise remains in effect.~~

(b) A water quality standard variance ~~shall~~ may not be granted if:

(A) Standards will be attained by all point source dischargers implementing effluent limitations required under sections 301(b) and 306 of the federal Clean Water Act; and by nonpoint sources implementing cost-effective and reasonable best management practices; or

(B) The variance would likely jeopardize the continued existence of any threatened or endangered species listed under section 4 of the Endangered Species Act; or result in the destruction or adverse modification of such species' critical habitat.

(c) ~~Prior to granting~~ Before a variance is granted, the ~~point source~~ applicant must demonstrate that attaining the water quality standard is not feasible ~~because~~ for one of the following reasons:

(A) Naturally occurring pollutant concentrations prevent the attainment of the use; ~~or~~

(B) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable uses to be met without violating State ~~state~~ water conservation requirements to enable uses to be met; or

(C) Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; ~~or~~

(D) Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way which would result in the attainment of the use; ~~or~~

(E) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and ~~the like~~ unrelated to water quality; preclude attainment of aquatic life protection uses; ~~or~~

(F) Controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act would result in substantial and widespread economic and social impact.

(d) Procedures. An applicant for a water quality standards variance ~~shall~~ must submit a request for a variance to the ~~Department~~ department. The application ~~shall~~ must include all relevant information showing that the requirements for a



variance have been satisfied. The burden is on the applicant to demonstrate that the designated use is unattainable for one of the reasons specified in subsection (c) of this rule~~section~~. If the ~~Department~~department preliminarily determines that grounds exist for granting a variance, it ~~shall~~must provide public notice of the proposed variance and ~~provide an opportunity for public comment~~.

(A) The ~~Department~~department may condition the variance on the performance of ~~such~~ additional studies, monitoring, management practices, and other controls ~~as may be deemed necessary~~. These terms and conditions will be incorporated into the applicant's NPDES permit or ~~Department~~department order.

(B) A variance may not exceed ~~3~~three years or the term of the NPDES permit, whichever is less. A variance may be renewed if the applicant reapplies and demonstrates that the use in question is still not attainable. Renewal of the variance may be denied if the applicant does not comply with the conditions of the original variance, or otherwise does not meet the requirements of this section.

(C) DEQ approval of a variance for a point source is not effective under the federal Clean Water Act until submitted to and approved by EPA.

(3) Plans for all sewage and industrial waste treatment, control, and disposal facilities must be submitted to the ~~Department~~department for review and approval prior to construction as required by ORS 468B.055.

(4) Minimum design criteria for waste treatment and control facilities prescribed under this plan and ~~such other waste treatment, and controls as may be deemed necessary to ensure compliance with the water quality standards contained in this plan,~~ must be provided in accordance with specific permit conditions for those sources or activities for which permits are required and the following implementation program:-.

(a) For new or expanded waste loads or activities, fully approved treatment or control facilities, or both, must be provided prior to discharge of any wastes from the new or expanded facilities or conduct of the new or expanded activity;-.

(b) For existing waste loads or activities, additional treatment or control facilities necessary to correct specific unacceptable water quality conditions must be provided in accordance with a specific program and timetable incorporated into the waste discharge permit for the individual discharger or activity. In developing treatment requirements and implementation schedules for existing installations or activities, consideration will be given to the impact upon the overall environmental quality, including air, water, land use, and aesthetics;-.

(c) Wherever minimum design criteria for waste treatment and control facilities set forth in this plan are more stringent than applicable federal standards and



treatment levels currently being provided, upgrading to the more stringent requirements will be deferred until it is necessary to expand or otherwise modify or replace the existing treatment facilities. Such deferral will be acknowledged in the permit for the source;

(d) Where planning, design, or construction of new or modified waste treatment and controls to meet prior applicable ~~State~~state or federal requirements ~~are~~is underway at the time this plan is adopted, such plans, design, or construction may be completed under the requirements in effect when the project was initiated. ~~Timing for u~~Upgrading to meet more stringent future requirements will be as providedtimed in accordance with section (3) of this rule.

(5) Confined animal feeding operations (CAFOs) are regulated ~~pursuant to~~under OAR 340-051-0005 through 340-051-0080 ~~in order to~~ minimize potential adverse effect on water quality (see also OAR 603-074-0005 through 603-074-0070).

(6) Programs for control of pollution from nonpoint sources when developed by the ~~Department~~department, or by other agencies pursuant to section 208 of ~~Public Law 92-500~~the federal Clean Water Act and approved by the ~~Department~~department, will ~~as applicable,~~ be incorporated into this plan by amendment via the same process used to adopt the plan unless other procedures are established by law.

(7) Where minimum requirements of federal law or enforceable regulations are more stringent than specific provisions of this plan, the federal requirements will prevail.

(8) Within ~~the~~the framework of ~~State-wide~~statewide ~~priority~~priority ~~priorities~~priorities and available resources, the ~~Department~~department will monitor water quality within the basin for the purposes of evaluating conformance with the plan and developing information for ~~future additions or updating~~updates.

(9) The ~~Commission~~commission recognizes that the potential exists for conflicts between water quality management plans and the land use plans and resource management plans ~~which that~~ local governments and other agencies ~~must are~~ required to develop pursuant to law. In the event any such ~~if~~ conflicts develop, it is the intent of the ~~Department~~department ~~will to~~ meet with the local governments or responsible ~~agency~~agencies ~~to formulate proposed revisions to one or both~~ so as to resolve the conflicts. Revisions will be presented for adoption via the same process used to adopt the plan unless other specific procedures are established by law.

(10) The ~~Department~~department will calculate and include effluent limits specified in pounds per day, which will be the mass load limits for biochemical oxygen demand or carbonaceous biochemical oxygen demand and total suspended



solids in National Pollutant Discharge Elimination System permits issued to all sewage treatment facilities. These limits must be calculated as follows:-

(a) Except as noted in paragraph (H) of this subsection, ~~for the following requirements apply to existing facilities and for to facilities receiving departmental approval for engineering plans and specifications approval from the Department~~ for new treatment facilities or treatment facilities expanding the average dry weather treatment capacity, ~~prior to before~~ June 30, 1992:

(A) During periods of low stream flows (approximately May 1 through October 31), the monthly average mass load expressed as pounds per day may not exceed the applicable monthly concentration effluent limit times the design average dry weather flow expressed in million gallons per day times 8.34. The weekly average mass load expressed as pounds per day may not exceed the monthly average mass load times 1.5. The daily mass load expressed in pounds per day may not exceed the monthly average mass load times 2.0:-

(B) During the period of high stream flows (approximately November 1 through April 30), the monthly average mass load expressed as pounds per day may not exceed the monthly concentration effluent limit times the design average wet weather flow expressed in million gallons per day times 8.34. The weekly average mass load expressed as pounds per day may not exceed the monthly average mass load times 1.5. The daily mass load expressed in pounds per day may not exceed the monthly average mass load times 2.0:-

(C) On any day that the daily flow to a sewage treatment facility exceeds the lesser hydraulic capacity of the secondary treatment portion of the facility or twice the design average dry weather flow, the daily mass load limit ~~will~~ does not apply. The permittee must operate the treatment facility at highest and best practicable treatment and control:-

(D) The design average wet weather flow used in calculating mass loads must be approved by the ~~Department~~ department in accordance with prudent engineering practice and must be based on a facility plan approved by the ~~Department~~ department, engineering plans and specifications approved by the ~~Department~~ department, or an engineering evaluation. The permittee must submit documentation describing and supporting the design average wet weather flow with the permit application, application for permit renewal, or modification request; or upon request by the ~~Department~~ department. The design average wet weather flow is defined as the average flow between November 1 and April 30 when the sewage treatment facility is projected to be at design capacity for that portion of the year:-

(E) Mass loads assigned as described in paragraphs (B) and (C) of this subsection will not be subject to OAR 340-041-0004(7);

(F) Mass loads as described in this rule will be included in permits upon renewal, or upon a request for permit modification; ~~request;~~

(G) Within 180 days after permit renewal or modification, a permittee receiving higher mass loads under this rule and having a separate sanitary sewer system must submit to the ~~Department~~department for review and approval a proposed program and time schedule for identifying and reducing inflow. The program must ~~consist of~~include the following:

(i) Identification of all overflow points and verification that sewer system overflows are not occurring up to a 24-hour, five-year storm event or equivalent;

(ii) Monitoring of all pump station overflow points; ~~and~~

(iii) A program for identifying and removing all inflow sources into the permit holder's sewer system over which the permit holder has legal control; and

(iv) For those permit holders not having the necessary legal authority for all portions of the sewer system discharging into the permit holder's sewer system or treatment facility, a program and schedule for gaining legal authority to require inflow reduction and a program and schedule for removing inflow sources.

(H) Within one year after the ~~Department~~department's approval of the program, the permit holder must begin implementation of the program.

(I) Paragraphs (A) through (G) of this subsection does not apply to the cities of Athena, Elgin, Adair Village, Halsey, Harrisburg, Independence, Carlton, and Sweet Home. Mass load limits have been individually assigned to these facilities.

(b) For new sewage treatment facilities or treatment facilities expanding the average dry weather treatment capacity, ~~and~~ receiving engineering plans and specifications approval from the ~~Department~~department after June 30, 1992, the mass load limits must be calculated by the ~~Department~~department based on the proposed treatment facility capabilities and the highest and best practicable treatment to minimize the discharge of pollutants; ~~and~~

(c) Mass load limits as defined in this rule may be replaced by more stringent limits if required by waste load allocations established in accordance with a TMDL for treatment facilities discharging to water quality limited streams, or if required to prevent or eliminate violations of water quality standards; ~~and~~

(d) ~~In the event that~~If the design average wet weather flow or the hydraulic secondary treatment capacity is not known or has not been approved by the ~~Department~~department at the time of permit issuance, the permit must include as interim mass load limits the mass load limits in the previous permit issued to the permit holder for the treatment facility. The permit must also include a



requirement that the permit holder ~~must submit to the Department~~department the design average wet weather flow and hydraulic secondary treatment capacity within 12 months after permit issuance. Upon review and approval of the design flow information, the ~~Department~~department will modify the permit and include mass load limits as described in subsection (a) of this section~~;~~.

(e) Each permit holder with existing sewage treatment facilities otherwise subject to subsection (a) of this section may choose mass load limits calculated as follows:

(A) The monthly average mass load expressed as pounds per day may not exceed the applicable monthly concentration effluent limit times the design average dry weather flow expressed in million gallons per day times 8.34 pounds per gallon~~;~~.

(B) The weekly average mass load expressed as pounds per day may not exceed the monthly average mass load times 1.5~~;~~.

(C) The daily mass load expressed in pounds per day may not exceed the monthly average mass load times 2.0. ~~In the event that~~If existing mass load limits are retained by the permit holder, the terms and requirements of subsection (a) of this section will do not apply.

(f) The ~~Commission~~commission may grant exceptions to subsection (a) of this section. In allowing increased discharged loads, the ~~Commission~~commission must make the findings specified in OAR 340-041-0004(9)(a) for waste loads, and ~~in addition must make the following findings:~~

(A) ~~That mass~~Mass loads as calculated in subsection (a) of this section cannot be achieved with the existing treatment facilities operated at maximum efficiency at projected design flows; and

(B) ~~That there~~There are no practicable alternatives to achieving the mass loads as calculated in subsection (a) of this section.

(11) Forestry on ~~State~~state and ~~Private~~private ~~Lands~~lands. For forest operations on ~~State~~state or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770) deemed in compliance with this ~~Division~~division. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards.



(12) Agricultural water quality management plans to reduce agricultural nonpoint source pollution are developed and implemented by the Oregon Department of Agriculture (ODA) through a cooperative agreement with the ~~Department~~ to implement applicable provisions of ORS 568.900 to 568.933 and ORS 561.191. If the ~~Department~~ has reason to believe that agricultural discharges or activities are contributing to water quality problems resulting in water quality standards violations, the ~~Department~~ may consult with the ODA. If water quality impacts are likely from agricultural sources, and the ~~Department~~ determines that a water quality management plan is necessary, the ~~Director~~ may write a letter to the ~~Director~~ of the ODA requesting that such a management plan be prepared and implemented to reduce pollutant loads and achieve the water quality criteria.

(13) ~~Agriculture and Forestry~~ on ~~Federal~~ Federal Lands. Agriculture and forestry activities conducted on federal land must meet the requirements of this ~~Division~~ and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices, and aquatic conservation strategies. Where the department designates a Federal Agency as a Designated Management Agency by the Department, implementation of these plans, practices, and strategies is deemed compliance with this ~~Division~~.

(14) Testing methods: ~~The analytical testing methods for determining compliance with the water quality standards contained in this rule must be in accordance with 40 CFR Part 136, or, if Part 136 does not prescribe a method, then with the most recent edition of *Standard Methods for the Examination of Water and Waste Water* published jointly by the American Public Health Association, American Water Works Association, and Water Pollution Control Federation; unless if the Department has published an applicable superseding method, in which case testing must be in accordance with the superseding method; provided, however, that~~ Testing in accordance with an alternative method must comply with this rule if the Department has published the method or has approved the method in writing.

(15) Reservoirs or managed lakes are deemed in compliance with water quality criteria for temperature, pH, or dissolved oxygen (DO) if all of the following circumstances exist.

(a) The water body has thermally stratified naturally or due to the presence of an impoundment.

(b) The water body has three observable layers, defined as the epilimnion, metalimnion, and hypolimnion.



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(c) A layer exists in the reservoir or managed lake in which temperature, pH, and DO criteria are all met, and the layer is sufficient to support beneficial uses.

(d) All practicable measures have been taken by the entities responsible for management of the reservoir or managed lake to maximize the layers meeting the temperature, pH, and DO criteria.

(e) One of the following conditions is met:

(A) The streams or river segments immediately downstream of the water body meet applicable criteria for temperature, pH, and DO.

(B) All practicable measures have been taken to maximize downstream water quality potential and fish passage.

(C) If the applicable criteria are not met in the stream or river segment immediately upstream of the water body, then no further measurable downstream degradation of water quality has taken place due to stratification of the reservoir or managed lake.

(16) Compliance Schedules. In a permit issued under OAR chapter 340, division 045 or in a water quality certification under OAR chapter 340, division 48, the department may include compliance schedules for the implementation of effluent limits derived from water quality criteria in this division. Any compliance schedule in an NPDES permit is allowed only for water quality based effluent limits that are newly applicable to the permit and must comply with provisions in 40 CFR §122.47 (including the requirement that water quality criteria must be achieved as soon as possible) and allowed only for water quality based effluent limits that are newly applicable to the permit.

Stat. Auth.: ORS 468.020, ORS 468B.030, ORS 468B.035, ORS 468B.048

Stats. Implemented: ORS 468B.030, ORS 468B.035, ORS 468B.048

## ***WATER QUALITY CRITERIA SUMMARY<sup>1</sup>*** **(Applicable to all Basins)<sup>1</sup>**

The concentration for each compound listed in this chart is a criteria or guidance value\* not to be exceeded in waters of the state for the protection of aquatic life and human health. Specific descriptions of each compound and an explanation of values are included in Quality Criteria for Water (1986). Selecting values for regulatory purposes will depend on the most sensitive beneficial use to be protected, and what level of protection is necessary for aquatic life and human health. The concentration for each compound listed in Table 20 is a criterion not to be exceeded in waters of the state in order to protect aquatic life and human health. All values are expressed as micrograms per liter (µg/L) except where noted. Compounds are listed in alphabetical order with the corresponding designations as to whether EPA has identified it as a priority pollutant and a carcinogen, aquatic life freshwater acute and chronic criteria, aquatic life marine acute and chronic criteria, human health water & organism and fish consumption only criteria, and Drinking Water Maximum Contaminant Level (MCL). The acute criteria refer to the average concentration for one (1) hour and the chronic criteria refer to the average concentration for 96 hours (4 days), and that these criteria should not be exceeded more than once every three (3) years.

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
ACENAPTHENE	Y	N	*1,700	*520	*970	*710			
ACROLEIN	Y	N	*68	*21	*55		320ug	780ug	
ACRYLONITRILE	Y	Y	*7,550	*2,600			0.058ug**	0.65ug**	
ALDRIN	Y	Y	3		1.3		0.074ng**	0.079ng**	
ALKALINITY	N	N		20,000					
AMMONIA	N	N	CRITERIA ARE pH AND TEMPERATURE DEPENDENT—SEE DOCUMENT USEPA JANUARY 1985 (Fresh Water) CRITERIA ARE pH AND TEMPERATURE DEPENDENT—SEE DOCUMENT USEPA APRIL 1989 (Marine Water)						
ANTIMONY	Y	N	*9,000	*1,600			146ug	45,000ug	
ARSENIC	Y	Y					2.2ng**	17.5ng**	0.05mg
ARSENIC (PENT)	Y	Y	*850	*48	*2,319	*13			
ARSENIC (TRI)	Y	Y	360	190	69	36			
ASBESTOS	Y	Y					30K f/L**		
BARIUM	N	N					1mg		1.0mg
BENZENE	Y	Y	*5,300		*5,100	*700	0.66ug**	40 ug**	
BENZIDINE	Y	Y	*2,500				0.12ng	0.53ng**	
BERYLLIUM	Y	Y	*130	*5.3			6.8ng**	117ng**	
BHC	Y	N	*100		*0.34				
CADMIUM	Y	N	3.9+	1.1+	43	9.3	10ug		0.010mg
CARBON TETRACHLORIDE	Y	Y	*35,200		*50,000		0.4ug**	6.94ug**	
CHLORDANE	Y	Y	2.4	0.0043	0.09	0.004	0.46ng**	0.48ng**	
CHLORIDE	N	N	860 mg/L	230 mg/L					
CHLORINATED BENZENES	Y	Y	*250	*50	*160	*129	488 ug		
CHLORINATED NAPHTHALENES	Y	N	*1,600		*7.5				
CHLORINE	N	N	19	11	13	7.5			



TABLE 20

**WATER QUALITY CRITERIA SUMMARY (Continued)**

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
CHLOROALKYL ETHERS	Y	N	*238,000						
CHLOROETHYL ETHER (BIS-2)	Y	Y					0.03 ug	1.36 ug**	
CHLOROFORM	Y	Y	*28,900	*1,240			0.19ug**	15.7ug**	
CHLOROISOPROPYL ETHER (BIS-2)	Y	N					34.7ug	4.36mg	
CHLOROMETHYL ETHER (BIS)	N	Y					0.00000376ng* *	0.00184ug**	
CHLOROPHENOL 2	Y	N	*4,380	*2,000					
CHLOROPHENOL 4	N	N			*29,700				
CHLOROPHENOXY HERBICIDES (2,4,5,-TP)	N	N					10ug		
CHLOROPHENOXY HERBICIDES (2,4-D)	N	N					100ug		
CHLORPYRIFOS	N	N	0.083	0.041	0.011	0.0056			
CHLORO-4 METHYL-3 PHENOL	N	N	*30						
CHROMIUM (HEX)	Y	N	16	11	1,100	50	50ug		0.05mg
CHROMIUM (TRI)	N	N	1,700.+	210.+	*10,300		170mg	3,433mg	0.05mg
COPPER	Y	N	18.+	12.+	2.9	2.9			
CYANIDE	Y	N	22	5.2	1	1	200ug		
DDT	Y	Y	1.1	0.001	0.13	0.001	0.024ng**	0.024ng**	
(TDE) DDT METABOLITE	Y	Y	*0.06		*3.6				
(DDE) DDT METABOLITE	Y	Y	*1,050		*14				
DEMETON	Y	N		0.1		0.1			
DIBUTYLPHTHALATE	Y	N					35mg	154mg	
DICHLOROBENZENES	Y	N	*1,120	*763	*1,970		400ug	2.6mg	
DICHLOROBENZIDINE	Y	Y					0.01ug**	0.020ug**	
DICHLOROETHANE 1,2	Y	Y	*118,000	*20,000	*113,000		0.94ug**	243ug**	
DICHLOROETHYLENES	Y	Y	*11,600		*224,000		0.033ug**	1.85ug**	
DICHLOROPHENOL 2,4	N	N	*2,020	*365			3.09mg		
DICHLOROPROPANE	Y	N	*23,000	*5,700	*10,300	*3,040			
DICHLOROPROPENE	Y	N	*6,060	*244	*790		87ug	14.1mg	
DIELDRIN	Y	Y	2.5	0.0019	0.71	0.0019	0.071ng**	0.076ng**	
DIETHYLPHTHALATE	Y	N					350mg	1.8g	
DIMETHYL PHENOL 2,4	Y	N	*2,120						
DIMETHYL PHTHALATE	Y	N					313mg	2.9g	
DINITROTOLUENE 2,4	N	Y					0.11ug**	9.1ug**	
DINITROTOLUENE	Y	N					70ug	14.3mg	
DINITROTOLUENE	N	Y	*330	*230	*590	*370			
DINITRO-O-CRESOL 2,4	Y	N					13.4g	765ug	

TABLE 20

## WATER QUALITY CRITERIA SUMMARY (Continued)

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
DIOXIN (2,3,7,8-TCDD)	Y	Y	*0.01	*38pg/L			0.000013ng**	0.000014ng**	
DIPHENYLHYDRAZINE	Y	N					42ng**	0.56ug**	
DIPHENYLHYDRAZINE 1,2	Y	N	*270						
DI-2-ETHYLHEXYL PHTHALATE	Y	N					15mg	50mg	
ENDOSULFAN	Y	N	0.22	0.056	0.034	0.0087	74ug	159ug	
ENDRIN	Y	N	0.18	0.0023	0.037	0.0023	1ug		0.0002mg
ETHYLBENZENE	Y	N	*32,000		*430		1.4mg	3.28mg	
FLUORANTHENE	Y	N	*3,980		*40	*16	42ug	54ug	
GUTHION	N	N		0.01		0.01			
HALOETHERS	Y	N	*360	*122					
HALOMETHANES	Y	Y	*11,000		*12,000	*6,400	0.19ug**	15.7ug**	
HEPTACHLOR	Y	Y	0.52	0.0038	0.053	0.0036	0.28ng**	0.29ng**	
HEXACHLOROETHANE	N	Y	*980	*540	*940		1.9ug	8.74ug	
HEXACHLOROBENZENE	Y	N					0.72ng**	0.74ng**	
HEXACHLOROBUTADIENE	Y	Y	*90	*9.3	*32		0.45ug**	50ug**	
HEXACHLOROCYCLOHEXANE (LINDANE)	Y	Y	2	0.08	0.16				0.004mg
HEXACHLOROCYCLOHEXANE-ALPHA	Y	Y					9.2ng**	31ng**	
HEXACHLOROCYCLOHEXANE-BETA	Y	Y					16.3ng**	54.7ng**	
HEXACHLOROCYCLOHEXANE-GAMA	Y	Y					18.6ng**	62.5ng**	
HEXACHLOROCYCLOHEXANE-TECHNICAL	Y	Y					12.3ng**	41.4ng**	
HEXACHLOROCYCLOPENTADIENE	Y	N	*7	*5.2	*7		206ug		
IRON	N	N		1,000			0.3mg		
ISOPHORONE	Y	N	*117,000		*12,900		5.2mg	520mg	
LEAD	Y	N	82.+	3.2+	140	5.6	50ug		0.05mg
MALATHION	N	N		0.1		0.1			
MANGANESE	N	N					50ug	100ug	
MERCURY	Y	N	2.4	0.012	2.1	0.025	144ng	146ng	0.002mg
METHOXYCHLOR	N	N		0.03		0.03	100ug		0.1mg
MIREX	N	N		0.001		0.001			
MONOCHLOROBENZENE	Y	N					488ug		
NAPHTHALENE	Y	N	*2,300	*620	*2,350				
NICKEL	Y	N	1,400.+	160+	75	8.3	13.4ug	100ug	
NITRATES	N	N					10mg		10mg
NITROBENZENE	Y	N	*27,000		*6,680		19.8mg		
NITROPHENOLS	Y	N	*230	*150	*4,850				
NITROSAMINES	Y	Y	*5,850		*3,300,000		0.8ng**	1,240ng**	



TABLE 20

**WATER QUALITY CRITERIA SUMMARY (Continued)**

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
NITROSODIBUTYLAMINE N	Y	Y					6.4ng**	587ng**	
NITROSODIETHYLAMINE N	Y	Y					0.8ng**	1,240ng**	
NITROSODIMETHYLAMINE N	Y	Y					1.4ng**	16,000ng**	
NITROSODIPHENYLAMINE N	Y	Y					4,900ng**	16,100ng**	
NITROSPYRROLIDINE N	Y	Y					16ng**	91,900ng**	
PARATHION	N	N	0.065	0.013					
PCB's	Y	Y	2	0.014	10	0.03	0.079ng**	0.079ng**	
PENTACHLORINATED ETHANES	N	N	*7,240	*1,100	*390	*281			
PENTACHLOROBENZENE	N	N					74ug	85ug	
PENTACHLOROPHENOL	Y	N	***20	***13	13		1.01mg		
PHENOL	Y	N	*10,200	*2,560	*5,800		3.5mg		
PHOSPHORUS ELEMENTAL	N	N				0.1			
PHTHALATE ESTERS	Y	N	*940	*3	*2,944	*3.4			
POLYNUCLEAR AROMATIC HYDROCARBONS	Y	Y			*300		2.8ng**	31.1ng**	
SELENIUM	Y	N	260	35	410	54	10ug		0.01mg
SILVER	Y	N	4.1+	0.12	2.3		50ug		0.05mg
SULFIDE HYDROGEN SULFIDE	N	N		2		2			
TETRACHLORINATED ETHANES	Y	N	*9,320						
TETRACHLOROBENZENE 1,2,4,5	Y	N					38ug	48ug	
TETRACHLOROETHANE 1,1,2,2	Y	Y		*2,400	*9,020		0.17ug**	10.7ug**	
TETRACHLOROETHANES	Y	N	*9,320						
TETRACHLOROETHYLENE	Y	Y	*5,280	*840	*10,200	*450	0.8ug**	8.85ug**	
TETRACHLOROPHENOL 2,3,5,6	Y	N				*440			
THALLIUM	Y	N	*1,400	*40	*2,130		13ug	48ug	
TOLUENE	Y	N	*17,500		*6,300	*5,000	14.3mg	424mg	
TOXAPHENE	Y	Y	0.73	0.0002	0.21	0.0002	0.71ng**	0.73ng**	0.005mg
TRICHLORINATED ETHANES	Y	Y	*18,000						
TRICHLOROETHANE 1,1,1	Y	N			*31,2000		18.4mg	1.03g	
TRICHLOROETHANE 1,1,2	Y	Y		*9,400			0.6ug**	41.8ug**	
TRICHLOROETHYLENE	Y	Y	*45,000	*21,900	*2,000		2.7ug**	80.7ug**	
TRICHLOROPHENOL 2,4,5	N	N					2,600ug		
TRICHLOROPHENOL 2,4,6	Y	Y		*970			1.2ug**	3.6ug**	
VINYL CHLORIDE	Y	Y					2ug**	525ug**	
ZINC	Y	N	120+	110+	95	86			

**MEANING OF SYMBOLS:**

g = grams

M.C.L. = Maximum Contaminant Level

**TABLE 20**

**WATER QUALITY CRITERIA SUMMARY (Continued)**

mg	=	milligrams	+	=	Hardness Dependent Criteria (100 mg/L used).
ug	=	micrograms	*	=	Insufficient data to develop criteria; value presented is the L.O.E.L – Lower Observed Effect Level.
ng	=	nanograms	**	=	Human health criteria for carcinogens reported for three risk levels. Value presented is the 10-6 risk level, which means the probability of one concern case per million people at the stated concentration.
pg	=	picograms	***	=	pH Dependent Criteria (7.8 pH used).
f	=	fibers			
Y	=	Yes			
N	=	No			

1 = Values in Table 20 are applicable to all basins. as follows:

<u>Basin</u>	<u>Rule</u>	<u>Basin</u>	<u>Rule</u>
<u>North Coast</u>	<u>340-041-205(p)</u>	<u>Umatilla</u>	<u>340-041-645(p)</u>
<u>Mid Coast</u>	<u>340-041-245(p)</u>	<u>Walla Walla</u>	<u>340-041-685(p)</u>
<u>Umpqua</u>	<u>340-041-285(p)</u>	<u>Grande Ronde</u>	<u>340-041-725(p)</u>
<u>South Coast</u>	<u>340-041-325(p)</u>	<u>Powder</u>	<u>340-041-765(p)</u>
<u>Rogue</u>	<u>340-041-365(p)</u>	<u>Malheur River</u>	<u>340-041-805(p)</u>
<u>Willamette</u>	<u>340-041-445(p)</u>	<u>Owyhee</u>	<u>340-041-845(p)</u>
<u>Sandy</u>	<u>340-041-485(p)</u>	<u>Malheur Lake</u>	<u>340-041-885(p)</u>
<u>Hood</u>	<u>340-041-525(p)</u>	<u>Goose &amp; Summer Lakes</u>	<u>340-041-925(p)</u>
<u>Deschutes</u>	<u>340-041-565(p)</u>	<u>Klamath</u>	<u>340-041-965(p)</u>
<u>John Day</u>	<u>340-041-605(p)</u>		

***Water and Fish Ingestion***

Values represent the maximum ambient water concentration for consumption of both contaminated water and fish or other aquatic organisms.

***Fish Ingestion***

Values represent the maximum ambient water concentrations for consumption of fish or other aquatic organisms



TABLE 33A

**WATER QUALITY CRITERIA SUMMARY<sup>A</sup>**  
**(Applicable to all Basins)<sup>†</sup>**

The concentration for each compound listed in this chart is a criteria or guidance value\* not to be exceeded in waters of the state for the protection of aquatic life and human health. Specific descriptions of each compound and an explanation of values are included in Quality Criteria for Water (1986). Selecting values for regulatory purposes will depend on the most sensitive beneficial use to be protected, and what level of protection is necessary for aquatic life and human health. The concentration for each compound listed in Table 20 is a criterion not to be exceeded in waters of the state in order to protect aquatic life and human health. All values are expressed as micrograms per liter (µg/L) except where noted. Compounds are listed in alphabetical order with the corresponding EPA number (from National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047), the Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic criteria, aquatic life saltwater acute and chronic criteria, human health water & organism and organism only criteria, and Drinking Water Maximum Contaminant Level (MCL). The acute criteria refer to the average concentration for one (1) hour and the chronic criteria refer to the average concentration for 96 hours (4 days), and that these criteria should not be exceeded more than once every three (3) years.

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater				Human Health For Consumption of:				Drinking Water M.C.L.
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Mariner Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion Water + Organism <sup>B</sup>	Effective Date	Fish Consumption only <sup>B</sup> Organism only <sup>B</sup>	Effective Date	
56	ACENAPHTHENEAcenaphthene	Y	N	83329	*1,700		*520		*970		*710		670		990		
57	Acenaphthylene			208968													
17	ACROLEINAcrolein	Y	N	107028	*68		*21		*55				320ug190		780ug290		
18	ACRYLONITRILEAcrylonitrile	Y	Y	107131	*7,550		*2,600						0.058ug**0.051		0.65ug*0.250		
102	ALDRINAldrin	Y	Y	309002	30	X			1.30	X			0.074ng**0.000049		0.079ng**0.000050		
1 N	ALKALINITYAlkalinity	N	N				20,000 P										
2 N	Aluminum (pH 6.5 - 9.0)			7429905													
	AMMONIA	N	N														
3 N	Ammonia			7664417					D	X	D	X					
58	Anthracene			120127									8300		40000		
1	ANTIMONYAntimony	Y	N	7440360	*9,000		*1,600						146ug5.6		45,000ug640		
2	ARSENICArsenic	Y	Y	7440382									2.2ng**0.018 R		17.5ng*0.14 R	0.05mg	

## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life						Concentration in Units Per Liter for Protection of Human Health					
					Freshwater			Saltwater			Human Health For Consumption of:					
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion Water ± Organism <sup>B</sup>	Effective Date	Fish Consumption only <sup>Org</sup> only <sup>B</sup>	Effective Date
	ARSENIC (PENT)	Y	Y		*850		*48		*2,319		*13					
	ARSENIC (TRI)	Y	Y		360		190		69		36					
15	ASBESTOSAsbestos	Y	Y	1332214									30K #/L**7.0 E+06 fibers/Liter			
6 N	BARIUMBarium	N	N	7440393									1mg1000			1.0mg
19	BENZENEBenzene	Y	Y	71432	*5,300				*5,100		*700		0.66ug**2.2		40 ug**51	
59	BENZIDINEBenzidine	Y	Y	92875	*2,500								0.12ng0.000086		0.53ng**0.00020	
60	Benzo(a)Anthracene			56553									0.0038		0.018	
61	Benzo(a)Pyrene			50328									0.0038		0.018	
62	Benzo(b)Fluoranthene			205992									0.0038		0.018	
63	Benzo(g,h,i)Perylene			191242												
64	Benzo(k)Fluoranthene			207089									0.0038		0.018	
3	BERYLLIUMBeryllium	Y	Y	7440417	*130		*5.3						6.8ng**		117ng**	
	BHC	Y	N		*100				*0.34							
103	BHC alpha-			319846									0.0026		0.0049	
104	BHC beta-			319857									0.0091		0.017	
106	BHC delta-			319868												
105	BHC gamma- (Lindane)			58899	0.95		0.08	X	0.16 O				0.98		1.8	
7 N	Boron			7440428												
20	Bromoform			75252									4.3		140	
69	Bromophenyl Phenyl Ether 4-															
70	Butylbenzyl Phthalate			85687									1500		1900	
4	CADMIUMCadmium	Y	N	7440439									10ug			0.010mg
21	CARBON TETRACHLORIDECarbon Tetrachloride	Y	Y	56235	*35,200				*50,000				0.4ug**0.23		6.94ug**1.6	



## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater				Human Health For Consumption of:				Drinking Water M.C.L.
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion + Organisms <sup>B</sup>	Effective Date	Fish Consumption only <sup>Org</sup> anism only <sup>B</sup>		
107	CHLORDANEChlordane	Y	Y	57749	2.4 O	X	0.0043 O	X	0.09 O	X	0.004 O	X	0.46ng* ±0.0008 O		0.48ng* ±0.0008 I		
8 N	CHLORIDEChloride	N	N	16887006	860 mg/L860000		230 mg/L230000										
	CHLORINATED BENZENES	Y	Y		*250		*50		*160		*129		488 ug				
	CHLORINATED NAPHTHALENES	Y	N		*1,600				*7.5								
9 N	CHLORINEChlorine	N	N	7782505	19	X	11	X	13	X	7.5	X					
	CHLOROALKYL ETHERS	Y	N		*238,000												
22	Chlorobenzene			108907									130		1600		
23	Chlorodibromomethane			124481									0.40		13		
24	Chloroethane			75003													
65	ChloroethoxyMethane Bis2-			111911													
66	CHLOROETHYL ETHER (BIS-2)ChloroethylEther Bis2-	Y	Y	111444									0.03 ug*0.030		1.36 ug*±0.53		
25	Chloroethylvinyl Ether 2-			110758													
26	CHLOROFORMChloroform	Y	Y	67663	*28,900		*1,240						0.19ug* ±5.7		15.7ug* ±470		
67	CHLOROISOPROPYL ETHER (BIS-2)ChloroisopropylEther Bis2-	Y	N	108601									34.7ug1400		4.36mg65000		
15 N	CHLROMETHYL ETHER (BIS)ChloromethylEther, Bis	N	Y	542881									0.00000376ng** 0.00010		0.00184 ug*±0.00029		
71	Chloronaphthalene 2-			91587									1000		1600		
45	CHLOROPHENOL 2Chlorophenol 2-	Y	N	95578	*4,380		*2,000						81		150		
	CHLOROPHENOL 4	N	N						*29,700								
10 N	CHLOROPHENOXY HERBICIDES (2,4,5,-TP)Chlorophenoxy Herbicide (2,4,5,-TP)	N	N	93721									10ug10H				

## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater				Human Health For Consumption of:				
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion Water ± Organism <sup>B</sup>	Effective Date	Fish Consumption onlyOrganism only <sup>B</sup>	Effective Date	Drinking Water M.C.L.
11N	CHLOROPHENOXY HERBICIDES (2,4-D)Chlorophenoxy Herbicide (2,4-D)	N	N	94757									100ug/100 H				
72	Chlorophenyl Phenyl Ether 4-			7005723													
12N	CHLORPYRIFOSChlorpyrifos	N	N	2921882	0.083	X	0.041	X	0.011	X	0.0056	X					
	CHLORO 4 METHYL 3 PHENOL	N	N		*30												
	CHROMIUM (HEX)	Y	N		16		11		1,100		50		50ug				0.05mg
5a	CHROMIUM (TRP)Chromium (III)	N	N										170mg		3,433mg		0.05mg
5b	Chromium (VI)			18540299													
73	Chrysene			218019									0.0038		0.018		
6	COPPERCopper	Y	N	7440508									1300 H				
14	CYANIDECyanide	Y	N	57125	22 S	X	5.2 S	X	1 S	X	1 S	X	200ug/140		140		
108	DDTDDT 4,4'-(TDE)-DDT-METABOLITEDDE 4,4'-(DDE)-DDT-METABOLITEDDD 4																



## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life						Concentration in Units Per Liter for Protection of Human Health						
					Freshwater				Saltwater				Human Health For Consumption of:				
					Freshwater Acute Criteria <u>Acute (CMC)</u>	Effective Date	Freshwater Chronic Criteria <u>Acute (CMC)</u>	Effective Date	Marine Acute Criteria <u>Acute (CMC)</u>	Effective Date	Marine Chronic Criteria <u>Acute (CMC)</u>	Effective Date	Water and Fish Ingestion <u>Water</u> ± <u>Organism<sup>B</sup></u>	Effective Date	Fish Consumption <u>only</u> <u>Organism only<sup>B</sup></u>	Effective Date	Drinking Water M.C.L.
29	DICHLOROETHANE	Y	Y	107062	*118,000		*20,000		*113,000				0.94ug*		243ug**		
30	1,2Dichloroethane 1,2-Dichloroethylene 1,1-			75354									*0.38		37		
	DICHLOROETHYLENES	Y	Y		*11,600				*224.00				330		7100		
	DICHLOROETHYLENES												0.033ug**		1.85ug*		
46	DICHLOROPHENOL	N	N	120832	*2,020		*365						3.09mg/7		290		
31	DICHLOROPROPANE	Y	N	78875	*23,000		*5,700		*10,300		*3,040		0.50		15		
32	DICHLOROPROPENE	Y	N	542756	*6,060		*244		*790				87ug0.34		14.1mg/21		
111	Dieldrin	Y	Y	60571	2.50/24				0.71 O	X	0.0019 O	X	0.071ng**0.000052		0.076ng**0.000054		
79	DIETHYLPHTHALATE	Y	N	84662									350mg/7000		1.8g/44000		
47	DIMETHYL PHENOL	Y	N	105679	*2,120								380		850		
80	DIMETHYL PHTHALATE	Y	N	131113									313mg/270000		2.9g/1100000		
81	Di-n-Butyl Phthalate			84742									2000		4500		
49	Dinitrophenol 2,4-			51285									69		5300		
27	Dinitrophenols			25550587									69		5300		
82	DINITROTOLUENE	N	Y	121142									0.11ug*		9.1ug**		
83	Dinitrotoluene 2,6-			606202									*0.11		3.4		
	DINITROTOLUENE	Y	N										70ug		14.3mg		
	DINITROTOLUENE	N	Y		*330		*230		*590		*370						
	DINITRO-O-CRESOL 2,4	Y	N										13.4g		765ug		
84	Di-n-Octyl Phthalate			117840													
16	DIOXIN (2,3,7,8-TCDD)	Y	Y	1746016	*0.01		*38pg/L						0.000013ng**5.0E-09		0.000014ng**5.1E-09		

## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class) Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater				Human Health For Consumption of:				
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion + Organism <sup>B</sup>	Effective Date	Fish Consumption only <sup>B</sup>	Effective Date	Drinking Water M.C.L.
	DIPHENYLHYDRAZINE	Y	N										42ng**		0.56ug*		
85	DIPHENYLHYDRAZINE	Y	N	122667	*270								0.036		0.20		
68	DI-2-ETHYLHEXYL PHTHALATE Ethylhexyl Phthalate Bis-2-	Y	N	117817									15mg/1.2		50mg/2.2		
	ENDOSULFAN Endosulfan	Y	N		0.22 LP	X	0.056 LP	X	0.034 LP	X	0.0087 LP	X	74ug/62		159ug/89		
112	Endosulfan alpha-			959988	0.22 O		0.056 O		0.034 O		0.0087 O		62		89		
113	Endosulfan beta-			3321365	0.22 O		0.056 O		0.034 O		0.0087 O		62		89		
114	Endosulfan Sulfate			1031078									62		89		
115	ENDRIN Endrin	Y	N	72208	0.180.08				0.037 O		0.0023 O		1ug/0.05		0.060		0.0002mg
116	Endrin Aldehyde			7421934	6								0.29		0.30		
33	ETHYLBENZENE Ethylbenzene	Y	N	100414	*32,000				*430				1.4mg/53		3.28mg/2		
86	FLUORANTHENE Fluoranthene	Y	N	206440	*3,980				*40		*16		42ug/130		54ug/140		
87	Fluorene			86737									1100		5300		
17	GUTHION Guthion	N	N	86500			0.01	X			0.01	X					
	HALOETHERS	Y	N		*360		*122										
	HALOMETHANES	Y	Y		*11,000				*12,000		*6,400		0.19ug*		15.7ug*		
117	HEPTACHLOR Heptachlor	Y	Y	76448	0.52 O	X	0.0038 O	X	0.053 O	X	0.0036 O	X	0.28ng*		0.29ng*		
118	Heptachlor Epoxide			1024573	0.52 O		0.0038 O		0.053 O		0.0036 O		*0.0000		*0.0000		
	HEXACHLOROETHANE	N	Y		*980		*540		*940				0.00003		0.00003		
88	HEXACHLOROBENZENE Hexachlorobenzene	Y	N	118741									1.9ug		8.74ug		
													0.72ng*		0.74ng*		
													*0.0002		*0.0002		
													8		9		



## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Pri- orit y Pol- luta- nt	Car- cin- ogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health						
					Freshwater				Saltwater				Human Health				For Consumption of:		Drinkin- g Water M.C.L.
					Freshwa- ter Acute Criteria Acute (CMC)	Effective Date	Freshwa- ter Chronic Criteria Acute (CMC)	Effective Date	Mariner Acute Criteria Acute (CMC)	Effective Date	Marine Chronic Criteria Acute (CMC)	Effective Date	Water and Fish Ingestio- n Water ± Organis- m <sup>B</sup>	Effective Date	Fish Consum- ption onlyOrg- anism only <sup>B</sup>	Effective Date			
89	HEXACHLOROBUTADIENEHexa- chlorobutadiene	Y	Y	87683	*90		*0.3		*32				0.45ug* *0.44		50ug**1 8				
91	Hexachloroethane			67721									1.4		3.3				
	HEXACHLOROCYCLOHEXANE (LINDANE)	Y	Y		2		0.08		0.16								0.004mg		
	HEXACHLOROCYCLOHEXANE- ALPHA	Y	Y										9.2ng**		31ng**				
	HEXACHLOROCYCLOHEXANE- BETA	Y	Y										16.3ng* *		54.7ng* *				
	HEXACHLOROCYCLOHEXANE- GAMA	Y	Y										18.6ng* *		62.5ng* *				
19 N	HEXACHLOROCYCLOHEXANE- TECHNICALHexachlorocyclo- hexane-Technical	Y	Y	319868									12.3ng* *0.0123 J		41.4ng* *0.0414 J				
90	HEXACHLOROCYCLOPENTADI- ENEHexachlorocyclopentadiene	Y	N	77474	*7		*5.2		*7				206ug40		1100				
92	Ideno1,2,3-(cd)Pyrene			193395									0.0038		0.018				
20 N	IRONIron	N	N	7439896			1,000	X					0.3mg30 0 K						
93	ISOPHORONEIsophorone	Y	N	78591	*117,000				*12,900				5.2mg35		520mg2 60				
7	LEADLead	Y	N	7439921									50ug				0.05mg		
21 N	MALATHIONMalathion	N	N	121755			0.1	X			0.1	X							
22 N	MANGANESEManganese	N	N	7439965									50ug50 K		100ug10 0 K				
8a	MERCURYMercury	Y	N	7439976	2.4	X	0.012	X	2.1	X	0.025	X	144ng		146ng		0.002mg		
23 N	METHOXYCHLORMethoxychlor	N	N	72435			0.03	X			0.03	X	100ug10 0 J				0.1mg		
34	Methyl Bromide			74839									47		1500				
35	Methyl Chloride			74873															
48	Methyl-4,6-Dinitrophenol 2-			534521									13		280				
52	Methyl-4-Chlorophenol 3-			59507															
36	Methylene Chloride			75092									4.6		590				





## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class) Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life						Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater		Human Health				Drinking Water M.C.L.
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion ± Organism <sup>B</sup>	Fish Consumption only <sup>Org</sup> only <sup>B</sup>	
119	PCBs Polychlorinated Biphenyls PCBs:	Y	Y	1336363	2 U	X	0.014 U	X	10 U	X	0.03 U	X	0.079ng **0.000 064 U	0.079ng **0.000 064 U	
	PENTACHLORINATED ETHANES	N	N		*7,240		*1,100		*390		*281				
34 N	PENTACHLOROBENZENE Pentachlorobenzene	N	N	608935									74ug1.4	85ug1.5	
53	PENTACHLOROPHENOL Pentachlorophenol	Y	N	87865	***20 M				13		7.9		1.01mg0 .27	3.0	
99	Phenanthrene			85018											
54	PHENOL Phenol	Y	N	108952	*10,200		*2,560		*5,800				3.5mg21 000	1700000	
36 N	PHOSPHORUS ELEMENTAL Phosphorus Elemental	N	N	7723140							0.1				
	PHTHALATE ESTERS	Y	N		*940		*3		*2,944		*3.4				
	POLYNUCLEAR AROMATIC HYDROCARBONS	Y	Y						*300					31.1ng*	
100	Pyrene			129000									2.8ng** 830	4000	
10	SELENIUM Selenium	Y	N	7782492									40ug170	4200	0.01mg
11	SILVER Silver	Y	N	7440224									50ug		0.05mg
40 N	SULFIDE HYDROGEN SULFIDE Sulfide-Hydrogen Sulfide	N	N	7783064			2	X			2	X			
	TETRACHLORINATED ETHANES	Y	N		*9,320										
43 N	TETRACHLOROBENZENE 1,2,4,5-Tetrachlorobenzene, 1,2,4,5	Y	N	95943									38ug0.9 7	48ug1.1	
37	TETRACHLOROETHANE 1,1,2,2-Tetrachloroethane 1,1,2,2-	Y	Y	79345			*2,400		*9,020				0.17ug* *0.17	10.7ug* *4.0	
	TETRACHLOROETHANES	Y	N		*9,320										
38	TETRACHLOROETHYLENE Tetra chloroethylene	Y	Y	127184	*5,280		*840		*10,200		*450		0.8ug** 0.69	8.85ug* *3.3	
	TETRACHLOROPHENOL 2,3,5,6	Y	N								*440				
12	THALLIUM Thallium	Y	N	7440280	*1,400		*40		*2,130				13ug0.2 4	48ug0.4 7	

## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life								Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater				Human Health For Consumption of:				Drinking Water M.C.L.
					Freshwater Acute Criteria <u>Acute (CMC)</u>	Effective Date	Freshwater Chronic Criteria <u>Acute (CMC)</u>	Effective Date	Mariner Acute Criteria <u>Acute (CMC)</u>	Effective Date	Marine Chronic Criteria <u>Acute (CMC)</u>	Effective Date	Water and Fish Ingestion <u>Water ± Organism<sup>B</sup></u>	Effective Date	Fish Consumption <u>onlyOrganism only<sup>B</sup></u>	Effective Date	
39	TOLUENEToluene	Y	N	108883	*17,500				*6,300		*5,000		14.3mg/l 300		424mg/l 5000		
120	TOXAPHENEToxaphene	Y	Y	8001352	0.73	X	0.0002	X	0.21	X	0.0002	X	0.71ng* *0.0002 8		0.73ng* *0.0002 8		0.005mg
40	Trans-Dichloroethylene 1,2-			156605									140		10000		
44	Tributyltin (TBT)			688733													
101	Trichlorobenzene 1,2,4-			120821									35		70		
	TRICHLORINATED ETHANES	Y	Y		*18,000												
41	TRICHLOROETHANE 1,1,1-Trichloroethane 1,1,1-	Y	N	71556					*31,200 0				18.4mg		1.03g		
42	TRICHLOROETHANE 1,1,2-Trichloroethane 1,1,2-	Y	Y	79005			*9,400						0.6ug** 0.59		41.8ug* *16		
43	TRICHLOROETHYLENETrichloroethylene	Y	Y	79016	*45,000		*21,900		*2,000				2.7ug** 2.5		80.7ug* *30		
45	TRICHLOROPHENOL 2,4,5Trichlorophenol 2,4,5	N	N	95954									2,600ug 1800		3600		
55	TRICHLOROPHENOL 2,4,6Trichlorophenol 2,4,6-	Y	Y	88062			*970						1.2ug** 1.4		3.6ug** 2.4		
44	VINYL CHLORIDEVinyl Chloride	Y	Y	75014									2ug**0. 025		525ug** 2.4		
13	ZINZZinc	Y	N	7440666									7400		26000		

## MEANING OF SYMBOLS:

g — grams M.C.L. — Maximum Contaminant Level

mg — milligrams + — Hardness Dependent Criteria (100 mg/L used).

ug — micrograms \* — Insufficient data to develop criteria; value presented is the L.O.E.L. — Lower Observed Effect Level.



## WATER QUALITY CRITERIA SUMMARY (Continued)

ng — nanograms      \*\* — Human health criteria for carcinogens reported for three risk levels. Value presented is the 10-6 risk level, which means the probability of one concern case per million people at the stated concentration.

pg — picograms      \*\*\* — pH Dependent Criteria (7.8 pH used).

f — fibers

Y — Yes

N — No

1 — Values in Table 20 are applicable to all basins as follows:

Basin	Rule	Basin	Rule
North Coast	340-041-205(p)	Umatilla	340-041-645(p)
Mid Coast	340-041-245(p)	Walla Walla	340-041-685(p)
Umpqua	340-041-285(p)	Grande Ronde	340-041-725(p)
South Coast	340-041-325(p)	Powder	340-041-765(p)
Regue	340-041-365(p)	Malheur River	340-041-805(p)
Willamette	340-041-445(p)	Owyhee	340-041-845(p)
Sandy	340-041-485(p)	Malheur Lake	340-041-885(p)
Hood	340-041-525(p)	Goose & Summer Lakes	340-041-925(p)
Deschutes	340-041-565(p)	Klamath	340-041-965(p)
John Day	340-041-605(p)		

*WATER QUALITY CRITERIA SUMMARY (Continued)*

*Water and Fish Ingestion*

Values represent the maximum ambient water concentration for consumption of both contaminated water and fish or other aquatic organisms.

*Fish Ingestion*

Values represent the maximum ambient water concentrations for consumption of fish or other aquatic organisms.



**WATER QUALITY CRITERIA SUMMARY<sup>A</sup>**  
**(Applicable to all Basins)<sup>1</sup>**

[illegible]

## WATER QUALITY CRITERIA SUMMARY (Continued)

EPA No.	Compound Name (or Class)Compound	Priority Pollutant	Carcinogen	CAS Number	Concentration in Micrograms Per Liter for Protection of Aquatic Life							Concentration in Units Per Liter for Protection of Human Health				
					Freshwater				Saltwater			Human Health For Consumption of:				Drinking Water M.C.L.
					Freshwater Acute Criteria (CMC)	Effective Date	Freshwater Chronic Criteria (CMC)	Effective Date	Marine Acute Criteria (CMC)	Effective Date	Marine Chronic Criteria (CMC)	Effective Date	Water and Fish Ingestion + Organism <sup>B</sup>	Effective Date	Fish Consumption only <sup>B</sup>	
					Effective Date	Effective Date	Effective Date	Effective Date	Effective Date	Effective Date	Effective Date	Effective Date	Effective Date	Effective Date		
10	SELENIUMSelenium	Y	N	7782492	260 E.V		355 E		410290 E		5471 E					
11	SILVERSilver	Y	N	7440224	4.1+E.F.P		0.120.10 E		2.31.9 E.P							
44	Tributyltin (TBT)			688733	0.46		0.063		0.37		0.01					
13	ZINCZinc	Y	N	7440666	120+E.F		110+E.F		9590 E		8681 E					

## Footnotes for Tables 33A and 33B:

A Values in Table 20 are applicable to all basins.

B Human Health criteria values were calculated using a fish consumption rate of 17.5 grams per day (0.6 ounces/day) unless otherwise noted.

C Ammonia criteria for freshwater may depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Values for freshwater criteria (of total ammonia nitrogen in mg N/L) can be calculated using the formulae specified in 1999 *Update of Ambient Water Quality Criteria for Ammonia* (EPA-822-R-99-014; <http://www.epa.gov/ost/standards/ammonia/99update.pdf>):

Freshwater Acute:

$$\text{salmonids present....CMC} = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

$$\text{salmonids not present...CMC} = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

Freshwater Chronic:

fish early life stages present

$$\text{CCC} = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * \text{MIN}(2.85, 1.45 * 10^{0.028 * (25 - T)})$$

fish early life stages not present



**WATER QUALITY CRITERIA SUMMARY (Continued)**

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * 1.45 * 10^{0.028 * (25 - MAX(T, 7))}$$

Note: these chronic criteria formulae would be applied to calculate the 30-day average concentration limit; in addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

D Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in *Ambient Water Quality Criteria for Ammonia (Saltwater)--1989* (EPA 440/5-88-004; <http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf>).

E Freshwater and saltwater criteria for metals are expressed in terms of "dissolved" concentrations in the water column, except where otherwise noted (e.g. aluminum).

F The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. Criteria values for hardness may be calculated from the following formulae (CMC refers to Acute Criteria; CCC refers to Chronic Criteria):

$$CMC = (\exp(m_A * [\ln(\text{hardness}) + b_A])) * CF$$

$$CCC = (\exp(m_C * [\ln(\text{hardness}) + b_C])) * CF$$

where CF is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.

Chemical	$m_A$	$b_A$	$m_C$	$b_C$
Cadmium	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.700	0.8545	-1.702
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59		
Zinc	0.8473	0.884	0.8473	0.884

Conversion factors (CF) for dissolved metals (the values for total recoverable metals criteria were multiplied by the appropriate conversion factors shown below to calculate the dissolved metals criteria):

**WATER QUALITY CRITERIA SUMMARY (Continued)**

<b>Chemical</b>	<b>Freshwater</b>		<b>Saltwater</b>	
	<b>Acute</b>	<b>Chronic</b>	<b>Acute</b>	<b>Chronic</b>
Arsenic	1.000	1.000	1.000	1.000
Cadmium	$1.136672 - [(\ln \text{ hardness})(0.041838)]$	$1.101672 - [(\ln \text{ hardness})(0.041838)]$	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	$1.46203 - [(\ln \text{ hardness})(0.145712)]$	$1.46203 - [(\ln \text{ hardness})(0.145712)]$	0.951	0.951
Nickel	0.998	0.997	0.990	0.990
Selenium	0.996	0.922	0.998	0.998
Silver	0.85	0.85	0.85	--
Zinc	0.978	0.986	0.946	0.946

G Human Health criterion is the same as originally published in the 1976 EPA Red Book (Quality Criteria for Water, EPA-440/9-76-023) which predates the 1980 methodology and did not use the fish ingestion BCF approach.

H This value is based on a Drinking Water regulation.

I This value is based on criterion published in Ambient Water Quality Criteria for Endosulfan (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.

J No BCF was available; therefore, this value is based on that published in the 1986 EPA Gold Book.

K Human Health criterion is for "dissolved" concentration based on the 1976 EPA Red Book conclusion that adverse effects from exposure at this level are aesthetic rather than toxic.

L This value is expressed as the fish tissue concentration of methylmercury.

M Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows:  $CMC = (\exp(1.005(pH) - 4.869))$ ;  $CCC = \exp(1.005(pH) - 5.134)$ .

N This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).

O This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines for minimum data requirements and derivation procedures. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

P Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).

Q Criterion is applied as total arsenic (i.e. arsenic (III) + arsenic (V)).

R Arsenic criterion refers to the inorganic form only.



*WATER QUALITY CRITERIA SUMMARY (Continued)*

- S This criterion is expressed as  $\mu\text{g}$  free cyanide (CN)/L.
- T This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).
- U This criterion applies to total PCBs (e.g. the sum of all congener or all isomer or homolog or Arochlor analyses).
- V The  $\text{CMC} = 1 / [(f_1 / \text{CMC}_1) + (f_2 / \text{CMC}_2)]$  where  $f_1$  and  $f_2$  are the fractions of total selenium that are treated as selenite and selenate, respectively, and  $\text{CMC}_1$  and  $\text{CMC}_2$  are  $185.9 \mu\text{g/L}$  and  $12.82 \mu\text{g/L}$ , respectively.
- W The acute and chronic criteria for aluminum are  $750 \mu\text{g/L}$  and  $87 \mu\text{g/L}$ , respectively. These values for aluminum are expressed in terms of "total recoverable" concentration of metal in the water column. The criterion applies at  $\text{pH} < 6.6$  and hardness  $< 12 \text{ mg/L}$  (as  $\text{CaCO}_3$ ).
- X The effective date for the criterion in the column immediately to the left is 1991.

**Table 33C**

**WATER QUALITY GUIDANCE VALUES SUMMARY<sup>A</sup>**

The concentration for each compound listed in Table 33c is a guidance value that can be used in application of Oregon's Narrative Toxics Criteria (340-041-0033(1)) to waters of the state in order to protect aquatic life. All values are expressed as micrograms per liter (µg/L) except where noted. Compounds are listed in alphabetical order with the corresponding EPA number (from National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047), corresponding Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic guidance values, and aquatic life saltwater acute and chronic guidance values.

EPA No.	Compound	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
56	Acenaphthene	83329	1,700	520	970	710
17	Acrolein	107028	68	21	55	-
18	Acrylonitrile	107131	7,550	2,600	-	-
1	Antimony	7440360	9,000	1,600	-	-
2	Arsenic	7440382	850	48	2,319	13
19	Benzene	71432	5,300	-	5,100	700
59	Benzidine	92875	2,500	-	-	-
3	Beryllium	7440417	130	5.3	-	-
19 B	BHC (Hexachlorocyclohexane-Technical)	319868	100	-	0.34	-
21	Carbon Tetrachloride	56235	35,200	-	50,000	-
	Chlorinated Benzenes		250	50	160	129
	Chlorinated naphthalenes		1,600	-	7.5	-
	Chloroalkyl Ethers		238,000	-	-	-
26	Chloroform	67663	28,900	1,240	-	-
45	Chlorophenol 2-	95578	4,380	2,000	-	-
	Chlorophenol 4-	106489	-	-	29,700	-
52	Methyl-4-chlorophenol 3-	59507	30	-	-	-
5a	Chromium (III)	16065831	-	-	10,300	-
109	DDE 4,4'-	72559	1,050	-	14	-
110	DDD 4,4'-	72548	0.06	-	3.6	-
	Diazinon	333415	0.08	0.05	-	-
	Dichlorobenzenes		1,120	763	1,970	-
29	Dichloroethane 1,2-	107062	118,000	20,000	113,000	-
	Dichloroethylenes		11,600	-	224,000	-
46	Dichlorophenol 2,4-	120832	2,020	365	-	-
31	Dichloropropane 1,2-	78875	23,000	5,700	10,300	3,040
32	Dichloropropene 1,3-	542756	6,060	244	790	-
47	Dimethylphenol 2,4-	105679	2,120	-	-	-
	Dinitrotoluene		330	230	590	370
16	Dioxin (2,3,7,8-TCDD)	1746016	0.01	38pg/L	-	-
85	Diphenylhydrazine 1,2-	122667	270	-	-	-
33	Ethylbenzene	100414	32,000	-	430	-
86	Fluoranthene	206440	3,980	-	40	16
	Haloethers		360	122	-	-
	Halomethanes		11,000	-	12,000	6,400
89	Hexachlorobutadiene	87683	90	9.3	32	-
90	Hexachlorocyclopentadiene	77474	7	5.2	7	-
91	Hexachloroethane	67721	980	540	940	-
93	Isophorone	78591	117,000	-	12,900	-
94	Naphthalene	91203	2,300	620	2,350	-
95	Nitrobenzene	98953	27,000	-	6,680	-
	Nitrophenols		230	150	4,850	-
26 B	Nitrosamines	35576911	5,850	-	3,300,000	-
	Pentachlorinated ethanes		7,240	1,100	390	281
54	Phenol	108952	10,200	2,560	5,800	-
	Phthalate esters		940	3	2,944	3.4
	Polynuclear Aromatic Hydrocarbons		-	-	300	-



**TABLE 33C****WATER QUALITY GUIDANCE VALUES SUMMARY (Continued)**

<b>EPA No.</b>	<b>Compound</b>	<b>CAS Number</b>	<b>Freshwater</b>		<b>Saltwater</b>	
			<b>Acute</b>	<b>Chronic</b>	<b>Acute</b>	<b>Chronic</b>
	Tetrachlorinated Ethanes		9,320	-	-	-
37	Tetrachloroethane 1,1,2,2-	79345	-	2,400	9,020	-
	Tetrachloroethanes		9,320	-	-	-
38	Tetrachloroethylene	127184	5,280	840	10,200	450
	Tetrachlorophenol 2,3,5,6		-	-	-	440
12	Thallium	7440280	1,400	40	2,130	-
39	Toluene	108883	17,500	-	6,300	5,000
	Trichlorinated ethanes		18,000	-	-	-
41	Trichloroethane 1,1,1-	71556	-	-	31,200	-
42	Trichloroethane 1,1,2-	79005	-	9,400	-	-
43	Trichloroethylene	79016	45,000	21,900	2,000	-
55	Trichlorophenol 2,4,6-	88062	-	970	-	-

The following chemicals/compounds/classes are of concern due to the potential for toxic effects to aquatic organisms; however, no guidance values are designated. If these compounds are identified in the waste stream, then a review of the scientific literature may be appropriate for deriving guidance values.

Polybrominated diphenyl ethers (PBDE)

Polybrominated biphenyls (PBB)

Pharmaceuticals

Personal care products

Alkyl Phenols

Other chemicals with Toxic effects

**Footnotes:**

A Values in Table 33c are applicable to all basins.

B This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).

**Attachment B**  
**Summary of Public Comments and Agency Responses**

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**Proposed revisions to water quality criteria for toxic pollutants.**

<b>Water Quality Criteria—General</b>	
<b>Comment 1</b> Extend comment period	<p>The comment period on the proposed rule should be extended 60 days in order to provide sufficient time to properly prepare comments. (37,44).</p> <p>The comment period should be extended because there is a difference between the proposed aquatic life criteria for mercury and the 2002 EPA criteria that was not revealed to the public and because there is a mislabeled table in the Draft Issue Paper that is misleading. (37,44).</p>
<b>Response</b>	<p><i>DEQ extended the comment period by 4 weeks from August 1 to August 29, providing a total of 88 days for the comment period. DEQ believes this is sufficient time for individuals and groups who are interested in the proposal to submit comments.</i></p> <p><i>DEQ disagrees that the comment period should be extended any further because of perceived differences between EPA's latest criteria and information provided in the draft issue paper. With respect to the proposed aquatic life criteria for mercury, footnotes in water quality criteria summary table in the draft issue paper and in the table provided in the proposed rulemaking documents clearly state that the criteria are expressed as "total recoverable" concentrations. DEQ regrets the confusion over the table in the</i></p>



	<p><i>Draft Issue Paper; however, the column of "Criteria Recommendations" marked as "DEQ" does correctly identify the proposed aquatic life mercury criteria and the supporting text indicates that these values are expressed as "total recoverable" concentrations. EPA's latest recommended criteria document presents aquatic life mercury criteria in "dissolved" concentrations, but in the accompanying footnote cites a memorandum that indicates that 1) "dissolved" criteria are derived from "total recoverable" criteria by the application of a conversion factor and 2) states can use the more conservative approach of using "total recoverable" metal in water quality standards. These facts are also stated in the Draft Issue Paper. Sufficient time was provided in the comment period for the public to seek further clarification on this issue. DEQ does not see the need to extend the comment period further.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<p><b>Comment 2</b> No toxics allowed</p>	<p>DEQ should stop allowing any toxic pollutants in water or air. By allowing toxic pollutants to be discharged, DEQ has violated the Americans with Disabilities Act (ADA), Title II because it has discriminated against persons disabled by disorders that render them unable to detoxify poisons. (48).</p> <p>Proposed rule should prohibit discharge of any polluting compound at any level of concern. (49).</p>
<p><b>Response</b></p>	<p><i>DEQ disagrees with the commenter's conclusion that the ADA requires the state to adopt numeric criteria that prohibit discharges of toxic pollutants.</i></p> <p><i>The protection afforded to beneficial uses by water quality criteria does not require "zero" levels of pollutants because the derivation of criteria includes consideration of a certain level of risk to either the aquatic environment or human health. Furthermore, Oregon's existing and proposed narrative toxics criteria both prohibit discharge of toxic pollutants in toxic amounts.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<p><b>Comment 3</b> Lowering criteria</p>	<p>DEQ should not loosen any regulations or reduce enforcement of pollution control laws. (3)</p> <p>Any existing criteria that are more stringent than the latest EPA-recommended criteria should be maintained in order to provide a safety factor until sufficient information is available to assess the effects on species that EPA has not addressed in the recommended criteria. (33,40,41).</p>

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<b>Response</b>	<p><i>DEQ used the best and latest scientific information in developing the proposed rule changes. Where the latest research (as incorporated into the EPA national recommendations) indicated that different criteria are protective of beneficial uses, DEQ changed the criteria, in most cases making them more stringent but in some less stringent. DEQ has not proposed changes to enforcement of water quality standards or other pollution control laws.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 4</b> Criteria below detection limits or lacking approved analytical methods	Oregon should not adopt criteria if detection limits are higher than criteria (e.g. dioxin). (32).
	DEQ should not adopt criteria for compounds that do not have approved analytical methods for measurement (e.g. chromium III, copper in saltwater). (32).
	DEQ should adopt only those saltwater criteria for which valid analytical procedures exist. (32).
<b>Response</b>	<p><i>DEQ disagrees that only criteria above detection levels and with EPA-approved analytical procedures should be adopted. Although pollutants with criteria below the detection limits and without approved analytical procedures pose a challenge for monitoring, the criteria still can be used to calculate waste loads and limits in permits. When necessary, DEQ may allow an alternate method such as sampling further up a waste stream to determine compliance with permit limits or specify analytical procedures based on the most current technology available.</i></p> <p><i>EPA also has guidance for determining compliance with water quality based effluent limitations that are set below analytical detection limits.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 5</b> Proposed criteria insufficient	Proposed rule on toxics criteria lacks sufficient basis for meeting requirements of CWA because Oregon 1) has not adopted specific numeric criteria for which EPA has published criteria; 2) has not adopted criteria for those toxic pollutants without published criteria based on biological monitoring methods or assessment methods established by EPA; 3) has not adopted criteria that support the most sensitive use; 4) did not review water quality data to identify specific waters where toxic pollutants may be affecting water quality; and 5) is not adopting criteria that are protective of beneficial uses in waters identified in (4). The proposed rule on toxics criteria will not fulfill the State's obligations under federal law. (33).
<b>Response</b>	<i>DEQ has (1) proposed adoption of numeric criteria for all priority pollutants and non-priority pollutants with numeric criteria listed in US EPA's "National Recommended Water Quality Criteria:</i>



	<p>2002.”</p> <p><i>With regard to toxic pollutants without published criteria (2), most toxic pollutants without EPA-published criteria will continue to be regulated by Oregon’s existing narrative criterion for toxic pollutants. In evaluating which criteria to adopt, DEQ considered (after consultation with technical and policy advisory committees) the possibility of adopting criteria other than those recommended by EPA, and in some cases, did so (e.g. maintaining criteria for endosulfan despite EPA removal of these criteria from its recommendations). However, DEQ focused the proposed rule on revising its numeric criteria for toxic pollutants, not on revising its narrative criteria. DEQ intends to develop an implementation plan for its narrative criteria for toxic pollutants after EPA approves the rule on numeric criteria. A draft of the plan will be offered as either a formal rulemaking proposal or as guidance for public comment, and the final plan will be submitted to EPA for approval.</i></p> <p><i>DEQ disagrees that it has not proposed criteria that support the most sensitive uses (3). As mentioned above, DEQ has proposed a) adoption of numeric criteria and b) criteria at least as stringent for all pollutants for which EPA has published national recommendations. DEQ believes that these criteria, derived using EPA methods, offer sufficient protection for Oregon’s beneficial uses. In those instances when EPA has not published nationally recommended criteria for beneficial uses identified in Oregon’s regulations (e.g. wildlife), DEQ will rely on its existing narrative toxics criteria.</i></p> <p><i>In response to (4) and (5), DEQ agrees that 40 CFR 131.11 requires DEQ to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of uses, and that DEQ must make site specific criteria for those waterbodies. However, this legal obligation does not prohibit DEQ from establishing statewide criteria, which is the focus of the current proposal.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<p><b>Comment 6</b> Other adverse effects</p>	<p>Proposed criteria should incorporate sub-lethal effects of toxics to human and wildlife health. (33,39,40).</p>
	<p>Proposed rules should incorporate cumulative and synergistic effects of toxics. (40,49).</p>
	<p>Proposed criteria should account for the exacerbating effects of increased temperature and decreased dissolved oxygen on toxicity of contaminants. (33,39,40).</p>

	Proposed human health criteria should take into account endocrine disruption effects. (33).
<b>Response</b>	<p><i>After considering issues raised by technical and policy advisory committees, DEQ based its proposed criteria largely on the latest EPA recommendations. Sublethal effects are considered in human health criteria (e.g., the risk assessment for carcinogens is based on the occurrence of additional cancers rather than deaths due to cancer). Sublethal effects can be considered in the development of aquatic life criteria; however, in practice, these sublethal effects must be severe (e.g., immobilization). Drawing a causal relation between incidence of a sublethal effect and the ecological effect on a population is difficult and rare.</i></p> <p><i>Human health criteria do consider cumulative impacts of toxics, as evidenced by use of the "relative source contribution" variable in the equation for deriving criteria for noncarcinogens. The chronic aquatic life criteria could be viewed as considering cumulative impacts, albeit over a relatively short time period. The main difficulty in deriving aquatic life criteria based on longer-term cumulative impacts is the lack of data and models. Neither EPA's recommended human health nor aquatic life criteria address synergistic effects of different toxics because this is a complex issue. To address these types of concerns, EPA and DEQ require whole effluent toxicity testing when issuing permits to dischargers with complex wastewaters.</i></p> <p><i>EPA has not recommended criteria that take into account the exacerbating effects of temperature or low dissolved oxygen except for selected pollutants (e.g. ammonia includes consideration of temperature effects); EPA has recommended taking into account water hardness for some metals and pH for some pollutants (e.g. ammonia, pentachlorophenol). DEQ proposes to follow EPA's recommendations regarding taking into account the effect of these parameters on the selected criteria.</i></p> <p><i>The proposed human health criteria consider "endocrine disruptive" effects for some compounds; however, endocrine disruption is a broad term that covers sublethal to lethal endpoints. Therefore, the response above regarding sublethal effects also covers sublethal endocrine disruption effects.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 7</b> Mixing zones	DEQ should prohibit or phase out mixing zones for persistent bioaccumulative contaminants. (33,37,39,40,44).



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<b>Response</b>	<p><i>The use or prohibition of mixing zones for persistent bioaccumulative contaminants is outside the scope of the proposed rule.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 8</b> Exceedance due to natural condition	<p>DEQ should strengthen 303(d) listing process to avoid unnecessary listing of stream segments as impaired when the exceedance of criterion is due to natural conditions (e.g. aluminum). Refer to Weyerhaeuser's comments made for last 303(d) list public comment on improved statistical methods (32).</p> <p>DEQ should include mechanism for recognizing that natural background levels of some metals may cause exceedance of criteria. (17).</p>
<b>Response</b>	<p><i>This issue has already been addressed by recent rule revisions to Division 041. OAR 340-041-0007 makes it clear that less stringent natural conditions are not considered water quality exceedance for any Clean Water Act purpose, including 303(d) listing.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 9</b> Impoundments with potential toxics	<p>DEQ should not allow any water impoundment where there is the potential for mercury or arsenic release or for contamination with other toxic materials. (38).</p>
<b>Response</b>	<p><i>Specific regulation of the type of impoundments addressed in the comment is outside the scope of the proposed rule. However, where existing regulations of impoundments require that water quality standards be met, water quality criteria for pollutants will apply (as they do in any downstream waters that also must meet water quality standards).</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 10</b> Reasonable Potential Analysis	<p>DEQ should conduct accurate reasonable potential analyses of discharges during its review of permit applications and should clarify which criteria for decision-making will be used (42,45,47).</p>
<b>Response</b>	<p><i>DEQ currently conducts reasonable potential analyses during the permitting process. DEQ intends to revise the scope of this analysis as necessary to address revisions to these criteria.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 11</b> Compliance on "non-detect" data	<p>Proposed criteria will require costly analytical techniques for a number of pollutants that will be burdensome to operators of municipal sewage treatment plants and stormwater utilities. Therefore, DEQ should consider alternative strategies for assessing compliance when data are reported as "non-detect." (42,45,47).</p>

<b>Response</b>	<p><i>DEQ believes that through the reasonable potential analysis process only those pollutants that are likely to be present in significant amounts in the waste stream of municipal sewage treatment plants and stormwater utilities will require monitoring. This will control costs by confining analyses to only those toxics that are essential for determining compliance. DEQ agrees it would be inappropriate to identify a discharger as in violation of its permit based on a sample result indicating "non-detect" (unless mass-load calculations indicate that processes under regulation will result in the calculated discharge of the pollutant at levels above the relevant criteria). Depending on the specific pollutant and the likelihood that it exists in the wastestream of a municipal sewage treatment plant or stormwater utility, DEQ may specify the type of analysis required to demonstrate compliance in the permit.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 12</b> "Pass-through" credit	Permits issued under OAR chapter 340, divisions 041, 045, and 048 should be given a pass-through credit for any pollutants in the intake process water. (17).
<b>Response</b>	<p><i>DEQ believes that this is a general implementation issue outside the scope of this rulemaking. DEQ will consider it in more detail in the future as resources allow.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 13</b> Pretreatment	Operators of pretreatment programs believe that the proposed criteria will not disrupt their on-going programs. (42,45,47).
<b>Response</b>	<p><i>DEQ concurs. Local programs may need to recalculate local limits and revise industrial user permits, as appropriate.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 14</b> Sediment criteria	DEQ should adopt sediment criteria for toxic pollutants. (49).
<b>Response</b>	<p><i>Adoption of sediment criteria is outside the scope of the proposed rule. DEQ does not believe that adopting statewide numeric sediment criteria is prudent at this time since EPA has not yet proposed national sediment criteria. Once EPA recommends national sediment criteria, DEQ will consider adopting them. Until that time, DEQ will continue to rely on its narrative sediment criteria for toxic pollutants.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 15</b> Calculations	DEQ must check the accuracy of calculations proposed for OAR 340-041-<Basin> Water Quality Criteria Summary (Applicable to all Basins) and Table 20 criteria. (17).



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<b>Response</b>	<p><i>DEQ has made every effort to provide accurate calculations in the final rule proposal.</i></p> <p><i>Additional information was added to footnotes (e.g. see Ammonia) to clarify units or formulae to be used.</i></p>
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<b>Water Quality Criteria—Notice Of Proposed Rulemaking Documents</b>	
<b>Comment 16</b> “shall” vs. “may”	Proposed rule language should retain the word “shall” rather than “may”. (33,37,44).
<b>Response</b>	<p><i>The replacement of “shall” with “must” and “shall not” with “may not” in the rule was done to correct the grammar. In no case does the change affect meaning. In the proposal for public comment, the elimination of the strikeout text showing proposed replacement of “shall” with “may” was unintentional. Correction of those grammatical errors does not require notice under ORS 183.335(7).</i></p> <p><i>Strikeout text is added to the draft rules to be presented to the EQC for adoption.</i></p>
<b>Comment 17</b> Arsenic	Specify arsenic species (14).
<b>Response</b>	<i>DEQ will add a footnote to the revised Table 20 (i.e. Tables 33A and 33B) to indicate that the aquatic life criteria are for total arsenic and human health criteria are for inorganic arsenic.</i>
<b>Comment 18</b> Land use compatibility statement	Proposed “Land Use Compatibility” statement is incorrect because TMDLs are being developed without any reference to toxics. (49).
<b>Response</b>	<p><i>DEQ disagrees that TMDLs are being developed without reference to toxics. The Willamette River TMDL is currently being developed to include mercury, and the Columbia River TMDL addresses dioxin (2,3,7,8-TCDD). TMDLs are developed for the water quality parameters for which the water is listed as being impaired. “Toxics” ranks fourth behind temperature, bacteria, and dissolved oxygen for number of river miles listed as impaired in Oregon in 2002.</i></p> <p><i>No changes were made in response to this comment.</i></p>

<b>Water Quality Criteria--Pollutants Without Criteria</b>	
<b>Comment 19</b> Criteria for more pollutants	Proposed rule contains no criteria for many pesticides found in Oregon; therefore, DEQ should adopt criteria, demand that EPA derive criteria, or require no detectable amounts of any of these pesticides in Oregon's waters. (1,2,4,5,6,7,8,9,10,11,18,20,21,23,24,25,26,27,29,30,31,34,35,36,38,39,46,48,50).
	Proposed rule should be expanded to include criteria for all permitted chemicals. (49).
	Proposed rules on toxic pollutants should include criteria for acenaphthene, beryllium, boron, BHC delta, chloroethane, dinitrotoluene, and metolachlor. (49).
<b>Response</b>	<p><i>EPA has not recommended numeric criteria for many of the pesticides nor for all permitted chemicals because this is a very data- and resource-intensive process. EPA has recommended human health criteria for acenaphthene and 2,4-dinitrotoluene; however, EPA has not recommended ambient water quality criteria for beryllium, boron, delta-BHC, chloroethane, or metalochlor. DEQ is proposing to follow these latest EPA recommendations. For pollutants that are not listed in the criteria, DEQ applies the narrative toxic criteria (OAR 340-041-0033(1)), which requires that toxics not be discharged in toxic amounts. In developing a permit, limits for pollutants without established criteria may still be set if those pollutants have the potential to be discharged at toxic levels.</i></p> <p><i>No changes were made in response to these comments.</i></p>

<b>Water Quality Criteria—Narrative Criteria</b>	
<b>Comment 20</b> Implementation of narrative criteria	DEQ has not created a methodology for interpretation of its narrative toxics criteria. (33,40,41).
	Does DEQ intend to develop an implementation plan for narrative toxics criterion? (16).
<b>Response</b>	<p><i>The development of an implementation methodology for the narrative criteria on toxic pollutants is beyond the scope of the proposed rule. DEQ does implement its narrative toxics criteria through the listing of impaired waters due to the publication of fish consumption health advisories by the State Department of Human Services. In implementing individual NPDES permits, DEQ may set specific effluent permit limits for pollutants that do not have numeric criteria by using published scientific literature and other information. However, DEQ has focused its current proposed rule on updating its numeric water quality criteria and development of a written implementation plan for the narrative toxics criteria will be part of future rulemaking efforts.</i></p>



	<i>No changes were made in response to these comments.</i>
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<b>Aquatic Life Criteria—General</b>	
<b>Comment 21</b> Wildlife criteria	DEQ should adopt aquatic life criteria that are protective of wildlife. (33).
<b>Response</b>	<p><i>DEQ focused the current rulemaking on adoption of water quality criteria that are protective of aquatic life and human health. DEQ agrees that it would be helpful to have numeric criteria protective of wildlife. However, EPA has not developed national recommended wildlife criteria. DEQ will continue to rely on the narrative toxics criteria to protect uses for which criteria have not been published. Should EPA recommend national wildlife numeric criteria, DEQ will consider adopting them.</i></p> <p><i>No changes were made in response to this comment.</i></p>

<b>Aquatic Life Criteria Related To Threatened &amp; Endangered Species</b>	
<b>Comment 22</b> Threatened and Endangered species	Proposed aquatic life criteria are not protective of threatened and endangered species. (1,2,4,5,6,7,8,9,10,11,18,20,23,24,25,26,27,29,30,31,34,35,38,39,40,46,48,49,50).
	Proposed rule does not meet the requirements of the Endangered Species Act. (33).
	The proposed acute aquatic life criteria are based on lethal endpoints and therefore, do not consider sub-lethal effects which might be significant to salmonids or lamprey. Therefore, DEQ should apply a safety factor of 10 to the criteria to take into account these sublethal effects. (37,44).
	Proposed criteria underestimate the current and future effects of toxic contaminants on threatened and endangered species. (33).
<b>Response</b>	<p><i>DEQ disagrees that the proposed criteria are not protective of threatened and endangered species. DEQ is proposing to adopt aquatic life criteria based on EPA-recommended criteria. The method EPA primarily uses to derive aquatic life criteria requires that toxicity information from a broad range of taxonomic groups be considered. Toxicity data must be high quality and must be from at least 8 different taxonomic families (one of which must be Salmonidae and another must be a non-salmonid bony fish). Therefore, the proposed criteria take into account information 1) on the T&amp;E-listed species if high quality information is available, 2) from a species in the same family if high quality information is available, or 3) at the minimum, two species of bony fish (including</i></p>

	<p>one salmonid).</p> <p><i>The EPA methodology for deriving aquatic life criteria allow for the use of a variety of experimental endpoints when considering toxicity studies. The most common type of data used is that which correlates exposure dose to lethality in the test organisms because this has a clear connection to population-level effects. However, EPA will use data based on non-lethal endpoints, such as immobilization, when there is a clear connection to population-level effects. For each species, a toxicity level is assigned usually based on the exposure dose that kills 50% of the test population (i.e. the LC50). In calculating the criteria, a genus mean toxicity value is calculated based on the average of the toxicity levels for all species in that genus. Then, the geometric mean of the genus mean toxicity levels from the four most sensitive genera is calculated, which in this instance involves the natural logarithm of the genus mean toxicity values, while taking into account how many genus mean values are available. The latter allows for extra conservatism to be used in the face of limited information. If there are fewer genus mean values available, then the final criterion is calculated to be more stringent than if more genus mean values are available. By calculating the harmonic mean of the LC50 values, the intent is to protect 95 percent of a group of diverse genera, unless a commercially or recreationally important species is very sensitive. The EPA methodology (and therefore, DEQ's criteria) calls for adjustment of the final recommended criterion if this value is higher than the genus mean toxicity levels of any commercially or locally important species (which would include threatened and endangered species).</i></p> <p><i>No changes were made in response to these comments.</i></p>
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Aquatic Life Metals Criteria	
<p><b>Comment 23</b> "Dissolved" concentrations</p>	<p>Metals criteria should be expressed as "dissolved" rather than "total recoverable" concentrations because 1) DEQ has not provided technical rationale for "total recoverable" concentrations; 2) DEQ does not follow latest EPA recommendation; 3) DEQ will achieve little environmental regulatory benefit from "total recoverable" metals criteria; 4) other states are going toward "dissolved" concentrations; 5) DEQ has not provided sufficient economic impact analysis for "total recoverable" metals criteria; 6) DEQ should provide for site-specific modifications to metals criteria; and 7) DEQ should clarify how water "hardness" will apply to metals criteria. (17,19,32,42,45,47).</p>



	Support proposed metals criteria expressed as "total recoverable" concentrations (not "dissolved"). (33,41).
<b>Response</b>	<p><i>DEQ agrees that the criteria for metals with EPA-recommended conversion factors (arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, selenium, silver, and zinc) should be expressed as "dissolved" concentrations. DEQ believes that extending protection beyond minimum EPA requirements is unnecessary at this time due to the increased costs to dischargers during this period of economic hardship. However, DEQ will rely on the existing narrative sediment and toxics criteria to protect beneficial uses from toxicity due to non-dissolved metals.</i></p> <p><i>With regard to site-specific criteria, DEQ believes that it already has the authority to issue site-specific criteria as indicated in OAR 340-041-0033(3).</i></p> <p><i>DEQ revised the proposed rule to express metals criteria as "dissolved" concentrations.</i></p>
<b>Comment 24</b> Stormwater	Stormwater permittees should not have their wasteload allocations for heavy metals reduced due to run-off from roadways because DEQ should control these pollutants during the manufacturing of motor vehicle parts. (15).
<b>Response</b>	<p><i>DEQ acknowledges that the operation of motor vehicles can be a major source of heavy metal deposition on roadways, which may end up in waters of the state. However, controlling these pollutants during the manufacturing of motor vehicle parts is outside the scope of this rulemaking. In regulating municipal separate storm sewer systems, DEQ recognizes that "nonpoint" sources of pollutants that contaminate storm water runoff are often out of the municipality's control. As a result, requirements for municipalities to manage storm water are typically oriented towards best management practices, developing fish-friendly design standards, and construction of storm water treatment facilities in new developments and significant re-developments.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 25</b> Footnotes	<p>For footnote on metals criteria, right bracket should be inserted on both acute &amp; chronic equations (14).</p> <p>In footnote F, clarify that CMC equation applies to acute criteria and CCC equation applies to chronic criteria. (16).</p>
<b>Response</b>	<i>DEQ agrees to the correction of the formulae and has made the appropriate changes.</i>

<b>Aquatic Life Criteria—Specific Pollutants</b>	
<b>Comment 26</b> Copper	<p>Proposed copper criteria are not protective of sublethal effects (disruption of olfactory system) to coho salmon. (14).</p> <p>The proposed copper criteria do not take into account the effects on gill function, stress, and immune function in fish. (33,40).</p>
<b>Response</b>	<p><i>EPA has announced its intent to review copper for possible revision of the aquatic life criteria. If EPA recommends revised copper criteria, then DEQ will consider revising the state's criteria. As mentioned in response to Comments 6 and 23, sublethal effects can be considered in the development of aquatic life criteria; however, in practice, these sublethal effects must be severe (e.g. immobilization) to factor into the final recommended criteria. Drawing a causal relation between incidence of a sublethal effect and the ecological effect on a population is difficult and rare. Therefore, the weight of evidence requirements are substantial before EPA considers such results in deriving the recommended criteria. DEQ is aware of the NOAA-Fisheries research on the effects of copper on the olfactory system of coho salmon. However, DEQ believes that numeric copper criteria should be based on a consensus scientific viewpoint, not on a single report which has yet to be corroborated. DEQ acknowledges that the public can be frustrated by the delay between scientific "discovery" and incorporation into policy; however, in making policy, such prudence is necessary.</i></p> <p><i>DEQ disagrees with the comment that the copper criteria do not take into account the effects on gill function. The studies of Cairns et al. (1981) on the effect of copper on the gill ventilation response of bluegill sunfish were used in the derivation of the freshwater acute criterion. A number of other references on effects to gill function are listed by EPA for use in its current review of copper criteria; therefore, more current scientific information will be considered during EPA's review. If EPA recommends revisions to the copper criteria, then DEQ will consider making similar revisions.</i></p> <p><i>With regard to copper effects on stress, the term "stress" is used in a number of the documents EPA consulted in deriving its criteria. However, DEQ assumes that the term "stress" used in the comment refers to the set of physiological responses that an organism undergoes when it perceives a maladaptive stimulus. By and large, these physiological responses fall in the realm of 'sub-lethal' effects and are addressed above. If the physiological effects accompany death or immobilization or some other severe chronic effect, then stress was considered in deriving the criteria insofar as it is reflected in the severe experimental endpoint.</i></p>



	<p><i>With regard to immune system effects, in deriving the national recommended criteria, EPA reviewed the studies of Baker et al. (1983), Ewing et al. (1982), Hetrick et al. (1979), and Knittel (1981) on the effects of copper on disease resistance in fish, but did not use any of the results in deriving the final criteria. These references are on the list to be studied by EPA during the current review of copper criteria.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 27</b> Cadmium	<p>DEQ should update sampling and analysis guidelines to reflect difficulty for analytical laboratories to measure the proposed freshwater chronic criterion for cadmium. (32).</p>
<b>Response</b>	<p><i>DEQ continually updates its sampling and analysis protocols in order to take advantage of technological advances and to meet specific needs. For example, DEQ currently uses Inductively Coupled Plasma Mass Spectrometry (ICP-MS) to analyze for cadmium. The proposed freshwater chronic criterion for cadmium will be lower than the current DEQ method detection level (MDL). However, it might be possible to lower the effective MDL by increasing sample volume or other means. DEQ does not believe that the proposed rule should prescribe sampling and analytical guidelines because technological advances tend to happen faster than criteria are revised. However, such guidelines should be specified in permits. DEQ has and will continue to use EPA guidance on determining compliance when water quality-based effluent limits are lower than analytical detection/quantitation levels.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 28</b> Silver	<p>There is no basis for maintaining the current freshwater chronic criterion for silver. (32).</p>
<b>Response</b>	<p><i>DEQ disagrees. There is a good basis for maintaining the current freshwater chronic criterion for silver. Although EPA considered the freshwater chronic value for silver in the 1986 EPA Gold Book "draft" and never finalized it, DEQ's Technical Advisory Committee (TAC) reviewed the draft silver ambient water quality criteria document (EPA 1987) and found that the data were credible and the calculation of the draft criterion was consistent with EPA methods. Therefore, the TAC recommended that DEQ maintain the current freshwater chronic criterion for silver, and DEQ proposes to follow this recommendation.</i></p> <p><i>No changes were made in response to this comment.</i></p>

<p><b>Comment 29</b> Lindane, PCBs, Selenium, Silver, Beryllium, Cadmium, Chromium (III), Chromium (VI), 2,6-Dinitrotoluene, Lead, Silver, 1,1,1-Trichloroethane</p>	<p>Support proposed maintenance of OR's current criteria for lindane (FW chronic), PCBs (FW &amp; SW acute), selenium (FW acute), and silver (FW chronic) and human health criteria for beryllium, cadmium, chromium (III), chromium (VI), 2,6-dinitrotoluene, lead, silver, and 1,1,1-trichloroethane, but make all these criteria more protective of sensitive species. (33,40).</p>
<p><b>Response</b></p>	<p><i>DEQ acknowledges receipt of the comments supporting maintaining these criteria. DEQ believes that the criteria are protective of sensitive species based on the technical committee's conclusion that the EPA method for deriving criteria (which focuses its consideration on the most sensitive species' response to exposure) is scientifically and technically sound (see response to Comment 22).</i></p> <p><i>No changes were made in response to this comment.</i></p>
<p><b>Comment 30</b> Selenium</p>	<p>Proposed rule should adopt aquatic life criterion for selenium based on the Biological Opinion on the California Toxics Rule (CTR). (33,40).</p>
<p><b>Response</b></p>	<p><i>In 2000, EPA had "reserved" (effectively withdrawn) its freshwater acute criterion for selenium when promulgating California's water quality criteria, but had proposed freshwater chronic and saltwater acute and chronic criteria after reviewing the Services' (USFWS and NOAA-Fisheries) Biological Opinion on the California Toxics Rule (CTR). DEQ initially proposed 1) to maintain its current freshwater acute selenium criterion in order to have a criterion in place while EPA and the Services resolved their difference and 2) to revise all other selenium criteria to the latest EPA recommendations. In late 2002, EPA published "National Recommended Water Quality Criteria 2002" which, by error, initially did not provide a criterion for freshwater selenium. Therefore, DEQ continued to believe that its position of maintaining Oregon's current freshwater acute criterion for selenium was prudent. Subsequently, EPA corrected the error (i.e. published a value for selenium); therefore, DEQ intends to adopt the latest EPA freshwater acute criterion for selenium (which is equal to <math>1/[(f1/CMC1)+(f2/CMC2)]</math> where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 and 12.82 µg/L, respectively. EPA is currently reviewing selenium for possible revision from the latest value. If EPA revises its national recommended criteria for selenium, then DEQ will consider</i></p>



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	<p><i>revising its criteria again.</i></p> <p><i>No change was made in response to this comment. However, the freshwater acute criterion for selenium has been modified to reflect EPA's latest national recommendation.</i></p>
<b>Comment 31</b> Pentachlorophenol	Freshwater acute criterion for pentachlorophenol is not protective of threatened and endangered species (EPA will propose a more protective criterion in response to the Biological Opinion to the CTR). (33,40).
<b>Response</b>	<p><i>DEQ disagrees that the proposed freshwater criteria for pentachlorophenol are not protective of endangered species. DEQ proposed criteria that are the same as those proposed by EPA in the CTR and in the National Recommended Water Quality Criteria: 2002. DEQ is unaware of an EPA proposal for a more stringent criterion. In response to the Biological Opinion to the CTR, EPA agreed to review the freshwater chronic criterion for pentachlorophenol and, if necessary, propose a new criterion by March 2001 and to propose this revised criterion by March 2002. EPA did not revise its freshwater chronic criterion for pentachlorophenol in California and proposed the same criterion that is in the CTR for its national recommended criteria in November 2002. The EPA criteria took into account toxicity information from rainbow trout, coho salmon, sockeye salmon, and chinook salmon. Populations of chinook salmon and steelhead (same species as rainbow trout) have been listed in Oregon by NOAA-Fisheries as threatened or endangered.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 32</b> Chlordane, Arsenic, Iron, Aldrin	Proposed aquatic life criteria for chlordane, arsenic, iron, and aldrin should be lowered to 0.00046, 0.0022, 146, and 0.002 µg/L, respectively. (49).

<b>Response</b>	<p><i>The proposed aquatic life criteria for chlordane, arsenic, iron, and aldrin are the same as those published by EPA in the National Recommended Water Quality Criteria: 2002. DEQ believes that these criteria are protective of aquatic life and do not need to be more stringent. The levels suggested in the comment for chlordane, arsenic, iron, and aldrin are not EPA's latest recommendation for aquatic life criteria. The levels of chlordane and arsenic in the comment were the 1986 EPA Gold Book values for the protection of human health and EPA has subsequently updated their recommended human health criteria based on more current information (and DEQ is following the latest EPA recommendation for human health criteria). The basis for the comment level for iron is unknown, but DEQ is proposing concentrations consistent with EPA's latest recommended ambient water quality criteria. The comment on the level for aldrin is a drinking water equivalent level from Arizona; drinking water maximum contaminant levels are outside the scope of the current rulemaking. In addition, drinking water maximum contaminant levels are designed to protect different uses than uses protected by aquatic life criteria.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 33</b> Mercury	<p>Proposed rule should not relax the aquatic life criteria for mercury. (14,33,40).</p> <p>Proposed rule should adopt wildlife criteria for mercury based on the Biological Opinion on the California Toxic Rule. (33,40).</p>
<b>Response</b>	<p><i>DEQ believes that the latest EPA nationally recommended aquatic life criteria for mercury may not be protective of threatened and endangered salmonids in Oregon based on views expressed by NOAA-Fisheries and the US Fish &amp; Wildlife Service in the Biological Opinion to the California Toxics Rule. Because of the existing concerns over mercury pollution in Oregon and the presence of several species of salmonids on the threatened or endangered species lists, the Department has decided to maintain the current Oregon water quality criteria for mercury for the protection of aquatic life until such time that EPA and the federal Services have issued revised criteria that specifically address protection of listed salmonids.</i></p> <p><i>EPA has not yet developed national recommendations on wildlife criteria. Should EPA develop national wildlife criteria, DEQ will consider adopting such criteria for the state. In the meantime, DEQ intends to use the narrative toxics criteria to address issues related to protection of the wildlife designated use.</i></p> <p><i>The Department is not proposing to change aquatic life criteria for mercury.</i></p>



<p><b>Comment 34</b> Ammonia</p>	<p>Support proposed aquatic life criteria for ammonia. (42,45,47).</p> <p>Proposed aquatic life criteria for ammonia are overprotective because several parameters known to influence ammonia toxicity are not accounted for. (43).</p> <p>Proposed rule should contain provisions for inclusion of site-specific conditions when setting discharge limits for ammonia that will indicate compliance with water quality standards. (43).</p> <p>For footnote on ammonia criteria, specify unit of measure. (14).</p>
<p><b>Response</b></p>	<p><i>DEQ is proposing to revise its freshwater aquatic life criteria for ammonia to that recommended by EPA in 1999. DEQ acknowledges receipt of comments in support of its proposed ammonia criteria. No changes were made in response to these comments.</i></p> <p><i>When EPA revised its freshwater aquatic life criteria for ammonia in 1999, it concluded that "available evidence indicates that toxicity of ammonia can depend on ionic composition, pH, and temperature." EPA revised its criteria to reflect the influence of these factors and the Technical Advisory Committee endorsed these revisions for adoption for Oregon. DEQ believes that the proposed criteria are not overprotective. No changes were made in response to this comment.</i></p> <p><i>DEQ believes that the proposed ammonia criteria address the major site-specific conditions that affect ammonia toxicity by requiring the use of pH (acute, chronic) and temperature (chronic) and the presence/absence of salmonids in calculating the criteria to be met. The comment contains information from a bioassay using fathead minnows (<i>Pimephales promelas</i>) that shows differences between the toxic effect level in this species and the criteria levels. This is not surprising since EPA derives its criteria based on reviewing toxicity information from a wide variety of taxonomic groups. Furthermore, EPA used information from five peer-reviewed studies on fathead minnows to derive its criteria. Based on this information, EPA ranked fathead minnows as the 21<sup>st</sup> (out of 34 species) most sensitive species to ammonia. The EPA method for deriving criteria gives greater emphasis to the toxicity values from the four most-sensitive species. No changes were made in response to this comment.</i></p> <p><i>DEQ agrees to specify units of measure in the footnote related to ammonia criteria.</i></p>

<b>Aquatic Life Guidance Values</b>	
<b>Comment 35</b> Specify use of guidance values	The roles of Tables 20 and 20a need to be more clearly defined. (42,45,47).
<b>Response</b>	<p><i>In the DEQ proposal, Table 20 (now Tables 33A and 33B) contains water quality criteria and Table 20a (now Table 33C) contains water quality guidance values. DEQ believes that the rule language adequately describes how the values in the two tables will be used. Namely, the levels in Table 20 are water quality criteria that are not to be exceeded whereas the levels in Table 20a are guidance values that can be used to set effluent limits to protect the most sensitive designated use when no EPA published criteria exist.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 36</b> Support separation of guidance values from criteria	Support moving 'guidance values' to separate table, but DEQ's use of guidance values in conjunction with narrative toxics criterion is inadequate because species are already being impacted by these pollutants. (33).
	Supports the establishment of guidance values for toxics not yet given a numeric value. (41).
<b>Response</b>	<p><i>DEQ acknowledges receipt of the comments in support of moving guidance values to Table 20a (now Table 33C). DEQ believes that use of the guidance values in conjunction with the narrative toxics criteria is an appropriate use of these values. If, during the course of developing a wastewater permit, the reasonable potential analysis indicates that a pollutant from Table 20a (now Table 33C) will be in the wastestream, then the proposed rule provides a means for those guidance values (as well as other information) to be used to set permit limits. The proposed rule changes the wording in 340-041-0033(4) (formerly 340-041-&lt;Basin&gt;(2)(p)(D)) to clarify that DEQ has the authority to require bioassessment studies on the toxicity of complex effluents. Thus, when appropriate information is available, DEQ has the ability to protect species from adverse impacts from pollutants listed in Table 20a (now Table 33C).</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 37</b> Dichloroethylenes	Guidance value for dichloroethylenes should be clarified—is it 224 or 224,000 µg/L? (14).



<b>Response</b>	<p>DEQ reconfirms its proposed guidance value as 224,000 µg/L. Although the criterion could have been expressed as 224 mg/L, the units were expressed as µg/L for consistency with the rest of the criteria.</p> <p>No changes were made in response to this comment.</p>
<b>Comment 38</b> Polybrominated Diphenyl Ethers	<p>There is sufficient scientific evidence for deriving guidance values for polybrominated diphenyl ethers. (36).</p>
<b>Response</b>	<p>DEQ did not propose a guidance value for the protection of aquatic life for polybrominated diphenyl ethers (PBDEs) because the Technical Advisory Committee could not identify such a value given the limited scope of their review and EPA did not publish a guidance value in the 1986 EPA Goldbook. The comment does not contain any reference to scientific information on PBDEs nor suggested guidance values. DEQ plans to revise its guidance values as time and resource priorities allow.</p> <p>No changes were made in response to this comment.</p>

Human Health Criteria—General	
<b>Comment 39</b> Support proposed criteria	<p>Proposed revisions are beneficial to human health. (12).</p>
<b>Response</b>	<p>DEQ acknowledges receipt of this comment in support of the proposed criteria.</p> <p>No changes were made in response to this comment.</p>
<b>Comment 40</b> Bioaccumulation factors	<p>Proposed rule does not incorporate the use of bioaccumulation factors. (33).</p>
<b>Response</b>	<p>In proposing human health criteria, DEQ endorsed EPA's "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)" for use when sufficient information was available. Nationally recommended bioaccumulation factors (BAFs) are not available from EPA and DEQ does not have the resources to develop BAFs for local fish species for all pollutants. Therefore, DEQ believes that following the EPA National Recommended Water Quality Criteria: 2002 approach of using bioconcentration factors (BCFs) is the best approach until such time that local or national BAFs become available.</p> <p>No changes were made in response to this comment.</p>

<b>Human Health Criteria—Fish Consumption Rate &amp; Sensitive Populations</b>	
<b>Comment 41</b> Sensitive populations	Proposed human health criteria are not protective of most sensitive populations (e.g. children, tribal members). (1,2,4,5,6,7,8,9,11,18,20,21,22,23,24,25,26,27,29,30,31,34,35,38,39,41,46,48,50).
	Proposed criteria for the protection of human health should account for increased sensitivity of children to toxic contaminants (e.g. incorporate a 10-fold safety factor). (33).
	Proposed criteria ignore environmental justice obligation. (33,40).
	The proposed human health criteria for toxics are not appropriate because they are not protective enough of Native Americans. National standards writers and members of the technical advisory committee did not consider tribal practices (e.g. consumption of lamprey) in making recommendations for criteria. (37,44,41).
	Fish consumption rate of 17.5 g/day for deriving human health criteria is inadequate. (33,37,44).
	Proposed rule should use a higher fish consumption rate that protects higher than the 50 <sup>th</sup> percentile of all Oregonians. (33).
	The proposed human health criteria should be changed to reflect the use of a fish consumption rate of 540 g/day, which will be protective of all Oregonians. (37,44).
	Proposed “Relationship to Federal Requirements” statement is incorrect because the recommended EPA criteria did not consider Oregon’s most sensitive beneficial uses, e.g. human health criteria inadequate for protecting Native Americans. (49).
	Fish consumption rate of 17.5 g/day for deriving human health criteria is adequate. (17,32).
<b>Response</b>	<i>DEQ acknowledges the importance of fish consumption in deriving protective criteria. However, DEQ has not been able to identify state-wide, Oregon-specific information on fish consumption. In the absence of such statewide information, DEQ believes the EPA approach of using USDA data to derive national 90<sup>th</sup> percentile fish consumption rate for calculating human health criteria is protective of the general population of Oregonians. Although the criteria will be less protective of people who consume more than 17.5 g/day (0.6 oz), which might include some subpopulations with higher fish consumption (e.g. Native Americans), nevertheless, a consumption rate of 17.5 g/day is 1) higher than the 95<sup>th</sup> percentile consumption rate for children (consumers and non-consumers) 14 years and younger, 2) includes over 23-24% of adult fish consumers within the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes (according to CRITFC 1994), and 3) offers a level of protection within EPA guidelines for acceptable risk to more highly exposed subgroups, such as the Columbia River tribes. DEQ</i>



	<p><i>plans to pursue resources to conduct a study on fish consumption by Oregonians, which can then be used to review these criteria for possible revision.</i></p> <p><i>No changes were made in response to these comments.</i></p>
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<b>Human Health Criteria—Specific Pollutants</b>	
<b>Comment 42</b> Mercury/methylmercury	<p>Proposed human health criterion for methylmercury/mercury is inadequate because it is based on a low fish consumption rate and there is no methodology specified for implementation. (33,40).</p> <p>The proposed aquatic life criteria for mercury should be changed to reflect higher fish consumption by tribal members and other Oregonians. (37,44).</p>
<b>Response</b>	<p><i>DEQ believes that the proposed methylmercury criterion is protective of Oregonians because it is based on EPA's National Recommended Water Quality Criteria: 2002, which uses a fish consumption rate based on the 90<sup>th</sup> percentile of consumers and nonconsumers. The aquatic life criteria is not designed to address human health protection; therefore, DEQ believes it would be inappropriate to revise the aquatic life criteria for the purposes of protecting human health.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 43</b> Cadmium	<p>Proposed criteria for cadmium are not sufficiently protective of human and wildlife health because they do not take into account recent studies reported in the news on the effects of low doses of cadmium on rats. (33,40).</p>
<b>Response</b>	<p><i>DEQ revised its human health criteria for cadmium to reflect the latest recommendation from EPA, which provides no values for human health criteria but provides a footnote indicating that EPA has recommended a Maximum Contaminant Level (MCL) for drinking water. Although EPA's current drinking water MCL for cadmium is 5 µg/L and Oregon's is 10 µg/L, the proposed aquatic life chronic criteria (which would be applicable in all waters of the state) for Oregon would range between 0.38 and 2.0 µg/L, which would be more strict than EPA's drinking water MCL. The comment refers to a news report on the findings of a scientific study. DEQ acknowledges that the lag between when results are presented in the scientific literature and when those results are used for deriving criteria can be frustrating. However, the translation of scientific results to public policy requires some time for review. As EPA updates its water quality criteria recommendations for cadmium (and other pollutants), DEQ will have the opportunity to revise its water quality criteria to take advantage of newer information.</i></p>

	<i>No changes were made in response to this comment.</i>
<b>Comment 44</b> Endosulfan	Proposed criteria for endosulfan are not protective of beneficial uses from endocrine disruption based on a recent study published on the effects on newts. (33,40).
<b>Response</b>	<p><i>DEQ believes that the proposed criteria are protective. For the National Recommended Water Quality Criteria: 2002, EPA recommended that criteria for endosulfan be replaced with criteria for the two main forms of endosulfan (<math>\alpha</math>- and <math>\beta</math>-); however, in the footnote accompanying these criteria, EPA indicated that the most appropriate application of these values was as the sum of <math>\alpha</math>- and <math>\beta</math>-endosulfan. DEQ proposed that in addition to water quality criteria for <math>\alpha</math>- and <math>\beta</math>-endosulfan, it maintain and revise its current criteria for endosulfan to reflect the latest EPA recommendations (which are 62 <math>\mu\text{g/L}</math> for Water + Organism and 89 <math>\mu\text{g/L}</math> for Organism only). In this way, DEQ feels that it will clearly reflect EPA's intent for using the sum of <math>\alpha</math>- and <math>\beta</math>-endosulfan and also meet EPA's expectation of having separate <math>\alpha</math>- and <math>\beta</math>-endosulfan criteria.</i></p> <p><i>The study cited in the comment was conducted on red-spotted newts and was published in 2001. As stated above in response to Comment 44, DEQ acknowledges that the lag between when results are presented in the scientific literature and when those results are used for deriving criteria can be frustrating; however, the translation of scientific results to public policy requires some time for review. As EPA updates its water quality criteria recommendations for endosulfan (and other pollutants), DEQ will have the opportunity to revise its water quality criteria to take advantage of newer information. The proposed aquatic life criteria for endosulfan are all at least 10 times more stringent than the lowest effect level cited in the comment and therefore, will provide extra protection until such time that the human health criteria are revised.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 45</b> PAHs	Proposed criteria for polycyclic aromatic hydrocarbons (PAHs) should account for studies showing long term exposure at low doses results in adverse effects. (33,40).



<b>Response</b>	<p>DEQ is proposing to revise its current criteria for PAHs, which consist of human health criteria for fluoranthene and polynuclear aromatic hydrocarbons, to EPA's latest recommended individual criteria for acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorine, ideno[1,2,3-c,d]pyrene, and pyrene. These criteria reflect EPA's cancer slope factor or reference dose information contained in its Integrated Risk Information System (IRIS) database as of May 17, 2002. Therefore, DEQ believes that these criteria are protective. As EPA revises its criteria to reflect new scientific information, then DEQ will consider revising its criteria.</p> <p>No changes were made in response to this comment.</p>
<b>Comment 46</b> PCBs	DEQ should apply weighting (based on EPA guidance) to PCB congener-specific analytical results when implementing the total PCB criteria. (17).
<b>Response</b>	<p>EPA's latest recommended criteria (2002) (which indicates that the PCB criteria apply to total PCBs, e.g. "the sum of all congener or all isomer or homolog or Arochlor analyses") does not suggest that any individual PCB congeners should be weighted when calculating compliance. DEQ agrees with EPA's recommendation. If EPA revises its PCB criteria, then DEQ will consider adopting such revisions.</p> <p>No changes were made in response to this comment.</p>

<b>Human Health Criteria—Dioxins And Furans Criteria</b>	
<b>Comment 47</b> TEF approach should not be adopted	<p>Toxic Equivalency Factor (TEF) approach for dioxins &amp; furans is not valid approach because it is 1) a misuse of the intended purpose (as a screening tool, not a criterion) of this method; 2) not based on the latest science; 3) scientifically uncertain and oversimplifies site-specific factors that affect bioaccumulation; 4) raises serious technical and practical questions regarding its implementation in Oregon (therefore, criteria for individual congeners should be proposed instead); and 5) counter to EQC rationale for denying 1991 proposal to adopt dioxin criteria different from EPA-recommended criteria. (17,32).</p> <p>DEQ should defer adoption of the TEF approach because 1) regulators and permittees have no experience with application of such criteria to NPDES permits; 2) the costs for analysis are too high; and 3) legacy deposition of dioxins and furans has not been addressed. (42,45,47).</p>

	<p>Proposed criterion for dioxin cannot be resolved with EPA's current action level for dioxin in drinking water. Furthermore, dioxin levels (as expressed as parts per quadrillion) are far higher in typical beef, pork, poultry, and dairy products than the proposed water quality criterion, and WHO research shows that 90% of human exposure to dioxin results from the food chain. (32).</p> <p>The proposed dioxin criterion will result in re-opening of the federal TMDL for dioxin on the Columbia River and will be inconsistent with dioxin criteria in Washington and Idaho. (32).</p>
<b>Response</b>	<p><i>Although, DEQ believes that the initially proposed approach to consider the toxic equivalency of a number of dioxins and furans to derive criteria for mixtures of these dioxins and furans is technically valid, DEQ is not including it as a feature of the final rule. Due to the uncertainties regarding the availability of adequate resources to DEQ and sources for implementing the TEF approach, DEQ believes that extending the protection beyond minimum federal requirements is unnecessary at this time. Therefore, DEQ is proposing numeric water quality criteria for 2,3,7,8-TCDD only.</i></p> <p><i>DEQ believes that using a toxic equivalency approach for dioxins and furans is consistent with EPA policy. In EPA's latest "National Recommended Water Quality Criteria: 2002," the policy for water quality criteria on Dioxin is stated as follows: "The section 304(a) water quality criteria for dioxin contained in this compilation is expressed in terms of 2,3,7,8-Tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) and should be used in conjunction with the national/international convention of toxicity equivalence factors (TEF/TEQs) to account for the additive effects of other dioxin-like compounds (dioxins). EPA supports the use of either the 1989 interim procedures or the 1998 World Health Organization (WHO) TEF scheme, but prefers the 1998 WHO TEF scheme because it is based on more recent data and is internationally accepted. (See: Update to the Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -dibenzofurans, EPA/625/3-89/016, March 1989 and Van den Berg M., 1998)." Nevertheless, EPA's recommended criteria table contains only values for 2,3,7,8-TCDD, thereby providing states with flexibility regarding criteria for dioxin-like compounds, but setting a minimum requirement of criteria for 2,3,7,8-TCDD (which DEQ is proposing to adopt).</i></p> <p><i>DEQ received confirmation from EPA's director of the Dioxin Policy Project that although Congress has asked EPA to confer with the National Academy of Sciences regarding EPA's Dioxin Reassessment efforts, the scientific validity of the toxic equivalency</i></p>



	<p><i>approach is not an issue in question. DEQ does not believe that the rationale for the EQC's denial of the 1991 petition to change the 2,3,7,8-TCDD criterion relates to the initial proposal, nevertheless, DEQ has modified its proposal to include criteria only for 2,3,7,8-TCDD at this time.</i></p> <p><i>Although DEQ is proposing to adopt criteria for only 2,3,7,8-TCDD, DEQ believes that a dioxin equivalency criterion may be useful in the future for addressing environmental pollution from dioxins and furans. Therefore, DEQ intends to incorporate increased monitoring requirements for dioxins and furans in individual NPDES permits as they are renewed in order to gather information on the composition and concentrations of various dioxins and furans in wastestreams. DEQ acknowledges that the costs for analyses might be increased because of new monitoring requirements. However, this increase is not unreasonable. Analyzing for several dioxin-like dioxins and furans is perhaps double the cost required for analyzing for one form of dioxin.</i></p> <p><i>DEQ acknowledges that when revised criteria are adopted, a number of regulatory instruments might be affected, including TMDLs and NPDES permits. Given that states differ in the timing of their triennial reviews of water quality standards, it is inevitable that states will differ in their water quality criteria. DEQ acknowledges that the new dioxin criteria may result in new or revised TMDLs, and may result in differences with bordering states.</i></p>
<p><b>Comment 48</b> "Non-detect" values as "0.0"</p>	<p>Support the use of combined threshold equivalency factor approach for dioxins and furans; however, non-detects from monitoring data should be assigned a certain percentage of the detection limit rather than zero. (37,44).</p> <p>The treatment of monitoring data below detection of the dioxin and dioxin equivalency criteria as 0.0 will result in biased statistical estimates of the toxic equivalency factor unprotective of aquatic or human health. (36).</p> <p>Compliance language with TEF approach should specify that analysis results indicating non-detection in a sample will count as "zero" (rather than 0) when calculating compliance with TEF. (17,19,32).</p> <p>Add "in ambient waters" to indicate where determination of compliance will be made when "zero" is used in TEF approach. (17).</p>
<p><b>Response</b></p>	<p>DEQ has removed the proposed OAR 340-041-0061(16) and is proposing to adopt criteria for 2,3,7,8-TCDD only (see Response to Comment 47).</p>

	<i>Since DEQ has removed this proposed rule language, there is no longer any issue regarding whether there is a disincentive to develop more sensitive laboratory methodologies or whether monitoring results indicating non-detection of dioxins and furans should be treated as percentages of the method reporting limit or detection limit.</i>
<b>Comment 49</b> Include PCBs in TEF approach	Support dioxin and dioxin equivalency criteria but it should be expanded to include PCBs. (33,39,40,41).
<b>Response</b>	<i>DEQ initially considered including dioxin-like PCBs in the dioxin and dioxin equivalency criteria proposal; however, the approach requires the use of bioaccumulation equivalency factors that were not available for these PCBs. Furthermore, DEQ is proposing criteria for only 2,3,7,8-TCDD.</i>  <i>No changes were made in response to this comment.</i>
<b>Comment 50</b> Make dioxins criteria more strict	Proposed criteria for dioxins should be strengthened to protect both human health and wildlife. (39).
<b>Response</b>	<i>DEQ believes that the proposed criteria for 2,3,7,8-TCDD is protective of human health with regard to this form of dioxin. If EPA makes national recommendations for dioxin criteria for wildlife, then DEQ will consider adopting them into its rules.</i>  <i>No changes were made in response to this comment.</i>
<b>Comment 51</b> Adopt dioxin criteria for wildlife	DEQ should adopt the TEF equivalent of the wildlife criteria contained in the Great Lakes Initiative at 0.000074 µg/L for PCBs and 0.0000000031 µg/L for 2,3,7,8-TCDD. (33).
<b>Response</b>	<i>EPA has not made national recommended water quality criteria for the protection of wildlife. If EPA does issue such recommendations, DEQ will consider adopting them into its rules.</i>  <i>No changes were made in response to this comment.</i>
<b>Comment 52</b> Specify use of monitoring data for TEF approach	Proposed rule should discuss how monitoring data will be used and the use of internal waste streams, semi-permeable membrane devices (SPMDs), tissue samples, etc. in order to ensure that data are collected that DEQ will actually use. (33).



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<b>Response</b>	<i>DEQ does not believe that such specifications are necessary in the proposed rule. As technology advances, having such specific rule language would be counterproductive and limit DEQ's options for using the best available science.</i>  <i>No changes were made in response to this comment.</i>
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**Proposed revisions to Other Implementation of Water Quality Criteria (340-041-0061)**

<b>Stratified Waters Rule</b>	
<b>Comment 53:</b> Expand waters covered by rules	Revise stratified waters rules so that they apply to all thermally stratified waters (not just reservoirs). (19).
<b>Response</b>	<p><i>The intent of the rule was to recognize the physics of stratification that limits stratified waters' ability to meet specific water quality criteria in parts or layers of the water column. In the case of natural lakes, there is no management of hydrology, and the temperature criteria prohibit significant human warming. Hence, there is no reason to apply the rule to natural lakes.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 54:</b> Stratification to 3 distinct layers unnecessary	Revise stratified waters rules by deleting reference to three observable layers—it should be sufficient that the waterbody has thermally stratified. (19).
<b>Response</b>	<p><i>DEQ considered less and more rigorous findings of stratification. The establishment of the three layers was seen as requisite to the physics that the rule is meant to address. That is, without full stratification (three layers), the top and bottom layers are not sufficiently physically isolated to keep them all from mixing. Transient thermal stratification requires very little input of wind or other energy to break it down.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 55:</b> Do not require all practicable measures in all layers or downstream	Revise stratified waters rules by deleting requirement for all practicable measures to be taken to bring temperature, pH, and dissolved oxygen in all layers into compliance with numeric criteria because it is unnecessary, potentially impracticable to implement, and wrongly implies that the rule is not fully protective of beneficial uses. (19).
	Revise stratified waters rules by deleting requirement that waters immediately downstream from stratified waterbody meet applicable criteria for temperature, pH, and dissolved oxygen because the condition of the downstream water has no bearing on whether beneficial uses are being protected in the stratified water. (19).
<b>Response</b>	<p><i>It is true that elsewhere in the water quality standards [340-041-0007] DEQ requires: "the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, .....and other deleterious factors at the lowest possible levels."</i></p> <p><i>The intent of the "all practicable measures" component of the findings required by the rule is to maximize the magnitude or volume of the layer meeting all criteria. This is not purely redundant to the general narrative; the effect would be a finding,</i></p>



	<p><i>for example, in an application for water quality certification that an applicant has a management plan in place with adequate practicable provisions to meet this standard. This finding is, on its face, practical.</i></p> <p><i>The condition of the downstream water <b>does</b> have bearing on the management plan put into place for all practicable measures to meet criteria. The intent of this component of the findings required by the rule is to allow for the needs of sensitive beneficial uses downstream of stratified waters. The foreseeable situation is a reservoir with threatened or endangered species downstream that may have a higher requirement or priority than those within the reservoir, and must thus be accommodated in the plan for addressing the criteria in the reservoir.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 56: Proposed rule shows inadequate advisory input</b>	<p>DEQ did not obtain input from federal agencies (e.g. EPA, USFWS, NMFS) or American Indian Tribes on whether the proposed rule on stratified waters will have negative impacts on threatened and endangered species. (28,33,51).</p> <p>DEQ has not provided sufficient background information to the Policy Advisory Committee or the public for them to evaluate the relaxation of water quality standards in stratified waters. (28,33,51).</p>
<b>Response</b>	<p><i>DEQ did consult EPA, USFWS, NMFS, and a Tribal representative through their participation in the Water Quality Standards Policy Advisory Committee (PAC). The draft of the stratified waters rule was included in the PAC agenda on four occasions, and it was discussed substantively on three of these occasions. Further, outside reviews of the rule draft were obtained from Kemper McMaster, USFWS, on December 12, 2002, and from Robert Anderson, NMFS, on December 18, 2002. All of these agencies were also invited to comment during the public comment period.</i></p> <p><i>There was a suggestion that DEQ should assemble background data from Oregon's population of lakes, in essence positing that the rule should be empirically rather than theoretically based. After investigating this suggestion, DEQ has concluded that such comprehensive data do not exist. DEQ does not have the resources to perform this survey at this time. However, all lakes for which data are available and that do exhibit the three stratified layers also exhibit consequent changes in temperature, pH, and dissolved oxygen values. These characteristics of seasonal thermal stratification are described in all basic texts on limnology and need not be re-proven as part of this rulemaking.</i></p>

	<i>No changes were made in response to these comments.</i>
<b>Comment 57:</b> Clarify language	The word “aspects” should be removed from the definition of “managed lakes” in the proposed rule on stratified waters. (28,33,51).
<b>Response</b>	<i>DEQ agrees that the use of the word “aspects” could be confusing, and has amended the definition of “managed lakes” to read: “.....in which hydrology is managed by controlling the rate or timing of inflow or outflow.” Also, the example of a lake being drained has been deleted.</i>
<b>Comment 58:</b> Proposed rule waives protection of beneficial uses	The proposed rule on stratified waters will result in a waiver of criteria for any two of the three layers. (28,33,51).
	The proposed rule on stratified waters will result in a waiver of criteria for all parts of a managed lake or reservoir, including those that are not stratified. (28,33,51).
	Proposed rule on stratified waters is intended to relieve dam operators of obligation to uphold water quality standards. (28,33,51).
	The proposed rule on stratified lakes should be withdrawn because 1) DEQ has not conducted an analysis of what the impact of this rule will be on beneficial uses specific to certain layers in a reservoir; 2) the definitions are too vague to identify to which waters the rule would apply; and 3) the Use Attainability Analysis process should be used if DEQ wishes to removed existing uses and protections. (37,44)
	Proposed rule on stratified waters is unprotective of Oregon’s waters because it requires federal authorities only to attempt to protect beneficial uses, not to achieve such protection. (49).
<b>Response</b>	<p><i>The proposed rule merely recognizes that water quality criteria have never been met nor could be met in all three layers during times when stratification occurs. This limited exception is very narrow and applies only if all five of the findings are met, including the finding that one layer <b>meets all criteria and is sufficient to support beneficial uses.</b></i></p> <p><i>The assumption underlying the proposed rule is that when the three thermal stratification layers are observable, mature stratification is present over the entire area of the water body. Wind- or flow-induced upwelling and downwelling might cause skewing or some erosion of the layers, but would not be expected to cause widespread breakdown of stratification. Thus, the rule applies to the entire areal extent of a body of water.</i></p> <p><i>DEQ disagrees with the comment that criteria will not be met in two of the distinct layers. DEQ anticipates that temperature will not be met in the uppermost layer only, and that dissolved oxygen will not be met in the bottom layer only. When water is impounded,</i></p>



	<p><i>thermal stratification can make it impossible to meet some water quality criteria without removing the impoundment. The intent of the proposed rule is to recognize that fact and to maximize water quality in view of it, while holding dam operators harmless for that which they cannot control. The rule is further intended to provide an opportunity during the TMDL or certification process for DEQ to ascertain that a plan is in place to implement all practicable measures to bring all layers into compliance. Thus, the proposed rule is intended to have positive, not negative, consequences on Oregon's water quality.</i></p> <p><i>The proposed rule applies to all entities that manage reservoirs or managed lakes, not just federal authorities. The rule recognizes that it may be physically impossible to meet temperature, dissolved oxygen, or pH criteria in waters that are thermally stratified. Given that, the rule is intended to maximize beneficial uses rather than reduce them as suggested by the comment.</i></p> <p><i>No changes were made in response to these comments.</i></p>
<b>Comment 59:</b> Proposed rule circumvents UAA process	<p>Proposed rule is an attempt to circumvent the requirements to employ the Use Attainability Analysis process for changing use protections (e.g. public notice, submission to EPA for approval/disapproval). (28,33,51).</p>
<b>Response</b>	<p><i>DEQ disagrees with this comment. The proposed rule does not change the use designations for lakes or reservoirs. The suite of five findings that allows application of the rule includes the requirement for the presence of at least one layer <b>sufficient to support beneficial uses</b>. The intent of the rule is to ensure that impoundment operators develop plans to implement all practicable measures to meet the criteria in as much of the impoundment as possible. Later in time, a water body shown to be unable to support beneficial uses under any operational circumstances could then appropriately be subject a use attainability analysis as prescribed by 40 CFR 131.10(g)(4), but that is a separate process requiring substantial site-specific information and a separate rulemaking for each impoundment.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 60:</b> Proposed rule should require finding on all practicable measures downstream	<p>Proposed rule does not require that DEQ make a finding with regard to whether all practicable measures have been taken to maintain water quality in waters immediately downstream of the stratified waters. (28,33,51).</p>

<b>Response</b>	<p><i>As noted elsewhere, the water quality standards embodied in OAR Chapter 340-041-0007(1) require in every case "the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, .....and other deleterious factors at the lowest possible levels." The proposed rule requires a finding that downstream criteria are met, that all practicable measures have been taken to meet them, or that the impoundment causes no further degradation. This recognizes that "all practicable measures" for downstream waters could include management actions that would be deleterious to the criteria in impoundment waters and might require some balancing based on identification of sensitive beneficial uses.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 61:</b> Clarify timing & location of rule applicability	Proposed rule should contain specifics on timing and location of where the stratified waters provisions would apply. (28,33,51).
<b>Response</b>	<p><i>DEQ agrees that this "where and when" information is desirable. However, the timing, magnitude, and duration of stratification in any given body of water may differ from year to year. Within a water body, the finding that there are three layers (indicating mature stratification) allows one confidence that the conditions, and therefore, the rule, apply in all areas of the water body.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 62:</b> Apply rule only on site-by-site basis	Proposed rules should be applied only on a site-by-site basis rather than to all reservoirs and managed lakes. (28,33,51).
<b>Response</b>	<p><i>DEQ agrees and will apply this rule on a site-specific basis as each impoundment stratifies, if at all.</i></p> <p><i>No changes were made in response to this comment.</i></p>

<b>Compliance Schedule Rules</b>	
<b>Comment 63:</b> Five-year time limit is inadequate	<p>Five-year time limit for compliance schedule is not consistent with compliance timeframe for many Total Maximum Daily Loads (TMDLs), e.g. 10-20 years; therefore, an exception for TMDLs should be added to Section (19). (13).</p> <p>The proposed rule on compliance schedules should be revised because the 5-year limit is unrealistically short. (42,45,47).</p>
<b>Response</b>	<i>The proposed rule is limited to implementation of water quality criteria in permits issued under Division 45 and Section 401 water quality certifications under Division 48. However, in order to make this more explicit, the rule has been revised to read:</i>



	<p><i>"The Department may in a permit issued under OAR chapter 340, division 045, or in a water quality certification under OAR 340, Division 48 include compliance schedules for the implementation of effluent limits derived from water quality criteria in this Division. Any compliance schedule in an NPDES permit must comply with provisions in 40 CFR §122.47 (including the requirement that water quality criteria must be achieved as soon as possible) and may be allowed only for water quality based effluent limits that are newly applicable to the permit."</i></p> <p><i>A compliance schedule for a water quality based effluent limit (WQBEL) that implements a TMDL waste load allocation should be treated differently. TMDL schedules represent the shortest time possible to achieve the criteria. A compliance period beyond five years is acceptable provided that it is reasonable and is approved consistent with 40 CFR § 122.47.</i></p> <p><i>In the case of NPDES permits, the five-year time limit is the maximum allowed under federal Clean Water Act requirements. If reasonable, DEQ could allow additional time beyond the 5 years by issuing a mutual agreement order (MAO) or some other enforcement tool, or a variance would need to be submitted to EPA for approval.</i></p>
<b>Comment 64:</b> Refer to "standards" rather than "criteria"	Revise compliance schedules rules to refer to standards rather than just criteria because Division 41 refers to beneficial uses as well as water quality criteria. (19).
<b>Response</b>	<p><i>DEQ disagrees that compliance schedules should refer to both beneficial uses and criteria. The proposed rule was intended to only address compliance with water quality based effluent limits placed in NPDES permits.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 65:</b> Expand compliance schedule rules to other OAR Divisions	Revise compliance schedules rules to include load and wasteload allocations in Division 42, NPDES and WPCF permit limits in Division 45, and water quality certifications under Division 48. (17,19).
<b>Response</b>	<p><i>DEQ agrees that compliance schedules should apply to NPDES and WPCF permit limits in Division 45 (as proposed) and to Section 401 water quality certifications in Division 48 (which the new rule language reflects; see Response to Comment 63). DEQ disagrees that compliance schedules should apply to TMDLs in Division 42, as there are no facility/activity-specific schedules required in a TMDL. Compliance schedules are specific to individual facilities or activities.</i></p> <p><i>No changes were made in response to this comment.</i></p>

<p><b>Comment 66:</b> Clarify language on time limit</p>	<p>Revise compliance schedules rules to read “shortest reasonable period” rather than “shortest period reasonably possible.” (19). Proposed rule on compliance schedules is not sufficiently stringent because it uses language (i.e., in the “shortest period reasonably possible”) other than “as soon as possible.” (28,33).</p>
<p><b>Response</b></p>	<p><i>The proposed language has been revised (see Response to Comment 63) and includes the phrase “as soon as possible” in reference to the requirement for when permit holder must meet water quality criteria.</i></p>
<p><b>Comment 67:</b> Indicate five-year limit starts when schedule published</p>	<p>Revise compliance schedules rules to indicate that start of five-year limit should be the effective date of the schedule. (19).</p>
<p><b>Response</b></p>	<p><i>DEQ believes that since a compliance schedule will be part of a permit, the initiation of the schedule is implicit in the date that the permit becomes effective. Therefore, DEQ does not believe any further language is necessary to include in the rule.</i>  <i>No changes were made in response to this comment.</i></p>
<p><b>Comment 68:</b> Compliance with schedule should equal compliance with WQ standards</p>	<p>Revise compliance schedules rules to indicate that compliance with the schedule should constitute compliance with the water quality standard for which the schedule was established. (19).</p>
<p><b>Response</b></p>	<p><i>DEQ believes that only a violation of the permit schedule, including milestones (e.g. exceedance of levels for those criteria set in the schedule at particular benchmark dates), will constitute a violation of the permit effluent limits.</i>  <i>No changes were made in response to this comment.</i></p>
<p><b>Comment 69:</b> Compliance Schedule rule violates CWA</p>	<p>Proposed rule on compliance schedules is illegal because the statutory deadline for compliance under the Clean Water Act is July 1, 1977, and therefore precludes DEQ from allowing any noncompliance, even if it is temporary or in the form of a Mutual Agreement Order. (28,33).</p>



Agenda Item B, Rule Adoption: Water Quality Standards, including Toxics Criteria  
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<b>Response</b>	<p><i>DEQ disagrees that the proposed rule is illegal. Federal and state law allow DEQ to authorize compliance schedules based on general rules that broadly authorize compliance schedules whenever they are otherwise appropriate, namely in water quality based effluent limits implementing water quality standards adopted after July 1977, or in Total Maximum Daily Load wasteload allocations. As indicated in the EPA NPDES Permit Writers' Manual (Dec. 1996), EPA regulations allow for compliance schedules for standards promulgated after July 1, 1977 if the State's water quality regulations allow for a compliance schedule and if the schedule complies with 40 CFR § 122.47.</i></p> <p><i>No changes were made in response to this comment.</i></p>
<b>Comment 70: Specify how compliance schedules apply to general permits</b>	<p>Proposed rule on compliance schedules is deficient because it does not specify how it would apply to general permits. (28,33).</p>
<b>Response</b>	<p><i>DEQ does not intend to include compliance schedules in general permits except in very rare situations. A compliance schedule should be tailored to the specific circumstances of an individual facility or activity. It is not amenable to use for a group of facilities or activities unless the entire group must undertake the same steps in the same time frame.</i></p> <p><i>No changes were made in response to this comment.</i></p>

Agenda Item B, Rule Adoption: Water Quality Standards, including Toxics Criteria  
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**List of Commenters**

	<b>Name</b>	<b>Organization</b>	<b>Address</b>	<b>Comment Format</b>	<b>Date Received</b>
1	Annette Bridges			email	8/27/03
2	Alex Beamer		2745 Alvarado Terrace S., Salem, OR 97302	email	8/27/03
3	Dahinda Meda		28718 Royal Ave., Eugene, OR 97402	email	8/26/03
4	Mary I. Fenner		202 Alder St., Silverton, OR 97381	email	8/26/03
5	Lori L. Beamer		2745 Alvarado Terrace S., Salem, OR 97302	email	8/26/03
6	Cathy Verret		Product Awareness Consulting, LLC, 862 Brookside Dr., PO Box 5221, Eugene, OR 97405	email	8/26/03
7	Maxine Centala		PO Box 375, Seal Rock, OR 97376	email	8/26/03
8	Sue Koger			email	8/26/03
9	Bernie Corrigan		Corrigan Associates, 2520 Jackson Street, Eugene, OR 97405	email	8/26/03
10	Fran Recht		PO Box 1344, Depoe Bay, OR 97341	email	8/26/03
11	Annie Hoy		Ashland Food Co-op, 237 N. First St., Ashland, OR 97520	email	8/26/03
12	Kelly Niemeyer	Douglas County Planning Department	Room 106, Justice Building, Douglas County Courthouse, Roseburg, OR 97470	letter	8/21/03
13	Lynne Kennedy	City of Gresham		email	7/29/03
14	Thomas M. Mendes		3921 Hampshire Lane, Eugene, OR 97404	email	8/18/03
15	Jon Oshel	Oregon Association of County Engineers and Surveyors	PO Box 12729, Salem, OR 97309	email/letter	7/30/03
17	Llewelyn Matthews	Northwest Pulp and Paper Association	1300 114 <sup>th</sup> Avenue SE, Suite 200, Bellevue, WA 98004	letter	8/25/03
18	Lynne Campbell	Oregon Citizens for Safe Drinking Water	PO Box 1045, Lake Oswego, OR 97034	letter	8/27/03
19	John Ledger	Associated Oregon Industries		email/letter	8/27/03
20	Tracy Miller		1895 Lawrence St., Eugene, OR 97401	fax	8/27/03
21	Jane Haley-Harris	Oregon Center for Environmental Health	516 SE Morrison, Suite 300, Portland, OR 97214	email	8/27/03
22	Sabree Hamel			email	8/27/03
23	Robert Roth		2510 Kincaid Street, Eugene, OR 97405-3058	email/letter	8/28/03



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	<b>Name</b>	<b>Organization</b>	<b>Address</b>	<b>Comment Format</b>	<b>Date Received</b>
24	Rob Handy		455 ½ River Road, Eugene, OR 97404	email	8/28/03
25	Tom Williams		595 W. 8 <sup>th</sup> Ave., Eugene, OR 97401	email	8/28/03
26	Jack DeAngeles		4637 Hubbard Creek Road, Umpqua, OR 97486	email	8/28/03
27	Phyllis Kirk		15226 S. Springwater Road, Oregon City, OR 97405	email	8/28/03
28	Mark Riskedahl	Northwest Environmental Defense Center	10015 SW Terwilliger Blvd., Portland, OR 97219	email	8/28/03
29	Dennis Fisher			email	8/28/03
30	Lorraine Dee		11438 SE Pine St., Portland, OR 97216	letter	8/29/03
31	Enid Griffin		6827 SW Capitol Hwy., Portland, OR 97219	letter	8/29/03
32	Marv Lewallen	Weyerhaeuser Company	1300 SW Fifth Ave., Suite 500, Portland, OR 97201	letter	8/28/03
33	Nina Bell	Northwest Environmental Advocates	PO Box 12187, Portland, OR 97212	email/letter	8/29/03
34	Adelle Sherwin		858 SE Watson Roseburg, OR 97470	email	8/29/03
35	Annette & Alan Higinbotham		1240 NW Shady Lane, Albany, OR 97321	email	8/29/03
36	Frank Ossiander		5800 SW West Hills Road, Corvallis, OR 97333	email	8/29/03
37	Rick George	Confederated Tribes of the Umatilla Indian Reservation	PO Box 638, Pendleton, OR 97801	email	8/29/03
38	Susan Applegate		4739 Elkhead Road, Yoncalla, OR 97499	email	8/29/03
39	Rhett Lawrence	OSPIRG	1536 SE 11 <sup>th</sup> Avenue, Portland, OR 97214	email/fax	8/29/03
40	Brent Foster	Willamette Riverkeeper, Columbia Riverkeeper, Oregon Sierra Club	380 SE Spokane St., Suite 305, Portland, OR 97202	email	8/29/03
41	Sherri Groh	Confederated Tribes of Siletz Indians	PO Box 549, Siletz, OR 97380	fax	8/29/03
42	Janet Gillaspie	Association of Clean Water Agencies	537 SE Ash, #12, Portland, OR 97214	fax	8/29/03
43	Lee Weber	Wah Chang	1600 Old Salem Road NE, PO Box 460, Albany, OR 97321- 0460	letter	8/29/03

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	<b>Name</b>	<b>Organization</b>	<b>Address</b>	<b>Comment Format</b>	<b>Date Received</b>
44	Olney Patt	Columbia River Inter-Tribal Fish Commission	729 NE Oregon, Suite 200, Portland, OR 97232	fax	8/29/03
45	William Tiffany	League of Oregon Cities	1201 Court St. NE, Suite 200, Salem, OR 97301-4194	fax/letter	8/29/03
46	Pollyanna Lind	Northwest Coalition for Alternatives to Pesticides	PO Box 1393, Eugene, OR 97440	fax	8/29/03
47	Peter Ruffier	City of Eugene	Public Works, Wastewater Division, 410 River Avenue, Eugene, OR 97404	fax	8/29/03
48	Jan Wroncy	Canaries Who Sing	PO Box 1101, Eugene, OR 97440	email, fax	8/29/03
49	David Monk	Oregon Toxics Alliance		fax	8/29/03
50	Holly Knight		210 E 30 <sup>th</sup> Avenue, Eugene, OR 97405	fax	8/29/03
51	Bill Bakke	Native Fish Society	c/o NWEA, PO Box 12187, Portland, OR 97212	email, letter	8/29/03



### **Attachment C**

#### **Advisory Committee Membership and Report**

Water quality standards are established using the best available scientific information within a public policy framework. The Department of Environmental Quality (DEQ) initiated the current Water Quality Standards Review in 1999 and completed the review in 2003 for temperature and toxic pollutants criteria. For this review, DEQ consulted a Policy Advisory Committee made up of external stakeholders for the overall process and a Technical Advisory Committee made up of external experts for each topic (e.g. toxic pollutants, temperature). This review process was devised to maintain independence between the technical and policy review discussions, while simultaneously providing sufficient interaction between the two groups. This enabled policy makers to understand both the technical and policy ramifications of their decisions in order to make the best informed choices.

#### **The Policy Advisory Committee**

In December 1999, the DEQ convened a Policy Advisory Committee (PAC) to provide candid, critical, and constructive advice on the policy implications of options raised during the water quality standards review. Originally, the review was scheduled to take place in three years; however, the process stretched into four years. DEQ appreciates the dedication and endurance of PAC members (Table C-1) in committing time and effort to a sometimes controversial forum on issues of critical importance to the Department. In particular, DEQ commends the efforts of chairpersons Pat Amedeo (1999-2002) and Bill Blosser (2002-2003) for shepherding the PAC towards the goal of providing the Department productive advice.

During the water quality standards review, the PAC discussed policy issues associated with development of water quality criteria for toxic pollutants and of requirements for reservoir operators to support beneficial uses in stratified waters. In addition, the PAC considered various aspects of water quality standards, including water quality criteria for temperature, turbidity, and biocriteria, implementation of the antidegradation policy and of the threatened and endangered species policy, and development of rules for issuing Total Maximum Daily Loads (TMDLs). Although the TAC recommendations were unanimous, consensus recommendations by the PAC were reached only on aquatic life criteria for endosulfan, freshwater chronic lindane, and freshwater chronic silver. The PAC thoroughly debated the ramifications of the remainder of the toxics package but was unable to reach consensus on the issues of 1) updating most aquatic life criteria to the EPA minimum recommendation, 2) total recoverable vs. dissolved metals criteria, 3) toxic equivalency factor criteria for dioxins and furans, and 4) the fish consumption rate used to calculate human health criteria.

The PAC process for water quality criteria for toxic pollutants is described in detail in the Toxic Pollutant Criteria Issue Paper (Attachment H), including PAC membership (Chapter 1) and policy analysis (Chapter 3).

**Table C-1: Water Quality Standards Review Policy Advisory Committee and Agency Advisors membership and affiliation.**

<b>Name</b>	<b>Organization</b>
Pat Amadeo, Bill Blosser Chair	unaffiliated
Nina Bell	Northwest Environmental Advocates
Sharon Beck	Oregon Cattlemen's Association
Bill Gaffi/Charles Logue	Association of Clean Water Agencies
Sherri Groh	Confederated Tribes of the Siletz Indian Reservation
Chris Jarmer	Oregon Forest Industries Council
John Ledger	Associated Oregon Industries
Karen Lewotsky	Oregon Environmental Council
Peter Ruffier	League of Oregon Cities
Aubrey Russell	Oregon Trout
Glen Spain	Pacific Coast Federation of Fishermen's Associations
Pete Test/Jean Wilkenson	Oregon Farm Bureau
Kathryn VanNatta	Northwest Pulp and Paper Association
<b>Alternates</b>	
Marv Lewallen	for Kathryn VanNatta
James Ollerenshaw	for Peter Ruffier
Laura Weiss	for Karen Lewotsky
Carol Whitaker	for John Ledger
<b>Agency Advisors</b>	
Dru Keenan	EPA
Rick Kepler	Oregon Department of Fish and Wildlife
David Leland	Oregon Department of Human Services
Robert Anderson	National Marine Fisheries Service/NOAA-Fisheries
Elizabeth Materna	US Fish and Wildlife Service

### **The Technical Advisory Committee**

In 2000, DEQ established a Technical Advisory Committee (TAC), drawn from academia and government (Table C-2), to assist in reviewing the water quality criteria for toxic pollutants. Members of the TAC were experts in the field of toxicology. DEQ values the important contribution that the TAC made in helping the Department develop its recommended water quality criteria. TAC members devoted considerable time both in and outside meetings to provide the Department with up-to-date technical information. The TAC process for water quality criteria for toxic pollutants is described in detail in the Toxic Pollutant Criteria Issue Paper (Attachment H), especially in Chapter 2.



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**Table C-2: Toxics Technical Advisory Committee membership and Affiliation.**

<b>Name</b>	<b>Affiliation</b>
Ken Kauffman, Reg. Sanitarian	Oregon Department of Human Services
Rick Johnson, PhD	Oregon Graduate Institute
Joan Rothlein, PhD	Center for Research on Occupational and Environmental Toxicology, Oregon Health and Science University
Jeff Jenkins, PhD	Oregon State University
Deke Gundersen, PhD	Pacific University
Jennifer Orme Zavaleta, MS	EPA
Steve Kolmes, PhD	University of Portland
Gene Foster, PhD	Oregon DEQ
Martin Fitzpatrick, PhD, Chair	Oregon DEQ

Attachment D

State of Oregon

Department of Environmental Quality

Memorandum

**Date:** February 26, 2004

**To:** **Holly Schroeder, Administrator**  
**Water Quality Program**

**From:** **Mark D. Charles**  
**Loretta Pickerell**  
**Martin Fitzpatrick**

**Subject:** Presiding Officer's Report on Public Hearings

Title of Proposal: Rulemaking Proposal – Adoption of OAR 340-041 State Water Quality Standards, Including Toxic Pollutants Criteria

<u>Hearing Date and Start Time</u>	<u>Hearing Locations</u>	<u>No. of Attendees</u>
July 1, 2003 2:00 PM	Bend	0
July 1, 2003 7:00 PM	Bend	0
July 8, 2003 2:00 PM	Roseburg	0
July 8, 2003 7:00 PM	Roseburg	0
July 10, 2003 2:00 PM	Portland	3
July 10, 2003 7:00 PM	Portland	2

Report

Between July 1<sup>st</sup> and July 10<sup>th</sup> 2003, DEQ held 6 public hearings in 3 locations around the State. 5 persons attended the 6 hearings.

All of the public hearings were scheduled for at least 2 hours in duration. The hearings were conducted in 2 phases. During the first hour, DEQ staff person Marty Fitzpatrick made a presentation consisting of an overview and summary of the proposed rules and took questions from attendees (when present). A copy of the presentation is available. Following a short break, attendees were invited to either provide written comments or make verbal statements on the record. No written comments or verbal statements were provided at any of the hearings.

Submitted By:



Mark D. Charles  
Presiding Officer (July 1)



Loretta Pickerell  
Presiding Officer (July 8)



Martin Fitzpatrick  
Presiding Officer (July 10)



Attachment E  
**Relationship to Federal Requirements Questions**

**Answers to the following questions identify how the proposed rulemaking relates to federal requirements and potential justification for differing from federal requirements. The questions are required by OAR 340-011-0029.**

- 1. Are there federal requirements that are applicable to this situation? If so, exactly what are they?**

Yes, applicable federal requirements for water quality standards are found in the federal Water Pollution Control Act Section 303(a)-(c) (33 USC Section 1313(a)-(c)) and implementing regulations in 40 CFR Part 131. Federal requirements specify that when states revise or adopt new standards, each state should adopt criteria for all toxic pollutants for which criteria have been published under the Water Pollution Control Act Section 304(a) or more stringent criteria.

- 2. Are the applicable federal requirements performance based, technology based, or both with the most stringent controlling?**

These requirements are performance based.

- 3. Do the applicable federal requirements specifically address the issues that are of concern in Oregon? Was data or information that would reasonably reflect Oregon's concern and situation considered in the federal process that established the federal requirements?**

Yes. The federal requirements for water quality standards address procedural and substantive issues of concern to Oregon. In establishing the federal recommended water quality criteria for toxic pollutants, EPA considered information regarding species of interest to Oregon and fish consumption rates for Oregonians.

- 4. Will the proposed requirement improve the ability of the regulated community to comply in a more cost effective way by clarifying confusing or potentially conflicting requirements (within or cross-media), increasing certainty, or preventing or reducing the need for costly retrofit to meet more stringent requirements later?**

The proposed rules update Oregon's criteria for toxic pollutants so that they are consistent with federal regulations.

- 5. Is there a timing issue which might justify changing the time frame for implementation of federal requirements?**

Yes. Northwest Environmental Advocates has filed an "intent to sue" against the US EPA challenging EPA's approval of Oregon's Water Quality Standards, claiming that EPA should have promulgated Oregon's water quality criteria for

Attachment E

toxic pollutants after Oregon failed to revise those criteria in a timely manner following EPA's publication of new criteria. Adopting the proposed revised criteria as soon as possible might avoid federal promulgation or other consequences resulting from this law suit.

**6. Will the proposed requirement assist in establishing and maintaining a reasonable margin for accommodation of uncertainty and future growth?**

The proposed rules do not directly address such issues as reserve capacity or accommodation of future growth.

**7. Does the proposed requirement establish or maintain reasonable equity in the requirements for various sources? (level the playing field)**

The proposed criteria will become part of Oregon's water quality standards used to develop TMDLs, develop NPDES permit limitations, evaluate proposed dredge and fill permits under section 404 of the Clean Water Act, and issue certifications under section 401 of the Clean Water Act. The revised criteria maintain reasonable equity because they apply to all sources affected by these criteria.

**8. Would others face increased costs if a more stringent rule is not enacted?**

If less stringent criteria were adopted, it is possible that the resulting lower protection might lead to increased costs in such areas as health care.

**9. Does the proposed requirement include procedural requirements, reporting or monitoring requirements that are different from applicable federal requirements? If so, Why? What is the "compelling reason" for different procedural, reporting or monitoring requirements?**

No. The proposed rules do not include differing procedural, reporting, or monitoring requirements.

The proposed rules do include differing substantive requirements. Several proposed criteria differ from the federal criteria because EPA had withdrawn them from their national recommendation and the Department believes there is sufficient technical and policy merit in having those criteria.

**10. Is demonstrated technology available to comply with the proposed requirement?**

In most instances, demonstrated technology is available to comply with the revised criteria. In those instances where it is not, it is often due to difficulties with accurate monitoring (e.g. criteria being lower than minimum detection limits).



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**11. Will the proposed requirement contribute to the prevention of pollution or address a potential problem and represent a more cost effective environmental gain?**

No.

Attachment F  
**Statement on Need and Fiscal and Economic Impact**

<b>Title of Proposed Rulemaking:</b> Revise Water Quality Criteria for Toxic Pollutants	
<b>Need for the Rule(s)</b>	<p>The Department is updating the proposed water quality criteria as part of the current triennial review of water quality standards. The Department last revised Oregon's toxics criteria in 1991, using criteria EPA recommended in 1986. The proposed revisions incorporate the latest scientific information, including the most recent (2002) federally recommended criteria for approximately 167 toxic pollutants. In addition, the proposal would add regulations regarding the application of water quality standards to reservoirs in instances where waters become stratified for temperature, dissolved oxygen, or pH. The proposal would also allow DEQ to establish compliance schedules for wastewater discharge permit holders to comply with criteria.</p>
<b>Documents Relied Upon for Rulemaking</b>	<p>These documents are available at the websites indicated or by contacting Martin Fitzpatrick, Oregon DEQ, Water Quality Division, 811 SW Sixth Ave., Portland, OR 97204-1390, (503) 229-5656, or toll-free in Oregon at 1-800-452-4011, x5656; <a href="mailto:Fitzpatrick.Martin@deq.state.or.us">Fitzpatrick.Martin@deq.state.or.us</a>.</p> <p>DEQ (2003). Toxic Pollutants Criteria—1999-2003 Water Quality Standards Review Draft Issue Paper. Oregon Department of Environmental Quality, Program Policy and Project Assistance Section, 811 SW Sixth, Portland, OR 97204. (<a href="http://www.deq.state.or.us/wq/standards/wqstdshome.htm">http://www.deq.state.or.us/wq/standards/wqstdshome.htm</a>)</p> <p>EPA (1999). National Recommended Water Quality Criteria—Correction. United States Environmental Protection Agency EPA 822-Z-99-001. (<a href="http://www.epa.gov/ostwater/pc/revcom.pdf">http://www.epa.gov/ostwater/pc/revcom.pdf</a>).</p> <p>EPA (2000). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. United States Environmental Protection Agency EPA 822-B-009-004. (<a href="http://www.epa.gov/waterscience/humanhealth/method/">http://www.epa.gov/waterscience/humanhealth/method/</a>).</p> <p>EPA (2000). Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California. Federal Register Vol. 65(97): 31681. (<a href="http://www.epa.gov/ost/standards/ctr/toxic.pdf">http://www.epa.gov/ost/standards/ctr/toxic.pdf</a>)</p> <p>EPA (2002). National Recommended Water Quality Criteria: 2002. United States Environmental Protection Agency EPA 822-R-02-047.</p>



Attachment F

	<p>(<a href="http://www.epa.gov/waterscience/pc/revcom.pdf">http://www.epa.gov/waterscience/pc/revcom.pdf</a>).</p> <p>Stephan, C.E., D.I. Mount, D.J. Hansen, J.H. Gentile, G.A. Chapman, and W.A. Brungs (1985). Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. United States Environmental Protection Agency PB85-227049.</p> <p>EPA (1996). 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water. United States Environmental Protection Agency EPA 820-B-96-001.</p>
<b>Fiscal and Economic Impact</b>	
<p><b>Overview of fiscal and economic impacts</b></p>	<p>The federal Environmental Protection Agency (EPA) authorized the Oregon Department of Environmental Quality (DEQ) to administer sections of the Clean Water Act. Section 303 of the Act requires that DEQ review Oregon's water quality standards regularly in order to use the latest scientific information and consider the state's latest needs. Division 041 contains the rules that describe Oregon's water quality standards.</p> <p>This proposal would revise the ambient water quality criteria for about 167 toxic pollutants (from the current 128 toxic pollutants). Some proposed revisions relax existing criteria; others are stricter, especially many of the human health criteria that incorporate the latest EPA-recommended fish consumption rate. All proposed revised criteria are at least as stringent as current federally recommended criteria. In addition, the rulemaking requests the Commission to revise rules regarding compliance with water quality standards in stratified reservoirs and rules allowing individual discharge permit holders a reasonable period to comply with changes to water quality standards.</p> <p>The public interested in the quality of Oregon's waters, small and large businesses, communities, and public agencies that discharge toxic pollutants to waters of the state may be affected by the proposed changes. The establishment of criteria, by themselves, has no direct impact or effect. However, how the Department applies those criteria will affect Oregonians. Particularly, the Department may require modifications to wastewater discharge permits and to certifications for dredge and fill activities and hydroelectric operations to comply with the revised criteria for toxic pollutants. The new criteria might result in more waters being listed as having impaired water quality. In addition, the revised criteria may alter the management practices required to control discharges from nonpoint sources, including those subject to</p>

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	<p>Total Maximum Daily Loads established for water quality limited waterbodies. In some instances, the proposed criteria are more strict than current criteria and therefore, the cost of compliance might increase; in other instances, the proposed criteria are less strict than current criteria and therefore, the cost of compliance might decrease.</p> <p>EPA's promulgation of the California Toxics Rule (CTR) in 2000 resulted in the establishment of water quality criteria for 166 compounds—a number similar to that in the current proposal for Oregon and covering largely the same compounds (although many have different criteria). Oregon does not have the resources to conduct a detailed cost/benefit analysis; however, EPA conducted an economic analysis of the CTR that might provide an illustration of the types of costs and benefits likely to occur if the proposal is adopted.</p> <p>EPA estimated that the costs of implementing the CTR to range between \$33.5 and \$61.0 million and that the benefits of implementing the CTR to range between \$6.9 and \$74.7 million. The analysis revealed that both indirect dischargers (i.e. those entities that discharge to waters that go to Publicly Owned Treatment Works (POTWs)) and direct dischargers would bear substantial costs (\$10.1 to \$23.6 million for indirect discharges; \$9.9 to \$50.9 million for direct dischargers) due to implementation of the CTR.</p> <p>Monetary benefits of implementing the CTR could be quantified in the areas of human health cancer risk (\$1.3 to 4.6 million), recreational angling (\$2.2 to \$15.2 million), and passive use (\$3.4 to \$54.9 million). The economic analysis noted that substantial non-quantifiable monetary benefits could result from increased wildlife viewing, water-related recreation apart from fishing, noncancer human health effects, and consumptive and nonconsumptive land-based recreation.</p> <p>At the time of the CTR analysis, California had about 3-fold more major and minor point source dischargers than Oregon currently has: California had 184 major point source dischargers (128 POTWs) and 1,057 minor point source dischargers; Oregon has 66 major point source dischargers and 306 minor point source dischargers. Therefore, although the costs and benefits to Oregon of the current proposal will likely be less than those estimated for California; nevertheless, the costs and benefits are expected to be substantial and will likely partition in a similar manner.</p> <p>To implement the new criteria, Oregon municipalities, industries, and businesses may be required to spend an estimated \$2000 to \$3000 every 5 years to provide data to DEQ for conducting Reasonable Potential Analysis (RPA) if the Department determines that the</p>
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	sources likely have toxics in their wastestreams. If RPA indicates the need for further monitoring and/or upgrading of treatment facilities to address potential violations of criteria, then these entities will be potentially required to spend substantial sums of money to address the issues of toxics in their wastestreams. For example, the City of Corvallis (with a population of about 50,000) currently spends approximately \$3300 per year to monitor for 11 metals and cyanide. With the new criteria, if other priority pollutants (e.g. organics) required monitoring, these costs would likely double (i.e. \$6500 - \$7000 for all monitoring per year). The potential monetary benefit to society due to the protection of beneficial uses (including human health and aquatic life) from toxic pollution has not been determined.
<b>General public</b>	<p>The revised criteria will benefit the general public by protecting beneficial uses of Oregon's waters. These uses provide certain fiscal and economic benefits such as increased recreational opportunities and reduced health costs associated with lowered risks of adverse health effects. The general public might also have increased costs as a result of increased user and connection fees necessary to pay for upgraded sewage treatment plants.</p> <p>Businesses and local governments may pass along costs of compliance with new criteria to the public in the form of increased costs and fees. It is also possible that some of the revised criteria could result in reductions in costs to businesses and local governments that are passed along to the public.</p>
<b>Small Business</b>	Small businesses may incur increased costs due to application of the revised criteria if their wastewater discharge permits must be modified to require upgraded wastewater treatment systems and additional monitoring of effluent discharges. Many small businesses do not have individual wastewater discharge permits; therefore, any increased costs will likely occur through increased fees imposed by local wastewater treatment facilities. To implement the new criteria, sources with individual NPDES permits will be required to spend an estimated \$2000 to \$3000 every 5 years to provide data to DEQ for conducting Reasonable Potential Analysis (RPA). Sources that discharge to a municipal sanitary sewer may be required to pay increased fees so that the sewage treatment plant can monitor for priority pollutants as part of the RPA in a pretreatment program. If RPA indicates the need for further monitoring and/or upgrading of treatment facilities to address potential violations of criteria, then these entities will be potentially required to spend substantial sums of money to address the issues of toxics in their wastestreams.
<b>Large Business</b>	Large businesses may incur increased costs due to application of the revised criteria if their wastewater discharge permits must be modified to require upgraded wastewater treatment systems and additional



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	<p>monitoring of effluent discharges. These costs may be direct if the large business has an individual NPDES discharge permit, or they may be indirect through increased fees imposed by local wastewater treatment facilities. To implement the new criteria, sources with individual NPDES permits will be required to spend an estimated \$2000 to \$3000 every 5 years to provide data to DEQ for conducting Reasonable Potential Analysis (RPA). Sources that discharge to a municipal sanitary sewer may be required to pay increased fees so that the sewage treatment plant can monitor for priority pollutants as part of the RPA in a pretreatment program. If RPA indicates the need for further monitoring and/or upgrading of treatment facilities to address potential violations of criteria, then these entities will be potentially required to spend substantial sums of money to address the issues of toxics in their wastestreams.</p>
<b>Local Government</b>	<p>Local governments may incur increased costs due to application of the revised criteria if their wastewater discharge permits must be modified to require upgraded wastewater treatment systems and additional monitoring of effluent discharges. To implement the new criteria, sources with individual NPDES permits will be required to spend an estimated \$2000 to \$3000 every 5 years to provide data to DEQ for conducting Reasonable Potential Analysis (RPA). Sources that discharge to a municipal sanitary sewer may be required to pay increased fees so that the sewage treatment plant can monitor for priority pollutants as part of the RPA in a pretreatment program. If RPA indicates the need for further monitoring and/or upgrading of treatment facilities to address potential violations of criteria, then these entities will be potentially required to spend substantial sums of money to address the issues of toxics in their wastestreams.</p>
<b>State Agencies</b>	<p>Agencies such as the Oregon Department of Fish and Wildlife or the Department of Transportation might be impacted by the proposed revised criteria if they hold permits for point sources, are responsible for nonpoint sources as addressed in TMDLs, or are designated agencies for sources under their authority. In addition, these and other agencies might be charged with implementing TMDLs which have been issued or modified due to the new criteria; therefore, additional administrative costs might be associated with TMDL implementation.</p> <p>Specifically, the Forest Practices Act and Senate Bill 1010 name the Oregon Department of Forestry (ODF) and the Oregon Department of Agriculture (ODA), respectively, as the designated management agencies (DMAs) charged with ensuring that forestry and agriculture sources under their authority meet water quality standards, including water quality criteria. Revised criteria might result in increased costs to these DMAs if they require changes to rules implementing the Forest Practices Act and Senate Bill 1010 or to management plans</p>



Attachment F

	implementing TMDLs.
<b>DEQ</b>	The Department currently applies water quality criteria to selected wastewater discharge permits where it is believed there is significant potential for toxic pollutants, in 401 certifications, in TMDL issuance, in its monitoring program, and in developing the 303(d) list of impaired waters. Implementation of the proposed changes to these criteria will likely require a shift in staff or funding for conducting reasonable potential analyses on wastewater discharge permit applications (estimated at \$19,158/year for that program). The proposed rules do not generate revenue for DEQ.
<b>Other agencies</b>	See the State Agencies section for impacts that state agencies may pass along to other agencies if they delegate or enforce aspects of this rule to other agencies.
<b>Assumptions</b>	This analysis is based on existing state and federal laws and regulations that establish requirements for maintaining and restoring water quality. It was also based on the assumption that stricter criteria will require increased costs, less strict criteria will require reduced costs, and that increased protection of aquatic life and human health will lead to increased long-term benefits to society.
<b>Housing Costs</b>	The Department has determined that this proposed rulemaking will have no effect on the cost of development of a 6,000 square foot parcel and the construction of a 1,200 square foot detached single family dwelling on that parcel.
<b>Administrative Rule Advisory Committee</b>	The rulemaking process included the participation of a Technical Advisory Committee (TAC) and a Policy Advisory Committee (PAC). The TAC was made up of scientists from Oregon Health and Sciences University, Oregon State University, University of Portland, Oregon Department of Human Services, Oregon Department of Environmental Quality, Pacific University, and the US Environmental Protection Agency. The PAC included representatives from Northwest Environmental Advocates, Oregon Cattlemen's Association, Association of Clean Water Agencies, Oregon Forest Industries Council, Associated Oregon Industries, Oregon Environmental Council, League of Oregon Cities, Oregon Trout, Pacific Coast Federation of Fishermen's Associations, Oregon Farm Bureau, and Northwest Pulp and Paper Association.

Prepared by

Martin Fitzpatrick  
Printed name

January 15, 2004  
Date

Attachment G  
Land Use Evaluation Statement

**1. Explain the purpose of the proposed rules.**

This proposal would revise the ambient water quality criteria for 167 toxic pollutants. The water quality criteria describe the minimum quality of water needed to protect identified beneficial uses.

**2. Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program?**

Yes X No     

**a. If yes, identify existing program/rule/activity:**

Water Quality Division:

Approval of Wastewater System and Facility Plans;

Issuance of NPDES and WPCF Permits;

Requirement of an Implementation Plan to Meet Restrictions for Waste Load

Allocations on Water Quality Limited Waterways (TMDLs);

Certification of Water Quality Standards for Federal Permits, Licenses;

**b. If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?**

Yes X No      (if no, explain):

Programs/activities are existing DEQ land use programs and require an approved Land Use Compatibility Statement (LUCS) from affected local governments to ensure consistency with local comprehensive land use plans.

**c. If no, apply the following criteria to the proposed rules.**

Staff should refer to Section III, subsection 2 of the SAC document in completing the evaluation form. Statewide Goal 6 - Air, Water and Land Resources is the primary goal that relates to DEQ authorities. However, other goals may apply such as Goal 5 - Open Spaces, Scenic and Historic Areas, and Natural Resources; Goal 11 - Public Facilities and Services; Goal 16 - Estuarine Resources; and Goal 19 - Ocean Resources. DEQ programs and rules that relate to statewide land use goals are considered land use programs if they are:

1. Specifically referenced in the statewide planning goals; or
2. Reasonably expected to have significant effects on
  - a. resources, objectives or areas identified in the statewide planning goals, or
  - b. present or future land uses identified in acknowledged comprehensive plans.

In applying criterion 2 above, two guidelines should be applied to assess land use significance:

- The land use responsibilities of a program/rule/action that involved more than one agency, are considered the responsibilities of the agency with primary authority.
- A determination of land use significance must consider the Department's mandate to protect public health and safety and the environment.



Attachment G

**In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.**

- 3. If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.**

Not applicable.



# Toxic Compounds Criteria

## 1999 – 2003 Water Quality Standards Review

### ISSUE PAPER

prepared by Martin S. Fitzpatrick



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# **Chapter 1 Standards Review and Status of Water Quality Criteria for Toxic Pollutants**

## **Section 1.1 Triennial Water Quality Standards Review for Toxic Pollutants**

### **1.1.1 Introduction**

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<b>Why is a review needed?</b>	The federal Environmental Protection Agency (EPA) authorized the Oregon Department of Environmental Quality (DEQ) to administer sections of the Clean Water Act. Section 303 of the Act requires that DEQ review Oregon's water quality standards regularly in order to use the latest scientific information and consider the state's latest needs.
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The State of Oregon's water quality standards last underwent periodic review from 1992 to 1996; however, criteria for toxic pollutants were not part of that process. Oregon's criteria for toxic pollutants were last revised in 1991 and are based on the EPA Gold Book (EPA 1986). Since Oregon adopted these criteria in 1991, EPA has published updates of individual as well as whole lists of compounds (EPA 1992; EPA 1995a; EPA 1999; EPA 2000a; EPA 2002a; EPA 2002b). Therefore, the existing rule in Oregon is not based on the latest scientific information and needs to be updated.

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<b>Purpose of this Issue Paper</b>	This issue paper addresses the technical and policy concerns that were raised during the review of Oregon's water quality criteria for toxic pollutants. It also presents the recommendations for those criteria made by the various advisory committees as well as the agency recommendation to the Environmental Quality Commission.
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### **1.1.2 Overview of Standards Review Process**

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<b>Framework</b>	The interim goal of the federal Clean Water Act (CWA) is to achieve "fishable and swimmable" waters which provides the policy framework that
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drives water quality standards review. Oregon's policy has been to protect designated beneficial uses—this does not mean that there is protection from the detrimental effects of pollution at all times because criteria that are derived for protecting designated beneficial uses include consideration of a certain level of risk to either the aquatic environment or human health. This policy formed the premise for the technical and policy discussions that took place during this review.

---

**Current Water  
Quality  
Standards  
Review Process**

Water quality standards are established using the best available scientific information within a public policy framework. DEQ initiated the current Water Quality Standards Review (triennial review) in 1999 and completed the review in 2003. For this review, DEQ consulted a Technical Advisory Committee (TAC) made up of external experts for each topic (e.g. toxic pollutants, temperature) and a Policy Advisory Committee (PAC) made up of external stakeholders for the overall process. This review process was devised to maintain independence between the technical and policy review discussions, while simultaneously providing sufficient interaction between the two groups. This enabled policy makers to understand both the technical and policy ramifications of their decisions in order to make the best informed choices.

---

**Scope & Depth**

The sheer number of criteria in need of updating presented a challenge for DEQ to accomplish within the resource and time limits of the current triennial review of water quality standards. Initially, DEQ considered only reviewing those compounds for which the new EPA criteria would be more stringent than Oregon's current criteria. However, comments from both the PAC and TAC led DEQ to give all compounds the same review process in order to ensure that Oregon's water quality criteria would be based on the best available science. Due to the broad scope of the review, the depth of the technical review was necessarily limited. DEQ used the following general process:

- 1) review EPA methodology for deriving criteria for all compounds used in the 1999 EPA criteria update; if acceptable, move to (2); if EPA methodology unacceptable or criteria are unavailable, move to (3).
- 2) approve EPA's latest criteria unless there is a compelling reason to maintain Oregon's current criteria.
- 3) if another methodology for deriving criteria is scientifically credible, propose new criteria based on that methodology; if no other methodology is scientifically credible, maintain Oregon's current criteria.



### 1.1.3 Advisory Committee Members

#### Technical Advisory Committee Members

In 2000, DEQ established a TAC, drawn from academia and government, to assist in reviewing the water quality criteria for toxic pollutants. Members of the TAC were experts in the field of toxicology (see Table 1.1).

Table 1.1: Toxics Technical Advisory Committee membership and Affiliation.

Name	Affiliation
Ken Kauffman, Reg. Sanitarian	Oregon Department of Human Services
Rick Johnson, PhD	Oregon Graduate Institute
Joan Rothlein, PhD	Center for Research on Occupational and Environmental Toxicology, Oregon Health and Science University
Jeff Jenkins, PhD	Oregon State University
Deke Gundersen, PhD	Pacific University
Jennifer Orme Zavaleta, MS	EPA
Steve Kolmes, PhD	University of Portland
Gene Foster, PhD	Oregon DEQ
Martin Fitzpatrick, PhD, Chair	Oregon DEQ

#### Policy Advisory Committee Members

DEQ also established a PAC with members from stakeholder groups, including industry, environmental advocacy groups, and municipal organizations (Table 1.2). Federal and State government officials were included as *ex officio* (non-voting) members. The purpose of the PAC review was to provide candid, critical, and constructive advice on the policy implications of options raised during the water quality standards review.

**Table 1.2: Water Quality Standards Review Policy Advisory Committee and Agency Advisors membership and affiliation.**

<b>Name</b>	<b>Organization</b>
Pat Amadeo, Chair	unaffiliated
Nina Bell	Northwest Environmental Advocates
Sharon Beck	Oregon Cattlemen's Association
Bill Gaffi/Charles Logue	Association of Clean Water Agencies
Sherri Groh	Confederated Tribes of the Siletz Indian Reservation
Chris Jarmer	Oregon Forest Industries Council
John Ledger	Associated Oregon Industries
Karen Lewotsky	Oregon Environmental Council
Peter Ruffier	League of Oregon Cities
Aubrey Russell	Oregon Trout
Glen Spain	Pacific Coast Federation of Fishermen's Associations
Pete Test/Jean Wilkenson	Oregon Farm Bureau
Kathryn VanNatta	Northwest Pulp and Paper Association
<b>Agency Advisors</b>	
Dru Keenan	EPA
Rick Kepler	Oregon Department of Fish and Wildlife
David Leland	Oregon Health Services
Robert Anderson	National Marine Fisheries Service/NOAA-Fisheries
Elizabeth Materna	US Fish and Wildlife Service

## 1.1.4 Existing Oregon Administrative Rule (OAR)

**Current Review** The current water quality standards review included proposed revision of the following rule language; as well as proposed revision of many of the values for criteria listed in Oregon Administrative Rule (OAR) 340-041-Table 20 (<http://www.deq.state.or.us/wq/wqrules/wqrules.htm>).

**Rule Language** The existing rule governing numeric criteria for toxic pollutants ("toxics") reads as follows in OAR 340-041-(basin)(2)(p)(B) for all basins:

"340-041-<Basin>

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990 and 468.992)

(1) Notwithstanding the water quality standards contained below, the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall



water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the <Basin>: ...

(p) Toxic pollutants:

(A) Toxic pollutants shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic pollutants shall not exceed the criteria listed in Table 20 which were based on criteria established by EPA and published in Quality Criteria for Water (1986), unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

## Section 1.2 What needs to be updated?

### 1.2.1 EPA Updates

---

**Major EPA  
criteria  
revisions**

Since 1986, EPA has updated a large number of water quality criteria for toxic pollutants several times. In 1992, EPA promulgated water quality criteria for toxic pollutants for 14 States (EPA 1992). These updated criteria became known as the “National Toxics Rule” and differed substantially from the EPA Gold Book. In 1995, EPA applied the methodology and data used in the Great Lakes Water Quality Initiative to derive new national aquatic life criteria for 15 toxic pollutants in freshwater (EPA 1995a). In 1999, EPA published the next major update of water quality criteria (EPA 1999). In 2000, EPA promulgated criteria for California (“California Toxics Rule”; EPA 2000a) and also published a revised methodology for deriving criteria that would be protective of human health (EPA 2000b; although no summary table of criteria was published). Since 2000, EPA has updated the criteria for some individual compounds as well (e.g. cadmium). In late 2002, EPA published another major update (EPA 2002a) using the EPA (2000b) revised human health methodology and proposed (EPA 2002b) revised criteria for 15 other toxic pollutants.

---

**Number of  
criteria needing  
revision**

A total of 62 criteria for the protection of aquatic life differ between Oregon’s OAR 340-041-Table 20 and the latest EPA criteria as of December 2002 (Table 1.3). These differences included 22 chemical compounds or classes. A total of 219 criteria for the protection of human health differ between Oregon’s Table 20 and the latest EPA criteria as of October 2001 (Table 1.4). These differences included 116 chemical compounds or classes.



**Table 1.3. Comparison of Oregon's and EPA's Aquatic Life Criteria.**

Aquatic Life Protection Criteria Comparison between Oregon Table 20 and the latest EPA (EPA 2002a) criteria. In the "Stringency" column, 'OR < EPA' indicates that the value for Oregon's criterion is less than that of the latest EPA criterion; 'OR > EPA' indicates the value for Oregon's criterion is more than that of latest EPA criterion; 'OR: no criteria' indicates that OR has no criterion for which EPA has a published criterion; 'Varies' indicates that the value for Oregon's criterion shifts between being more than to less than that of the latest EPA criterion; and 'OR = EPA' indicates the value for Oregon's criterion equals that of the latest EPA criterion.

Stringency	Freshwater		Seawater		Total Criteria
	Acute	Chronic	Acute	Chronic	
OR < EPA	4	8	4	5	21
OR > EPA	11	6	3	1	21
OR: no criteria	5	5	4	5	19
Varies	0	1	0	0	1
OR = EPA	13	19	17	21	70
Total Criteria	33	39	28	32	132
Criteria needing update	20	20	11	11	62

**Table 1.4: Comparison of Oregon's and EPA's Human Health Criteria.**

Human Health Protection Criteria Comparison between Oregon Table 20 and the latest EPA criteria. See Table 3 caption for explanation of "Stringency" column.

Stringency	Water + Fish Ingestion	Fish Consumption Only	Total Criteria
OR < EPA	28	18	46
OR > EPA	45	43	88
OR: no criteria	37	48	85
Varies	0	0	0
OR = EPA	12	3	15
Total Criteria	122	112	234
Criteria needing update	110	109	219

## 1.2.2 EPA Withdrawals

### Status of EPA Criteria withdrawn

Since publishing the EPA Gold Book, EPA has changed the values of criteria or added new criteria and also withdrawn criteria. Table 1.5 and Table 1.6 list the compounds for which the latest recommendation for criteria (EPA 2002a) indicates withdrawn criteria.

**Table 1.5: EPA-withdrawn Aquatic Life Criteria.**

Compounds for which EPA removed Aquatic Life Protection Criteria. The "Criteria" column contains freshwater (FW) or saltwater (SW) values for acute or chronic criteria; the "Year Withdrawn" column contains the year which EPA first published a summary table that did not contain the criteria.

Compound	Criteria	Year Withdrawn
Lindane	FW Chronic	1995
PCBs	FW Acute	1992
	SW Acute	1992
Silver	FW Chronic	1992

**Table 1.6: EPA-withdrawn Human Health Criteria.**

Compounds for which EPA removed Human Health Protection Criteria. The "Criteria" column contains values for water and fish ingestion (water + fish) or fish consumption only (fish only); the "Year Withdrawn" column contains the year which EPA first published a summary table that did not contain the criteria.

Compound	Criteria	Year Withdrawn
Beryllium	Water + fish	1992
	Fish only	1992
Cadmium	Water + fish	1992
	Fish only	1992
Chromium III	Water + fish	1992
	Fish only	1992
Chromium VI	Water + fish	1992
2,6-Dinitrotoluene	Water + fish	1992
	Fish only	1992
Lead	Water + fish	1992
	Fish only	1992
Mercury	Water + fish	2002
	Fish only	2002
Silver	Water + fish	1992
1,1,1-Trichloroethane	Water + fish	1992
	Fish only	1992



**Rationale for  
criteria  
withdrawal**

In some instances, the withdrawals happened within the context of a formal process. For example, in “Water Quality Standards; Establishment of Numeric Criteria for Priority Pollutants for the State of California” (EPA 2000b; the California Toxics Rule), EPA “reserved” the aquatic life criteria for mercury (freshwater acute and chronic, saltwater acute and chronic) and selenium (freshwater acute only) while these criteria underwent re-evaluation. At the time of the TAC review of Oregon’s criteria, EPA evaluation of mercury and selenium was still underway; therefore, the TAC and PAC discussions were based on this ‘withdrawn’ status. Since EPA (2002a) re-published the EPA (1999) values for mercury and selenium criteria, these criteria became the “latest” EPA recommendation which influenced the Department’s own recommendation (see Section 4.2)

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### **1.2.3      Status of EPA Guidance Values and Human Health Criteria**

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**Guidance  
Values**

Oregon’s Table 20 contains 130 “guidance values” (from 58 compounds or classes) that the EPA Gold Book (1986) included in the summary table of criteria even though there were insufficient data to derive criteria. Beginning with the 1992 “National Toxics Rule”, EPA no longer listed these values when publishing its criteria tables. Therefore, the issue of what to do with Oregon’s guidance values needed to be addressed.

---

**Human Health  
Criteria based  
on 2000 EPA  
Methodology**

In 2000, EPA published "Methodology for deriving ambient water quality criteria for the protection of human health (2000)" (2000 EPA Methodology). The formulae used to calculate the criteria values in the 2000 EPA Methodology differed from those in the 1980 EPA methodology by:

- 1) the addition of a new formula to calculate criteria for compounds where the mode of carcinogenicity shows a non-linear relationship between dose and effect;
- 2) the use of a bioaccumulation factor rather than bioconcentration factor (bioconcentration refers to the uptake and retention of a chemical from the water only; bioaccumulation refers to the uptake and retention of a chemical from all the surrounding environment, e.g. water, food, and sediment); and
- 3) the use of a new fish consumption rate.

In addition, the 2000 EPA Methodology proposed new options for deriving the factors used in these formulae. The TAC agreed to review the new EPA Methodology to determine whether it should be applied in deriving Oregon's criteria.

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**2002 EPA  
Criteria**

After the TAC process ended, EPA published recommended water quality criteria (EPA 2002a) that reflected the use of a new fish consumption rate in calculating the values, the use of bioconcentration factors rather than bioaccumulation factors (since national bioaccumulation factors were not available), and newer information on the toxicity of various pollutants. The EPA Gold Book (EPA 1986), Oregon's criteria, and 1999 EPA criteria (EPA 1999) were derived using a fish consumption rate of 6.5 g (0.2 oz)/day; the latest EPA criteria (EPA 2002a, 2002b) were derived using a fish consumption rate of 17.5 g (0.6 oz)/day.



## Section 1.3 Water Quality Criteria for Toxic Pollutants

### 1.3.1 Background

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#### Components of Water Quality Standards

Water quality standards consist of three parts:

- 1) beneficial uses, which represent the State's goals for a particular waterbody;
- 2) water quality criteria, which are the numeric values and narrative conditions that are designed to protect the beneficial uses; and
- 3) an antidegradation policy, which protects existing water quality from needless degradation.

The numeric water quality criteria for toxic pollutants were the components being reviewed during the current Water Quality Standards Review process.

---

#### Beneficial Uses

In Oregon, designated beneficial uses include:

- Public Domestic Water Supply
  - Private Domestic Water Supply
  - Industrial Water Supply
  - Irrigation
  - Livestock Watering
  - Anadromous Fish Passage
  - Salmonid Fish Rearing
  - Resident Fish & Aquatic Life
  - Wildlife & Hunting
  - Fishing
  - Boating
  - Water Contact Recreation
  - Aesthetic Quality
  - Hydro Power
  - Commercial Navigation & Transportation
- 

#### Purpose of Criteria

The purpose of the toxic pollutants water quality criteria is to protect the most sensitive designated beneficial use for the waters included in the specified basin. Oregon's Table 20 lists up to six surface water criteria for each pollutant based on the following protections: aquatic life (freshwater acute, freshwater chronic, marine acute, and marine chronic) and human health (water and fish ingestion, and fish consumption only). Waters of the State (at the level of Basin) always have multiple designated beneficial uses.

---

**How are the  
criteria  
utilized?**

In the situation of competing uses, DEQ employs and will employ the criteria that protect the most sensitive beneficial use. Furthermore, one or more criteria may be relevant to a particular waterbody. When determining whether a waterbody should be designated as water quality impaired on the State's 303(d) list, the lowest criteria concentration for the pollutant consistent with an applicable beneficial use will govern which criteria should be applied.

For example, Oregon's current water quality criteria for cadmium have values for 1) freshwater acute, 2) freshwater chronic, 3) marine acute, 4) marine chronic, and 5) water and fish ingestion. In the Clackamas River, Designated Beneficial Uses include the following most sensitive beneficial uses: "Resident Fish & Aquatic Life," "Public Domestic Water Supply," and "Fishing"; therefore, the relevant criteria include 1) freshwater acute, 2) freshwater chronic, and 5) water and fish ingestion. Since the freshwater chronic criterion has the lowest concentration, this criterion would be the one used to determine if the Clackamas River should be listed as water quality impaired. For individual NPDES permits, multiple criteria may be applied (e.g. acute criteria in the zone of initial dilution and chronic criteria at the edge of the mixing zone).

---

### **1.3.2 Criteria for Protection of Aquatic Life**

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**Overview of  
Aquatic Life  
Criteria**

The freshwater and marine criteria for the protection of aquatic life may be presented in two forms: acute and chronic values. The acute value should not be exceeded by the one-hour average concentration of the compound; the chronic value should not be exceeded by the four-day average concentration of the compound (Stephan et al. 1985). Similar to most States, Oregon uses the recommended criteria published by the United States Environmental Protection Agency (EPA) as its own criteria, although it reserves the right to adopt different criteria to protect beneficial uses. Oregon's current water quality criteria for toxic pollutants for the protection of aquatic life are based on the values published in Quality Criteria for Water 1986 (EPA 1986) which is often referred to as the "EPA Gold Book." The EPA Gold Book contains a summary table of values (similar to Table 20) as well as brief narrative descriptions of the criteria which have been excerpted from ambient water quality criteria documents published for individual compounds.

---

**Technical Basis  
for Aquatic  
Life Criteria**

The process that EPA uses to generate aquatic life criteria is described in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (Stephan et al. 1985). EPA



can follow a number of paths to generate values for acute and chronic criteria including gathering information on

- 1) acute toxicity to aquatic animals;
- 2) chronic toxicity to aquatic animals;
- 3) toxicity to plants;
- 4) bioaccumulative effects; and
- 5) other effects.

However, the most common path taken involves reviewing data on acute and chronic toxicity to aquatic animals. The level of protection of aquatic organisms is not absolute (i.e. all species at all times and places) because aquatic ecosystems are tolerant of some stress; therefore, the procedure EPA uses is designed to protect at least 95% of the species.

Criteria are derived only if sufficient high quality data exist from aquatic organisms (both vertebrates and invertebrates) that represent a broad range of life history and taxonomic groups. The procedures followed to calculate acute and chronic criteria may be very similar to each other if sufficient data are available. The criteria are primarily based on the toxicity of the compound to the four most sensitive genera (with some influence of data from other available genera). In some cases, if a recreationally or commercially important species is more sensitive to the contaminant than any of the other most sensitive genera, then the criterion is based on the toxicity value from this recreationally or commercially important species. In this way, the procedure can produce numeric values that will be broadly protective, or values that are specifically protective of the single most sensitive species.

If data on chronic toxicity are limited (i.e. too few genera with high quality data), then chronic criteria may be calculated from values that are derived from the relationship between chronic and acute criteria for a few species. For example, if data are available for acute and chronic toxicity of fathead minnows tested under the same conditions, then the ratio of the acute to chronic toxicity can be generated. If sufficient numbers of these acute-chronic ratios are available from a variety of species, then a chronic criterion can be generated using the acute criteria and the acute-chronic ratios.

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### 1.3.3 Criteria for Protection of Human Health

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#### **Overview of Human Health Criteria**

The criteria for the protection of human health are presented in two forms: values based on the consumption of organisms (usually fish or shellfish) and water, and values based on the consumption of organisms only. Similar to aquatic life criteria, Oregon generally follows EPA's recommended criteria for the protection of human health, although it reserves the right to generate criteria on its own. Oregon's current water quality criteria for toxic pollutants for the protection of human health are based on the values published in the EPA Gold Book in 1986.

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#### **Technical Basis for Human Health Criteria**

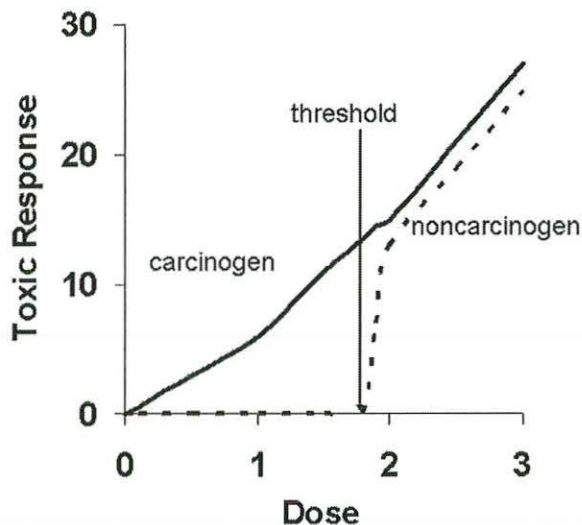
In 1980, EPA published a methodology for deriving the water quality criteria in the EPA Gold Book which addressed noncancer, cancer, and organoleptic (taste and odor) effects. Oregon did not adopt criteria based on organoleptic effects into Table 20. For noncancer and cancer endpoints, EPA used risk assessment-based procedures to derive human health criteria and these criteria became part of Oregon's Table 20. Noncancer endpoints include neurotoxicity, immunotoxicity, and reproductive/developmental effects.

Depending on the ultimate toxic endpoint, the calculation of criteria differed in type of variables included. Criteria for contaminants which cause cancer were derived assuming that even infinitesimally small doses carry some risk of inducing cancer (linear, nonthreshold assumption for low dose risk); criteria for contaminants which do not cause cancer were derived assuming that there must be some sufficient dose of contaminant to cause an adverse effect (threshold concentration for adverse effects). The major difference in these approaches is that for carcinogens, the relationship between dose of contaminant and incidence of cancer remains linear at very low doses; whereas for noncarcinogens, there is a dose of contaminant (the threshold) below which there is no observable adverse effect (Figure 1.1).



**Figure 1.1: Theoretical Dose-Response Curve for Carcinogenic and Noncarcinogenic Compounds.**

Theoretical relationship between dose/concentration of a toxic compound and the toxic response to exposure. Note that the response to a carcinogen has a linear relationship through a dose/concentration of 0, but that the response to a noncarcinogen has a threshold below which no adverse effect is observed.



The equation for deriving the criteria for cancer-causing contaminants contains variables for cancer risk level (e.g.  $10^{-6}$  = 1 additional case per 1,000,000 people) and the effectiveness of the contaminant to cause cancer (a carcinogenicity potency slope factor). The equation for noncancer-causing contaminants contains a variable for the threshold dose (reference dose) in water that will not cause a deleterious effect and accounts for exposure by other routes (dietary and inhalation).

Regardless of the toxic endpoint, the remaining variables used for calculating the criteria are similar: body weight of an average adult (70 kg or 154 lbs), water intake of an average adult (2 L/day or 68 ounces/day), daily fish consumption of an average adult, ratio of lipid fraction of fish consumed adjusted to 3%, and a bioconcentration factor. See Section 2.2 for a more detailed discussion.

# Chapter 2 Technical Review of Water Quality Criteria for Toxic Pollutants

## Section 2.1 Aquatic Life Protection Criteria

### 2.1.1 Technical Review Process

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#### Review of EPA Aquatic Life Criteria Methodology

One of the initial concerns of the TAC was whether EPA had revised the methodology for deriving ambient water quality criteria for the protection of aquatic life between the publication of the 1986 criteria (the resulting criteria became Oregon's Table 20) and the latest published criteria at the time of the TAC review (EPA 1999). Once it became clear that EPA still used Stephan et al. (1985) to derive its latest criteria, the TAC then reviewed the methodology to make a determination on its scientific credibility. The TAC agreed that the 1985 EPA Methodology was scientifically credible and therefore, could be used as the basis from which it would make recommendations on Oregon's new WQ criteria.

For the 62 aquatic life criteria that differed between Oregon's Table 20 and EPA's latest criteria summary table, the TAC reviewed EPA's rationale for the changes. The TAC then decided whether to recommend that Oregon use the latest EPA criteria, continue to use its current criteria, or propose different criteria altogether. Appendix A lists all such compounds and presents the reasons that EPA changed criteria, which can be summarized as follows:

- new data were used in deriving the criterion
- data were reanalyzed to derive the criterion
- data were subjected to a new analytical approach
- the criterion was never finalized

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#### Review of Other Sources and Considerations

In addition to the EPA Methodology (Stephan et al. 1985), TAC members also reviewed selected scientific literature on particular topics. The TAC reviewed literature to determine if there was sufficient information to derive criteria for compounds EPA has yet to publish criteria. This included a number of scientific papers on sublethal effects of various pesticides and synthetic compounds (PAHs, DDTs, PCBs, fluoride, diazinon, atrazine, hexachlorocyclohexane, carbofuran) on salmonid fishes (Arkoosh et al. 1991; Arkoosh et al. 1994; Moore and Waring 1996; Waring and Moore 1997; Arkoosh et al. 1998a; Arkoosh et al. 1998b; Moore and Waring 1998; Sweet et al. 1998; Scholz et al. 2001), since protection of Endangered Species Act-listed salmonids is of particular concern to the State of Oregon. The TAC



concluded that there was insufficient scientific information to propose criteria for these compounds based on the sublethal effects to salmonids.

The TAC also examined scientific literature on the Toxic Equivalency Factor approach in its discussion of deriving new criteria for dioxins, furans, and PCBs (Van den Berg et al. 1998; WHO 1998; see Section 2.3). Finally, individual Policy Advisory Committee (PAC) members asked the TAC to review information provided by PAC members on background levels of aluminum and on using total recoverable vs. dissolved metals concentrations for criteria.

Since the TAC was particularly concerned with protecting Endangered Species Act (ESA)-listed salmonids, EPA's revised criteria were also evaluated for whether information on salmonids was used in generating the final values. Although EPA's methodology for deriving ambient water quality criteria uses all acceptable data, the final criteria values are particularly influenced by the toxicity information from the four most sensitive species for a particular compound. EPA's methodology allows for adjustment of criteria due to the presence of a commercially or recreationally important species among the most sensitive species. Therefore, the TAC determined if EPA adjusted any criteria because of the presence of an ESA-listed salmonid. Of the 22 compounds reviewed, the TAC found that EPA followed its methodology and adjusted the criteria of 2 compounds due to the presence of salmonid species that also inhabit the waters of Oregon. Appendix A provides the information on the four most sensitive species that the TAC considered before making its recommendation on criteria, as well as the ranked toxicity of salmonid species (if available).

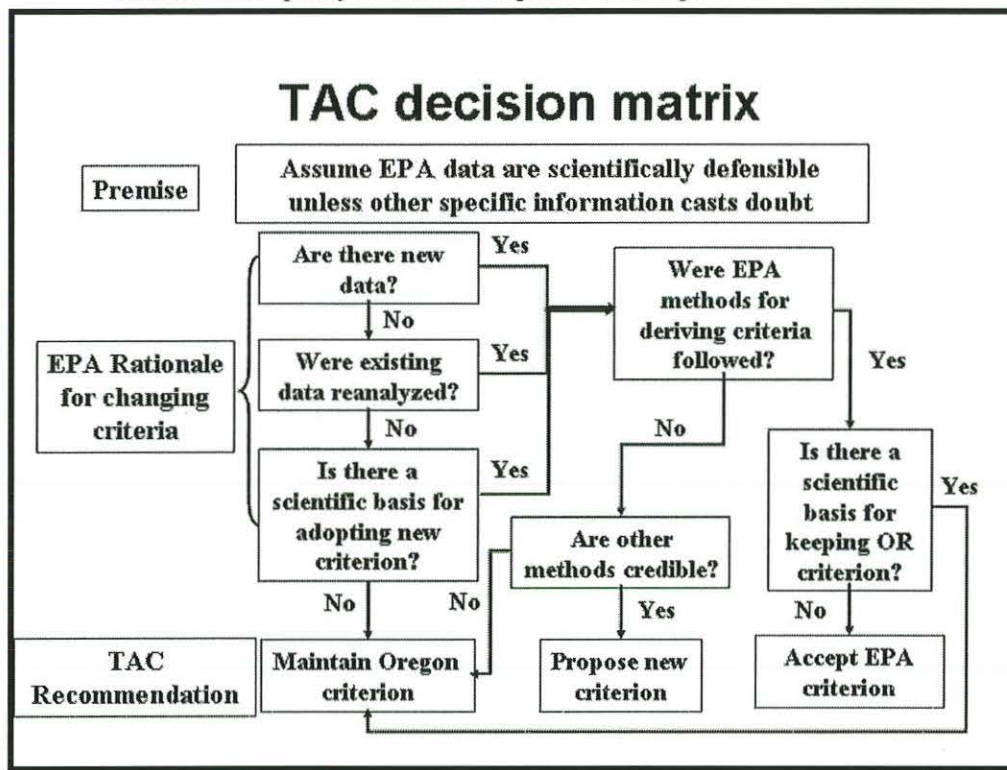
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**Framework for  
making  
technical  
recommendations**

The TAC recommended criteria based on a framework that presumed that the EPA data included in the criteria documents were scientifically defensible unless other information was more compelling. From that assumption, the TAC considered EPA's rationale for changing the criteria. Once the rationale for change was evaluated, the TAC then considered whether EPA methods were followed, whether other scientifically credible methods were used, or whether technically sound reasons existed for maintaining Oregon's current criteria before making its final recommendation on the criterion that Oregon should adopt. The process is diagrammed in Figure 2.1.

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**Figure 2.1: TAC Decision Matrix on Aquatic Life Criteria.**  
 Technical Advisory Committee (TAC) decision matrix for recommending ambient water quality criteria for the protection of aquatic life.



If EPA revised a criterion due to the incorporation of new data, the reanalysis of existing data, or the consideration of other scientifically credible reasons, then the TAC considered whether the EPA methodology was followed for deriving the new criteria. If EPA methodology was followed and there was no scientific basis for maintaining current Oregon criterion, then the TAC recommended that Oregon adopt the latest EPA criterion. If, as in the instance of the toxic equivalency factor approach to dioxins, furans, and PCBs, EPA methodology was not applied to derive the new criteria but other scientifically credible methods were employed, then the TAC recommended that Oregon adopt new criteria that differed from both EPA and Oregon's current criteria (see Section 2.3).

#### Technical Options for Aquatic Life Criteria

The TAC recommendations for criteria that Oregon should adopt fell into four categories:

- 1) adopt latest EPA criteria without modification;
- 2) adopt latest EPA criteria expressing the values as 'total recoverable' concentrations of metals;
- 3) maintain Oregon criteria; and
- 4) maintain Oregon criteria until EPA completes its review.

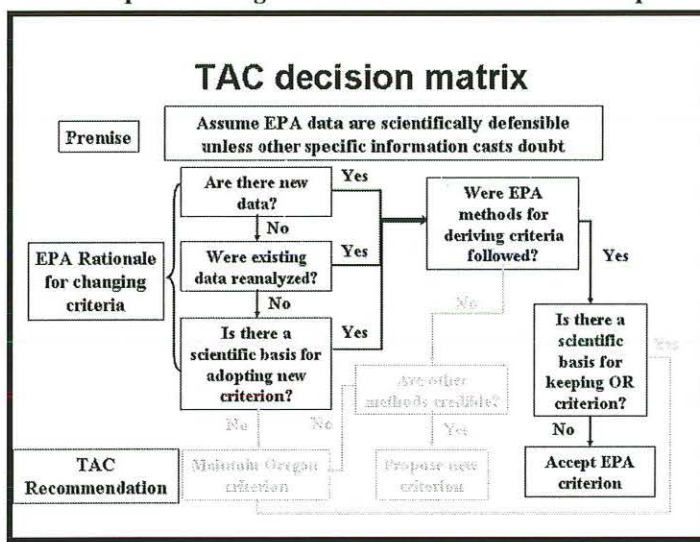


## 2.1.2 TAC Recommendation: Adopt EPA Aquatic Life Criteria

### Decision Path

The TAC used its decision matrix to review all the aquatic life criteria that differed between Oregon and EPA 1999. As shown in Figure 2.2, if new data were used, existing data reanalyzed, or there was a scientific reason for adopting EPA's latest criteria, then the TAC confirmed that EPA methods were used in deriving the criterion in question. If there was no outstanding technical reason for maintaining Oregon's criterion, then the TAC recommended that Oregon adopt EPA's latest criterion. Table 2.1 contains the compounds and their criteria for which the TAC followed this path to recommend adoption of EPA's latest criteria.

Figure 2.2: Decision path leading to TAC recommendation to adopt EPA criterion.



### Adopt EPA Criteria

Table 2.1: Compounds for which the TAC recommended that Oregon adopt the 1999 EPA criteria. Table presents the compound name, the relevant medium (freshwater or saltwater) and exposure (acute or chronic) conditions, Oregon's (OR) and EPA's (EPA) recommended criteria, and the criteria recommended by the TAC.

Compound		Medium	Exposure	Criteria		TAC Recommendation
				OR	EPA	
				(in ug/L)		
1	Aluminum <sup>1</sup>	Freshwater	Acute	none	750	750
		Freshwater	Chronic	none	87	87
2	Ammonia <sup>2,3</sup>	Freshwater	Acute	15000 <sup>4</sup>	13000 <sup>4</sup>	13000

Compound		Medium	Exposure	Criteria		TAC Recommendation
				OR	EPA	
				(in ug/L)		
		Freshwater	Chronic	2200 <sup>5</sup>	4200 <sup>5</sup>	4200
3	Dieldrin	Freshwater	Acute	2.5	0.24	0.24
		Freshwater	Chronic	0.0019	0.056	0.056
4	alpha-Endosulfan	Freshwater	Acute	none	0.22	0.22
		Freshwater	Chronic	none	0.056	0.056
		Saltwater	Acute	none	0.034	0.034
		Saltwater	Chronic	none	0.0087	0.0087
5	beta-Endosulfan	Freshwater	Acute	none	0.22	0.22
		Freshwater	Chronic	none	0.056	0.056
		Saltwater	Acute	none	0.034	0.034
		Saltwater	Chronic	none	0.0087	0.0087
6	Endrin	Freshwater	Acute	0.18	0.086	0.086
		Freshwater	Chronic	0.0023	0.036	0.036
7	Heptachlor Epoxide	Freshwater	Acute	none	0.52	0.52
		Freshwater	Chronic	none	0.0038	0.0038
		Saltwater	Acute	none	0.053	0.053
		Saltwater	Acute	none	0.0036	0.0036
8	Lindane	Freshwater	Acute	2	0.95	0.95
9	Pentachlorophenol <sup>6</sup>	Freshwater	Acute	20	19	19
		Freshwater	Chronic	13	15	15
		Saltwater	Chronic	7.9 <sup>7</sup>	7.9	7.9
10	Tributyltin	Freshwater	Acute	none	0.46	0.46
		Freshwater	Chronic	none	0.063	0.063
		Saltwater	Acute	none	0.37	0.37
		Saltwater	Chronic	none	0.01	0.01

<sup>1</sup>Criteria shown are 'total recoverable' (not 'dissolved') concentrations

<sup>2,3</sup>Ammonia criteria dependent on pH and temperature (see Appendix A for formulae used to calculate OR and EPA criteria).

<sup>4</sup>pH = 7.5; T = 15 C; value converted to 'total ammonia' using table in EPA Ambient Water Quality document (EPA 440/5-85-001).

<sup>5</sup>pH = 7.5; T = 15 C; value is for 'total ammonia'

<sup>6</sup>Pentachlorophenol criteria dependent on pH (see Appendix A for formulae to calculate criteria for pentachlorophenol):

<sup>7</sup>Oregon value is a 'guidance value'; EPA value and TAC recommendation are criteria.

### Express concentrations as "total recoverable"

The technical discussion for many of the metals initially followed a similar path as that for the compounds in Table 2.1. However, EPA's latest criteria (EPA 1999, 2002a) for the metals in Table 2.2 were published with the concentrations expressed as 'dissolved' rather than 'total recoverable' because EPA believed (EPA 1995) that 'dissolved' was more appropriate for capturing the bioavailable fraction of metals in the water column. EPA



(1995) developed conversion factors that could be applied to 'total recoverable' concentrations in order to calculate 'dissolved' concentrations.

EPA (1995) acknowledged that part of the scientific community did not agree that the 'dissolved' concentration was a more accurate estimate of bioavailable fraction; therefore, EPA stated that States could adopt metals criteria as either 'dissolved' or 'total recoverable'. Communication with EPA staff at the Duluth laboratory indicated that EPA had found that most of the data used in generating the criteria came from studies in which 'total recoverable' metals concentrations were determined.

TAC members voiced their concern that dissolved concentrations did not take into account the evidence of toxicity resulting from non-dissolved metals suspended in the water column (for example, see Freeman and Everhart 1971; Gundersen et al. 1994). They also pointed out that the criteria were derived mostly from data that had been generated using 'total recoverable' concentrations of metals. Therefore, the TAC recommended that Oregon adopt the latest EPA criteria for metals, but maintain Oregon's current practice of expressing the concentrations as 'total recoverable.'

**Table 2.2: Compounds for which the TAC recommended that Oregon adopt EPA criteria for "total recoverable" concentrations (rather than "dissolved").**

Compound		Medium	Exposure	Criteria		TAC Recommendation
				OR	EPA	
				(in ug/L)		
1	Arsenic <sup>1</sup>	Freshwater	Acute	360	340	<b>340</b>
		Freshwater	Chronic	190	150	<b>150</b>
2	Cadmium <sup>1,2</sup>	Freshwater	Acute	3.9	2.1	<b>2.1</b>
		Freshwater	Chronic	1.1	0.27	<b>0.27</b>
		Saltwater	Acute	43	40	<b>40</b>
		Saltwater	Chronic	9.3	8.8	<b>8.8</b>
3	Chromium III <sup>1,2</sup>	Freshwater	Acute	1700	1800	<b>1800</b>
		Freshwater	Chronic	210	86	<b>86</b>
4	Copper <sup>1,2</sup>	Freshwater	Acute	18	14	<b>14</b>
		Freshwater	Chronic	12	9.3	<b>9.3</b>
		Saltwater	Acute	2.9	5.8	<b>5.8</b>
		Saltwater	Chronic	2.9	3.7	<b>3.7</b>
5	Lead <sup>1</sup>	Saltwater	Acute	140	220	<b>220</b>
		Saltwater	Chronic	5.6	8.5	<b>8.5</b>
6	Nickel <sup>1,2</sup>	Freshwater	Acute	1400	470	<b>470</b>
		Freshwater	Chronic	160	52	<b>52</b>
7	Selenium <sup>1</sup>	Freshwater	Chronic	35	5	<b>5</b>
		Saltwater	Acute	410	290	<b>290</b>
		Saltwater	Chronic	54	71	<b>71</b>
8	Zinc <sup>1,2</sup>	Freshwater	Chronic	110	120	<b>120</b>

<sup>1</sup>criteria shown are "total recoverable" concentrations.

<sup>2</sup>formulae to calculate metals criteria that are hardness-dependent

$$\text{acute} \quad CMC = e^{(m_a[\ln(\text{hardness})] + b_a)}$$

$$\text{chronic} \quad CCC = e^{(m_c[\ln(\text{hardness})] + b_c)}$$

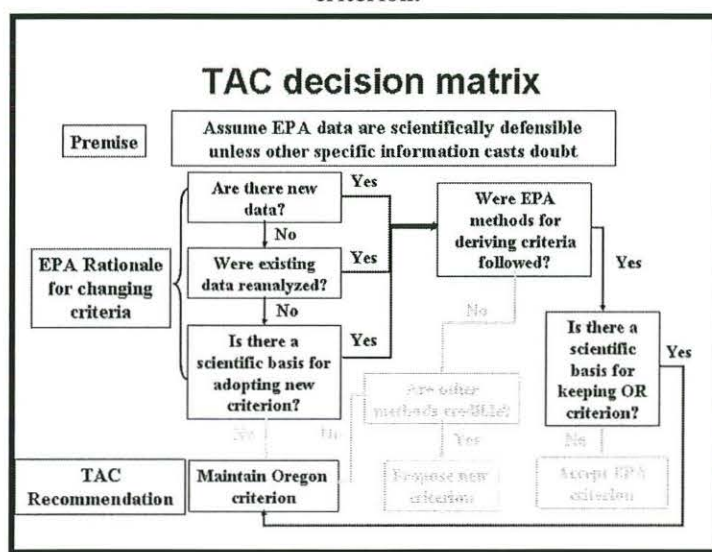
Chemical	Current Oregon				EPA recommended			
	$m_a$	$b_a$	$m_c$	$b_c$	$m_a$	$b_a$	$m_c$	$b_c$
Cadmium	1.128	-3.828	0.7852	-3.490	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.688	0.8190	1.561	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.4640	0.8545	-1.465	0.9422	-1.700	0.8545	-1.702
Nickel	0.8460	3.3612	0.8460	1.1645	0.8460	2.255	0.8460	0.0584
Silver	1.7200	-6.520	--	--	1.7200	-6.520	--	--
Zinc	0.8473	0.8604	0.8473	0.7614	0.8473	0.884	0.8473	0.884

values presented in Table 2.2 are for hardness = 100 mg/L

## 2.1.3 TAC Recommendation: Maintain Oregon's Current Aquatic Life Criteria

**Decision Path** For several compounds, the TAC recommended that Oregon maintain the current criteria using the following decision matrix (Figure 2.3).

Figure 2.3: Decision path leading to TAC recommendation to maintain Oregon's current criterion.





## Maintain Oregon's Criteria

Table 2.3 and Table 2.4 list the compounds for which the TAC recommended maintaining Oregon's current criteria. More detailed information is provided in the sections after the tables.

**Table 2.3: Compounds for which the TAC recommended maintaining Oregon's current criteria until such time that EPA completes its review resulting from the California Toxics Rule (2000).**

Toxic Rule (2000):							
Compound		Medium	Exposure	Criteria		Coarse Screening Value	TAC Recommendation
				OR	EPA		
				(in ug/L)			
1	Mercury <sup>1</sup>	Freshwater	Acute	2.4	1.6	<b>1.6</b>	2.4
			Chronic	0.012	0.91	<b>0.91</b>	0.012
		Saltwater	Acute	2.1	2.1	<b>2.1</b>	2.1
			Chronic	0.025	1.1	<b>1.1</b>	1.1
2	Selenium <sup>1</sup>	Freshwater	Acute	260	190/13 <sup>2</sup>	<b>190/13</b>	260

<sup>1</sup>All values are presented as "total recoverable" concentrations.

<sup>2</sup>formula to calculate the 1999 EPA acute criterion:

$$CMC = \left( \frac{1}{[(f1/CMC1) + (f2/CMC2)]} \right)$$

where f1 and f2 are the fractions of selenite and selenate; and CMC1= 185.9 and CMC2= 12.83. If the relative fraction of selenite is 1 (making selenate 0), then the CMC is 13 (rounding 12.83 to 2 significant digits); if the relative fraction of selenate is 1 (making selenite 0), then the CMC is 190 (rounding 185.9 to 2 significant digits).

**Table 2.4: Compounds for which the TAC recommended maintaining Oregon's current criteria.**

Compound		Medium	Exposure	Criteria		TAC Recommen- dation
				OR	EPA	
				(in ug/L)		
1	Endosulfan <sup>1</sup>	Freshwater	Acute	0.22	none	<b>0.22</b>
		Freshwater	Chronic	0.056	none	<b>0.056</b>
		Saltwater	Acute	0.034	none	<b>0.034</b>
		Saltwater	Chronic	0.0087	none	<b>0.0087</b>
2	Lindane (γ-BHC)	Freshwater	Chronic	0.08	none	<b>0.08</b>
3	Silver <sup>2,3</sup>	Freshwater	Chronic	0.12	none	<b>0.12</b>

<sup>1</sup>recommended criteria are for the sum of alpha- and beta-endosulfan, each of which has EPA recommended criteria at these concentrations.

<sup>2</sup>criteria based on 'total recoverable' (not 'dissolved') concentrations.

<sup>3</sup>acute criterion has a formula to account for hardness (see Table 2.2 footnotes); however, chronic criterion has no formula.

## Mercury & Selenium

For mercury (all criteria) and selenium (freshwater acute criteria), EPA had 'reserved' the criteria in the California Toxics Rule (CTR; EPA 2000a) until reviews of the criteria could be completed to address the concerns raised by

the US Fish and Wildlife Service and the National Marine Fisheries Service in the Biological Opinion on the CTR (USFWS 2000). This meant that those criteria were effectively withdrawn.

The TAC reviewed the information in the 1995 update of criteria (EPA 1995), the CTR (EPA 2000), and the Biological Opinion (USFWS 2000). The TAC recognized that the 1999 EPA criteria for mercury (all) and selenium (freshwater acute) as being scientifically defensible by the process that had been devised for developing national criteria. However, the TAC recommended that DEQ maintain Oregon's current criteria for these compounds until completion of the EPA review. The EPA review is reportedly focused on deriving criteria that will protect threatened and endangered west coast salmonids, which are also found in Oregon. Therefore, in the interim, the TAC recommended maintaining Oregon's current criteria for these compounds (Table 2.3) rather than adopting EPA criteria to which USFWS and NMFS already object. The TAC recommended that once EPA completes the review, then Oregon should consider revising its criteria. The TAC recommendation was made prior to EPA's re-publication of the 1999 criteria in the 2002 recommendation (EPA 2002a).

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#### **Endosulfan**

EPA had recommended new criteria for alpha-endosulfan and beta-endosulfan and removal of the (total) endosulfan criteria. The new alpha- and beta-endosulfan criteria had the same values as the total endosulfan criteria. However, the 1999 EPA criteria table carried the footnote that these criteria would be "most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan." The TAC was concerned that this crucial information would be missed with table values for only alpha- and beta-endosulfan; thereby resulting in exceeding the current Oregon criteria for total endosulfan while complying individually with the alpha-endosulfan and beta-endosulfan criteria. Therefore, the TAC recommended that DEQ should maintain its current criteria for endosulfan because it captured the intent of EPA (Table 2.4).

---

#### **Lindane**

EPA had withdrawn its recommended freshwater chronic criterion for Lindane ( $\gamma$ -BHC) in 1995 because the removal of data for fathead minnow had resulted in too few species for calculation of the criterion. The TAC discussion included the observation that Lindane was still used in Oregon and had been detected in environmental samples. Therefore, the TAC recommended that DEQ maintain the current freshwater chronic criterion for Lindane (Table 2.4) and undertake a review in order to determine Lindane's current use and environmental detection in Oregon, as well as to ascertain if new data could be used to calculate a criterion.

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## **Silver**

EPA had published a freshwater chronic value for silver in the 1986 EPA Gold Book which was then adopted by Oregon as a criterion in Table 20. However, email correspondence with staff at EPA Headquarters established that EPA considered this value “draft” and never finalized it after it had been challenged during the public comment period. Subsequent publications of EPA criteria did not include the freshwater chronic criterion for silver. The TAC reviewed the draft Silver ambient water quality criteria document (EPA 1987) and found that the data were credible and the calculation of the draft criterion was consistent with EPA methods. Therefore, the TAC recommended that DEQ maintain the current freshwater chronic criterion for silver (Table 2.4).

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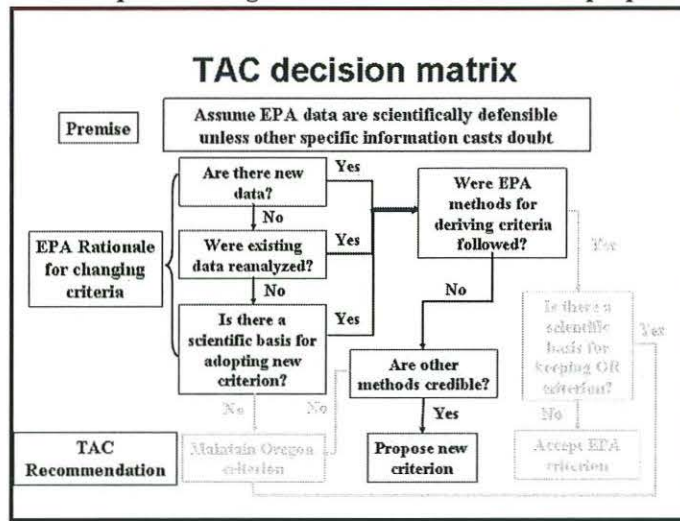
## **2.1.4 TAC Recommendation: Propose New Aquatic Life Values for Dioxins, Furans, and PCBs**

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### **Decision Path**

Oregon’s Table 20 contains values for acute (freshwater and saltwater) criteria for polychlorinated biphenyls (PCBs). Since 1992, EPA has published its table of recommended criteria without these criteria. The TAC’s discussion of how to address this removal of criteria quickly turned to the opportunity to apply new scientific information (van den Berg et al. 1998) to address the need for taking into account the common mechanism of toxicity of some of the dioxins, furans, and PCBs. Thus, for this group of chemicals, the TAC made recommendations for new criteria for the protection of human health and new guidance values for the protection of aquatic life based on the following decision path (Figure 2.4). This meant that for this group of compounds, the TAC considered aquatic life and human health criteria simultaneously. For more information on these recommendations, see Section 2.3.

Figure 2.4: Decision path leading to TAC recommendation to propose new criteria.



## 2.1.5 Guidance Values for the Protection of Aquatic Life

### Background

Both the EPA Gold Book (EPA 1986) and Oregon's Table 20 contain "guidance values" for the protection of aquatic life. These values are described as resulting from "insufficient data to develop criteria; value presented is the L.O.E.L—Lower Observed Effect Level." The next time EPA published its recommended criteria in the National Toxics Rule (EPA 1992), these values no longer appeared in the criteria table. TAC members reviewed the use of these numbers at DEQ and found that because they were not criteria, "guidance values" were inconsistently used in DEQ's regulatory actions.



**TAC Proposal  
for Guidance  
Values**

The TAC understood EPA's motive to avoid confusion by removing "guidance values" from the table of criteria; however, members felt that in the absence of criteria for these compounds, the "guidance values" were worthwhile for use in the application of Oregon's narrative toxics rule and possibly other regulatory actions. Therefore, the TAC recommended that DEQ remove the guidance values to a separate table (Table 2.5; draft name: "Table 20a") so as to prevent misapplication of the numbers as criteria, but to allow for their use in other contexts. The guidance values were not reviewed to determine if information now existed that would allow for criteria to be calculated. In addition, the TAC recommended that Table 20a include several other compounds/categories so as to provide placeholders for new information. These compounds included polybrominated diphenylethers (PBDE), polybrominated biphenyls (PBB), pharmaceuticals, personal care products, alkyl phenols, pyrethroids, and other chemicals with toxic effects. Even though no values were proposed for these compounds, the TAC felt that identifying them would provide the impetus to take appropriate regulatory action after review of the latest scientific information should they turn up in the waste stream or in ambient monitoring results.

**Table 2.5: Guidance Values for inclusion in "Table 20a"**  
(These numbers represent Lowest Observed Effects Levels and are expressed as µg/L)

Compound or Class	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Acenaphthene	1,700	520	970	710
Acrolein	68	21	55	
Acrylonitrile	7,550	2,600		
Antimony	9,000	1,600		
Benzene	5,300		5,100	700
Benzidine	2,500			
Beryllium	130	5.3		
BHC	100		0.34	
Carbon tetrachloride	35,200		50,000	
Chlorinated benzenes	250	50	160	129
Chlorinated naphthalenes	1,600		7.5	
Chloroalkyl ethers	238,000			
Chloroform	28,900	1,240		
Chlorophenol 2	4,380	2,000		
Chlorophenol 4			29,700	
Chloro-4 Methyl-3 Phenol	30			
Chromium (II)			10,300	
DDT Metabolite (DDE)	1,050		14	
DDT Metabolite (TDE)	0.06		3.6	

Compound or Class	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Dichlorobenezenes	1,120	763	1,970	
Dichloroethane	118,000	20,000	113,000	
Dichloroethylenes	11,600		224,000	
Dichlorophenol	2,020	365		
Dichloropropane	23,000	5,700	10,300	3,040
Dichloropropene	6,060	244	790	
Dimethyl Phenol	2,120			
Dinitrotoluene	330	230	590	370
Dioxin (2,3,7,8-TCDD)	0.01	0.000038		
Diphenylhydrazine	270			
Ethylbenzene	32,000		430	
Fluoranthene	3,980		40	16
Haloethers	360	122		
Halomethanes	11,000		12,000	6,400
Hexachloroethane	980	540	940	
Hexachlorobutadiene	90	9.3	32	
Hexachlorocyclopentadiene	7	5.2	7	
Isophorone	117,000		12,900	
Naphthalene	2,300	620	2,350	
Nitrobenzene	27,000		6,680	
Nitrophenols	230	150	4,850	
Nitrosamines	5,850		3,300,000	
Pentachlorinated Ethanes	7,240	1,100	390	281
Pentachlorophenol				7.9
Phenol	10,200	2,560	5,800	
Phthalate Esters	940	3	2,944	3.4
Polynuclear Aromatic Hydrocarbons			300	
Tetrachlorinated Ethanes	9,320			
Tetrachloroethane 1,1,2,2-		2,400	9,020	
Tetrachloroethanes	9,320			
Tetrachloroethylene	5,280	840	10,200	450
Tetrachlorophenol 2,3,5,6-				440
Thallium	1,400	40	2,130	
Toluene	17,500		6,300	5,000
Trichlorinated Ethanes	18,000			
Trichloroethane 1,1,1-			31,200	
Trichloroethane 1,1,2-		9,400		
Trichloroethylene	45,000	21,900	2,000	
Trichlorophenol 2,4,6-		970		
Dioxins, furans, PCBs (TEF approach)	.01	.000038		
Polybrominated diphenyl ethers (PBDE)				
Polybrominated biphenyls (PBB)				
Pharmaceuticals				



Compound or Class	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Personal care products				
Alkyl Phenols				
Pyrethroids				
Diazinon	0.08	0.05		
Other chemicals with Toxic effects				

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**Recommended  
Use of  
“Guidance  
Values”**

TAC members advised that “guidance values” should be used in conjunction with evidence of beneficial use impairment and best professional judgment in order to apply the narrative toxics criterion (Oregon Administrative Rules 340-041-~~<Specified Basin>~~(2)(p)(A)). Best professional judgment may include information from scientific literature (such information should be of the nature of having been corroborated by others in the scientific community) and beneficial use impairment may include effects such as lethality, neurotoxicity, reproductive impairment, or immunosuppression.

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## Section 2.2 Human Health Protection Criteria

### 2.2.1 Technical Review Process

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#### **Framework for making technical choices**

The TAC struggled with the magnitude of the task of reviewing the large number of new and different (between EPA and Oregon) criteria for the protection of human health. A decision matrix similar to that used to evaluate aquatic life criteria could not be used because information on why criteria had been changed or newly recommended did not exist in a readily accessible form. Since the human health criteria were developed with broader participation from various EPA offices and received more scrutiny by many more interested parties, the TAC accepted the data published by EPA in the Integrated Risk Information System (IRIS) database as the basis for developing human health criteria, and decided to focus on whether to recommend the 2000 EPA Methodology for deriving ambient water quality criteria for the protection of human health.

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#### **TAC Approach**

In comparing the 2000 EPA Methodology with the old EPA methodology for deriving human health criteria, the TAC concluded that the 2000 EPA Methodology was a superior approach, but that some of the data required to develop criteria based on the 2000 EPA Methodology was not yet available. Therefore, the TAC focused its efforts on determining the availability of data on bioaccumulation factors so that the 2000 EPA Methodology could be applied for deriving Oregon's water quality criteria and on deriving a fish consumption rate appropriate for the protection of Oregon's population. The TAC review took place prior to publication of the 2002 EPA recommended criteria (EPA 2002a).

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### 2.2.2 EPA Methodology

#### **Major Factors in Calculating Criteria**

The methodology for calculating the 1999 EPA Criteria and the 2000 EPA Methodology both derive ambient water quality criteria through the consideration of three major factors: risk assessment, exposure, and biomagnification. Risk assessment includes the potency of the compound to cause a toxic effect that is either cancerous or noncancerous, and for cancer-causing compounds, the level of risk that is acceptable for society (e.g. one additional cancer per million people). Exposure includes consideration of body weight, water intake, and fish intake. Biomagnification encompasses the degree of increase in concentration of a compound as it makes its way



through the food chain prior to being eaten by humans.

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**TAC Focus on Fish Consumption and Bioaccumulation**

The TAC accepted EPA's data as being authoritative for setting the toxic potency of the compounds, the average body weight of US citizens, and the average water intake. The TAC felt that setting the relative risk of increasing the incidence of cancer was a policy decision, not a technical decision. Therefore, the TAC focused its efforts on a more in-depth evaluation of the two remaining variables used in developing criteria: fish consumption rates and bioaccumulation factors.

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**Review of EPA Human Health Criteria Methodology**

The TAC evaluated EPA's methodology for deriving the 1999 EPA Criteria (EPA 1980) and the 2000 EPA Methodology (EPA 2000a). EPA published recommended criteria (EPA 2002a) using the 2000 EPA Methodology after the TAC process ended. The TAC reviewed the EPA documents and had discussions (conference call and email) with the EPA Headquarters staff responsible for authoring the new methodology. The major differences between the 'old' EPA Methodology and the 2000 EPA Methodology are:

- 1) use of Bioaccumulation Factors (BAFs) in place of Bioconcentration Factors (BCFs),
- 2) use of new fish consumption rates, and
- 3) use of a new formula for calculating criteria for carcinogenic compounds that exhibit a threshold effect.

The 2000 EPA Methodology provided suggestions for the type of information that should be used to formulate the variables used for deriving human health criteria. EPA outlined a hierarchy of approaches that States should consult in deriving the criteria. The spectrum of possibilities begins with States relying on locally relevant information (on fish species for calculating bioaccumulation factor levels and on human populations for setting fish consumption rates) to states relying on national numbers for these factors provided by EPA. The TAC focused its efforts on determining the availability of data on bioaccumulation factors and on deriving a fish consumption rate appropriate for the protection of Oregon's population.

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## **2.2.3 Bioconcentration factors (BCFs) vs. Bioaccumulation factors (BAFs)**

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**Overview**

Water quality criteria for the protection of human health are derived, in part, by considering human exposure to pollutants that have been stored within fish

after that fish has been exposed. A bioconcentration factor (BCF) accounts for the uptake by a fish of pollutant from the surrounding water; a bioaccumulation factor (BAF) accounts for the uptake by a fish of pollutant from all sources (including the surrounding water, food, and sediment). In the 2000 EPA Methodology, the use of BAFs was singled out as a major improvement in setting criteria. The 1999 EPA Criteria formula did address bioaccumulation in theory by including the product of BCF and a foodchain multiplier; however, in practice, the foodchain multiplier for each pollutant was set to 1, making a theoretical BAF equal to a BCF. The 2000 EPA Methodology proposed a more sophisticated approach to calculating bioaccumulation by including fish consumption and the bioaccumulation at several trophic levels in order to account for possible biomagnification of contaminants within foodwebs.

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**Latest BAF  
Information**

The TAC made several requests to EPA for the latest information on BAFs for compounds with human health criteria. However, EPA responded that a list of national BAFs for compounds had not yet been developed and that EPA only had plans to release information on BAFs for a limited number of compounds sometime in the near future. Since resource limitations precluded DEQ from deriving Oregon-specific BAFs, the TAC discussed how best to proceed with its recommendation on human health criteria given the unavailability of this critical information.

## **2.2.4 Fish Consumption**

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**Discussion on  
Relevant,  
Defensible Fish  
Consumption  
Rates**

The TAC discussion on fish consumption rates centered on the availability of technically defensible values for Oregon's general population and for subpopulations within Oregon that are known to be high fish consumers. The TAC reviewed fish consumption rates published in a variety of surveys (see OEHHA 2001). The TAC agreed that there were no quantitative studies that would provide the necessary information on fish consumption by the general Oregon population; however, the 1994 Columbia River Inter-Tribal Fish Commission (CRITFC) Fish Consumption Study did contain good information on fish consumption in a subpopulation with a high fish consumption rate. Issues that were considered included whether the fish consumption rate used in deriving criteria should protect the average or some higher percentage of Oregonians, and whether it should protect subpopulations of Oregonians that consume large amounts of fish.

Both the 1999 EPA criteria and the 2000 EPA Methodology used USDA survey data in setting the fish consumption rate to be used in calculating



criteria. The 2000 EPA Methodology offered 17.5 g/day (0.6 oz/day) as its default fish consumption rate, which is the national 90<sup>th</sup> percentile for consumers and non-consumers of fish. It also offered the 99<sup>th</sup> percentile rate, 142.4 g/day (5.0 oz/day), as a value that can be used if states desire to protect subsistence anglers. These rates are higher than the 6.5 g/day (0.2 oz/day) used in calculating the 1999 EPA Criteria, which was the national 50<sup>th</sup> percentile. The CRITFC Study mean and 99<sup>th</sup> percentile rates, 63.5 and 389.0 g/day (2.2 and 13.7 oz/day, respectively), are also higher than the rate used to calculate the 1999 EPA criteria.

**TAC  
Recommended  
Fish  
Consumption  
Rates**

The TAC concluded that 17.5, 142.4, 63.5, and 389.0 g/day were technically defensible fish consumption rates. Initially, the TAC indicated that the choice of which rate to employ was a policy decision to be made based on which population or subpopulation Oregon wished to protect. Members of the PAC were reluctant to choose a single fish consumption rate in the face of incomplete information; therefore, the TAC responded by proposing an approach to apply different fish consumption rates depending on the intensity of consumption of fish from specific waters of the State.

**TAC Proposal  
to Apply  
Different Fish  
Consumption  
Rates to  
Different  
Waters of  
Oregon**

The TAC proposed that one of three fish consumption rates
17.5 g/day (0.6 oz/day)      low intensity fish consumption
142.4 g/day (5.0 oz/day)    medium intensity fish consumption
389.0 g/day (13.7 oz/day)   high intensity fish consumption

be used for deriving criteria that would be specific to waters within Oregon's designated subbasins (see Table 2.6). Waters where fish are actively harvested by members of Oregon subpopulations with high fish consumption (e.g. Native American, Asian) would be assigned the high intensity value, waters where fish are harvested by sport fishers but not members of the previous subpopulations would be assigned the medium intensity, and the remaining waters of the State in which fishing is a beneficial use would be assigned the low intensity fish consumption value. The TAC used professional judgment in assigning the fish consumption rates and indicated that these numbers could be modified once a more in-depth study was conducted on fishing intensity in the waters of Oregon.

## 2.2.5 Carcinogens

**Non-linear low  
dose  
extrapolation  
model for some  
carcinogens**

The early methods for calculating water quality criteria for cancer-causing compounds assumed that there was some risk of cancer from exposure to these compounds at any dose (i.e. the dose-response curve was linear even at very low doses; see Figure 1.1). Some carcinogenic compounds do not conform to this linear dose-response assumption at low doses; therefore, the

2000 EPA Methodology included a formula for calculating water quality criteria which employs the point of departure from linearity and an uncertainty factor. A variable to account for exposure from non-water sources is also included in the non-linear low dose extrapolation model. Since the model no longer includes linear extrapolation to low doses for a particular cancer risk level, the latter has been dropped from the formula. The TAC endorsed this approach as being technically sound and discussed how it could be implemented in the face of limited information on the compounds that would be covered under this approach.

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## **2.2.6 TAC Recommendations for Human Health Criteria**

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### **Human Health Criteria Technical Options**

The TAC approached the revision of the criteria for the protection of Human Health differently than that for criteria for the protection of Aquatic Life because there were many more criteria to consider and the reasons for changes in criteria were not readily accessible from EPA publications. After reviewing the 2000 EPA Methodology, the TAC considered the following options for recommending revisions to Oregon's human health criteria:

- 1) Adopt the 1999 EPA Human Health Criteria
  - 2) Adopt the 2000 EPA Methodology
  - 3) Adopt the 2000 EPA Methodology with modifications
- 

### **Option 1 and 2 Rejected**

The TAC rejected option 1 to adopt the 1999 EPA criteria because of the inadequacy of the fish consumption rate used in deriving the criteria and availability of the superior 2000 EPA Methodology.

Although the TAC endorsed the 2000 EPA Methodology, its members acknowledged that Oregon did not have the resources to obtain the information needed to fully implement this methodology so option 2 was rejected.

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**Option 3  
Recommended:  
Adopt the 2000  
EPA  
Methodology  
with  
modifications**

- TAC members felt it was important that DEQ use the 2000 EPA Methodology as soon as sufficient information became available. Therefore, the TAC recommended that:
- 1) DEQ should use the 2000 EPA Methodology if sufficient information was available.
  - 2) If sufficient information was not available, DEQ should derive criteria by using bioconcentration factors (BCFs) in place of bioaccumulation factors (BAFs).
  - 3) DEQ should derive criteria by using one of three fish consumption rates which would be assigned to particular waters of the State based on the level of consumption of fish from those waters: low, moderate, or high (Table 2.6). The low fish consumption rate would be 17.5 g/day (0.6 oz/day); the moderate would be 142.4 g/day (5.0 oz/day); and the high would be 389.0 g/day (13.7 oz/day).

**Table 2.6. Proposed Fish Consumption Rates for Waters of Oregon. The TAC assigned one of three fish consumption rates to each waterbody listed in OAR 340-041 based on the level of fishing intensity that occurs in those waters (17.5 g/day = low intensity; 142.4 g/day = medium intensity; 389.0 g/day = high intensity).**

Basin	Specified Waters	Fish Consumption Rate (g/day)
<b>North Coast – Lower Columbia Basin</b>	Estuaries and Adjacent Marine Waters	389.0
	Columbia River: Mouth to RM 86	389.0
	All Other Streams & Tributaries Thereto	17.5
<b>Mid Coast Basin</b>	Estuaries and Adjacent Marine Waters	389.0
	Fresh Waters	17.5
<b>Umpqua Basin</b>	Umpqua R. Estuary to Head of Tidewater and Adjacent Marine Waters	389.0
	Umpqua R. Main Stem from Head of Tidewater to Confluence of N. & S. Umpqua Rivers	142.4
	North Umpqua River Main Stem	142.4
	South Umpqua River Main Stem	142.4
	All Other Tributaries to Umpqua, North & South Umpqua Rivers	17.5
<b>South Coast Basin</b>	Estuaries and Adjacent Marine Waters	389.0
	All Streams & Tributaries Thereto	17.5
<b>Rogue Basin</b>	Rogue River Estuary and Adjacent Marine Waters	389.0
	Rogue River Main Stem from Estuary to Lost Creek Dam	142.4

Basin	Specified Waters	Fish Consumption Rate (g/day)
	Rogue River Main Stem above Lost Dam & Tributaries	142.4
	Bear Creek Main Stem	17.5
	All Other Tributaries to Rogue River & Bear Creek	17.5
<b>Willamette Basin</b>	Clackamas River	142.4
	Molalla River	142.4
	Santiam River	142.4
	McKenzie River	142.4
	Tualatin River	142.4
	All Other Streams & Tributaries	17.5
	Mouth of Willamette Falls, Including Multnomah Channel	389.0
	Willamette Falls to Newberg	142.4
	Newberg to Salem	142.4
	Salem to Coast Fork	142.4
	Main Stem Columbia River (RM 86 to 120)	389.0
<b>Sandy Basin</b>	Streams Forming Waterfalls Near Columbia River Highway	17.5
	Sandy River	142.4
	Bull Run River and All Tributaries	
	All Other Tributaries to Sandy River	17.5
	Columbia River (RM 120 to 147)	389.0
<b>Hood Basin</b>	Columbia River (RM 147 to 203)	389.0
	Other Hood River Basin Streams	142.4
<b>Deschutes Basin</b>	Columbia River (RM 203 to 218)	389.0
	Deschutes River Main Stem from Mouth to Pelton Regulating Dam	389.0
	Deschutes River Main Stem from Pelton Regulating Dam to Ben Diversion Dam and for the Crooked River Main Stem	142.4
	Deschutes River Main Stem above Bend Diversion Dam & for the Metolius River Main Stem	142.4
	All Other Basin Streams	142.4
<b>John Day Basin</b>	Columbia River (RM 218 to 247)	389.0
	John Day River & All Tributaries	142.4
<b>Umatilla Basin</b>	Umatilla Subbasin	142.4
	Willow Creek Subbasin	17.5
	Columbia River (RM 247 to 309)	389.0



Basin	Specified Waters	Fish Consumption Rate (g/day)
<b>Walla Walla Basin</b>	Walla Walla River Main Stem from Confluence of North and South Forks to State Line	142.4
	All Other Basin Streams	142.4
<b>Grande Ronde Basin</b>	Main Stem Snake River (RM 176 to 260)	389.0
	Main Stem Grande Ronde River (RM 39 to 165)	142.4
	All Other Basin Waters	142.4
<b>Powder Basin</b>	Main Stem Snake River (RM 260 to 335)	389.0
	All Other Basin Waters	142.4
<b>Malheur River Basin</b>	Snake River Main Stem (RM 335 to 395)	389.0
	Malheur River (Namorf to Mouth) Willow Creek (Brogan to Mouth) Bully Creek (Reservoir to Mouth)	142.4
	Willow Creek (Malheur Reservoir to Brogan) Malheur R. (Beulah Dam & Warm Springs Dam to Namorf)	142.4
	Reservoirs: Malheur, Bully Creek, Beulah, Warm Springs	142.4
	Malheur River & Tributaries Upstream from Reservoirs	17.5
<b>Owyhee Basin</b>	Snake River (Rm 295 – 409)	389.0
	Owyhee River (RM 0 – 18)	142.4
	Owyhee River (RM 18 – Dam)	142.4
	Reservoirs: Antelope, Cow Creek, Owyhee	142.4
	Owyhee River & Tributaries Upstream from Owyhee Reservoir	142.4
	Designated Scenic Waterway	142.4
<b>Malheur Lake Basin</b>	Natural Lakes	17.5
	All Rivers & Tributaries	17.5
<b>Goose and Summer Lakes Basin</b>	Goose Lake	142.4
	Fresh Water Lakes & Reservoirs	142.4
	Highly Alkaline & Saline Lakes	17.5
	Freshwater Streams	17.5
<b>Klamath Basin</b>	Klamath River from Klamath Lake to Keno Dam (RM 255 to 232.5)	142.4
	Lost River (RM 5 to 65) & Lost River	142.4

Basin	Specified Waters	Fish Consumption Rate (g/day)
	Diversion Channel	
	All Other Basin Waters	142.4



## Section 2.3 Dioxins, Furans and PCBs

### 2.3.1 Overview

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**What are these chemicals?**

Polychlorinated dibenzo-*p*-dioxins (dioxins), polychlorinated dibenzofurans (furans), and polychlorinated biphenyls (PCBs) are classes of human-made chemicals that persist in the environment. There are more than 70 dioxins and more than 130 furans, which are produced as by-products of industrial processes such as chemical manufacturing, bleaching at pulp and paper mills, and chlorination during water treatment. More than 200 PCBs were produced in the US until 1977 for use as insulators and lubricants in electrical equipment such as transformers.

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**Mechanisms of Toxicity**

A number of dioxins, furans, and PCBs have been found to cause toxic responses—including dermal toxicity, immunotoxicity, carcinogenicity, and adverse effects on reproduction, development, and endocrine functions (Van den Berg et al. 1998)—similar to those caused by one particularly toxic dioxin called 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD).

At the cellular level, 2,3,7,8-TCDD exerts its toxic effects through a multistep process. Once 2,3,7,8-TCDD reaches the tissue (e.g. liver) on which it will act, it binds to a specific intracellular receptor molecule (the aryl-hydrocarbon or *Ah* receptor) that attaches itself to the cell's DNA to then affect gene expression to cause a toxic effect. Other dioxins, furans, and PCBs act through this same *Ah* receptor mechanism to cause toxicity, although individual chemicals have different potencies. Furthermore, the latest scientific information indicates that the toxicity to an organism resulting from exposure to a mixture of these compounds is additive rather than synergistic.

This mechanism of action is sometimes explained as “one lock, many keys” with the receptor molecule being the “lock” and the similarly acting dioxins, furans, and PCBs acting as the “keys”—all of which fit into the lock with some fitting better than others. Thus, the receptor can affect gene function through the binding of any single type of molecule (e.g. 2,3,7,8-TCDD) or through the binding of a mixture of compounds from any of the classes. This is important because these compounds often exist in the environment as complex mixtures, and therefore the magnitude of the toxic response cannot be completely explained by the toxicity of any one chemical. This also raises an important policy issue because numeric water quality criteria have been set for some of these compounds, but not for others.

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**Current Oregon  
& EPA criteria**

Oregon currently has numeric water quality criteria for 2,3,7,8-TCDD for the protection of human health, guidance values for 2,3,7,8-TCDD for the protection of freshwater aquatic life, and numeric water quality criteria for PCBs (as a group) for the protection of aquatic life and the protection of human health (Table 2.7). EPA has published numeric water quality criteria for 2,3,7,8-TCDD for the protection of human health and for PCBs (as a group) for the protection of aquatic life and protection of human health (Table 2.7).

Neither Oregon nor EPA has numeric water quality criteria for any of the furans. The current Table 20 values for the 2,3,7,8-TCDD criteria to protect human health for Oregon are less strict than those for EPA; EPA no longer publishes its guidance values for 2,3,7,8-TCDD for aquatic life.

EPA and Oregon have the same chronic criteria for PCBs for the protection of aquatic life. Both EPA's and Oregon's criteria are set for the concentration of all PCBs; thereby including some PCBs that do not act through the *Ah* receptor.

**Table 2.7: Water Quality Criteria for 2,3,7,8-TCDD and PCBs (Oregon's current and EPA's latest) in µg/L.**  
Guidance values are not shown.

	Freshwater		Seawater		Water + Fish Ingestion	Fish Con- sumption Only
	Acute	Chronic	Acute	Chronic		
<b>Oregon</b>						
2,3,7,8-TCDD					$1.3 \times 10^{-8}$	$1.4 \times 10^{-8}$
PCBs	2.0	0.014	10	0.03	$7.9 \times 10^{-5}$	$7.9 \times 10^{-5}$
<b>EPA</b>						
2,3,7,8-TCDD					$5.0 \times 10^{-9}$	$5.1 \times 10^{-9}$
PCBs		0.014		0.03	$6.4 \times 10^{-5}$	$6.4 \times 10^{-5}$

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**Summing  
Individual  
Toxicities:  
Toxic  
Equivalency  
Factor  
Approach**

The scientific evidence indicates that the toxicity of a mixture of pollutants that act through the *Ah* receptor can be viewed as the sum of all the individual toxicities. Therefore, scientists have developed methods for expressing the toxicity of these individual chemicals relative to that of 2,3,7,8-TCDD (World Health Organization 1998; Van den Berg et al. 1998). Each individual chemical is assigned a value called the "toxic equivalency factor" (TEF) based on its potency in comparison to 2,3,7,8-TCDD. The toxicity associated with a mixture of these chemicals can be calculated by adding the product of the concentration of each individual chemical and its toxic equivalency factor



for all the compounds present in the mixture. Similarly, water quality criteria can be expressed as “2,3,7,8-TCDD-equivalents” for mixtures by using the toxic equivalency factors to calculate the relative contribution of each chemical towards limits established by the criteria. Table 2.8 depicts the human health toxic equivalency factors for those 29 compounds considered to function through the *Ah* receptor.

In the TEF approach, the toxicity should not exceed the criteria for 2,3,7,8-TCDD, since this is considered the most toxic pollutant. This can be expressed in the following equation:

$$(Concentration_1 \times TEF_1) + (Concentration_2 \times TEF_2) \dots + (Concentration_n \times TEF_n) \leq 2,3,7,8\text{-TCDD criterion}$$

where 1) Concentration<sub>1</sub> through Concentration<sub>n</sub> are the concentrations of each *Ah* receptor-acting chemical present and 2) TEF<sub>1</sub> through TEF<sub>n</sub> are the Toxic Equivalency Factors for the *Ah* receptor-acting chemicals.

**Table 2.8: Toxic Equivalency Factors (TEF) for human risk assessment.**

Congener	TEF value	Congener	TEF value
<b>Dioxins</b>		<b>Non-ortho PCBs</b>	
2,3,7,8-tetraCDD (2,3,7,8-TCDD)	1	PCB 77	0.0001
1,2,3,7,8-pentaCDD	1	PCB 81	0.0001
1,2,3,4,7,8-hexaCDD	0.1	PCB 126	0.1
1,2,3,6,7,8-hexaCDD	0.1	PCB 169	0.01
1,2,3,7,8,9-hexaCDD	0.1		
1,2,3,4,6,7,8-heptaCDD	0.01		
OctaCDD	0.0001		
<b>Furans</b>		<b>Mono-ortho PCBs</b>	
2,3,7,8-tetraCDF	0.1	PCB 105	0.0001
1,2,3,7,8-pentaCDF	0.05	PCB 114	0.0005
2,3,4,7,8-pentaCDF	0.5	PCB 118	0.0001
1,2,3,4,7,8-hexaCDF	0.1	PCB 123	0.0001
1,2,3,6,7,8-hexaCDF	0.1	PCB 156	0.0005
1,2,3,7,8,9-hexaCDF	0.1	PCB 157	0.0005
2,3,4,6,7,8-hexaCDF	0.1	PCB 167	0.00001
1,2,3,4,6,7,8-heptaCDF	0.01	PCB 189	0.0001
1,2,3,4,7,8,9-heptaCDF	0.01		
OctaCDF	0.0001		

## 2.3.2 TAC Recommendation

### Toxic Equivalency Factor (TEF) Approach

The TAC recommended that Oregon adopt the TEF approach for setting water quality criteria protective of human health for those dioxins, furans, and PCBs that act through the Ah receptor (see Table 2.8) and for setting water quality guidance values protective of aquatic life (see Table 2.9). The TAC acknowledged that this would be a new approach; however, members believed the TEF approach was justified because it used the latest scientific information that was broadly accepted within the scientific community. Furthermore, the TAC felt that use of the TEF approach in water quality criteria was most appropriate for protecting beneficial uses from the toxic effects of the number of pollutants that exert their toxicity through the Ah receptor.

**Table 2.9: Toxic Equivalency Factors (TEF) for aquatic life risk assessment**

Congener	TEF value	Congener	TEF value
<b>Dioxins</b>		<b>Non-ortho PCBs</b>	
2,3,7,8-tetraCDD (2,3,7,8-TCDD)	1	PCB 77	0.0005
1,2,3,7,8-pentaCDD	1	PCB 81	0.0001
1,2,3,4,7,8-hexaCDD	0.5	PCB 126	0.005
1,2,3,6,7,8-hexaCDD	0.01	PCB 169	0.00005
1,2,3,7,8,9-hexaCDD	0.01		
1,2,3,4,6,7,8-heptaCDD	0.001		
OctaCDD	<0.0001		
<b>Furans</b>		<b>Mono-ortho PCBs</b>	
2,3,7,8-tetraCDF	0.05	PCB 105	<0.00005
1,2,3,7,8-pentaCDF	0.05	PCB 114	<0.00005
2,3,4,7,8-pentaCDF	0.5	PCB 118	<0.00005
1,2,3,4,7,8-hexaCDF	0.1	PCB 123	<0.00005
1,2,3,6,7,8-hexaCDF	0.1	PCB 156	<0.00005
1,2,3,7,8,9-hexaCDF	0.1	PCB 157	<0.00005
2,3,4,6,7,8-hexaCDF	0.1	PCB 167	<0.00005
1,2,3,4,6,7,8-heptaCDF	0.01	PCB 189	<0.00005
1,2,3,4,7,8,9-heptaCDF	0.01		
OctaCDF	<0.0001		

### Example of TEF calculation

The following example is presented to aid understanding of how the TEF approach might be applied as a water quality criterion. For the example, an analysis of a sample revealed the following compounds at the following concentrations:



<i>Compound</i>	<i>Concentration</i>	<i>TEF</i>	<i>Ah-receptor acting?</i>
2,3,7,8-TCDD	$0.4 \times 10^{-8} \mu\text{g/L}$	1	Yes
1,2,3,4,7,8-hexaCDD	$1.5 \times 10^{-8} \mu\text{g/L}$	0.1	Yes
1,2,3,7,8-pentaCDF	$2.3 \times 10^{-7} \mu\text{g/L}$	0.05	Yes
PCB 81	$6.5 \times 10^{-8} \mu\text{g/L}$	0.0001	Yes
PCB 101	$1.9 \times 10^{-7} \mu\text{g/L}$	--	No

$$(0.4 \times 10^{-8} \mu\text{g/L} \times 1) + (1.5 \times 10^{-8} \mu\text{g/L} \times 0.1) + (2.3 \times 10^{-7} \mu\text{g/L} \times 0.05) + (6.5 \times 10^{-8} \mu\text{g/L} \times 0.0001) =$$

$$1.70 \times 10^{-8} \mu\text{g/L}$$

Since the proposed criterion concentration for 2,3,7,8-TCDD is  $5.0 \times 10^{-9} \mu\text{g/L}$  (see Table 2.7), then the concentration from the sample exceeds the criterion.

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## Chapter 3 Policy Analysis of Potential Options

### Section 3.1 Policy Advisory Committee Process

#### **PAC Membership & Mandate**

The Policy Advisory Committee (PAC) was convened to provide DEQ with diverse stakeholder input on the policy implications of decisions made with regard to water quality standards. The PAC membership is shown in Table 1.2. The PAC discussed issues regarding the toxic pollutants criteria beginning in January 2001 and lasting through November 2003. Discussions of issues related to toxics criteria often occupied the balance of time at PAC meetings in 2001 and 2002. PAC members agreed that its recommendations should come from a consensus of members in order that DEQ should have a clear mandate in moving forward with its water quality standards review. Interested parties, numbering more than 500 names, received notices of PAC meetings in advance. Meetings were open to the public and a public comment period was provided at every meeting.

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### Section 3.2 Policy Issues Considered

#### **EPA Inspector General's audit underestimates criteria review needs**

In 1999, an audit from the EPA Inspector General indicated that Oregon did not have water quality criteria for 8 out of 99 priority pollutants for which EPA had published criteria. DEQ's review revealed that over 250 of Oregon's criteria differed from those of the latest EPA recommendation (see Table 1.3 and Table 1.4); therefore, DEQ decided to broaden the scope of criteria review from the 8 compounds that the Inspector General's audit had identified. One of the first issues that the PAC discussed was the extent of the review of toxic compounds and the scope of the technical committee's (TAC) responsibilities.

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*Continued on next page*



<b>Initial Proposed Scope of Technical Review</b>	<p>DEQ's initial proposal was to limit its technical review to those compounds for which Oregon's criteria were either absent or less strict than those of EPA (1999). The rationale for this proposed approach stemmed from the reality that EPA can (and has for other States) promulgate criteria if a State does not adopt EPA's recommended criteria, criteria more strict than EPA's recommendations, or provide acceptable scientific justification for why the State's criteria should be less stringent than EPA's recommended criteria. DEQ's initial proposal was to adopt only those criteria susceptible to potential promulgation, and then to undertake a more in-depth technical review of those EPA criteria that were less stringent than Oregon's current criteria in order to ensure that EPA's criteria would be protective of local species.</p>
<b>PAC Response to Initial Proposal</b>	<p>Some PAC members disagreed with limiting the review to only those EPA criteria more stringent than Oregon's criteria. A review of all criteria was suggested because it was more equitable and consistent since DEQ would be generally deferring to EPA as the authority on the best science regardless of the stringency of the criteria. Other PAC members wanted DEQ to broaden the scope of the technical review to include consideration of toxic effects on wildlife as well as aquatic life and human health. The PAC did not endorse a PAC member-initiated proposal to accept EPA's criteria by reference. Subsequently, a PAC subcommittee was unable to propose an alternate approach for the technical review.</p>
<b>DEQ Decision on Approach</b>	<p>DEQ responded by proposing a broader review that encompassed all criteria as one option for the PAC to consider. A majority of PAC members endorsed this approach (vote: 6 for, 0 against, 3 abstained), but there was not consensus. DEQ moved forward with a review of all criteria that differed between Oregon and EPA without a formal PAC recommendation.</p>

## Section 3.3 Aquatic Life Criteria

### **Aquatic Life Criteria and Beneficial Uses**

As explained in Section 1.3.2, water quality criteria for the protection of aquatic life have four possible forms: freshwater acute, freshwater chronic, marine (saltwater) acute, or marine (saltwater) chronic criteria. Oregon's designated beneficial uses for which these criteria are designed to protect include anadromous fish passage, salmonid fish rearing, salmonid fish spawning, and resident fish and aquatic life. During the course of discussions on the aquatic life criteria, one PAC member suggested including wildlife dependent on aquatic life (e.g. bald eagles) as a beneficial use that should be considered when evaluating the numeric value of a specific criterion. The majority of the PAC did not concur. EPA has not recommended national water quality criteria for the protection of wildlife, although the US Fish and Wildlife Service has recommended such criteria in the Biological Opinion to the California Toxics Rule (<http://pacific.fws.gov/caltoxics/>). For this review, DEQ took the position of considering aquatic life criteria to protect the designated beneficial uses of anadromous fish passage, salmonid fish rearing, salmonid fish spawning, and resident fish and aquatic life.

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### **Process of PAC Evaluation of Aquatic Life Criteria**

DEQ brought the TAC recommendations on Aquatic Life criteria (see Chapter 2) to the PAC and presented them as one of several options to consider for PAC endorsement. DEQ hoped that this approach would allow the PAC to discuss the policy implications with sufficient technical context such that the PAC could make a consensus recommendation on which aquatic life criteria DEQ should adopt. The PAC was also afforded the opportunity to forward questions or issues that fit within the scope of the technical review to the TAC for consideration and response. The TAC recommendations for aquatic life criteria were presented to the PAC in one of four categories depending on the chemicals or compounds under consideration:

- adopt 1999 EPA criteria (Table 2.1);
  - adopt 1999 EPA criteria and express value as "total recoverable concentration" (Table 2.2);
  - maintain Oregon's current criteria (Table 2.3 and Table 2.4);
  - adopt criteria that differ from 1999 EPA and Oregon (Table 2.8).
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**Compounds for which TAC recommended adopting 1999 EPA criteria**

For a large number of compounds (shown in Table 2.1), the TAC concluded that the scientific information supported the adoption of the latest EPA criteria. For these compounds, the PAC considered four options:

1. the TAC recommendation to adopt the 1999 EPA criteria
2. maintenance of all of Oregon's current criteria. The latter option could result in EPA promulgating Oregon's criteria for those compounds for which Oregon's current criteria are not as protective as the latest EPA criteria.
3. the adoption of only those 1999 EPA criteria which were more stringent than Oregon's current criteria.
4. Option 3 and the footnoting of all values in the final criteria table for which information on bioaccumulation had yet to be taken into account. The presence of such compounds in the waste stream or in ambient monitoring samples would trigger the use of the narrative criteria for toxic substances.

Options 3 and 4 were offered during the course of PAC discussion, stemming from one PAC member's belief that sufficient information was not available to indicate whether the 1999 EPA criteria were truly protective of aquatic life. Other members of the PAC did not support these two options because they believed the premise of these options was not supported by the evidence.

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**PAC decision on compounds in Table 2.1**

PAC members entertained a motion to endorse Option 1, i.e. follow the TAC's recommendation to adopt EPA's recommended criteria for the compounds in Table 2.1. A majority of PAC members voted in favor of this recommendation (vote: 7 for; 2 against); however, the resolution had insufficient votes to pass as a consensus recommendation.

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**Metals criteria:  
TAC  
recommends  
adopting 1999  
EPA criteria as  
“total  
recoverable  
concentrations”  
(Table 2.2)**

For metals, the 1999 EPA criteria document expresses the criteria as either individual values or a formula that takes into account the hardness of the water. Therefore, identifying a EPA 1999 criterion for a metal can be viewed as a two-step process. First, a criterion is based on "total recoverable" concentration of the metal, or if water hardness needs to be considered, then the formula is used to calculate the criterion as "total recoverable concentration" of the metal. Second, conversion factors are provided so that the "total recoverable concentration" can be converted to "dissolved concentration." In 1995, EPA recommended that States use the "dissolved concentrations" for metals criteria because these were the most appropriate values for representing the fraction of metal that was available for exposure to biological organisms ("bioavailable fraction"). At the same time, EPA indicated it would approve States to use "total recoverable concentrations" as criteria for metals if States elected not to use "dissolved concentrations." Oregon's current metals criteria are expressed in "total recoverable concentrations."

The TAC recommendation was to adopt the 1999 EPA criteria as calculated for "total recoverable concentrations" rather than "dissolved concentrations" (Table 2.2) because the TAC concluded that some toxicity to metals resulted from exposure to the nondissolved fraction. DEQ outlined 3 options for the PAC:

- adopt the TAC recommendation to use EPA metals criteria for "total recoverable" concentrations;
  - use EPA metals criteria for "dissolved" concentrations;
  - maintain Oregon's current criteria.
-



**Policy concerns  
with metals  
criteria**

The PAC had the opportunity to discuss the policy implications of metals criteria over several meetings. The option of maintaining Oregon's current criteria was not deemed viable since EPA could promulgate Oregon's criteria for those compounds which have less stringent criteria than EPA's recommended criteria. In addition, the TAC reviewed a "white paper" from one PAC member's group that supported the use of "dissolved" concentrations for the criteria; however, the TAC reiterated its recommendation that the criteria should be expressed in "total recoverable" concentrations. Some PAC members noted that the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) had also supported criteria as "total recoverable" concentrations; thus, Oregon's adoption of such an approach would likely expedite consent from the Services on EPA's approval of Oregon's water quality standards during the Endangered Species Act consultation process.

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**PAC decision  
on metals  
criteria in  
Table 2.2.**

The PAC focused on the technical validity of the TAC's recommendation for metals criteria. Some members of the PAC challenged the TAC recommendation on technical grounds, mainly citing EPA (1995) as indicating that "dissolved" metals concentrations were the most reflective of bioavailability, and therefore, toxicity, of metals. Other members agreed with the TAC recommendation, pointing to NMFS and USFWS expected challenge of the use of "dissolved" metals concentrations for criteria in Idaho as a rationale to adopt "total recoverable" concentrations as more conservative criteria likely to meet with agency approval. A motion to endorse the TAC recommendation did not pass (vote: 2 for; 6 against) and a motion to endorse use of EPA metals criteria for "dissolved" concentrations received a majority of votes (vote: 6 for; 2 against), but did not receive sufficient support to be a consensus recommendation from the PAC on metals criteria.

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**Federal actions  
on Mercury  
and Selenium  
criteria**

In 1999, EPA published revised aquatic life criteria for mercury (freshwater acute, freshwater chronic, saltwater acute, saltwater chronic) and selenium (freshwater acute). However, when EPA proposed these same values in the California Toxics Rule (CTR; EPA 2000), USFWS and NMFS challenged these values during consultation for compliance with the Endangered Species Act (USFWS 2000; <http://pacific.fws.gov/caltoxics>). EPA responded by “reserving” (i.e. not publishing) values for mercury (freshwater acute, freshwater chronic, saltwater acute, saltwater chronic) and selenium (freshwater acute), and undertaking a review in order to determine if different criteria should be recommended. Therefore, the TAC was faced with a choice of

- adopting the 1999 EPA criteria which would likely be challenged during USFWS and NMFS consultation on compliance of water quality standards with the Endangered Species Act,
- maintaining Oregon’s current criteria until the EPA review was complete
- deriving new criteria based on the latest scientific information.

The last choice was not considered viable because of the limited scope of and resources available to the TAC to compile and review the latest scientific information.

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**PAC discussion  
of options on  
Mercury and  
Selenium  
criteria**

The TAC recommended that DEQ maintain Oregon’s current criteria for mercury (all criteria) and selenium (freshwater acute) (Table 2.3). In addition, the TAC recommended that once EPA completes the review of the criteria for these compounds, DEQ should reevaluate the criteria. DEQ offered for PAC discussion a second option of adopting the more stringent of Oregon’s current and EPA’s latest criteria. The PAC focused most of its discussion on mercury. PAC members expressed general concern about the necessity of limiting the technical review because of the large number of criteria in need of updating. One PAC member suggested that DEQ should adopt aquatic life criteria based on a value put forward by NMFS and USFWS in the CTR Biological Opinion; however, no formal motion was entertained. A motion to endorse the TAC recommendation and amend it to include the requirement of a more in depth technical review of mercury criteria never came to a vote.

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**Removal of  
criteria for  
endosulfan,  
lindane, and  
silver?**

The 1999 EPA recommendation does not contain criteria for endosulfan (freshwater acute, freshwater chronic, marine acute, marine chronic), lindane (freshwater chronic), or silver (freshwater chronic). EPA had substituted alpha- and beta-endosulfan criteria for the endosulfan criteria. EPA had not published the lindane criterion because of failure to meet the minimum data requirements after data on fathead minnows had been removed. The silver criterion in the Oregon Administrative Rules was based on a draft criterion that was never finalized by EPA. Thus, DEQ sought input on what to do about criteria that EPA had removed from its latest recommendations.

**PAC discusses  
TAC position to  
maintain  
Oregon's  
criteria for  
endosulfan,  
lindane, and  
silver (Table  
2.4)**

The TAC recommended maintaining Oregon's water quality criteria for endosulfan (all aquatic life criteria), lindane (freshwater chronic), and silver (freshwater chronic). The TAC believed that the endosulfan criteria would be useful in fulfilling EPA's intent with the criteria for alpha- and beta-endosulfan; that lindane use in Oregon warranted maintaining the old EPA criterion until such time that a more in-depth review could be undertaken; and that the silver criterion was based on sound science even if EPA never finalized it (see Section 2.1.3). DEQ presented two options to the PAC:

1. adopt the TAC recommendation to maintain Oregon's current criteria for these compounds
2. adopt EPA's recommendation to remove the criteria from Oregon's list of compounds.

The PAC discussion on these options centered on understanding the TAC rationale for its recommendation. The major policy implication identified concerned the lindane criterion because this pollutant is generally not controlled at the point of disposal; instead, it might be found in the waste stream of the municipal sewage treatment plant which makes application of the criteria to a source a challenge. In general, PAC members acknowledged the rationale of the TAC recommendation and a motion to endorse the TAC recommendation passed unanimously (vote: 8 for; 0 against).

## Section 3.4 Human Health Criteria

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### **Background on Human Health Criteria**

The large number of human health criteria in need of review and the nature of the information available on those criteria made the TAC review of the human health criteria different from that on the aquatic life criteria. EPA's publication of "Methods for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)" complicated the TAC review because it did not contain a summary table of recommended criteria based on that methodology. Rather than reviewing the scientific literature on the human toxicity of individual compounds, the TAC focused its efforts on evaluating the new EPA methodology, including an assessment of the availability of information necessary to apply that methodology, and then determining an approach that would apply to deriving all the criteria. In addition, the TAC reviewed an approach for deriving human health criteria for those dioxins, furans, and polychlorinated biphenyls (PCBs) that share a common mechanism of action which was based on relating the cumulative toxicity of these compounds to the existing criteria for 2,3,7,8-TCDD (dioxin).

### **TEF Approach for Dioxins, Furans, and PCBs**

The TAC recommended that DEQ adopt a toxic equivalency factor (TEF) approach for criteria for those dioxins, furans, and PCBs that act through the Ah receptor (see Section 2.3.2). The PAC discussed how this approach would be implemented after DEQ presented an example using USGS data. The major issue raised by some PAC members was whether it would be equitable to include consideration of some PCBs in these criteria because contamination from these compounds results from historical deposition. Thus, these members believed that it would be unfair to include 'legacy' pollution in the calculation of the final criteria. A straw poll indicated that the TAC recommendation would not gain PAC endorsement, so the PAC formed a subcommittee to determine whether it could put forward a consensus recommendation.

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**PAC  
subcommittee  
on TEF  
discussion**

The PAC subcommittee was created to examine this issue in more detail. The subcommittee asked the TAC for clarification on technical aspects of the TEF approach; specifically, 1) whether sufficient information existed on bioavailability, bioaccumulation, depuration rates and other physiological mechanisms of the compounds included in the TEF approach, 2) whether the PCBs should be split off from the TEF approach, 3) whether cost and methodological problems made the TEF approach too difficult to implement, and 4) whether the Arochlor PCBs should be included in the TEF approach. The TAC responded that 1) although more information would always be better, sufficient information existed on the behavior of the TEF compounds to include them in this approach, 2) since the TEF PCBs act through the same mechanism of action, it was appropriate to include them in the TEF approach, 3) analytical techniques were continually improving the detection limits and costs were not prohibitive for the analysis of the TEF compounds, and 4) some PCBs in Arochlor mixtures would be counted in the TEF approach. The subcommittee also reviewed documents from New York State on its limited TEF approach and the rationale for why EPA did not propose a TEF approach when promulgating the California Toxics Rule. Based on these considerations, the subcommittee proposed that Oregon adopt a TEF approach for dioxins and furans but not include PCBs, and that bioconcentration equivalency factors (BEF) as developed by EPA Region 5 be included in application of the TEF approach. This approach is currently used by the State of New York and several other Great Lakes states. The full PAC did not reach consensus on this subcommittee proposal.

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**Human Health  
Criteria using  
2000 EPA  
Methodology**

The TAC recommended that DEQ use the 2000 EPA Methodology to derive criteria protective of human health when sufficient information was available. In the interim, the TAC recommended that DEQ modify the EPA methodology used to derive the 1999 EPA criteria by incorporating higher fish consumption rates reflective of the information presented in the 2000 EPA Methodology and the 1994 Columbia River Inter-Tribal Fish Commission (CRITFC) Study. The TAC indicated that four published fish consumption rates were scientifically defensible and regionally relevant:

- 17.5 g/day (0.6 oz/day)(national 90<sup>th</sup> percentile)
- 63.5 g/day (2.2 oz/day)(average for Columbia River tribal members)
- 142.4 g/day (5.0 oz/day)(national 99<sup>th</sup> percentile)
- 389.0 g/day (13.7 oz/day)(99<sup>th</sup> percentile for Columbia River tribal members)

Finally, the TAC recommended that DEQ use  $10^{-6}$  as the cancer risk level when deriving criteria for carcinogenic compounds.

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**Policy issues  
concerning  
human health  
criteria**

One major policy issue revolved around whether the criteria should be adopted based on protecting a high fish-consuming subpopulation in Oregon or on protecting the general population of Oregon. This issue was complicated because high quality data were not available on the fish consumption level of the general Oregon population, which was the rationale for the TAC's inclusion of the national numbers in the options to be considered. Another issue arose concerning the proportion of the population that should be targeted for protection. In the past, EPA used mean level of fish consumption in its formulae for calculating criteria; however, the data used to calculate the mean included non-consumers of fish; therefore, the 2000 EPA Methodology recommended that the fish consumption rate be set at a higher percentile in order to provide better protection for fish consumers. A third issue was raised concerning the criteria for carcinogens. Since current EPA criteria for carcinogens are based on the assumption that exposure at any dose would result in some increase in the risk of contracting cancer--and this risk level is a variable used in calculating the criteria--EPA recommends that States use  $10^{-5}$ ,  $10^{-6}$ , or  $10^{-7}$  as possible risk levels. Oregon's current criteria are based on a risk level of  $10^{-6}$ .

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**Questions on  
human health  
criteria  
considered by  
PAC**

In summary, the PAC faced the following policy decisions that needed to be made concerning human health criteria:

1. which population should the criteria target to protect (i.e. fish consumption rates from which populations)?
  2. which percentage of the population should be protected?
  3. which level of risk of increased incidence of cancer should the criteria for carcinogens be set?
- 

**TAC response  
to PAC  
dilemma on  
selecting a fish  
consumption  
rate**

The PAC discussed the methods for determining fish consumption rates, acknowledging the difficulty in determining a rate appropriate for Oregon in the face of limited information and the challenge of settling on a particular rate that would provide the appropriate and prudent amount of protection. The TAC responded to this discussion by suggesting three different fish consumption rates that could be applied to different waters of the State depending on the intensity of consumption of fish from those waters.

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**PAC decision  
on fish  
consumption  
rate**

PAC members questioned the TAC's three consumption rate approach for setting human health criteria as possibly leading to inequities because there would be different criteria for the same toxic compound on the same river, leading to situations where a source might have to comply with a criterion more strict than designated for its location in order for the water to meet a more strict criterion downstream. One PAC member offered an alternative approach of using a lower fish consumption rate statewide except for those areas where it was known that highly contaminated fish were being caught and consumed by at least some sector of Oregon's population. Another PAC member offered another alternative of using a higher fish consumption rate statewide except for those areas where it was known that fish are not contaminated or fish are not caught and consumed. In the end, there was no consensus from the PAC regarding whether a single or multiple fish consumption rates should be used, nor was there consensus on the level that that (or those) fish consumption rate(s) should be.

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**PAC discussion  
of population  
percentile to  
use for setting  
fish  
consumption  
rate**

The PAC discussed the difficulty of deciding on the appropriate population percentile to target in order to derive a protective fish consumption rate. EPA has offered justification for the use of several different percentiles and PAC members struggled with the necessity of making a qualitative judgment on a quantitative variable. A straw poll of PAC members indicated that there was no consensus on the percentile of a population that should be targeted when setting the fish consumption rate to be used in calculating the human health criteria.

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**PAC decision  
on cancer risk  
rate**

In considering the three possible cancer risk rates ( $10^{-5}$ ,  $10^{-6}$ , or  $10^{-7}$ ), the PAC discussed the large influence that this factor had on calculating the criteria. EPA had recommended any of these levels as being acceptable for setting human health criteria, and the TAC had recommended that DEQ continue to use  $10^{-6}$ . The PAC acknowledged that there was no strong sentiment to support one risk level over another; therefore, they voted unanimously to accept the TAC recommendation to maintain the value for the cancer risk level variable at  $10^{-6}$  for deriving human health criteria (vote: 8 for; 0 against).



## Chapter 4 DEQ Recommendations

### Section 4.1 Introduction

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#### Background

Initially, the recommendations for the toxic compounds ambient water quality criteria from the Department of Environmental Quality were developed from the information contained in preceding sections of this issue paper, and the Technical and Policy Advisory Committees' discussions. In addition, these recommendation also considered public comment obtained during the 88-day Public Comment period.

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#### Advisory Committees

All the recommendations from the Technical Advisory Committee (TAC) were made by consensus. Although few PAC recommendations were made by consensus, the PAC frequently agreed by strong majority vote. DEQ has factored this majority approach into its deliberations in lieu of full consensus.

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### Section 4.2 Criteria for the Protection of Aquatic Life

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#### Compounds for which DEQ recommends 2002 EPA criteria

DEQ recommends adoption of the aquatic life criteria for compounds shown in Table 4.1, which were recommended by the TAC (Table 2.1) and received a majority endorsement from the PAC. DEQ believes that these criteria are the result of the latest science as suggested by the TAC recommendation, and that these criteria represent the best policy choice as suggested by the PAC majority opinion. Adoption of these criteria will bring Oregon into agreement with the latest EPA criteria.

**Table 4.1 Compounds for which DEQ recommends acceptance of the 2002 EPA Aquatic Life Criteria. For each compound, medium, and exposure conditions, values are presented for current Oregon criteria, the Technical Advisory Committee (TAC) recommendation, the Policy Advisory Committee (PAC) recommendation or majority opinion, and the Department's recommendation (DEQ). All values are expressed as µg/L.**

Compound	Medium	Exposure	Current OR Criteria <sup>1</sup>	Criteria <sup>1</sup> Recommendations		
				TAC	PAC	DEQ
Aluminum	Freshwater	Acute	none	750	750	<b>750</b>
	Freshwater	Chronic	none	87	87	<b>87</b>
Ammonia	Freshwater	Acute	15000 <sup>2</sup>	13000 <sup>3</sup>	13000 <sup>3</sup>	<b>13000<sup>3</sup></b>
	Freshwater	Chronic	2200 <sup>2</sup>	4200 <sup>3</sup>	4200 <sup>3</sup>	<b>4200<sup>3</sup></b>
Dieldrin	Freshwater	Acute	2.5	0.24	0.24	<b>0.24</b>
	Freshwater	Chronic	0.0019	0.056	0.056	<b>0.056</b>
alpha-Endosulfan	Freshwater	Acute	none	0.22	0.22	<b>0.22</b>
	Freshwater	Chronic	none	0.056	0.056	<b>0.056</b>
	Saltwater	Acute	none	0.034	0.034	<b>0.034</b>
	Saltwater	Chronic	none	0.0087	0.0087	<b>0.0087</b>
beta-Endosulfan	Freshwater	Acute	none	0.22	0.22	<b>0.22</b>
	Freshwater	Chronic	none	0.056	0.056	<b>0.056</b>
	Saltwater	Acute	none	0.034	0.034	<b>0.034</b>
	Saltwater	Chronic	none	0.0087	0.0087	<b>0.0087</b>
Endrin	Freshwater	Acute	0.18	0.086	0.086	<b>0.086</b>
	Freshwater	Chronic	0.0023	0.036	0.036	<b>0.036</b>
Heptachlor Epoxide	Freshwater	Acute	none	0.52	0.52	<b>0.52</b>
	Freshwater	Chronic	none	0.0038	0.0038	<b>0.0038</b>
	Saltwater	Acute	none	0.053	0.053	<b>0.053</b>
	Saltwater	Acute	none	0.0036	0.0036	<b>0.0036</b>
Lindane (γ-BHC)	Freshwater	Acute	2	0.95	0.95	<b>0.95</b>
Pentachlorophenol	Freshwater	Acute	20 <sup>4</sup>	19 <sup>5</sup>	19 <sup>5</sup>	<b>19<sup>5</sup></b>
	Freshwater	Chronic	13 <sup>4</sup>	15 <sup>5</sup>	15 <sup>5</sup>	<b>15<sup>5</sup></b>
	Saltwater	Chronic	7.9 <sup>6</sup>	7.9	7.9	<b>7.9</b>
Tributyltin	Freshwater	Acute	none	0.46	0.46	<b>0.46</b>
	Freshwater	Chronic	none	0.063	0.063	<b>0.063</b>
	Saltwater	Acute	none	0.37	0.37	<b>0.37</b>
	Saltwater	Chronic	none	0.01	0.01	<b>0.01</b>

<sup>1</sup> Criteria are expressed as total recoverable concentrations unless otherwise footnoted.

<sup>2</sup> Criteria depend on pH, temperature, and the presence of salmonids or other cold-water species. Values presented are for total ammonia in waters with pH= 7.5, temperature= 15°C (59°F), and salmonids present using the formula specified in EPA (1986), i.e. the "Gold Book".

<sup>3</sup> Criteria depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Values presented are for total ammonia in waters with pH=7.5, temperature=15°C (59°F), and salmonids or sensitive early life stages present using the formulae



specified in *1999 Update of Ambient Water Quality Criteria for Ammonia* (EPA-822-R-99-014; <http://www.epa.gov/ost/standards/ammonia/99update.pdf>).

<sup>4</sup> Criteria depend on pH. Values presented are for pentachlorophenol in waters with pH=7.8 using the formula specified in EPA (1986), i.e. the "Gold Book".

<sup>5</sup> Criteria depend on pH. Values presented are for pentachlorophenol in waters with pH=7.8 using the formula specified in *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-96-001).

<sup>6</sup> Value presented is erroneously published in Oregon's Table 20 as a "guidance value" when it should be a criterion. The recommendation will correct this error.

**DEQ  
recommends  
maintaining  
Oregon's  
Endosulfan,  
Lindane, and  
Silver criteria**

DEQ recommends adoption of the criteria for compounds shown in Table 4.2, which were recommended by the TAC (Table 2.4) and received a consensus endorsement from the PAC. Adoption of these criteria will maintain Oregon's current criteria which are stricter than the latest EPA criteria for these compounds. DEQ believes that there is technical basis for these criteria and that maintaining Oregon's current criteria is the best way to protect beneficial uses.

**Table 4.2** Compounds for which DEQ recommends maintaining Oregon's current Aquatic Life Criteria. For each compound, medium, and exposure conditions, values are presented for current Oregon criteria, the Technical Advisory Committee (TAC) recommendation, the Policy Advisory Committee (PAC) recommendation or majority opinion, and the Department's recommendation (DEQ). All values are expressed as µg/L.

Compound	Medium	Exposure	Current OR Criteria <sup>1</sup>	Criteria <sup>1</sup> Recommendations		
				TAC	PAC	DEQ
Endosulfan <sup>2</sup>	Freshwater	Acute	0.22	0.22	0.22	<b>0.22</b>
	Freshwater	Chronic	0.056	0.056	0.056	<b>0.056</b>
	Saltwater	Acute	0.034	0.034	0.034	<b>0.034</b>
	Saltwater	Chronic	0.0087	0.0087	0.0087	<b>0.0087</b>
Lindane (γ-BHC)	Freshwater	Chronic	0.08	0.08	0.08	<b>0.08</b>
Silver	Freshwater	Chronic	0.12	0.12	0.12	<b>0.12</b>

<sup>1</sup> Criteria are expressed as total recoverable concentrations unless otherwise footnoted.

<sup>2</sup> Value is for the sum of alpha- and beta-endosulfan.

**DEQ  
recommends  
adopting the  
2002 EPA  
Metals Criteria  
as "dissolved"  
concentrations**

DEQ recommends adoption of the criteria for metals as "dissolved" concentrations as shown in Table 4.3. In its national recommendations to States, EPA recommends States establish water quality criteria for these metals as "dissolved" concentrations although the Agency acknowledges that using "total recoverable" concentrations may be appropriate, too. The TAC had recommended metals criteria be expressed as "total recoverable" concentrations of metals; however, this recommendation did not receive consensus or majority endorsement from the PAC. Although DEQ believes that using a more conservative approach of "total recoverable" concentrations is technically defensible as acknowledged by EPA (1995), the current economic difficulties in the State do not support the adoption of metals criteria more stringent than the federal minimum (which in this case is "dissolved" concentrations).

One might argue that criteria expressed in "total recoverable" concentration represents the best policy choice because they are 1) more protective of beneficial uses than using "dissolved" concentrations and thus, represents protection from metals exposure from all sources, not just dissolved within the water column, 2) consistent with the how the criteria are currently applied, and 3) likely to be approved by both EPA and the Federal Services during consultation on whether the criteria meet the requirements of the Endangered Species Act; however adoption of "total recoverable" would have made Oregon's criteria more stringent than the latest EPA criteria which are expressed as "dissolved" concentrations and thus, might require greater treatment costs by permittees. Therefore, DEQ is recommending that the metals criteria be adopted as "dissolved" concentrations in order to minimize the financial burden to the regulated community during the economic slowdown.

**Table 4.3** Compounds for which DEQ recommends acceptance of the 2002 EPA Aquatic Life Criteria as "dissolved" concentrations. For each compound, medium, and exposure conditions, values are presented for current Oregon criteria, the Technical Advisory Committee (TAC) recommendation, the Policy Advisory Committee (PAC) recommendation or majority opinion, and the Department's recommendation (DEQ). All values are expressed as µg/L.

Compound	Medium	Exposure	Current OR Criteria <sup>1</sup>	Criteria <sup>1</sup> Recommendations		
				TAC	PAC	DEQ
Arsenic	Freshwater	Acute	360	340	340 <sup>4</sup>	340 <sup>4</sup>
	Freshwater	Chronic	190	150	150 <sup>4</sup>	150 <sup>4</sup>
Cadmium	Freshwater	Acute	3.9 <sup>2</sup>	2.1 <sup>3</sup>	2.0 <sup>3,4</sup>	2.0 <sup>3,4</sup>
	Freshwater	Chronic	1.1 <sup>2</sup>	0.27 <sup>3</sup>	0.25 <sup>3,4</sup>	0.25 <sup>3,4</sup>
	Saltwater	Acute	43	40	40 <sup>4</sup>	40 <sup>4</sup>
	Saltwater	Chronic	9.3	8.8	8.8 <sup>4</sup>	8.8 <sup>4</sup>
Chromium III	Freshwater	Acute	1700 <sup>2</sup>	1800 <sup>3</sup>	570 <sup>3,4</sup>	570 <sup>3,4</sup>



Compound	Medium	Exposure	Current OR Criteria <sup>1</sup>	Criteria <sup>1</sup> Recommendations		
				TAC	PAC	DEQ
	Freshwater	Chronic	210 <sup>2</sup>	86 <sup>3</sup>	74 <sup>3,4</sup>	<b>74</b> <sup>3,4</sup>
Copper	Freshwater	Acute	18 <sup>2</sup>	14 <sup>3</sup>	13 <sup>3,4</sup>	<b>13</b> <sup>3,4</sup>
	Freshwater	Chronic	12 <sup>2</sup>	9.3 <sup>3</sup>	9.0 <sup>3,4</sup>	<b>9.0</b> <sup>3,4</sup>
	Saltwater	Acute	2.9	5.8	4.8 <sup>4</sup>	<b>4.8</b> <sup>4</sup>
	Saltwater	Chronic	2.9	3.7	3.1 <sup>4</sup>	<b>3.1</b> <sup>4</sup>
	Saltwater	Acute	140	220	210 <sup>4</sup>	<b>210</b> <sup>4</sup>
Lead	Saltwater	Chronic	5.6	8.5	8.1 <sup>4</sup>	<b>8.1</b> <sup>4</sup>
	Freshwater	Acute	1400 <sup>2</sup>	470 <sup>3</sup>	470 <sup>3,4</sup>	<b>470</b> <sup>3,4</sup>
Nickel	Freshwater	Chronic	160 <sup>2</sup>	52 <sup>3</sup>	52 <sup>3,4</sup>	<b>52</b> <sup>3,4</sup>
	Freshwater	Chronic	35	5.0	4.6 <sup>4</sup>	<b>4.6</b> <sup>4</sup>
Selenium	Saltwater	Acute	410	290	290 <sup>4</sup>	<b>290</b> <sup>4</sup>
	Saltwater	Chronic	54	71	71 <sup>4</sup>	<b>71</b> <sup>4</sup>
Silver	Freshwater	Acute	4.1	4.1	3.4 <sup>4</sup>	<b>3.4</b> <sup>4</sup>
Zinc	Freshwater	Chronic	110 <sup>2</sup>	120 <sup>3</sup>	120 <sup>3,4</sup>	<b>120</b> <sup>3,4</sup>

<sup>1</sup> Criteria are expressed as total recoverable concentrations unless otherwise footnoted.

<sup>2</sup> Criteria depend on water hardness. Values presented are for metals in waters with water hardness=100 mg/L using the formulae specified in EPA (1986), i.e. the "Gold Book".

<sup>3</sup> Criteria depend on water hardness. Values presented are for metals in waters with water hardness=100 mg/L using the formulae specified in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047; <http://www.epa.gov/ost/pc/revcom.pdf>) or 2001 Update of Ambient Water Quality Criteria for Cadmium (EPA-822-R-01-001; <http://www.epa.gov/waterscience/criteria/aqualife/cadmium/cad2001upd.pdf>)

<sup>4</sup> Values presented are for dissolved concentrations of metals.

**DEQ  
recommends  
adopting EPA's  
latest Selenium  
Criterion and  
Maintaining the  
current Oregon  
criteria for  
Mercury**

DEQ recommends that the criteria for selenium be changed to reflect the latest EPA recommendation (Table 4.4). The TAC had recommended maintaining the current Oregon criteria for both compounds, and this recommendation had received no action from the PAC; however, these discussions occurred prior to the 2002 publication of EPA recommended criteria (EPA 2002a). The TAC's recommendation had been to maintain Oregon's current criteria until EPA completed its review and then reevaluate the criteria at that time. EPA (2002a) offered no explanation for why it changed its recommendation from "reserved" in the California Toxics Rule (EPA 2000a) to the values it had previously published in 1999 (EPA 1999). Informal correspondence with EPA Headquarters revealed that EPA considered the "reserved" status for these criteria to only apply to California and therefore, the 1999 EPA criteria were relevant as national recommendations for other States. DEQ believes that changing the selenium criterion to the latest EPA recommendation is prudent until such time that Oregon can review these criteria in depth. DEQ believes that maintaining the current Oregon aquatic life criteria for mercury is prudent because of concerns existing in Oregon over mercury and the protection of threatened and endangered salmonids. These criteria were "reserved" (i.e. withdrawn) from the California Toxics Rule because of the Services' objections to suspected adverse impact of the proposed EPA criteria on Threatened and Endangered salmonids. Since Oregon has the same species as those identified in the Biological Opinion to the California Toxics Rule, DEQ believes this is the most prudent action until such time that the mercury criteria can be reviewed in depth..

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**Table 4.4** Compounds for which DEQ recommends acceptance of the 2002 EPA Aquatic Life Criteria. For each compound, medium, and exposure conditions, values are presented for current Oregon criteria, the Technical Advisory Committee (TAC) recommendation, the Policy Advisory Committee (PAC) recommendation or majority opinion, and the Department's recommendation (DEQ). All values are expressed as µg/L and as total recoverable concentrations unless specified otherwise.

Compound	Medium	Exposure	Current OR Criteria <sup>1</sup>	Criteria <sup>1</sup> Recommendations		
				TAC	PAC	DEQ
Mercury	Freshwater	Acute	2.4	2.4		<b>2.4</b>
	Freshwater	Chronic	0.012	0.012		<b>0.012</b>
	Saltwater	Acute	2.1	2.1		<b>2.1</b>
	Saltwater	Chronic	0.025	0.025		<b>0.025</b>
Selenium	Freshwater	Acute	260	260		<b>190/13<sup>2</sup></b>

<sup>1</sup>Criteria are expressed as total recoverable concentrations.

<sup>2</sup>The CMC =  $1/[(f1/CMC1)+(f2/CMC2)]$  where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.82 µg/l, respectively.

## Summary

### Table of Recommended Criteria for the Protection of Aquatic Life

Table 4.5 presents a comparison of the DEQ proposed and current Oregon aquatic life criteria for all compounds, including those that were not reviewed because no differences existed between Oregon and EPA criteria.

**Table 4.5** Comparison of Aquatic Life Criteria between DEQ proposed values and current Oregon values. All values are expressed as µg/L. Compounds are listed in alphabetical order with the corresponding EPA (1999) compound number ("N" following a number indicates that the compound is listed by EPA under Non-Priority Pollutants) and the Chemical Abstract Service (CAS) number.

EPA No.	Compound	CAS	Freshwater				Saltwater			
			Acute Criteria (CMC)		Chronic Criteria (CCC)		Acute Criteria (CMC)		Chronic Criteria (CCC)	
			DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR
56	Acenaphthene	83329								
57	Acenaphthylene	208968								
17	Acrolein	107028								
18	Acrylonitrile	107131								
102	Aldrin	309002	3.0	3.0			1.3	1.3		
2 N	Aluminum (pH 6.5 - 9.0)	7429905	750 C		87 C					
3 N	Ammonia (@18 C & pH=7.5)	7664417	20 A	13 A	5.6 B	3.7 B				

EPA No.	Compound	CAS	Freshwater				Saltwater			
			Acute Criteria (CMC)		Chronic Criteria (CCC)		Acute Criteria (CMC)		Chronic Criteria (CCC)	
			DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR
58	Anthracene	120127								
1	Antimony	7440360								
2	Arsenic	7440382	340 H	360 C	150 H	190 C	69 H	69 C	36 H	36 C
15	Asbestos	1332214								
6 N	Barium	7440393								
19	Benzene	71432								
59	Benzidine	92875								
60	Benzo(a)Anthracene	56553								
61	Benzo(a)Pyrene	50328								
62	Benzo(b)Fluoranthene	205992								
63	Benzo(ghi)Perylene	191242								
64	Benzo(k)Fluoranthene	207089								
3	Beryllium	7440417								
103	BHC, alpha-	319846								
104	BHC, beta-	319857								
106	BHC, delta	319868								
105	BHC, gamma- (Lindane)	58899	0.95	2.0	0.08	0.08	0.16	0.16		
7 N	Boron	7440428								
20	Bromoform	75252								
69	Bromophenyl Phenyl Ether 4-	101553								
70	Butylbenzyl Phthalate	85687								
4	Cadmium	7440439	2.0 H,D	3.9 C,D	0.25 H,D	1.13 C,D	40 H	43 C	8.8 H	9.3 C
21	Carbon Tetrachloride	56235								
107	Chlordane	57749	2.4	2.4	0.0043	0.0043	0.09	0.09	0.004	0.004
8 N	Chloride	16887006	860000	860000	230000	230000				
9 N	Chlorine	7782505	19	19	11	11	13	13	7.5	7.5
22	Chlorobenzene	108907								
23	Chlorodibromomethane	124481								
24	Chloroethane	75003								
65	ChloroethoxyMethane, Bis2-	111911								
66	ChloroethylEther, Bis2-	111444								
25	Chloroethylvinyl Ether 2-	110758								
26	Chloroform	67663								
67	ChloroisopropylEther, Bis2-	108601								
71	Chloronaphthalene 2-	91587								
45	Chlorophenol 2-	95578								
10 N	Chlorophenoxy Herbicide 2,4,5,-TP	93721								



EPA No.	Compound	CAS	Freshwater				Saltwater			
			Acute Criteria (CMC)		Chronic Criteria (CCC)		Acute Criteria (CMC)		Chronic Criteria (CCC)	
			DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR
11 N	Chlorophenoxy Herbicide 2,4-D	94757								
72	Chlorophenyl Phenyl Ether 4-	7005723								
12 N	Chloropyrifos	2921882	0.083	0.083	0.041	0.041	0.011	0.011	0.0056	0.0056
5a	Chromium III	16065831	570 H,D	1700 C,D	74 H,D	210 C,D				
5b	Chromium VI	18540299	16	16	11	11	1100	1100	50	50
73	Chrysene	218019								
6	Copper	7440508	13 H,D	18 C,D	9.0 H,D	12 C,D	4.8 H	2.9 C	3.1 H	2.9 C
14	Cyanide	57125	22	22	5.2	5.2	1	1	1	1
110	DDD 4,4'-	72548								
109	DDE 4,4'-	72559								
108	DDT 4,4'-	50293	1.1	1.1	0.001	0.001	0.13	0.13	0.001	0.001
14 N	Demeton	8065483			0.1	0.1			0.1	0.1
74	Dibenzo(a,h)Anthracene	53703								
75	Dichlorobenzene 1,2-	95501								
76	Dichlorobenzene 1,3-	541731								
77	Dichlorobenzene 1,4-	106467								
78	Dichlorobenzidine 3,3'-	91941								
27	Dichlorobromomethane	75274								
28	Dichloroethane 1,1-	75343								
29	Dichloroethane 1,2-	107062								
30	Dichloroethylene 1,1-	75354								
40	Dichloroethylene 1,2- Trans-	156605								
46	Dichlorophenol 2,4-	120832								
31	Dichloropropane 1,2-	78875								
32	Dichloropropene 1,3-	542756								
111	Dieldrin	60571	0.24	2.5	0.056	0.0019	0.71	0.71	0.0019	0.0019
79	DiethylPhthalate	84662								
80	Dimethyl Phthalate	131113								
47	Dimethylphenol 2,4-	105679								
81	Di-n-Butyl Phthalate	84742								
49	Dinitrophenol 2,4-	51285								
27 N	Dinitrophenols	25550587								
82	Dinitrotoluene 2,4-	121142								
83	Dinitrotoluene 2,6-	606202								
84	Di-n-Octyl Phthalate	117840								
16	Dioxin (2,3,7,8-TCDD)	1746016								
85	Diphenylhydrazine 1,2-	122667								
	Endosulfan	7439976	0.22 E	0.22 E	0.056 E	0.056 E	0.034 E	0.034 E	0.0087 E	0.0087 E

EPA No.	Compound	CAS	Freshwater				Saltwater			
			Acute Criteria (CMC)		Chronic Criteria (CCC)		Acute Criteria (CMC)		Chronic Criteria (CCC)	
			DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR
114	Endosulfan Sulfate	1031078								
112	Endosulfan, alpha-	959988	0.22		0.056		0.034		0.0087	
113	Endosulfan, beta-	33213659	0.22		0.056		0.034		0.0087	
115	Endrin	72208	0.086	0.18	0.036	0.0023	0.037	0.037	0.0023	0.0023
116	Endrin Aldehyde	7421934								
15 N	Ether, Bis Chloromethyl	542881								
33	Ethylbenzene	100414								
68	EthylhexylPhthalate, Bis2-	117817								
86	Fluoranthene	206440								
87	Fluorene	86737								
17 N	Guthion	86500			0.01	0.01			0.01	0.01
117	Heptachlor	76448	0.52	0.52	0.0038	0.0038	0.053	0.053	0.0036	0.0036
118	Heptachlor Epoxide	1024573	0.52		0.0038		0.053		0.0036	
88	Hexachlorobenzene	118741								
89	Hexachlorobutadiene	87683								
19 N	Hexachlorocyclo-hexane-Technical	319868								
90	Hexachlorocyclopentadiene	77474								
91	Hexachloroethane	67721								
92	Ideno1,2,3-cdPyrene	193395								
20 N	Iron	7439896			1000	1000				
93	Isophorone	78591								
7	Lead	7439921	65 H,D	82 C,D	2.5 H,D	3.2 C,D	210 H	140 C	8.1 H	5.6 C
21 N	Malathion	121755			0.1	0.1			0.1	0.1
22 N	Manganese	7439965								
8a	Mercury	7439976	2.4 C	2.4 C	0.012 C	0.012 C	2.1 C	2.1 C	0.025 C	0.025 C
23 N	Methoxychlor	72435			0.03	0.03			0.03	0.03
34	Methyl Bromide	74839								
35	Methyl Chloride	74873								
48	Methyl-4,6-Dinitrophenol 2-	534521								
52	Methyl-4-Chlorophenol 3-	59507								
36	Methylene Chloride	75092								
8b	Methylmercury	22967926								
24 N	Mirex	2385855			0.001	0.001			0.001	0.001
94	Naphthalene	91203								
9	Nickel	7440020	470 H,D	1400 C,D	52 H,D	160 C,D	74 H	75 C	8.2 H	8.3 C
25 N	Nitrates	14797558								
95	Nitrobenzene	98953								
50	Nitrophenol 2-	88755								



EPA No.	Compound	CAS	Freshwater				Saltwater			
			Acute Criteria (CMC)		Chronic Criteria (CCC)		Acute Criteria (CMC)		Chronic Criteria (CCC)	
			DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR	DEQ Proposed	Current OR
51	Nitrophenol 4-	100027								
26 N	Nitrosamines	35576911								
28 N	Nitrosodibutylamine,N	924163								
29N	Nitrosodiethylamine,N	55185								
96	Nitrosodimethylamine, N-	62759								
97	Nitrosodi-n-Propylamine, N-	621647								
98	Nitrosodiphenylamine, N-	86306								
30 N	Nitrosopyrrolidine,N	930552								
32 N	Parathion	56382	0.065	0.065	0.013	0.013				
33 N	Pentachlorobenzene	608935								
53	Pentachlorophenol	87865	19 F	20 F	15 F	13 F	13	13	7.9	
99	Phenanthrene	85018								
54	Phenol	108952								
34 N	Phosphorus Elemental	7723140							0.1	0.1
119	Polychlorinated biphenyls PCBs:	1336363	2.0	2	0.014	0.014	10	10	0.03	0.03
100	Pyrene	129000								
10	Selenium	7782492	190/13 G	260	5	35	290	410	71	54
11	Silver	7440224	3.2 H,D	4.1 C,D	0.12 H	0.12 C	1.9 H	2.3 C		
36 N	Sulfide-Hydrogen Sulfide	7783064			2	2			2	2
40 N	Tetrachlorobenzene,1,2,4,5	95943								
37	Tetrachloroethane 1,1,2,2-	79345								
38	Tetrachloroethylene	127184								
12	Thallium	7440280								
39	Toluene	108883								
120	Toxaphene	8001352	0.73	0.73	0.0002	0.0002	0.21	0.21	0.0002	0.0002
43 N	Tributyltin TBT	688733	0.46		0.063		0.37		0.01	
101	Trichlorobenzene 1,2,4-	120821								
41	Trichloroethane 1,1,1-	71556								
42	Trichloroethane 1,1,2-	79005								
43	Trichloroethylene	79016								
44 N	Trichlorophenol 2,4,5	95954								
55	Trichlorophenol 2,4,6-	88062								
44	Vinyl Chloride	75014								
13	Zinc	7440666	120 H,D	120 C,D	120 H,D	110 C,D	90 H	95 C	81 H	86 C

- A Ammonia criteria for freshwater may depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Values for freshwater criteria (for total ammonia nitrogen in mg N/L) can be calculated using the formulae specified in *1999 Update of Ambient Water*

*Quality Criteria for Ammonia* (EPA-822-R-99-014;  
<http://www.epa.gov/ost/standards/ammonia/99update.pdf>):  
Freshwater Acute:

$$\text{salmonids present...CMC} = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

$$\text{salmonids not present...CMC} = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

Freshwater Chronic:

fish early life stages present

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * MIN(2.85, 1.45 * 10^{0.028 * (25 - T)})$$

fish early life stages not present

$$CCC = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * 1.45 * 10^{0.028 * (25 - MAX(T, 7))}$$

Note: these formulae would be applied to calculate the 30-day average concentration limit; in addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

- B Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in *Ambient Water Quality Criteria for Ammonia (Saltwater)--1989* (EPA 440/5-88-004; <http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf>).
- C Freshwater and saltwater criteria for metals are expressed in terms of “total recoverable” concentrations in the water column, except where otherwise noted (e.g. iron and manganese).
- D The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value shown is for hardness = 100 mg/L. Criteria values for hardness may be calculated from the following formulae:

$$CMC = \exp(m_A * [\ln(\text{hardness}) + b_A])$$

$$CCC = \exp(m_C * [\ln(\text{hardness}) + b_C])$$

Chemical	m <sub>A</sub>	b <sub>A</sub>	m <sub>C</sub>	b <sub>C</sub>
Cadmium	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.700	0.8545	-1.702
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59		
Zinc	0.8473	0.884	0.8473	0.884

- E This value is based on the criterion published in *Ambient Water Quality Criteria for Endosulfan* (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.
- F Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869)); CCC=exp(1.005(pH)-5.134).
- G The CMC = 1/[(f1/CMC1)+(f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.82 µg/l, respectively.
- H Freshwater and saltwater criteria for metals are expressed in terms of “dissolved” concentrations in the water column, except where otherwise noted (e.g. aluminum).



## Section 4.3 Guidance Values for the Protection of Aquatic Life

### Separation of Guidance Values from Criteria

DEQ recommends removing the guidance values in Table 20 to a separate table (shown in Table 4.6) within Division 41 of the Oregon Administrative Rules, as recommended by the TAC. The PAC did not discuss this recommendation. DEQ agrees with the TAC recommendation that Guidance Values can be used in setting effluent limits, especially in the absence of other scientific information on the toxicity of these compounds. DEQ believes that separation of the guidance values from the criteria is technically justified since sufficient information was not available to generate actual criteria for these compounds. EPA removed the guidance values from their latest criteria table and has not yet published a table of guidance values. However, DEQ agrees with the TAC that the guidance values constitute valuable information on this group of compounds that otherwise do not have criteria. Therefore, DEQ believes that the guidance values should be used for reference purposes in setting effluent limits preferably in conjunction with other scientific information. However, violation of the guidance values should not result in the listing of a waterbody as impaired because these values were derived without meeting the data requirements for criteria development.

**Table 4.6** Guidance Values for the protection of Aquatic Life. All values are expressed as µg/L. Compounds are listed in alphabetical order with the corresponding EPA (1999) compound number ("N" following a number indicates that the compound is listed by EPA under Non-Priority Pollutants) and the Chemical Abstract Service (CAS) number.

EPA No.	Compound	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
56	Acenaphthene	83329	1,700	520	970	710
17	Acrolein	107028	68	21	55	
18	Acrylonitrile	107131	7,550	2,600		
1	Antimony	7440360	9,000	1,600		
2	Arsenic	7440382	850	48	2,319	13
19	Benzene	71432	5,300		5,100	700
59	Benzidine	92875	2,500			
3	Beryllium	7440417	130	5.3		
19 N	BHC (Hexachlorocyclohexane-Technical)	319868	100		0.34	
21	Carbon Tetrachloride	56235	35,200		50,000	
	Chlorinated Benzenes		250	50	160	129
	Chlorinated naphthalenes		1,600		7.5	
	Chloroalkyl Ethers		238,000			
26	Chloroform	67663	28,900	1,240		
45	Chlorophenol 2-	95578	4,380	2,000		
	Chlorophenol 4-	106489			29,700	
52	Methyl-4-chlorophenol 3-	59507	30			
5a	Chromium (III)	16065831			10,300	
109	DDE 4,4'-	72559	1,050		14	
110	DDD 4,4'-	72548	0.06		3.6	
	Diazinon	333415	0.08	0.05		
	Dichlorobenzenes		1,120	763	1,970	

EPA No.	Compound	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
29	Dichloroethane 1,2-	107062	118,000	20,000	113,000	
	Dichloroethylenes		11,600		224,000	
46	Dichlorophenol 2,4-	120832	2,020	365		
31	Dichloropropane 1,2-	78875	23,000	5,700	10,300	3,040
32	Dichloropropene 1,3-	542756	6,060	244	790	
47	Dimethylphenol 2,4-	105679	2,120			
	Dinitrotoluene		330	230	590	370
16	Dioxin (2,3,7,8-TCDD)	1746016	0.01	0.000038		
85	Diphenylhydrazine 1,2-	122667	270			
33	Ethylbenzene	100414	32,000		430	
86	Fluoranthene	206440	3,980		40	16
	Haloethers		360	122		
	Halomethanes		11,000		12,000	6,400
89	Hexachlorobutadiene	87683	90	9.3	32	
90	Hexachlorocyclopentadiene	77474	7	5.2	7	
91	Hexachloroethane	67721	980	540	940	
93	Isophorone	78591	117,000		12,900	
94	Naphthalene	91203	2,300	620	2,350	
95	Nitrobenzene	98953	27,000		6,680	
	Nitrophenols		230	150	4,850	
26 C	Nitrosamines	35576911	5,850		3,300,000	
	Pentachlorinated ethanes		7,240	1,100	390	281
54	Phenol	108952	10,200	2,560	5,800	
	Phthalate esters		940	3	2,944	3.4
	Polynuclear Aromatic Hydrocarbons				300	
	Tetrachlorinated Ethanes		9,320			
37	Tetrachloroethane 1,1,2,2-	79345		2,400	9,020	
	Tetrachloroethanes		9,320			
38	Tetrachloroethylene	127184	5,280	840	10,200	450
	Tetrachlorophenol 2,3,5,6					440
12	Thallium	7440280	1,400	40	2,130	
39	Toluene	108883	17,500		6,300	5,000
	Trichlorinated ethanes		18,000			
41	Trichloroethane 1,1,1-	71556			31,200	
42	Trichloroethane 1,1,2-	79005		9,400		
43	Trichloroethylene	79016	45,000	21,900	2,000	
55	Trichlorophenol 2,4,6-	88062		970		

The following chemicals/compounds/classes are of concern due to the potential for toxic effects to aquatic organisms; however, no guidance values are designated. If these compounds are identified in the waste stream, then a review of the scientific literature may be appropriate for deriving guidance values.

Polybrominated diphenyl ethers (PBDE)

Polybrominated biphenyls (PBB)

Pharmaceuticals

Personal care products

Alkyl Phenols

Other chemicals with Toxic effects



## Section 4.4 Criteria for the Protection of Human Health

### **TEF Approach for Dioxins, Furans, and PCBs**

DEQ recommends adoption of criteria for 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) as shown in Table 4.7. This revision satisfies the federal minimum recommendation for regulating dioxins and furans. The TAC had recommended that DEQ use a dioxin toxic equivalency approach for the dioxins, furans, and PCBs shown in Table 2.8. This approach was not endorsed by the PAC. Instead, a PAC subcommittee that was created to examine this issue in more detail proposed that Oregon adopt a TEF approach for dioxins and furans but not include PCBs, and that bioconcentration equivalency factors (BEF) as developed by EPA Region 5 be included in application of the TEF approach. This approach is currently used by the State of New York and several other Great Lakes states. The full PAC did not reach consensus on this subcommittee proposal. DEQ is recommending criteria for 2,3,7,8-TCDD only be adopted at this time.

**TAC and PAC  
choices for  
Human Health  
Criteria**

For all human health criteria, the TAC recommended that DEQ use EPA's "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)" as soon as sufficient information becomes available for deriving bioaccumulation factors and for application of the two models for cancer-causing chemicals. In the interim, the TAC recommended that DEQ modify the approach used to derive the 1999 EPA criteria by 1) substituting one of three values for the intensity of fish consumption for 6.5 g/day (0.2 oz/day) as the value of the fish consumption variable, 2) using the 1999 EPA values for risk level or relative source contribution, cancer potency factor or reference dose, body weight, and water intake, and 3) maintaining EPA's practice of setting the ratio of lipid fraction of fish consumed and the foodchain multiplier both to 1. EPA's national minimum recommendation for fish consumption is 17.5 g/day. The values for fish consumption recommended by the TAC were 17.5 g/day (low; 0.6 oz/day), 142.4 g/day (moderate; 5.0 oz/day), or 389.0 g/day (high; 13.7 oz/day), and these values were designated to apply in the waters of the specific basins identified in the Oregon Administrative Rules. These values are based on the national 90<sup>th</sup> (17.5 g/day) and 99<sup>th</sup> (142.4 g/day) percentile fish consumption rates published in EPA (2000), and the 1994 Columbia River Inter-Tribal Fish Commission (CRITFC) Study 99<sup>th</sup> (389.0 g/day) percentile fish consumption rate. The TAC also recommended that for carcinogens, DEQ should keep the risk level at  $10^{-6}$  (i.e. 1 additional incidence of cancer per 1 million people) in deriving the criteria. In addition, the TAC recommended that DEQ use the values for bioconcentration factors from the 1999 EPA criteria until such time that either national or locally relevant bioaccumulation factors are known. The PAC could not reach a majority agreement on the value for the fish consumption variable.

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# Chapter 6 Appendix A

## Aquatic Life Criteria Profiles for Toxic Pollutants

The following pages contain brief descriptions of the toxic pollutants considered by the Toxics Technical Advisory Committee for revision of criteria for the protection of aquatic life. A general format is followed for each compound. Each compound description contains the type of waters and set of circumstances for which the criteria apply (e.g. Freshwater Acute Criterion). Next, the criteria for Oregon and EPA are described, followed by the date when each criterion was changed between the value for Oregon and the current EPA value. The Rationale for Change describes the existence of new data or other circumstances that led to the revision, the 4 most sensitive genera used in calculating the criterion (if available), and information on salmonids. Finally, citations of references used to generate the above information are provided.

### Brief Description of Criteria Development

EPA's (and OR's) criteria for protection of aquatic life may be provided for freshwater and/or saltwater and as a value that is based on the Criterion Maximum Concentration (CMC; the one-hour maximum concentration should not exceed this value more than once every three years) or a Criterion Continuous Concentration (CCC; the four-day average concentration should not exceed this value more than once every three years).

Acute criteria are developed after reviewing existing aquatic toxicological data on the pollutant and subsequent calculation of the Final Acute Value (FAV) based on the acute toxicity of the compound to various species of aquatic life. The acceptable toxicity data for freshwater criterion development must include results from at least one species in at least 8 different families (the stipulations of which families must be included differ somewhat between freshwater and saltwater). From these data (generally, from the acute toxicity values assigned to the genera for the four most sensitive genera), a FAV is calculated and the Criterion Maximum Concentration (CMC) is derived by dividing the FAV by 2. The sensitivity of a commercially or recreationally important species may cause further adjustment in the CMC.

Chronic criteria are developed after a more complicated process—due to the generally more scarce nature of information on chronic toxicity. If available, acceptable chronic toxicity data must include at least one species in at least 8 different families. If there are insufficient data, then the Final Chronic Value (FCV) can be calculated if there is enough information to quantitatively describe the relation between acute and chronic toxicity for a number of individual genera (called the Genus Mean Acute Chronic Ratio; GMACR). The Final Acute Chronic Ratio is calculated from all the acceptable GMACRs. The FCV then becomes the result of dividing the Final Acute Value by the Final Acute Chronic Ratio. Chronic criteria can also be developed by calculating a Final Residue Value (FRV) from data on bioaccumulation of the pollutant. The CCC is defined as the lowest value between the Final Chronic Value (whichever way it is calculated) and the Final Residue Value. The sensitivity of a commercially or recreationally important species may cause further adjustment in the CCC.

The aim in providing the following descriptions was to help the Toxics Technical Advisory Committee make recommendations regarding whether Oregon should adopt the 1999 EPA criteria.

## Aluminum (between pH 6.5 and 9.0)

### Freshwater Acute (CMC)

OR Criterion: none

EPA Criterion: 750 µg/L

*Date Changed:* 1988

*Rationale for Change:* This criterion was proposed in 1988. The Final Acute Value (FAV) was based on the geometric mean of the Genus Mean Acute Values (GMAVs) from the four most sensitive genera (out of 14):

4. amphipod (*Gammarus*);
3. rainbow trout (*Oncorhynchus*);
2. brook trout (*Salvelinus*); and
1. cladoceran (*Ceriodaphnia*)

*Information on Salmonids.* The GMAVs were available for *Salvelinus* (brook trout) (sensitivity rank=2); *Oncorhynchus* (rainbow trout) (3); and *Oncorhynchus* (chinook salmon) (10).

Note: At the time of criterion publication, rainbow trout was classified as *Salmo gairdneri*—which is why there are separate GMAVs for rainbow trout and chinook salmon.

*Reference:* “Ambient Water Quality Criteria for Aluminum - 1988” (1988) EPA 440-5-86-008.

### Freshwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 87 µg/L

*Date Changed:* 1988

*Rationale for Change:* Data on chronic effects were available from studies on fathead minnow (*Pimephales*) and two cladocerans (*Ceriodaphnia* and *Daphnia*). There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was initially calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR). The FACR varied widely between these three species and the first option was invoked to set the FACR equal to the Genus Mean Acute Chronic Ratio (GMACR) from most acutely sensitive species. However, this value was less than 2, which is not allowed in EPA procedures because it results in a CCC greater than the CMC. Therefore, the FACR was set to 2 in calculating the FCV with the end result being that the FCV would equal the CMC. Yet, additional data on the toxicity of aluminum to brook trout and striped bass demonstrated that the FCV should be lowered to 87 µg/L to protect these two important species. Thus, the CCC was set to 87 µg/L because brook trout and striped bass exposed to aluminum at or near this concentration showed no or minimal adverse effects.

*Information on Salmonids.* No GMACRs available for salmonids.

*Reference:* “Ambient Water Quality Criteria for Aluminum - 1988” (1988) EPA 440-5-86-008.



## Ammonia

### Freshwater Acute (CMC)

OR Criterion (in  $\mu\text{g/L}$ ): salmonids present.... $\text{CMC} = 0.52 / \text{FT} / \text{FPH} / 2$

where  $\text{FT} = 1$  when  $20 \leq T \leq 30$

or  $\text{FT} = 10^{0.03(20-T)}$  when  $0 \leq T \leq 20$

and  $\text{FPH} = 1$  when  $8 \leq \text{pH} \leq 9$

or  $\text{FPH} = \frac{1 + 10^{7.4-\text{pH}}}{1.25}$  when  $6.5 \leq \text{pH} \leq 8$   
salmonids absent.... $\text{CMC} = 0.52 / \text{FT} / \text{FPH} / 2$

where  $\text{FT} = 0.71$  when  $25 \leq T \leq 30$

or  $\text{FT} = 10^{0.03(20-T)}$  when  $0 \leq T \leq 25$

and  $\text{FPH} = 1$  when  $8 \leq \text{pH} \leq 9$

or  $\text{FPH} = \frac{1 + 10^{7.4-\text{pH}}}{1.25}$  when  $6.5 \leq \text{pH} \leq 8$

$$\begin{aligned} \text{EPA Criterion (in } \mu\text{g/L): } \quad & \text{salmonids present....CMC} = \frac{0.275}{1 + 10^{7.204-\text{pH}}} + \frac{39.0}{1 + 10^{\text{pH}-7.204}} \\ & \text{salmonids not present....CMC} = \frac{0.411}{1 + 10^{7.204-\text{pH}}} + \frac{58.4}{1 + 10^{\text{pH}-7.204}} \end{aligned}$$

*Date Changed:* 1999

*Rationale for Change:* The old criterion (OR criterion) was based on the toxicity of un-ionized ammonia (even though a table on total ammonia was provided in EPA's "Quality Criteria for Water—1986"); the new EPA criterion is based on the toxicity of total ammonia (un-ionized ammonia + ammonium ion). The old criterion included a temperature component; the new criterion does not (re-analysis of old data and analysis of 1992 data on fish indicated that for the species used in the acute criterion calculations, no temperature correction for acute toxicity was appropriate). Derivation of the new criterion relies solely on acute tests reported in the 1984/1985 criteria document, supplemented by some newer studies relevant to the revised pH relationship. New data were not used in the derivation of the new CMC, but they were used to compare the performance of the new CMC with that of the old CMC. The Genus Mean Acute Values (GMAVs) differ between 1984/1985 and 1998/1999 EPA documents in that 1) pH and temperature are addressed differently in the two sets of calculations; 2) golden trout, cutthroat trout, and rainbow trout are now in the genus *Oncorhynchus* (same as Pacific salmon); and 3) new GMAVs are expressed in terms of total ammonia nitrogen instead of un-ionized ammonia (from 1984/1985). The FAV was initially calculated based on the four most sensitive genera (out of 34):

4. trout/salmon (*Oncorhynchus*);
3. orangethroat darter (*Ethiostoma*);
2. golden shiner (*Notemigonus*); and
1. mountain whitefish (*Prosopium*; a salmonid)

However, since the Species Mean Acute Value (SMAV) for rainbow trout was lower than this geometric mean, the FAV was lowered to the SMAV for rainbow trout.

*Information on Salmonids.* In 1984/1985, the genus mean acute values had the following species sensitivity ranks (1=most sensitive):

4. walleye (*Stizostedion*);

3. orangethroat darter (*Ethiostoma*);
2. golden shiner (*Notemigonus*); and
1. mountain whitefish (*Prosopium*; a salmonid)

In that document, rainbow trout fell into the *Salmo* group which was the 5<sup>th</sup> most sensitive; the Pacific salmon group was the 9<sup>th</sup> most sensitive. However, because rainbow trout had a Species Mean Acute Value (SMAV) lower than the Final Acute Value (FAV) calculated from other four species, the FAV was lowered to the SMAV for rainbow trout in order to derive the CMC (which is ½ of this FAV). The same approach was followed for calculating the 1999 CMC, i.e. use the SMAV of rainbow trout to derive the CMC.

*Reference:* "Ambient Water Quality Criteria for Ammonia—1984" (1985) EPA 440/5-85-001;  
 "1999 Update of Ambient Water Quality Criteria Documents for Ammonia" (1999) EPA-822-R-99-014.

#### Freshwater Chronic (CCC)

OR Criterion (µg/L): salmonids present....CCC = 0.80 / FT / FPH / RATIO

where FT = 1.4 when  $15 \leq T \leq 30$

or FT =  $10^{0.03(20-T)}$  when  $0 \leq T \leq 15$

and FPH = 1 when  $8 \leq \text{pH} \leq 9$

or FPH =  $\frac{1 + 10^{7.4 - \text{pH}}}{1.25}$  when  $6.5 \leq \text{pH} \leq 8$

and RATIO = 16 when  $7.7 \leq \text{pH} \leq 9$

or RATIO =  $24 \times \frac{10^{7.7 - \text{pH}}}{1 + 10^{7.4 - \text{pH}}}$  when  $6.5 \leq \text{pH} \leq 7.7$

salmonids absent....CCC = 0.80 / FT / FPH / RATIO

where FT = 1 when  $20 \leq T \leq 30$

or FT =  $10^{0.03(20-T)}$  when  $0 \leq T \leq 20$

and FPH = 1 when  $8 \leq \text{pH} \leq 9$

or FPH =  $\frac{1 + 10^{7.4 - \text{pH}}}{1.25}$  when  $6.5 \leq \text{pH} \leq 8$

and RATIO = 16 when  $7.7 \leq \text{pH} \leq 9$

or RATIO =  $24 \times \frac{10^{7.7 - \text{pH}}}{1 + 10^{7.4 - \text{pH}}}$  when  $6.5 \leq \text{pH} \leq 7.7$

Note: these formulae would be applied to calculate the 4-day average concentration limit.

EPA Criterion (in µg/L): fish early life stages present

$$\text{CCC} = \left( \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) * \text{MIN}(2.85, 1.45 * 10^{0.028 * (25 - T)})$$

fish early life stages not present

$$\text{CCC} = \left( \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) * 1.45 * 10^{0.028 * (25 - \text{MAX}(T, 7))}$$

Note: these formulae would be applied to calculate the 30-day average concentration limit; in addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

*Date Changed:* 1999



*Rationale for Change:* The old criterion (OR Table 20) CCC was derived by dividing the Final Acute Value (FAV) by an Acute-Chronic Ratio (ACR) due to the lack of sufficient data for directly calculating Final Chronic Values (FCVs). Both the old and new criterion calculation take temperature (T) and pH into account. The old criterion calculation varies depending on the presence of salmonids; the new criterion varies depending on the presence of early life history stages of fish. For the 1984/1985 approach, the analyses were split into two groups: those data for pH>7.7 and those data for pH<7.7. For pH>7.7, 5 of 9 GMACRs (channel catfish, bluegill, rainbow trout, fathead minnow, and white sucker) were used; GMACRs from green sunfish, largemouth bass, and 2 cladocerans were excluded because these species had markedly higher chronic values. For pH<7.7, few data were present. The 1999 EPA criteria document indicates that the approach used in 1984/1985 to develop the old criterion 1) had uncertainties associated with both FAVs and ACRs; and 2) the number of chronic studies with acceptable data was far fewer than the number of acute studies. The new criterion (EPA) CCC is based on re-analysis of the 1984/1985 data and newer chronic data to calculate 9 Genus Mean Chronic Values (GMCVs) for appropriate endpoints. The FCV was based on the four most sensitive genera (out of 34) normalized to a temperature of 25°C:

4. fathead minnow (Pimephales);
3. sunfish (Lepomis);
2. fingernail clam (Musculium); and
1. amphipod (Hyaella)

The CCC was derived based on the presence or absence of early life stages of fish.

*Information on Salmonids.* In 1984/1985, Genus Mean Acute Chronic Ratios (GMACRs) were available for 10 species, including the following salmonids (pink salmon and rainbow trout). In 1999, the CCC was calculated directly from Genus Mean Chronic Values (GMCVs); therefore, GMACRs and Genus Mean Acute Chronic Ratios were presented in the criteria document as a comparison with the direct calculation from the GMCVs.

*Reference:* "Ambient Water Quality Criteria for Ammonia—1984" (1985) EPA 440/5-85-001;  
"1999 Update of Ambient Water Quality Criteria Documents for Ammonia" (1999) EPA-822-R-99-014.

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## Arsenic

### Freshwater Acute (CMC)

OR Criterion: 360 µg/L

EPA Criterion: 340 µg/L

Note: These values are expressed as total recoverable concentrations.

*Date Changed:* 1995

*Rationale for Change:* New data (references from 1986) from studies on fathead minnow and three cladocerans (2 Daphnia; 1 Ceriodaphnia) were analyzed and incorporated into the calculation of the Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 14):

4. cladoceran (Daphnia);
3. cladoceran (Ceriodaphnia);
2. cladoceran (Simocephalus); and
1. amphipod (Gammarus).

*Information on Salmonids.* Genus mean acute value (GMAV) available for rainbow trout (sensitivity rank=5) and brook trout (7).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

Freshwater Chronic (CCC)

OR Criterion: 190 µg/L

EPA Criterion: 150 µg/L

*Date Changed:* 1995

*Rationale for Change:* New data (reference from 1986) from studies on fathead minnow were analyzed. There were insufficient data to calculate a Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR). The FACR was calculated based on geometric mean of the Genus Mean Acute Chronic Ratio (GMACR) from 3 species: cladoceran (*Daphnia*), fathead minnow (*Pimephales*), and flagfish (*Jordanella*).

*Information on Salmonids.* No GMACRs were available for salmonids. EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

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## Cadmium

Freshwater Acute (CMC)

OR Criterion: 3.9 µg/L

EPA Criterion: 2.1 µg/L

*note:* These criteria are expressed as a function of hardness:

$$CMC = e^{(m_a[\ln(hardness)] + b_a)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_a$  (1.0166) and  $b_a$  (-3.924) are provided in "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

*Date Changed:* 2001

*Rationale for Change:* New data from studies on coho salmon (1975; *Oncorhynchus kisutch*), chinook salmon (1975, 1978, 1982; *O. tshawytscha*), and rainbow trout (1975, 1976, 1978, 1985, 1986, 1999; *O. mykiss*); striped bass (1985; *Morone saxatilis*); brook trout (1979; *Salvelinus fontinalis*) and bull trout (1999; *S. confluentus*); and brown trout (1984; *Salmo trutta*) were analyzed and incorporated into the calculation of the Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 55):

4. salmon/trout (*Oncorhynchus*);
3. striped bass (*Morone*);
2. char (*Salvelinus*); and
1. trout (*Salmo*).



*Information on Salmonids.* Genus mean acute values (GMAVs) were available for *Oncorhynchus* (coho salmon, chinook salmon, and rainbow trout) (sensitivity rank=4); *Salvelinus* (brook trout and bull trout) (2); and *Salmo* (brown trout) (1).

*Reference:* "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001; "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

Freshwater Chronic (CCC)

OR Criterion: 1.13 µg/L

EPA Criterion: 0.27 µg/L

note: These criteria are expressed as a function of hardness:

$$CCC = e^{(m_c[\ln(\text{hardness})] + b_c)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_c$  (0.7409) and  $b_c$  (-4.719) are provided "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

*Date Changed:* 2001

*Rationale for Change:* New data from studies on midge (unpublished; *Chironomus tentans*); coho salmon (1978), chinook salmon (1975), and rainbow trout (1994); cladocerans (1984, 1988, 1989, manuscript; *Daphnia* sp.); and amphipod (unpubl.; *Hyalla azteca*) were analyzed and incorporated into the calculation of the Final Chronic Value (FCV). The FCV was based on the four most sensitive genera (out of 16):

4. midge (*Chironomus*);
3. salmon/trout (*Oncorhynchus*);
2. cladoceran (*Daphnia*); and
1. amphipod (*Hyalella*)

*Information on Salmonids.* Genus mean chronic values (GMCVs) were available for *Oncorhynchus* (coho salmon, chinook salmon, and rainbow trout) (sensitivity rank=3); *Salvelinus* (brook trout and lake trout) (5); and *Salmo* (Atlantic salmon and brown trout) (8).

*Reference:* "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001; "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

Saltwater Acute (CMC)

OR Criterion: 43 µg/L

EPA Criterion: 40 µg/L

*Date Changed:* 2001

*Rationale for Change:* New data from studies on a mysid (1982, 1985; *Mysidopsis bigelowi*); American lobster (1979; *Homarus americanus*); striped bass (1985; *Morone saxatilis*); and a mysid (1977, 1982, 1985; *Americamysis bahia*) were analyzed and incorporated into the calculation of Final Acute Value (FAV) for saltwater. The FAV was based on the four most sensitive genera (out of 54):

4. mysid (*Mysidopsis*);
3. American lobster (*Homarus*);
2. striped bass (*Morone*); and

1. mysid (*Americamysis*).

*Information on Salmonids.* Genus mean acute value (GMAV) was available for *Oncorhynchus* (coho salmon) (sensitivity rank=28).

*Reference:* "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

Saltwater Chronic (CCC)

OR Criterion: 9.3 µg/L

EPA Criterion: 8.8 µg/L

*Date Changed:* 2001

*Rationale for Change:* New data were insufficient for calculation of Final Chronic Value (FCV) for saltwater using the 8 family procedure; therefore, the saltwater FCV was calculated using the saltwater FAV divided by the Final Acute Chronic Ratio (FACR). The Genus Mean Acute Chronic Ratios (GMACR) from two saltwater species (both mysids) were used to calculate a FACR.

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* "2001 Update of Ambient Water Quality Criteria for Cadmium" (2001) EPA-822-R-01-001.

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## Chromium (III)

Freshwater Acute (CMC)

OR Criterion: 1700 µg/L

EPA Criterion: 1800 (1803) µg/L

*note:* These criteria are expressed as a function of hardness:

$$CMC = e^{(m_a[\ln(\text{hardness})] + b_a)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_a$  (0.8190) and  $b_a$  (3.7256) are provided in "National Recommended Water Quality Criteria—Correction" (1999).

*Date Changed:* 1995

*Rationale for Change:* New data (reference from 1986) from studies on amphipod were analyzed and incorporated into the calculation of the Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 19):

4. goldfish (*Carassius*);
3. guppy (*Poecilia*);
2. amphipod (*Gammarus*); and
1. mayfly (*Ephemerella*)

*Information on Salmonids.* A Genus Mean Acute Value (GMAV) was available for *Oncorhynchus* (rainbow trout) (sensitivity rank=6).



*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

Freshwater Chronic (CCC)

OR Criterion: 210 µg/L

EPA Criterion: 86 µg/L

*note:* These criteria are expressed as a function of hardness:

$$CCC = e^{(m_c[\ln(\text{hardness})] + b_c)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_c$  (0.8190) and  $b_c$  (0.6848) are provided in "National Recommended Water Quality Criteria—Correction"(1999).

*Date Changed:* 1995

*Rationale for Change:* No new chronic data were available, so there were still insufficient data to calculate the Final Chronic Value (FCV) by the 8 family procedure. Therefore, the FCV was calculated by dividing the FAV by the Final Acute Chronic Ratio (FACR). The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 2 of 3 species: fathead minnow (*Pimephales*), and rainbow trout (*Oncorhynchus*)—the third GMACR was excluded because it was from the least sensitive species.

*Information on Salmonids.* A GMACR was available for *Oncorhynchus* (rainbow trout) (sensitivity rank=6). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species since GMACR for rainbow trout was greater than GMACR for fathead minnow.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

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## Chromium (VI)

Freshwater Acute (CMC)

OR Criterion: 16 µg/L

EPA Criterion: 16 (16.3) µg/L

*Date Changed:* 1995

*Rationale for Change:* New data (references from 1987) were available from studies on cladocerans (*Daphnia* sp.), amphipod (*Crangonyx pseudogracilis*), bluegill (*Lepomis macrochirus*), and fathead minnow (*Pimephales promelas*) and were used to calculate FAV. The FAV was based on the four most sensitive genera (out of 28):

4. amphipod (*Gammarus*);
3. cladoceran (*Ceriodaphnia*);
2. cladoceran (*Simocephalus*); and
1. cladoceran (*Daphnia*)

*Information on Salmonids.* Genus mean acute values (GMAVs) were available for *Salvelinus* (brook trout) (sensitivity rank=19); and *Oncorhynchus* (rainbow trout) (22).

Notes: EPA rounds to 2 significant digits; therefore, the EPA criterion is expressed as 16 µg/L in the 1999 "National Recommended Water Quality Criteria—Correction".

Therefore, the Oregon and new EPA criteria can be considered to be the same.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

#### Freshwater Chronic (CCC)

OR Criterion: 11 µg/L

EPA Criterion: 11 (11.4) µg/L

*Date Changed:* 1995

*Rationale for Change:* No new chronic data; therefore, FCV calculated by dividing the FAV by the FACR. The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 4 of 8 species: all cladocerans—GMACRs were excluded from resistant species such as fathead minnow (*Pimephales*), brook trout (*Salvelinus*), and rainbow trout (*Oncorhynchus*), as well as from one cladoceran with a 'greater than' value.

*Information on Salmonids.* GMACRs were available for *Salvelinus* (brook trout) and *Oncorhynchus* (rainbow trout). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

Notes: EPA rounds to 2 significant digits; therefore, EPA criteria is expressed as 11 µg/L in the 1999 "National Recommended Water Quality Criteria—Correction".

Therefore, the Oregon and new EPA criteria can be considered to be the same.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

#### Saltwater Acute (CMC)

OR Criterion: 1100 µg/L

EPA Criterion: 1100 (1108) µg/L

*Date Changed:*

*Rationale for Change:* EPA believes that freshwater and saltwater criteria for metals should be expressed in terms of dissolved metal in the water column, which is how this criterion is expressed in the 1999 EPA criteria document. The EPA criterion of 1108 is back-calculated from the published dissolved value which is derived by multiplying the 'total recoverable' (comparable to Oregon's criterion) by a conversion factor. EPA rounds to 2 significant digits; therefore, both the dissolved and total recoverable would be expressed as '1100 µg/L'. Thus, the EPA and Oregon criteria can be considered the same.

*Reference:* "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (1985) PB85-227049.



#### Saltwater Chronic (CCC)

OR Criterion: 50 µg/L

EPA Criterion: 50 (50.4) µg/L

*Date Changed:*

*Rationale for Change:* The EPA criterion of 50.4 is back-calculated from the published dissolved value which is derived by multiplying the 'total recoverable' (comparable to Oregon's criterion) by a conversion factor. EPA rounds to 2 significant digits; therefore, both the dissolved and total recoverable would be expressed as '50 µg/L'. Thus, the EPA and Oregon criteria can be considered the same.

*Reference:* "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (1985) PB85-227049.

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## Copper

#### Freshwater Acute (CMC)

OR Criterion: 18 µg/L

EPA Criterion: 14 µg/L

note: These criteria are expressed as a function of hardness:

$$CMC = e^{(m_a[\ln(hardness)] + b_a)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_a$  (0.9422) and  $b_a$  (-1.700) are provided in "National Recommended Water Quality Criteria—Correction" (1999).

*Date Changed:* 1995

*Rationale for Change:* New data (references from 1986) from studies on cladocerans (1 Daphnia; 1 Ceriodaphnia) were analyzed and incorporated into the calculation of Final Acute Value (FAV). Data from Gammarus pulex (used in 1985) were excluded for lack of geographical relevance. The FAV was based on the four most sensitive genera (out of 43):

4. amphipod (Gammarus);
3. Northern pikeminnow (Northern squawfish; Ptycholcheilus);
2. cladoceran (Daphnia); and
1. cladoceran (Ceriodaphnia)

*Information on Salmonids.* Genus mean acute values (GMAVs) were available for Oncorhynchus (rainbow trout, chinook salmon, cutthroat trout, sockeye salmon, coho salmon) (sensitivity rank=12); Salmo (Atlantic salmon) (19); and Salvelinus (brook trout) (20).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

#### Freshwater Chronic (CCC)

OR Criterion: 12 µg/L

EPA Criterion: 9.3 µg/L

note: These criteria are expressed as a function of hardness:

$$CCC = e^{(m_c[\ln(\text{hardness})] + b_c)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_c$  (0.8545) and  $b_c$  (-1.702) are provided in "National Recommended Water Quality Criteria—Correction" (1999).

*Date Changed:* 1995

*Rationale for Change:* New data (reference from 1986) were analyzed from studies on fathead minnow. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR). The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 2 of 8 species: a cladoceran and an amphipod—GMACRs were excluded from resistant species such as snail (Physa), salmon/trout (Oncorhynchus), brook trout (Salvelinus), minnow (Pimephales), blue gill (Lepomis) and snail (Campeloma).

*Information on Salmonids.* GMACRs were available for Oncorhynchus (chinook salmon) and Salvelinus (brook trout). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

#### Saltwater Acute (CMC)

OR Criterion: 2.9 µg/L

EPA Criterion: 5.8 µg/L

*Date Changed:* 1995

*Rationale for Change:* New data from six new species (clam [Mulinia], copepod [Tigriopus], sea urchin [Arbacia], sheepshead minnow [Cyprinodon], mummichog [Fundulus], and topsmelt [Atherinops], were added to the database for deriving the saltwater copper criteria. The FAV was initially calculated based on the four most sensitive genera (out of 26):

4. oyster (Crassostrea);
3. coot clam (Mulinia);
2. summer flounder (Paralichthys); and
1. blue mussel (Mytilus)

However, in order to protect the commercially important blue mussel, the FAV was lowered to the Genus Mean Acute Value for this species.

*Information on Salmonids.* No Genus Mean Acute Values (GMAVs) were available for salmonids.

*Reference:* "Ambient Water Quality Criteria – Saltwater Copper Addendum (Draft)" (1995) no EPA No.; "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria" (1995) 60 FR 22229-22237.



#### Saltwater Chronic (CCC)

OR Criterion: 2.9 µg/L

EPA Criterion: 3.7 µg/L

*Date Changed:* 1995

*Rationale for Change:* No new chronic data were available; therefore, the Final Chronic Value (FCV) was calculated by dividing the FAV by the Final Acute Chronic Ratio (FACR). The FACR was calculated by taking the geometric mean of Genus Mean Acute Chronic Ratios (GMACRs) from 4 species (3 freshwater; 1 saltwater): *Daphnia*, *Gammarus*, *Physa*, and *Mysidopsis*.

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* "Ambient Water Quality Criteria – Saltwater Copper Addendum (Draft)" (1995) no EPA No.; "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria" (1995) 60 FR 22229-22237.

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## **Dieldrin**

#### Freshwater Acute (CMC)

OR Criterion: 2.5 µg/L

EPA Criterion: 0.24 µg/L

*Date Changed:* 1995

*Rationale for Change:* New data from studies on stonefly (1986; *Pteromarcys* sp. and *Claassenia sabulosa*) and rainbow trout (1985; *Oncorhynchus mykiss*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 18):

4. salmon/trout (*Oncorhynchus*);
3. stonefly (*Claassenia*);
2. stonefly (*Pteronarcys*); and
1. stonefly (*Pternarcella*)

*Information on Salmonids.* A Genus Mean Acute Value (GMAV) was available for *Oncorhynchus* (rainbow trout, chinook salmon, cutthroat trout, coho salmon) (sensitivity rank=4).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

#### Freshwater Chronic (CCC)

OR Criterion: 0.0019 µg/L

EPA Criterion: 0.056 µg/L

*Date Changed:* 1995

*Rationale for Change:* No new data were analyzed. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR). The FACR was based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 3 of 3 species: rainbow trout (*Oncorhynchus*), guppy (*Poecilia*), and a saltwater mysid. The OR criterion was based on 1980 methods that calculated a Freshwater Final Residue Value (based on FDA action level for fish tissue concentration, lipid content, and bioconcentration factor) that became the FCV.

*Information on Salmonids.* GMACR was available for *Oncorhynchus* (rainbow trout). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

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## **alpha-Endosulfan**

### Freshwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.22 µg/L

*Date Changed:* 1992

*Rationale for Change:* This criterion, first published in 1992 and again in 1999, is the same as that published in 1986 for endosulfan in the "Gold Book" which indicates that technical endosulfan typically contains a ratio of alpha- to beta-endosulfan of 70:30. The 1992 "Establishment of Numeric Criteria for Priority Toxic Pollutants" provides distinct criteria for alpha- and beta-endosulfan with the following footnote:

"Aquatic life criteria for these compounds were issued in 1980 utilizing the 1980 Guidelines for criteria development. The acute values shown are final acute values (FAV) which by the 1980 Guidelines are instantaneous values as contrasted with a CMC which is a one-hour average."

The 1999 "National Recommended Water Quality Criteria—Correction" continues to provide distinct criteria for alpha- and beta-endosulfan and has the following footnotes:

"This criterion is based on 304(a) aquatic life criterion in 1980, and was issued in one of the following documents:...Endosulfan (EPA 440/5-80-046).... The minimum data requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a 'CMC' derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines."

and

"This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan."

The four most sensitive genera (out of 10) were:

4. white sucker (*Catostomus*);
3. stonefly (*Pteronarcys*);
2. fathead minnow (*Pimephales*); and



1. rainbow trout (*Oncorhynchus*)

*Information on Salmonids.* Genus mean acute value (GMAV) available for *Oncorhynchus* (rainbow trout) (sensitivity rank=1).

*Reference:* "Ambient Water Quality Criteria for Endosulfan" (1980) EPA 440-5-80-046; "Quality Criteria for Water 1986" (1986) EPA 440-5-86-001; "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992) EPA 823-Z-92-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

Freshwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.056 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion. Genus Mean Acute Chronic Ratios (GMACRs) were available for 2 freshwater (*Daphnia* and *Pimephales*) and 2 saltwater species (*Mysidopsis* and *Cyprinodon*). The Final Chronic Value was calculated by dividing the FAV by the Final Acute Chronic Ratio.

*Information on Salmonids.* No GMACR was available for salmonids.

*Reference:* see references for Freshwater Acute.

Saltwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.034 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion. The four most sensitive genera (out of 12) were:

4. copepod (*Acartia*);
3. striped bass (*Morone*);
2. spot (*Leiostomus*); and
1. pink shrimp (*Penaeus*)

*Information on Salmonids.* No data for salmonids were available.

*Reference:* see references for Freshwater Acute.

Saltwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.0087 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion. Species Mean Acute-Chronic Ratios were available for 2 freshwater (*Daphnia* and *Pimephales*) and 2 saltwater species (*Mysidopsis* and

Cyprinodon). The Final Chronic Value was calculated by dividing the FAV by the Final Acute Chronic Ratio.

*Information on Salmonids.* No GMACR was available for salmonids.

*Reference:* see references for Freshwater Acute.

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## **beta-Endosulfan**

### Freshwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.22 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion for alpha-Endosulfan.

*Reference:* see references for Freshwater Acute for alpha-Endosulfan.

### Freshwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.056 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion and for Freshwater Chronic Criterion for alpha-Endosulfan.

*Reference:* see references for Freshwater Acute for alpha-Endosulfan.

### Saltwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.034 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion for alpha-Endosulfan.

*Reference:* see references for Freshwater Acute for alpha-Endosulfan.

### Saltwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.0087 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion and for Saltwater Chronic Criterion for alpha-Endosulfan.



*Reference:* see references for Freshwater Acute for alpha-Endosulfan.

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## **Endrin**

### Freshwater Acute (CMC)

OR Criterion: 0.18 µg/L

EPA Criterion: 0.086 µg/L

*Date Changed:* 1995

*Rationale for Change:* New data from studies on yellow perch (1986; *Perca flavescens*), bluegill (1985; *Lepomis macrochirus*), and largemouth bass (1986; *Micropterus salmoides*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 27):

4. largemouth bass (*Micropterus*);
3. stonefly (*Pteronarcys*);
2. bluegill (*Lepomis*); and
1. yellow perch (*Perca*)

*Information on Salmonids.* A Genus Mean Acute Value (GMAV) was available for *Oncorhynchus* (rainbow trout, chinook salmon, coho salmon) (sensitivity rank=8).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001; "Ambient Water Quality Criteria for Aldrin/Dieldrin" (1980) EPA 440/5-80-019.

### Freshwater Chronic (CCC)

OR Criterion: 0.0023 µg/L

EPA Criterion: 0.036 µg/L

*Date Changed:* 1995

*Rationale for Change:* No new data were analyzed. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR).

Note: the fathead minnow acute-chronic ratio was excluded.

The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 3 of 4 species: two saltwater species and one for a freshwater species, the flagfish (*Jordanella*). The OR criterion was based on 1980 methods that calculated a Freshwater Final Residue Value (based on FDA action level for fish tissue concentration, lipid content, and bioconcentration factor) that became the FCV.

*Information on Salmonids.* No GMACRs were available for salmonids. EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* “1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water” (1996) EPA-820-B-96-001; “Ambient Water Quality Criteria for Endrin” (1980) EPA 440/5-80-047.

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## Heptachlor Epoxide

### Freshwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.52 µg/L

*Date Changed:* 1992

*Rationale for Change:* This criterion, first published in 1992 and again in 1999, is the same as that published in 1986 for heptachlor in the “Gold Book”. Heptachlor undergoes oxidation to form heptachlor epoxide. The 1992 “Establishment of Numeric Criteria for Priority Toxic Pollutants” provides criteria for heptachlor epoxide with the following footnote:

“Aquatic life criteria for these compounds were issued in 1980 utilizing the 1980 Guidelines for criteria development. The acute values shown are final acute values (FAV) which by the 1980 Guidelines are instantaneous values as contrasted with a CMC which is a one-hour average.”

The 1999 “National Recommended Water Quality Criteria—Correction” continues to provide criteria for heptachlor epoxide and has the following footnotes:

“This criterion is based on 304(a) aquatic life criterion in 1980, and was issued in one of the following documents:...Heptachlor (EPA 440/5-80-052)... The minimum data requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a ‘CMC’ derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.”

and

“This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide”

The four most sensitive genera (out of 18) were:

4. stonefly (Claassenia);
3. glass shrimp (Palaemonotes);
2. stonefly (Pteronarcys); and
1. stonefly (Pteronarcella)

*Information on Salmonids.* Species Mean Acute Values (SMAVs) were available for rainbow trout (sensitivity rank=6), chinook salmon (sensitivity rank=8), and coho salmon (sensitivity rank=15).

*References:* “Ambient Water Quality Criteria for Heptachlor” (1980) EPA 440-5-80-052; “Quality Criteria for Water 1986” (1986) EPA 440-5-86-001; “Establishment of Numeric Criteria for Priority Toxic Pollutants” (1992) EPA 823-Z-92-001; “National Recommended Water Quality Criteria—Correction” (1999) EPA 822-Z-99-001.



Freshwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.0038 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion, and the following footnote was included for CCCs.

“This CCC is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.”

In addition, the 1986 “Water Quality Advisory—Heptachlor Epoxide” indicates that at that time there were insufficient data to calculate a criterion; however,

“Since preliminary indications are that heptachlor epoxide is less toxic than heptachlor to aquatic organisms, the EPA chronic criteria for heptachlor of 0.0038 µg/L and 0.0036 µg/L would be a conservative advisory concentration for heptachlor epoxide as well.”

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* “Ambient Water Quality Criteria for Heptachlor” (1980) EPA 440-5-80-052; “Quality Criteria for Water 1986” (1986) EPA 440-5-86-001; “Establishment of Numeric Criteria for Priority Toxic Pollutants” (1992) EPA 823-Z-92-001; “National Recommended Water Quality Criteria—Correction” (1999) EPA 822-Z-99-001.

Saltwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.053 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion.

*References:* “Ambient Water Quality Criteria for Heptachlor” (1980) EPA 440-5-80-052; “Quality Criteria for Water 1986” (1986) EPA 440-5-86-001; “Establishment of Numeric Criteria for Priority Toxic Pollutants” (1992) EPA 823-Z-92-001; “National Recommended Water Quality Criteria—Correction” (1999) EPA 822-Z-99-001.

Saltwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.0036 µg/L

*Date Changed:* 1992

*Rationale for Change:* see rationale for Freshwater Acute Criterion, and the following footnote was included for CCCs.

“This CCC is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.”

References: "Ambient Water Quality Criteria for Heptachlor" (1980) EPA 440-5-80-052; "Quality Criteria for Water 1986" (1986) EPA 440-5-86-001; "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992) EPA 823-Z-92-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

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## Lead

### Saltwater Acute (CMC)

OR Criterion: 140 µg/L

EPA Criterion: 220 µg/L

note: These criteria are expressed as total recoverable concentration.

*Date Changed:* 1992

*Rationale for Change:* The new criterion resulted from a correction of data. EPA recognized in the "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992; page 60882, comment 45) an error in the Genus Mean Acute Value (GMAV) for *Fundulus* and subsequent recalculation of the CMC to the value above (no details on the error in question are given; however, this value can be attained by removing the value for *Fundulus* from the four most sensitive species and adding the value for a copepod to calculate the Final Acute Value). The four species used in calculating the CMC were: *Mytilus* (mussel), *Ampelisca* (amphipod), *Cancer* (crab), and *Acartia* (copepod). The FAV was based on the four most sensitive genera (out of 27):

4. copepod (*Acartia*);
3. Dungeness crab (*Cancer*);
2. amphipod (*Ampelisca*); and
1. blue mussel (*Mytilus*)

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* "Ambient Water Quality for Lead—1984" (1985) EPA 440/5-84-027; "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992) EPA 823-Z-92-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

### Saltwater Chronic (CCC)

OR Criterion: 5.6 µg/L

EPA Criterion: 8.5 µg/L

note: These criteria are expressed as total recoverable concentration.

*Date Changed:* 1992

*Rationale for Change:* No new data were used. The CCC was recalculated based on the new FAV (see Rationale for Change for Saltwater Acute Criterion).



*Reference:* "Ambient Water Quality for Lead—1984" (1985) EPA 440/5-84-027; "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992) EPA 823-Z-92-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

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## **Lindane ( $\gamma$ -BHC)**

### Freshwater Acute (CMC)

OR Criterion: 2  $\mu\text{g/L}$

EPA Criterion: 0.95  $\mu\text{g/L}$

*Date Changed:* 1995

*Rationale for Change:* New data from studies on stonefly (1986; *Pteronarcys californicus*), backswimmer (1976; *Notonecta undulata*), and snail (1979; *Lymnaea stagnalis*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 23):

4. isopod (*Asellus*);
3. snail (*Lymnae*);
2. backswimmer (*Notonecta*); and
1. stonefly (*Pteronarcys*)

*Information on Salmonids.* Genus mean acute values (GMAVs) were available for *Salmo* (brown trout) (sensitivity rank=5); *Oncorhynchus* (rainbow trout, chinook salmon, coho salmon) (10); *Salvelinus* (brook trout, lake trout) (11).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

### Freshwater Chronic (CCC)

OR Criterion: 0.08  $\mu\text{g/L}$

EPA Criterion: no criteria

*Date Changed:* 1995

*Rationale for Change:* No new data were found. The Genus Mean Acute Chronic Ratio (GMACR) for fathead minnow was deemed unacceptable; therefore, GMACRs were available from 2 of 3 species (a midge and a cladoceran) which EPA deemed unacceptable for calculating the Final Chronic Value (FCV) by dividing the FAV by the Final Acute Chronic Ratio (FACR). Thus, the CCC could not be determined.

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

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## Mercury

### Freshwater Acute (CMC)

OR Criterion: 2.4 µg/L

EPA Criterion: 1.6 µg/L

*Date Changed:* 1995

*Rationale for Change:* New data from studies on cladoceran (1986; Ceriodaphnia reticulata) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 29):

4. crayfish (Faxonella);
3. amphipod (Gammarus);
2. cladoceran (Daphnia); and
1. cladoceran (Ceriodaphnia)

*Information on Salmonids.* Genus mean acute value (GMAV) was available for Oncorhynchus (rainbow trout, coho salmon) (sensitivity rank=19).

Note: T&E concerns were raised by NMFS & USFWS with EPA over the criterion in California Toxics Rule (2000).

*Reference:* “1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water” (1996) EPA-820-B-96-001; “Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California” (2000) 65 FR 31682-31719.

### Freshwater Chronic (CCC)

OR Criterion: 0.012 µg/L

EPA Criterion: 0.91 µg/L

*Date Changed:* 1995

*Rationale for Change:* No new data were obtained. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR)—data on ACR from the highly resistant fathead minnow was excluded.

*Information on Salmonids.* No GMACRs were available for salmonids. EPA provided estimates of the chronic values for rainbow trout (0.42 µg/L), coho salmon (0.37 µg/L), and bluegill (0.25 µg/L), all of which were more than a factor of two below that of the FCV of 0.91 µg/L; therefore, EPA concluded that the criterion of 0.91 µg/L might not be protective of those three important species.

Note: T&E concerns were raised by NMFS & USFWS with EPA over the criterion in California Toxics Rule (2000).

*Reference:* “1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water” (1996) EPA-820-B-96-001; “Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California” (2000) 65 FR 31682-31719.



## Nickel

### Freshwater Acute (CMC)

OR Criterion: 1400 µg/L

EPA Criterion: 470 (469) µg/L

note: These criteria are expressed as a function of hardness:

$$CMC = e^{(m_a[\ln(hardness)] + b_a)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_a$  (0.8460) and  $b_a$  (2.255) are provided in "National Recommended Water Quality Criteria—Correction"(1999).

*Date Changed:* 1995

*Rationale for Change:* New data from studies on snail (1986; *Physa gyrina*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 21):

4. mayfly (*Ephemera*);
3. rock bass (*Ambloplites*);
2. cladoceran (*Daphnia*); and
1. snail (*Physa*)

*Information on Salmonids.* A Genus Mean Acute Value (GMAV) was available for *Oncorhynchus* (rainbow trout) (sensitivity rank=13).

Note: EPA rounds criterion to 470 (2 significant digits).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

### Freshwater Chronic (CCC)

OR Criterion: 160 µg/L

EPA Criterion: 52 (52.2) µg/L

note: These criteria are expressed as a function of hardness:

$$CCC = e^{(m_c[\ln(hardness)] + b_c)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_c$  (0.8460) and  $b_c$  (0.0584) are provided in "National Recommended Water Quality Criteria—Correction"(1999).

*Date Changed:* 1995

*Rationale for Change:* No new data were available. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute-Chronic Ratio (FACR). The FACR was calculated based on the geometric mean of Genus Mean Acute Chronic Ratios (GMACRs) from 3 of 3 species: two freshwater species (cladoceran and fathead minnow) and one saltwater species.

*Information on Salmonids.* No GMACRs were available for salmonids. EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

Note: EPA rounds criterion to 470 (2 significant digits).

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

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## Pentachlorophenol

### Freshwater Acute (CMC)

OR Criterion: 20 µg/L

EPA Criterion: 19 µg/L

note: These criteria are expressed as a function of pH:

OR Criterion:  $CMC = e^{(1.005[pH]-4.830)}$

EPA Criterion:  $CMC = e^{(1.005[pH]-4.869)}$

The values given above correspond to a pH of 7.8.

*Date Changed:* 1995

*Rationale for Change:* No new data were available. However, the new taxonomy of salmonids and correction of data for *Rana catesbeiana* provided data that required re-analysis, which was incorporated into the calculation of the equation that provides the Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 32):

4. bullfrog (*Rana*);
3. salmon/trout (*Oncorhynchus*);
2. channel catfish (*Ictalurus*); and
1. common carp (*Cyprinus*)

*Information on Salmonids.* Genus mean acute values (GMAVs) were available for *Oncorhynchus* (rainbow trout, coho salmon, sockeye salmon, chinook salmon) (sensitivity rank=3); and *Salvelinus* (brook trout) (5). Brook trout had previously (for the OR criterion) occupied the 4<sup>th</sup> most sensitive genera and rainbow trout (then classified as *Salmo gairdneri*) occupied the 5<sup>th</sup> most sensitive genera.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

### Freshwater Chronic (CCC)

OR Criterion: 13 µg/L

EPA Criterion: 15 µg/L

note: These criteria are expressed as a function of pH:

OR Criterion:  $CCC = e^{(1.005[pH]-5.290)}$

EPA Criterion:  $CCC = e^{(1.005[pH]-5.134)}$



The values given above correspond to a pH of 7.8.

*Date Changed:* 1995

*Rationale for Change:* No new data were available. There were insufficient data to calculate FCV using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the FACR (as was the case for the 1986 criteria document on which OR's criterion is based). The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratio (GMACR) from 4 of 6 species: rainbow trout, cladoceran (*Simocephalus*), fathead minnow, and cladoceran (*Daphnia*); GMACRs were excluded from a cladoceran (*Ceriodaphnia*) and a snail with 'greater than' values.

"Ambient Water Quality Criteria for Pentachlorophenol—1986" (1986), on which OR criteria were based, incorporated a GMACR from a 5<sup>th</sup> species (the saltwater-dwelling sheepshead minnow) into its calculation of the FACR, resulting in a larger number than that provided in the "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1995 update provides no explanation for why the sheepshead minnow GMACR was not included). This results in the difference between the OR and EPA criteria.

*Information on Salmonids.* GMACR was available for *Oncorhynchus* (rainbow trout). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* "Ambient Water Quality Criteria for Pentachlorophenol—1986" (1986) EPA 440/5-86-009; "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

#### Saltwater Chronic (CCC)

OR Criterion: 7.9 µg/L (published as a guidance value)

EPA Criterion: 7.9 µg/L

*Date Changed:* 1986

*Rationale for Change:* The Summary Table from "Quality Criteria for Water 1986" (the Gold Book) places an "\*" by the 7.9 µg/L to indicate that it is a guidance value, not a criterion, based on the lowest observed effect level (LOEL) because there were insufficient data. The "Ambient Water Quality Criteria for Pentachlorophenol – 1986" indicates that the 7.9 µg/L is a criterion. Only two saltwater species had usable data on toxicity, so the Final Chronic Value (FCV) was calculated by dividing the Final Acute Value (FAV) by the Final Acute Chronic Ratio (FACR), which was calculated as the geometric mean of 5 of the 7 available Genus Mean Acute Chronic Ratios (GMACRs): cladoceran (*Daphnia*), fathead minnow, cladoceran (*Simocephalus*), rainbow trout, and sheepshead minnow (the only saltwater species).

*Information on Salmonids.* No GMACRs were available from salmonids during saltwater lifestage.

*Reference:* "Quality Criteria for Water 1986" (1986) EPA 440/5-86-001; "Ambient Water Quality Criteria for Pentachlorophenol – 1986" (1986) EPA 440/5-86-009.

## Polychlorinated Biphenyls (PCBs)

### Freshwater Acute (CMC)

OR Criterion: 2.0 µg/L

EPA Criterion: none

*Date Changed:* 1992

*Rationale for Change:* According to Cindy Roberts at EPA (Health and Ecological Criteria Division), this number was never meant to be an acute criterion. The actual description of criteria from the 1986 EPA Gold Book does specify 0.014 µg/L as a criterion (for chronic); however, the value of 2.0 µg/L is mentioned as follows "The available data indicate that acute toxicity to freshwater aquatic life probably will only occur at concentrations above 2.0 µg/L and that the 24-hour average [0.014 µg/L], should provide adequate protection against acute toxicity." Further reading of the entire criteria document shows that 2.0 µg/L was the lower limit of the range of values attained for what is termed "acute toxicity" which were derived as LC50s for 96-hour flow-through exposures. The most sensitive fish species of the four tested was rainbow trout (newly hatched).

*Reference:* "Ambient Water Quality Criteria for Polychlorinated Biphenyls" (1980) EPA 440-5-80-068; phone messages and emails with Cindy Roberts, EPA Health and Ecological Criteria Division.

### Saltwater Acute (CMC)

OR Criterion: 10 µg/L

EPA Criterion: none

*Date Changed:* 1992

*Rationale for Change:* According to Cindy Roberts at EPA (Health and Ecological Criteria Division), this number was never meant to be an acute criterion. The actual description of criteria from the 1986 EPA Gold Book does specify 0.030 µg/L as a criterion (for chronic); however, the value of 10 µg/L is mentioned as follows "The available data indicate that acute toxicity to saltwater aquatic life probably will only occur at concentrations above 10 µg/L and that the 24-hour average [0.03 µg/L], should provide adequate protection against acute toxicity." Further reading of the entire criteria document shows that 10 µg/L was the lower limit of the range of values attained for what is termed "acute toxicity" which were derived as LC50s for flow-through exposures. The most sensitive invertebrate species of the 3 tested was Eastern oyster (newly hatched); reports from exposures of saltwater fish did not produce data that could be used to calculate an LC50.

*Reference:* "Ambient Water Quality Criteria for Polychlorinated Biphenyls" (1980) EPA 440-5-80-068; phone messages and emails with Cindy Roberts, EPA Health and Ecological Criteria Division.

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## Selenium

### Freshwater Acute (CMC)

OR Criterion: 260 µg/L

EPA Criterion: 190\* (185.9) µg/L (see equation)

\*note: based on highest CMC from EPA formula (below) for proportion of total selenium composed of selenite (selenium IV) and selenate (selenium VI):



$$CMC = \left( \frac{1}{\left[ (f1/CMC1) + (f2/CMC2) \right]} \right)$$

where f1 & f2 are the fractions of total selenium treated as selenite and selenate, respectively, and CMC1=185.9 and CMC2=12.83. EPA rounds to the nearest two digits.

*Date Changed:* 1996

*Rationale for Change:* EPA proposed the new criterion to address 1) a court challenge that the 1995 CMC did not take into account the relative toxicities of the two oxidation states of selenium, and 2) new data that indicated an additive toxicity effect of the different forms of selenium. New data from studies on cladoceran (1987; *Daphnia magna*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV for selenite (selenium IV) was based on the four most sensitive genera (out of 22):

4. hydra (*Hydra*);
3. fathead minnow (*Pimephales*);
2. cladoceran (*Ceriodaphnia*); and
1. amphipod (*Hyaella*)

*Information on Salmonids.* Genus Mean Acute Values (GMAVs) were available for *Salvelinus* (brook trout) (sensitivity rank=9); and *Oncorhynchus* (rainbow trout) (10).

The FAV for selenate (selenium VI) was based on the four most sensitive genera (out of 11):

4. fathead minnow (*Pimephales*);
3. amphipod (*Hyaella*);
2. cladoceran (*Daphnia*); and
1. amphipod (*Gammarus*)

*Information on Salmonids.* Genus mean acute value (GMAV) available for *Oncorhynchus* (rainbow trout) (7).

Note: T&E concerns were raised by NMFS & USFWS with EPA over the criterion in California Toxics Rule (2000).

*Reference:* "Proposed Selenium Criterion Maximum Concentration for the Water Quality Guidance for the Great Lakes System (1996) Federal Register 61FR58444-58449, November 14, 1996; "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

#### Freshwater Chronic (CCC)

OR Criterion: 35 µg/L

EPA Criterion: 5 µg/L

*Date Changed:* 1995

*Rationale for Change:* No new data were available. There were insufficient data to calculate the Final Chronic Values (FCVs) for selenite or selenate using the 8 family procedure; therefore, the FCVs were calculated by dividing the FAVs by the Final Acute Chronic Ratios (FACRs) for each compound. The FACR for selenite (selenium IV) was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratios (GMACRs) from 3 of 4 species: fathead minnow and two cladocerans (*Daphnia*); the GMACR from rainbow trout was excluded because it was an acutely resistant species.

Although GMACRs were available for 3 species, the FACR for selenate (selenium VI) was calculated based on GMACR from the most sensitive species, a cladoceran (*Daphnia*).

*Information on Salmonids.* A GMACR for selenite was available for *Oncorhynchus* (rainbow trout). The FCV was lowered to protect rainbow trout as a commercially and recreationally important species. A GMACR for selenate was available for *Oncorhynchus* (rainbow trout). EPA judged that the FCV for selenate did not need to be lowered to protect a commercially or recreationally important species. However, EPA reviewed field studies that indicated that selenium might be more toxic to some freshwater fish species than had been observed in laboratory studies. Therefore, the CCC for total selenium was set to 5 µg/L—the level in the field at which no chronic effects on fish were observed.

*Reference:* “Proposed Selenium Criterion Maximum Concentration for the Water Quality Guidance for the Great Lakes System (1996) Federal Register 61FR58444-58449, November 14, 1996; “1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water” (1996) EPA-820-B-96-001.

Saltwater Acute (CMC)

OR Criterion: 410 µg/L

EPA Criterion: 290 (291) µg/L

*Date Changed:* 1987

*Rationale for Change:* The Oregon criterion was derived by EPA in 1980 and published in 1986 in the “Gold Book” using data from selenite toxicity tests of 13 genera (5 invertebrates, 7 fish). In 1986, the four most sensitive genera were:

4. Dungeness crab (*Cancer*);
3. copepod (*Acartia*);
2. mysid shrimp (*Mysidopsis*); and
1. haddock (*Melanogrammus*)

New data (in 1987) on a mysid shrimp and on a copepod affected the rankings for these genera. The 1987 criteria document used data from 15 genera (7 invertebrates, 8 fish) for selenite and 2 genera (both fish) for selenate. The FAV for the new criterion was based on the four most sensitive genera (out of 17):

4. copepod (*Acartia*);
3. brown shrimp (*Penaeus*);
2. Dungeness crab (*Cancer*); and
1. haddock (*Melanogrammus*)

Note: EPA rounds to 2 significant digits.

*Information on Salmonids.* No GMACs were available for salmonids.

*Reference:* “Ambient Water Quality Criteria for Selenium” (1980) EPA 440/5-80-070; “Quality Criteria for Water 1986” (1986) EPA 440-5-86-001; “Ambient Water Quality Criteria for Selenium” (1987) EPA 440/5-87-006.

Saltwater Chronic (CCC)

OR Criterion: 54 µg/L

EPA Criterion: 71 µg/L



*Date Changed:* 1987

*Rationale for Change:* For both the 1980 and 1987 criteria documents, the chronic saltwater toxicity was determined using data from two species: sheepshead minnow and mysid shrimp. The 1980 criterion document describes the Final Chronic Value (FCV) being derived by dividing the FAV by the Final Acute Chronic Ratio (FACR). In the 1987 document, the FCV is also calculated from dividing the FAV by the FACR. In the 1987 criterion, the value used for sheepshead minnow was the same as that in the 1980 document; in the 1987 document, the value used for mysid shrimp differed from that noted in the 1980 document due to the incorporation of new data into the 1987 calculation. In both documents, only chronic data for selenite were available for deriving the criterion.

*Information on Salmonids.* No chronic toxicity information was available for salmonids in saltwater.

*Reference:* "Ambient Water Quality Criteria for Selenium" (1980) EPA 440/5-80-070; "Ambient Water Quality Criteria for Selenium" (1987) EPA 440/5-87-006.

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## Silver

### Freshwater Chronic (CCC)

OR Criterion: 0.12 µg/L

EPA Criterion: none

*Date Changed:* 1992

*Rationale for Change:* The CCC expressed in the Summary Table from "Quality Criteria for Water 1986" is based on the following statement: "The available data indicate that chronic toxicity to freshwater life may occur at concentrations as low as 0.12." Such a statement might be questioned as to whether it qualifies as a criterion. However, this value is more formally put forward as a criterion in "Ambient Aquatic Life Water Quality Criteria for Silver – Draft 1987" which derived a Final Acute Chronic Ratio (FACR) from Genus Mean Acute Chronic Ratios for two freshwater species: rainbow trout, fathead minnow; and one saltwater species: mysid (*Mysidopsis*). The old criterion (OR's current) was derived by dividing the FAV by the FACR. EPA proposed this value as the final criterion in the Federal Register in May of 1990. The reason that EPA decided to remove the chronic criterion in 1992 remains obscure—in "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992), aka "National Toxics Rule", the response to Comment 48 indicates that due to comments made on the May 14, 1990 proposed silver criteria, EPA decided to promulgate "its 1980 criteria for silver..." That decision may indicate that EPA did not consider the initial quote above to be a criterion and thus, the number was removed.

*Reference:* "Ambient Water Quality Criteria for Silver" (1980) EPA 440/5-80-071; "Ambient Aquatic Life Water Quality Criteria for Silver—Draft" (1987) EPA 440/5-87-011; "Ambient Water Quality Criteria" (1990) Federal Register 55FR19986-19992; "Establishment of Numeric Criteria for Priority Toxic Pollutants" (1992) EPA 823-Z-92-001

### Saltwater Acute (CMC)

OR Criterion: 2.3 µg/L

EPA Criterion: 2.2 µg/L (should be 2.3)

*Date Changed:* 1995

*Rationale for Change:* The difference in criteria is due to rounding. The latest 1999 EPA criterion for silver presents a value of 1.9 µg/L for dissolved silver; to calculate total recoverable silver, the correction factor provided by EPA is 0.85 (i.e. divide 1.9 by 0.85). The original EPA criterion (OR's current) was 2.3 µg/L for total recoverable silver; when EPA published its guidance ("Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria" [1995]) for calculating dissolved metals from total recoverable, it provided a correction factor of 0.85 for silver (i.e. multiply 2.3 by 0.85). EPA indicated in the 1995 document that this should yield a dissolved metals criterion of 1.9 µg/L—which is rounded down from 1.955. Therefore, the EPA criterion of 2.2 µg/L is an artifact of this rounding error; the total recoverable silver criterion should be expressed as 2.3 µg/L.

*Reference:* "Ambient Water Quality Criteria for Silver" (1980) EPA 440/5-80-071; "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria" (1995) 60 FR 22229-22237; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

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## **Tributyltin (TBT)**

### Freshwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.46 µg/L

*Date Changed:* 1997

*Rationale for Change:* This concentration was published by EPA in 1997 as a proposed criterion. Although EPA has yet to complete its response to comments, it continues to publish this concentration for States and Tribes to consider for adoption as a criterion. The FAV was based on the four most sensitive genera (out of 14):

4. amphipod (Gammarus);
3. fathead minnow (Pimephales);
2. hydra (Chlorohydra); and
1. hydra (Hydra)

*Information on Salmonids.* Genus Mean Acute Values (GMAVs) were available for Oncorhynchus (rainbow trout) (sensitivity rank=6); and Salvelinus (lake trout) (11).

*Reference:* "Water Quality Criteria; Ambient Water Quality Criteria; Notice of Ambient Water Quality Criteria Document for Tributyltin (TBT) and Request for Comments" (1997) 62 FR 42554; "Ambient Aquatic Life Water Quality Criteria—Tributyltin (Draft)" (1997) EPA-822-D-97-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

### Freshwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.063 µg/L

*Date Changed:* 1997



*Rationale for Change:* This concentration was published by EPA in 1997 as a proposed criterion. Although EPA has yet to complete its response to comments, it continues to publish this concentration for States and Tribes to consider for adoption as a criterion. There were insufficient data to calculate FCV using the 8 family procedure; therefore, the FCV was calculated by dividing FAV by FACR. The FACR was calculated based on the geometric mean of the Genus Mean Acute Chronic Ratio (GMACR) from 4 of 4 species: cladoceran (*Daphnia*) and fathead minnow; both freshwater species; and mysid (*Acanthomysis*) and copepod (*Eurytemora*); both saltwater species.

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* "Water Quality Criteria; Ambient Water Quality Criteria; Notice of Ambient Water Quality Criteria Document for Tributyltin (TBT) and Request for Comments" (1997) 62 FR 42554; "Ambient Aquatic Life Water Quality Criteria—Tributyltin (Draft)" (1997) EPA-822-D-97-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

Saltwater Acute (CMC)

OR Criterion: none

EPA Criterion: 0.37 µg/L

*Date Changed:* 1997

*Rationale for Change:* This concentration was published by EPA in 1997 as a proposed criterion. Although EPA has yet to complete its response to comments, it continues to publish this concentration for States and Tribes to consider for adoption as a criterion. The FAV was based on the four most sensitive genera (out of 27):

4. Pacific oyster (*Crassostrea*);
3. copepod (*Acartia*);
2. mysid (*Metamysidopsis*); and
1. mysid (*Acanthomysis*)

*Information on Salmonids.* A Genus Mean Acute Value (GMAV) was available for *Oncorhynchus* (chinook salmon) (sensitivity rank=7).

*Reference:* "Water Quality Criteria; Ambient Water Quality Criteria; Notice of Ambient Water Quality Criteria Document for Tributyltin (TBT) and Request for Comments" (1997) 62 FR 42554; "Ambient Aquatic Life Water Quality Criteria—Tributyltin (Draft)" (1997) EPA-822-D-97-001; "National Recommended Water Quality Criteria—Correction" (1999) EPA 822-Z-99-001.

Saltwater Chronic (CCC)

OR Criterion: none

EPA Criterion: 0.01 µg/L

*Date Changed:* 1997

*Rationale for Change:* This concentration was published by EPA in 1997 as a proposed criterion. Although EPA has yet to complete its response to comments, it continues to publish this concentration for States and Tribes to consider for adoption as a criterion. There were insufficient data to calculate FCV using the 8 family procedure; therefore, the FCV was initially calculated by dividing FAV by FACR. However, because the resulting value was less than the concentrations at which some commercially or

ecologically important saltwater species show reductions in growth, the FCV was lowered to the above criterion in order to protect *Acartia*, *Mercenaria*, *Crassostrea*, and *Ostrea* from unacceptable impacts.

*Information on Salmonids.* No GMACRs were available for salmonids.

*Reference:* “Water Quality Criteria; Ambient Water Quality Criteria; Notice of Ambient Water Quality Criteria Document for Tributyltin (TBT) and Request for Comments” (1997) 62 FR 42554; “Ambient Aquatic Life Water Quality Criteria—Tributyltin (Draft)” (1997) EPA-822-D-97-001; “National Recommended Water Quality Criteria—Correction” (1999) EPA 822-Z-99-001.

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## Zinc

### Freshwater Acute (CMC)

OR Criterion: 120 µg/L

EPA Criterion: 120 µg/L

note: These criteria are expressed as a function of hardness:

$$CMC = e^{(m_a[\ln(hardness)] + b_a)}$$

The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_a$  (0.8473) and  $b_a$  (0.844) are provided in “National Recommended Water Quality Criteria—Correction”(1999).

*Date Changed:* 1995

*Rationale for Change:* New data from studies on cladoceran (1984; *Daphnia magna*) were analyzed and incorporated into the calculation of Final Acute Value (FAV). The FAV was based on the four most sensitive genera (out of 36):

4. cladoceran (*Daphnia*);
3. longfin dace (*Agosia*);
2. striped bass (*Morone*); and
1. cladoceran (*Ceriodaphnia*)

*Information on Salmonids.* Genus Mean Acute Values (GMAVs) were available for *Oncorhynchus* (rainbow trout, coho salmon, sockeye salmon, chinook salmon) (sensitivity rank=6); *Salvelinus* (brook trout) (14); and *Salmo* (Atlantic salmon) (15).

Note: No change in criterion.

*Reference:* “1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water” (1996) EPA-820-B-96-001.

### Freshwater Chronic (CCC)

OR Criterion: 110 µg/L

EPA Criterion: 120 µg/L

note: These criteria are expressed as a function of hardness:

$$CCC = e^{(m_c[\ln(hardness)] + b_c)}$$



The values given here correspond to a hardness of 100 mg/L and are expressed as total recoverable concentration. The values for variables  $m_c$  (0.8473) and  $b_c$  (0.844) are provided in "National Recommended Water Quality Criteria—Correction" (1999).

*Date Changed:* 1995

*Rationale for Change:* No new data were available. There were insufficient data to calculate the Final Chronic Value (FCV) using the 8 family procedure; therefore, the FCV was calculated by dividing the FAV by the Final Acute Chronic Ratio (FACR)—the Genus Mean Acute Chronic Ratios (GMACRs) were excluded from resistant species. The FACR was calculated based on the geometric mean of the GMACRs from 3 of 7 species: rainbow trout, cladoceran (*Daphnia*), and chinook salmon; GMACRs were excluded from resistant species--flagfish, brook trout, and fathead minnow—as well as sockeye salmon which had a 'less than' value. This geometric mean was less than 2, which is not allowed in EPA procedures; therefore, the FACR was set to 2 in calculating the FCV.

*Information on Salmonids.* GMACRs were available for *Oncorhynchus* (rainbow trout, chinook salmon, sockeye salmon ('less than' value)); and *Salvelinus* (brook trout). EPA judged that the FCV did not need to be lowered to protect a commercially or recreationally important species.

*Reference:* "1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water" (1996) EPA-820-B-96-001.

## ERRATA

Agenda Item B, Rule Adoption: Water Quality Standards, including Toxics Criteria  
May 20-21, 2004 EQC Meeting

(17) "Designated Beneficial Use" means the purpose or benefit to be derived from a water body, as designated by the Water Resources Department or the ~~Commission~~Water Resources Commission.

(18) "DO" means dissolved oxygen.

(19) "Ecological Integrity" means the summation of chemical, physical, and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region.

(20) "Epilimnion" means the seasonally stratified layer of a lake or reservoir above the metalimnion; the surface layer.

~~(20)~~(21) "Erosion Control Plan" means a plan containing a list of best management practices to be applied during construction to control and limit soil erosion.

~~(21)~~(22) "High Quality Waters" means those waters ~~which~~that meet or exceed these levels that are necessary to support the propagation of fish, shellfish, and wildlife; ~~and~~ recreation in and on the water; ~~and~~ other designated beneficial uses.

(23) "Hypolimnion" means the seasonally stratified layer of a lake or reservoir below the metalimnion; the bottom layer.

~~(22)~~(24) "Industrial Waste" means any liquid, gaseous, radioactive, or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business, or from the development or recovery of any natural resources.

~~(23)~~(25) "In Lieu Fee" means a fee collected by a jurisdiction in lieu of requiring construction of ~~on-site~~onsite stormwater quality control facilities.

~~(24)~~(26) "Intergravel Dissolved Oxygen" (IGDO) means the concentration of oxygen measured in the water within the stream bed gravels. Measurements should be taken within a limited time period, ~~prior to~~ before emergence of fry.

~~(25)~~(27) "Jurisdiction" means any city or county agency in the Tualatin River and Oswego Lake subbasin that regulates land development activities within its boundaries by approving plats, or site plans or issuing permits for land development.

~~(26)~~(28) "Land Development" means any ~~human~~human-induced change to improved or unimproved real estate, including but not limited to construction,



**DEQ choice for Human Health Criteria**

DEQ recommends that the criteria for human health be as shown in Table 4.7, which were calculated using the same approach as used for deriving the 2002 EPA criteria (EPA 2002a, 2002b) employing a fish consumption rate of 17.5 g/day (0.6 oz/day). This rate is the national 90<sup>th</sup> percentile fish consumption rate published by EPA (2000). DEQ believes that this is the best technical and policy approach until such time that sufficient information is available to completely apply the 2000 EPA Methodology in deriving criteria. This approach is consistent with the lowest fish consumption rate recommendation of both EPA and the TAC. Although the PAC did not formulate a recommendation on human health criteria, the recommended approach is a logical policy choice as it will likely be approved by EPA, it avoids the equity issues raised by some PAC members over the use of TAC-recommended multiple fish consumption levels, and it provides greater protection to subsistence fisher subpopulations within the State than currently exists. Ideally, an Oregon-specific survey of fish consumption will be available for similar calculations in the future.

**Table 4.7 Comparison of current and recommended criteria for the protection of human health. For each compound and exposure conditions, values are presented for current Oregon criteria, the Technical Advisory Committee (TAC) recommendation, the Policy Advisory Committee (PAC) recommendation or majority opinion, and the Department's recommendation (DEQ). All values are expressed as µg/L.**

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Acenaphthene	water and fish ingestion		670	120	44		670
	fish consumption only		990	120	45		990
Acenaphthylene	water and fish ingestion						
	fish consumption only						
Acrolein	water and fish ingestion	320	190	33	13		190
	fish consumption only	780	290	36	13		290
Acrylonitrile	water and fish ingestion	0.058	0.051	0.021	0.0095		0.051
	fish consumption only	0.65	0.25	0.030	0.011		0.25
Aldrin	water and fish ingestion	0.000074	0.00005	0.0000062	0.0000023		0.000049
	fish consumption only	0.000079	0.00005	0.0000062	0.0000023		0.000050

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Aluminum (pH 6.5 - 9.0)	water and fish ingestion						
	fish consumption only						
Ammonia (@18 C & pH=7.5)	water and fish ingestion						
	fish consumption only						
Anthracene	water and fish ingestion		8300	3300	1500		8300
	fish consumption only		40000	4900	1800		40000
Antimony	water and fish ingestion	146	14	13	12		5.6 <sup>4</sup>
	fish consumption only	45000	1600	200	72		640 <sup>4</sup>
Arsenic	water and fish ingestion	0.0022	0.014	0.0048	0.0021		0.018 <sup>4</sup>
	fish consumption only	0.0175	0.052	0.0064	0.0023		0.140 <sup>4</sup>
Asbestos	water and fish ingestion	3.0E+04	7.0E+06	7.0E+06	7.0E+06		7.0E+06 fibers/liter
	fish consumption only						
Barium	water and fish ingestion	1000	1000	1000	1000		1000
	fish consumption only						
Benzene	water and fish ingestion	0.66	1.2	0.88	0.60		2.2 <sup>4</sup>
	fish consumption only	40	27	3.3	1.2		51 <sup>4</sup>
Benzidine	water and fish ingestion	0.00012	0.000090	0.000021	0.000010		0.000086
	fish consumption only	0.00053	0.00020	0.000024	0.000010		0.00020
Benzo(a)Anthracene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.018	0.0022	0.00082		0.018
Benzo(a)Pyrene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.018	0.0022	0.00082		0.018
Benzo(b)Fluoranthene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only		0.018	0.0022	0.00082		0.018
Benzo(g,h,i)Perylene	water and fish ingestion						
	fish consumption only						
Benzo(k)Fluoranthene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.018	0.0022	0.00082		0.018
Beryllium	water and fish ingestion	0.0068					
	fish consumption only	0.117					
BHC, alpha-	water and fish ingestion	0.0092	0.0026	0.00054	0.00021		0.0026
	fish consumption only	0.031	0.0049	0.00060	0.00022		0.0049
BHC, beta-	water and fish ingestion	0.0163	0.0091	0.0019	0.00074		0.0091
	fish consumption only	0.0547	0.017	0.0021	0.00077		0.017
BHC, delta	water and fish ingestion						
	fish consumption only						
BHC, gamma-(Lindane)	water and fish ingestion	0.0186	0.013	0.0026	0.0010		0.98 <sup>3</sup>
	fish consumption only	0.0625	0.024	0.0029	0.0011		1.8 <sup>3</sup>
Boron	water and fish ingestion						
	fish consumption only						
Bromoform	water and fish ingestion		4.3	3.5	2.6		4.3
	fish consumption only		140	17	6.1		140
Bromophenyl Phenyl Ether 4-	water and fish ingestion						
	fish consumption only						
Butylbenzyl Phthalate	water and fish ingestion		1500	230	86		1500
	fish consumption only		1900	240	87		1900

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Cadmium	water and fish ingestion	10					
	fish consumption only	10					
Carbon Tetrachloride	water and fish ingestion	0.40	0.23	0.12	0.058		0.23
	fish consumption only	6.94	1.6	0.20	0.074		1.6
Chlordane	water and fish ingestion	0.00046	0.00080	0.00010	0.000040		0.00080
	fish consumption only	0.00048	0.00081	0.00010	0.000040		0.00081
Chloride	water and fish ingestion						
	fish consumption only						
Chlorine	water and fish ingestion						
	fish consumption only						
Chlorobenzene	water and fish ingestion		640	400	230		130 <sup>3</sup>
	fish consumption only		7800	950	350		1600 <sup>3</sup>
Chlorodibromomethane	water and fish ingestion		0.40	0.33	0.24		0.40
	fish consumption only		13	1.6	0.57		13
Chloroethane	water and fish ingestion						
	fish consumption only						
ChloroethoxyMethane, Bis2-	water and fish ingestion						
	fish consumption only						
ChloroethylEther, Bis2-	water and fish ingestion	0.030	0.030	0.021	0.014		0.030
	fish consumption only	1.360	0.53	0.065	0.024		0.53
Chloroethylvinyl Ether 2-	water and fish ingestion						
	fish consumption only						
Chloroform	water and fish ingestion	0.19	5.7	4.5	3.3		5.7



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only	15.7	470	21	7.9		470
Chloroisopropyl Ether, Bis2-	water and fish ingestion	34.7	1400	1200	950		1400
	fish consumption only	4360	65000	8000	2900		65000
Chloronaphthalene 2-	water and fish ingestion		1000	180	69		1000
	fish consumption only		1600	190	71		1600
Chlorophenol 2-	water and fish ingestion		81	17	7		81
	fish consumption only		150	18	7		150
Chlorophenoxy Herbicide 2,4,5,-TP	water and fish ingestion	10	10	10	10		10
	fish consumption only						
Chlorophenoxy Herbicide 2,4-D	water and fish ingestion	100	100	100	100		100
	fish consumption only						
Chlorophenyl Phenyl Ether 4-	water and fish ingestion						
	fish consumption only						
Chloropyrifos	water and fish ingestion						
	fish consumption only						
Chromium III	water and fish ingestion	170000					
	fish consumption only	3433000					
Chromium VI	water and fish ingestion	50					
	fish consumption only						
Chrysene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.018	0.0022	0.00082		0.018
Copper	water and fish ingestion		1300	1300	1300		1300
	fish consumption only						

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Cyanide	water and fish ingestion	200	690	650	590		140 <sup>3</sup>
	fish consumption only		80000	9800	3600		16000 <sup>3</sup>
DDD 4,4'-	water and fish ingestion		0.00031	0.000030	0.000010		0.00031
	fish consumption only		0.00031	0.000038	0.000010		0.00031
DDE 4,4'-	water and fish ingestion		0.00022	0.000027	0.000010		0.00022
	fish consumption only		0.00022	0.000027	0.000010		0.00022
DDT 4,4'-	water and fish ingestion	0.000024	0.00022	0.000027	0.000010		0.00022
	fish consumption only	0.000024	0.00022	0.000027	0.000010		0.00022
Demeton	water and fish ingestion						
	fish consumption only						
Dibenzo(a,h)Anthracene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.0180	0.0022	0.00082		0.0180
Dichlorobenzene 1,2-	water and fish ingestion	400	2100	640	270		420 <sup>3</sup>
	fish consumption only		6500	800	290		1300 <sup>3</sup>
Dichlorobenzene 1,3-	water and fish ingestion		320	95	40		320
	fish consumption only		960	120	43		960
Dichlorobenzene 1,4-	water and fish ingestion		320	95	40		63 <sup>3</sup>
	fish consumption only		970	120	43		190 <sup>3</sup>
Dichlorobenzidine 3,3'-	water and fish ingestion	0.010	0.021	0.0034	0.0013		0.021
	fish consumption only	0.020	0.028	0.0035	0.0013		0.028
Dichlorobromomethane	water and fish ingestion		0.55	0.45	0.33		0.55
	fish consumption only		17	2.1	0.77		17
Dichloroethane 1,1-	water and fish ingestion						



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only						
Dichloroethane 1,2-	water and fish ingestion	0.94	0.38	0.35	0.31		0.38
	fish consumption only	243	37	4.5	1.6		37
Dichloroethylene 1,1-	water and fish ingestion	0.033	0.056	0.042	0.028		330 <sup>3</sup>
	fish consumption only	1.85	1.2	0.15	0.054		1700 <sup>3</sup>
Dichloroethylene 1,2-Trans-	water and fish ingestion		690	630	540		140 <sup>3</sup>
	fish consumption only	1.85	51000	6200	2300		10000 <sup>3</sup>
Dichlorophenol 2,4-	water and fish ingestion	3090	77	27	12		77
	fish consumption only		290	36	13		290
Dichloropropane 1,2-	water and fish ingestion		0.50	0.40	0.29		0.50
	fish consumption only		15	1.8	0.66		15
Dichloropropene 1,3-	water and fish ingestion	87	10	9.2	7.7		0.34 <sup>3</sup>
	fish consumption only	14100	630	78	28		21 <sup>3</sup>
Dieldrin	water and fish ingestion	0.000071	0.00005	0.0000066	0.0000024		0.000052
	fish consumption only	0.000076	0.00005	0.0000066	0.0000024		0.000054
DiethylPhthalate	water and fish ingestion	350000	17000	4500	1800		17000
	fish consumption only	1800000	44000	5400	2000		44000
Dimethyl Phthalate	water and fish ingestion		270000	98000	44000		270000
	fish consumption only		1100000	140000	50000		1100000
Dimethylphenol 2,4-	water and fish ingestion		380	91	36		380
	fish consumption only		850	100	38		850
Di-n-Butyl Phthalate	water and fish ingestion	35000	2000	480	190		2000
	fish consumption only	154000	4500	550	200		4500

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Dinitrophenol 2,4-	water and fish ingestion		69	63	54		69
	fish consumption only		5300	660	240		5300
Dinitrophenols	water and fish ingestion						69 <sup>4</sup>
	fish consumption only						5300 <sup>4</sup>
Dinitrotoluene 2,4-	water and fish ingestion	0.11	0.11	0.11	0.11		0.11
	fish consumption only	9.1	9.1	9.1	9.1		3.4 <sup>4</sup>
Dinitrotoluene 2,6-	water and fish ingestion						
	fish consumption only						
Di-n-Octyl Phthalate	water and fish ingestion						
	fish consumption only						
Dioxin (2,3,7,8-TCDD)	water and fish ingestion	1.3E-08	5.0E-09 <sup>1</sup>	6.3E-10 <sup>1</sup>	2.3E-10 <sup>1</sup>		5.0E-09 <sup>2</sup>
	fish consumption only	1.4E-08	5.1E-09 <sup>1</sup>	6.3E-10 <sup>1</sup>	2.3E-10 <sup>1</sup>		5.1E-09 <sup>2</sup>
Diphenylhydrazine 1,2-	water and fish ingestion		0.036	0.016	0.0075		0.036
	fish consumption only		0.20	0.025	0.0090		0.20
Endosulfan Sulfate	water and fish ingestion		62	10	3.9		62
	fish consumption only		89	11	4.0		89
Endosulfan, alpha-	water and fish ingestion		62	10	3.9		62
	fish consumption only		89	11	4.0		89
Endosulfan, beta-	water and fish ingestion		62	10	3.9		62
	fish consumption only		89	11	4.0		89
Endrin	water and fish ingestion	1.0	0.29	0.037	0.014		0.059 <sup>3</sup>
	fish consumption only		0.30	0.037	0.014		0.060 <sup>3</sup>
Endrin Aldehyde	water and fish ingestion		0.29	0.037	0.014		0.29



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only		0.30	0.037	0.014		0.30
Ether, Bis Chloromethyl	water and fish ingestion	3.76E-09	0.00010	0.000029	0.000012		0.00010
	fish consumption only	0.00184	0.000290	0.000035	0.000013		0.00029
Ethylbenzene	water and fish ingestion	1400	2600	950	420		530 <sup>3</sup>
	fish consumption only	3280	11000	1300	480		2100 <sup>3</sup>
EthylhexylPhthalate, Bis2-	water and fish ingestion	15000	1.2	0.24	0.10		1.2
	fish consumption only	50000	2.2	0.27	0.10		2.2
Fluoranthene	water and fish ingestion	42	130	17	6		130
	fish consumption only	54	140	17	6		140
Fluorene	water and fish ingestion		1100	450	200		1100
	fish consumption only		5300	660	240		5300
Guthion	water and fish ingestion						
	fish consumption only						
Heptachlor	water and fish ingestion	0.00028	0.000079	0.000010	0.0000036		0.000079
	fish consumption only	0.00029	0.000079	0.000010	0.0000036		0.000079
Heptachlor Epoxide	water and fish ingestion		0.000039	0.0000048	0.0000018		0.000039
	fish consumption only		0.000039	0.0000048	0.0000018		0.000039
Hexachlorobenzene	water and fish ingestion	0.00072	0.00028	0.000035	0.000010		0.00028
	fish consumption only	0.00074	0.00029	0.000035	0.000010		0.00029
Hexachlorobutadiene	water and fish ingestion	0.45	0.44	0.37	0.29		0.44
	fish consumption only	50	18	2.3	0.83		18
Hexachlorocyclohexane-Technical	water and fish ingestion	0.0123	0.012	0.012	0.012		0.0123
	fish consumption only	0.0414	0.041	0.041	0.041		0.0414

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Hexachlorocyclopentadiene	water and fish ingestion		240	190	130		40 <sup>3</sup>
	fish consumption only		6500	790	290		1100 <sup>3</sup>
Hexachloroethane	water and fish ingestion	1.9	1.4	0.35	0.14		1.4
	fish consumption only	8.74	3.3	0.40	0.15		3.3
Ideno1,2,3-(c,d)Pyrene	water and fish ingestion		0.0038	0.0015	0.00070		0.0038
	fish consumption only		0.018	0.0022	0.00082		0.018
Iron	water and fish ingestion	300	300	300	300		300
	fish consumption only						
Isophorone	water and fish ingestion	5200	35	28	20		35
	fish consumption only	520000	960	120	43		960
Lead	water and fish ingestion						
	fish consumption only						
Malathion	water and fish ingestion						
	fish consumption only						
Manganese	water and fish ingestion	50	50	50	50		50
	fish consumption only	100	100	100	100		100
Mercury	water and fish ingestion	0.14	0.054	0.0067	0.0024		4
	fish consumption only	0.15	0.054	0.0067	0.0025		4
Methoxychlor	water and fish ingestion	100	100	100	100		100
	fish consumption only						
Methyl Bromide	water and fish ingestion		47	39	28		47
	fish consumption only		1500	180	67		1500
Methyl Chloride	water and fish ingestion						



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only						
Methyl-4,6-Dinitrophenol 2-	water and fish ingestion	13400000	13	13	13		13
	fish consumption only	765	770	770	770		280 <sup>4</sup>
Methyl-4-Chlorophenol 3-	water and fish ingestion						
	fish consumption only						
Methylene Chloride	water and fish ingestion		4.6	4.4	4.0		4.6
	fish consumption only		590	73	27		590
Methylmercury	water and fish ingestion						
	fish consumption only		300	36	13		300
Mirex	water and fish ingestion						
	fish consumption only						
Naphthalene	water and fish ingestion						
	fish consumption only						
Nickel	water and fish ingestion	13	610	160	69		610
	fish consumption only	100	4600	210	77		4600
Nitrates	water and fish ingestion	10000	10000	10000	10000		10000
	fish consumption only						
Nitrobenzene	water and fish ingestion	19800	17	15	11		17
	fish consumption only		690	85	31		690
Nitrophenol 2-	water and fish ingestion						
	fish consumption only						
Nitrophenol 4-	water and fish ingestion						
	fish consumption only						

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Nitrosamines	water and fish ingestion	0.0008	0.00080	0.00080	0.00080		0.00080
	fish consumption only	1.24	1.2	1.2	1.2		1.24
Nitrosodibutylamine,N	water and fish ingestion	0.0064	0.0064	0.0064	0.0064		0.0063 <sup>4</sup>
	fish consumption only	0.587	0.59	0.59	0.59		0.22 <sup>4</sup>
Nitrosodiethylamine,N	water and fish ingestion	0.0008	0.00080	0.00080	0.00080		0.00080
	fish consumption only	1.24	1.2	1.2	1.2		1.24
Nitrosodimethylamine, N-	water and fish ingestion	0.0014	0.00069	0.00069	0.00068		0.00069
	fish consumption only	16	3.0	0.37	0.14		3.0
Nitrosodi-n-Propylamine, N-	water and fish ingestion		0.0050	0.0046	0.0041		0.0050
	fish consumption only		0.51	0.062	0.023		0.51
Nitrosodiphenylamine, N-	water and fish ingestion	4.9	3.3	0.67	0.26		3.3
	fish consumption only	16.1	6.0	0.74	0.27		6.0
Nitrosopyrrolidine,N	water and fish ingestion	0.016	0.016	0.016	0.016		0.016
	fish consumption only	91.9	92	92	92		34 <sup>4</sup>
Parathion	water and fish ingestion						
	fish consumption only						
Pentachlorobenzene	water and fish ingestion	74	1.4	0.18	0.068		1.4
	fish consumption only	85	1.5	0.19	0.068		1.5
Pentachlorophenol	water and fish ingestion	1010	0.27	0.16	0.093		0.27
	fish consumption only		3.0	0.37	0.14		3.0
Phenanthrene	water and fish ingestion						
	fish consumption only						
Phenol	water and fish ingestion	3500	2.1E+04	1.9E+04	1.7E+04		2.1E+04



Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
	fish consumption only		1.7E+06	2.1E+05	7.7E+04		1.7E+06
Phosphorus Elemental	water and fish ingestion						
	fish consumption only						
Polychlorinated biphenyls PCBs:	water and fish ingestion	0.000079	0.000064	0.0000079	0.0000029		0.000064
	fish consumption only	0.000079	0.000064	0.0000079	0.0000029		0.000064
Pyrene	water and fish ingestion		830	330	150		830
	fish consumption only		4000	490	180		4000
Selenium	water and fish ingestion	10	170	130	91		170
	fish consumption only		4200	510	190		4200
Silver	water and fish ingestion	50					
	fish consumption only						
Sulfide-Hydrogen Sulfide	water and fish ingestion						
	fish consumption only						
Tetrachlorobenzene, 1,2, 4,5	water and fish ingestion	38	0.97	0.13	0.048		0.97
	fish consumption only	48	1.1	0.13	0.048		1.1
Tetrachloroethane 1,1,2,2-	water and fish ingestion	0.17	0.17	0.13	0.089		0.17
	fish consumption only	10.7	4.0	0.49	0.18		4.0
Tetrachloroethylene	water and fish ingestion	0.80	0.69	0.28	0.13		0.69
	fish consumption only	8.85	3.3	0.40	0.15		3.3
Thallium	water and fish ingestion	13	1.20	0.26	0.10		0.24 <sup>3</sup>
	fish consumption only	48	2.3	0.29	0.11		0.47 <sup>3</sup>
Toluene	water and fish ingestion	14300	6400	4000	2300		1300 <sup>3</sup>
	fish consumption only	424000	75000	9200	3400		15000 <sup>3</sup>

Compound	Exposure	Current OR Criteria	TAC			PAC	DEQ
			low	medium	high		
Toxaphene	water and fish ingestion	0.00071	0.00028	0.000034	0.000012		0.00028
	fish consumption only	0.00073	0.00028	0.000034	0.000012		0.00028
Tributyltin TBT	water and fish ingestion						
	fish consumption only						
Trichlorobenzene 1,2,4-	water and fish ingestion		180	38	15		35 <sup>3</sup>
	fish consumption only		350	43	16		70 <sup>3</sup>
Trichloroethane 1,1,1-	water and fish ingestion	18400	3000	2300	1500		
	fish consumption only	1030000	64000	7900	2900		
Trichloroethane 1,1,2-	water and fish ingestion	0.60	0.59	0.47	0.33		0.59
	fish consumption only	41.80	16	1.9	0.70		16
Trichloroethylene	water and fish ingestion	2.7	2.5	1.6	0.91		2.5
	fish consumption only	80.7	30	3.7	1.3		30
Trichlorophenol 2,4,5	water and fish ingestion	2600	1800	400	160		1800
	fish consumption only		3600	450	160		3600
Trichlorophenol 2,4,6-	water and fish ingestion	1.2	1.4	0.27	0.11		1.4
	fish consumption only	3.6	2.4	0.30	0.11		2.4
Vinyl Chloride	water and fish ingestion	2.0	2.0	1.9	1.6		0.025 <sup>3</sup>
	fish consumption only	525.0	200	24	8.8		2.4 <sup>3</sup>
Zinc	water and fish ingestion		7400	2400	1000		7400
	fish consumption only		26000	3100	1200		26000

<sup>1</sup>TAC recommended that DEQ adopt a Toxic Equivalency approach for dioxins, furans, and PCBs that act through the Ah receptor.

<sup>2</sup>Staff recommend that DEQ adopt criteria for 2,3,7,8-TCDD.

<sup>3</sup>Based on EPA (2002b).

<sup>4</sup>Based on EPA (2002a).



**Summary  
Table of  
Recommended  
Criteria for the  
Protection of  
Human Health**

Table 4.8 presents a comparison of the current Oregon and the DEQ recommended human health criteria for all compounds, including those that were not reviewed because no changes had occurred.

**Table 4.8 Comparison of Human Health Criteria between current Oregon values and DEQ recommended values. All values are expressed as µg/L except where noted. Compounds are listed in alphabetical order with the corresponding EPA (1999) number ("N" following a number indicates that the compound is listed by EPA under Non-Priority Pollutants) and the Chemical Abstract Service (CAS) number.**

EPA No.	Compound	CAS	Current Oregon Criteria		DEQ Recommended Criteria	
			water and fish ingestion	fish consumption only	water + organism	organism only
56	Acenaphthene	83329			670	990
57	Acenaphthylene	208968				
17	Acrolein	107028	320	780	190	290
18	Acrylonitrile	107131	0.058	0.65	0.051	0.250
102	Aldrin	309002	0.000074	0.000079	0.000049	0.000050
2 N	Aluminum (pH 6.5 - 9.0)	7429905				
3 N	Ammonia (@18 C & pH=7.5)	7664417				
58	Anthracene	120127			8300	40000
1	Antimony	7440360	146	45000	5.6	640
2	Arsenic	7440382	0.0022	0.0175	0.018	0.14
15	Asbestos	1332214	3.0E+04 fibers/L		7.0E+06 fibers/L	
6 N	Barium	7440393	1000		1000	
19	Benzene	71432	0.66	40	2.2	51
59	Benzidine	92875	0.00012	0.00053	0.000086	0.00020
60	Benzo(a)Anthracene	56553			0.0038	0.018
61	Benzo(a)Pyrene	50328			0.0038	0.018
62	Benzo(b)Fluoranthene	205992			0.0038	0.018
63	Benzo(g,h,i)Perylene	191242				
64	Benzo(k)Fluoranthene	207089			0.0038	0.018
3	Beryllium	7440417	0.0068	0.117		
103	BHC, alpha-	319846	0.0092	0.031	0.0026	0.0049
104	BHC, beta-	319857	0.0163	0.0547	0.0091	0.017
106	BHC, delta-	319868				
105	BHC, gamma- (Lindane)	58899			0.98	1.8
7 N	Boron	7440428				
20	Bromoform	75252			4.3	140
69	Bromophenyl Phenyl Ether 4-	101553				
70	Butylbenzyl Phthalate	85687			1500	1900

EPA No.	Compound	CAS	Current Oregon Criteria		DEQ Recommended Criteria	
			water and fish ingestion	fish consumption only	water + organism	organism only
4	Cadmium	7440439	10	10		
21	Carbon Tetrachloride	56235	0.4	6.94	0.23	1.6
107	Chlordane	57749	0.00046	0.00048	0.00080	0.00081
8 N	Chloride	16887006				
9 N	Chlorine	7782505				
22	Chlorobenzene	108907			130	1600
23	Chlorodibromomethane	124481			0.40	13
24	Chloroethane	75003				
65	ChloroethoxyMethane, Bis2-	111911				
66	ChloroethylEther, Bis2-	111444	0.03	1.36	0.030	0.53
25	Chloroethylvinyl Ether 2-	110758				
26	Chloroform	67663	0.19	15.7	5.7	470
67	ChloroisopropylEther, Bis2-	108601	34.7	4360	1400	65000
15 N	ChloromethylEther, Bis	542881	3.76E-09	0.00184	0.00010	0.00029
71	Chloronaphthalene 2-	91587			1000	1600
45	Chlorophenol 2-	95578			81	150
10 N	Chlorophenoxy Herbicide (2,4,5,-TP)	93721	10			
11 N	Chlorophenoxy Herbicide (2,4-D)	94757	100		100	
72	Chlorophenyl Phenyl Ether 4-	7005723				
12 N	Chloropyrifos	2921882				
5.1	Chromium (III)		170000	3433000		
5.2	Chromium (VI)	18540299	50			
73	Chrysene	218019			0.0038	0.018
6	Copper	7440508			1300	
14	Cyanide	57125	200		140	16000
108	DDT 4,4'-	50293	0.000024	0.000024	0.00022	0.00022
109	DDE 4,4'-	72559			0.00022	0.00022
110	DDD 4,4'-	72548			0.00031	0.00031
14 N	Demeton	8065483				
74	Dibenzo(a,h)Anthracene	53703			0.0038	0.018
75	Dichlorobenzene 1,2-	95501	400		420	1300
76	Dichlorobenzene 1,3-	541731			320	960
77	Dichlorobenzene 1,4-	106467			63	190
78	Dichlorobenzidine 3,3'-	91941	0.01	0.02	0.021	0.028
27	Dichlorobromomethane	75274			0.55	17
28	Dichloroethane 1,1-	75343				
29	Dichloroethane 1,2-	107062	0.94	243	0.38	37
30	Dichloroethylene 1,1-	75354	0.033	1.9	330	7100
46	Dichlorophenol 2,4-	120832	3090		77	290
31	Dichloropropane 1,2-	78875			0.50	15
32	Dichloropropene 1,3-	542756	87	14100	0.34	21



EPA No.	Compound	CAS	Current Oregon Criteria		DEQ Recommended Criteria	
			water and fish ingestion	fish consumption only	water + organism	organism only
111	Dieldrin	60571	0.000071	0.000076	0.000052	0.000054
79	DiethylPhthalate	84662	350000	1800000	17000	44000
47	Dimethylphenol 2,4-	105679			380	850
80	DimethylPhthalate	131113			270000	1100000
81	Di-n-Butyl Phthalate	84742	35000	154000	2000	4500
49	Dinitrophenol 2,4-	51285			69	5300
27 N	Dinitrophenols	25550587			69	5300
82	Dinitrotoluene 2,4-	121142	0.11	9.1	0.11	3.4
83	Dinitrotoluene 2,6-	606202				
84	Di-n-Octyl Phthalate	117840				
16	Dioxin (2,3,7,8-TCDD)	1746016	1.30E-08	1.40E-08	5.0E-09	5.1E-09
85	Diphenylhydrazine 1,2-	122667			0.036	0.20
	Endosulfan	115297	74	159	62	89
114	Endosulfan Sulfate	1031078			62	89
112	Endosulfan, alpha-	959988			62	89
113	Endosulfan, beta-	33213659			62	89
115	Endrin	72208	1		0.059	0.060
116	Endrin Aldehyde	7421934			0.29	0.30
33	Ethylbenzene	100414	1400	3280	530	2100
68	EthylhexylPhthalate, Bis2-	117817	15000	50000	1.2	2.2
86	Fluoranthene	206440	42	54	130	140
87	Fluorene	86737			1100	5300
17 N	Guthion	86500				
117	Heptachlor	76448	0.00028	0.00029	0.000079	0.000079
118	Heptachlor Epoxide	1024573			0.000039	0.000039
88	Hexachlorobenzene	118741	0.00072	0.00074	0.00028	0.00029
89	Hexachlorobutadiene	87683	0.45	50	0.44	18
19 N	Hexachlorocyclo-hexane-Technical	319868	0.0123	0.0414	0.0123	0.0414
90	Hexachlorocyclopentadiene	77474			40	1100
91	Hexachloroethane	67721	1.9	8.74	1.4	3.3
92	Ideno1,2,3-(c,d)Pyrene	193395			0.0038	0.018
20 N	Iron	7439896	300		300	
93	Isophorone	78591	5200	520000	35	960
7	Lead	7439921				
21 N	Malathion	121755				
22 N	Manganese	7439965	50	100	50	100
8	Mercury	7439976	0.14	0.15		(see methylmercury criterion)
23 N	Methoxychlor	72435	100		100	
34	Methyl Bromide	74839			47	1500
35	Methyl Chloride	74873				

EPA No.	Compound	CAS	Current Oregon Criteria		DEQ Recommended Criteria	
			water and fish ingestion	fish consumption only	water + organism	organism only
48	Methyl-4,6-Dinitrophenol 2-	534521	13400000	765	13	280
52	Methyl-4-Chlorophenol 3-	59507				
36	Methylene Chloride	75092			4.6	590
8b	Methylmercury					300 ug/kg <sup>1</sup>
24 N	Mirex	2385855				
94	Naphthalene	91203				
9	Nickel	7440020	13	100	610	4600
25 N	Nitrates	14797558	10000		10000	
95	Nitrobenzene	98953	19800		17	690
50	Nitrophenol 2-	88755				
51	Nitrophenol 4-	100027				
26 N	Nitrosamines	35576911	0.0008	1.24	0.0008	1.24
28 N	Nitrosodibutylamine,N	924163	0.0064	0.587	0.0063	0.22
29 N	Nitrosodiethylamine,N	55185	0.0008	1.24	0.0008	1.24
30 N	Nitrosopyrrolidine,N	930552	0.016	91.9	0.016	34
96	N-Nitrosodimethylamine	62759	0.0014	16	0.00069	3.0
97	N-Nitrosodi-n-Propylamine	621647			0.0050	0.51
98	N-Nitrosodiphenylamine	86306	4.9	16.1	3.3	6.0
33 N	Parathion	56382				
34 N	Pentachlorobenzene	608935	74	85	1.4	1.5
53	Pentachlorophenol	87865	1010		0.27	3.0
99	Phenanthrene	85018				
54	Phenol	108952	3500		21000	1700000
37 N	Phosphate Phosphorus					
36 N	Phosphorus Elemental	7723140				
119	Polychlorinated Biphenyls (PCBs)	1336363	0.000079	0.000079	0.000064	0.000064
100	Pyrene	129000			830	4000
10	Selenium	7782492	10		170	4200
11	Silver	7440224	50			
40 N	Sulfide-Hydrogen Sulfide	7783064				
43 N	Tetrachlorobenzene, 1,2,4,5-	95943	38	48	0.97	1.1
37	Tetrachloroethane, 1,1,2,2-	79345	0.17	10.7	0.17	4.0
38	Tetrachloroethylene	127184	0.8	8.9	0.69	3.3
12	Thallium	7440280	13	48	0.24	0.47
39	Toluene	108883	14300	424000	1300	15000
120	Toxaphene	8001352	0.00071	0.00073	0.00028	0.00028
40	Trans-Dichloroethylene 1,2-	156605		1.85	140	10000
44 N	Tributyltin (TBT)	688733				
101	Trichlorobenzene 1,2,4-	120821			35	70
41	Trichloroethane 1,1,1-	71556	18400	1030000		
42	Trichloroethane 1,1,2-	79005	0.6	41.8	0.59	16



EPA No.	Compound	CAS	Current Oregon Criteria		DEQ Recommended Criteria	
			water and fish ingestion	fish consumption only	water + organism	organism only
43	Trichloroethylene	79016	2.7	80.7	2.5	30
45 N	Trichlorophenol 2,4,5-	95954	2600		1800	3600
55	Trichlorophenol 2,4,6-	88062	1.2	3.6	1.4	2.4
44	Vinyl Chloride	75014	2	525	0.025	2.4
13	Zinc	7440666			7400	26000

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<sup>1</sup>Methylmercury value expressed as µg/kg fish.

## Chapter 5 References

- Arkoosh, M.R., E. Casillas, E. Clemons, A.N. Kagley, R. Olson, P. Reno, and J. Stein (1998b). Effect of pollution on fish diseases: potential impacts on salmonid populations. *Journal of Aquatic Animal Health* 10: 182-190.
- Arkoosh, M.R., E. Casillas, E. Clemons, B. McCain, and U. Varanasi (1991). Suppression of immunological memory in juvenile Chinook salmon (*Oncorhynchus tshawytscha*) from an urban estuary. *Fish & Shellfish Immunology* 1: 261-277.
- Arkoosh, M.R., E. Casillas, P. Huffman, E. Clemons, J. Evered, J. Stein, and U. Varanasi (1998a). Increased susceptibility of juvenile Chinook salmon from a contaminated estuary to *Vibrio anguillarum*. *Transactions of the American Fisheries Society* 127: 360-374.
- Arkoosh, M.R., E. Clemons, M. Myers, and E. Casillas (1994). Suppression of B-cell mediated immunity in juvenile Chinook salmon (*Oncorhynchus tshawytscha*) after exposure to either a polycyclic aromatic hydrocarbon or to polychlorinated biphenyls. *Immunopharmacology and Immunotoxicology* 16(2): 293-314.
- EPA (1986). Quality Criteria for Water 1986. United States Environmental Protection Agency EPA 440/5-86-001.
- EPA (1995). Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria. *Federal Register* Vol. 60 (No. 86): 22229-22237.
- EPA (1996). 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water. United States Environmental Protection Agency EPA 820-B-96-001.
- EPA (1999). National Recommended Water Quality Criteria—Correction. United States Environmental Protection Agency EPA 822-Z-99-001. (<http://www.epa.gov/ostwater/pc/revcom.pdf>).
- EPA (2000a). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. United States Environmental Protection Agency EPA 822-B-009-004. (<http://www.epa.gov/waterscience/humanhealth/method/>).
- EPA (2000b). Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California. *Federal Register* Vol. 65 (No. 97): 31681-31719. <http://www.epa.gov/ost/standards/ctr/toxic.pdf>
- EPA (2002a). National Recommended Water Quality Criteria, U.S. Environmental Protection Agency EPA 822-R-02-047. (<http://www.epa.gov/waterscience/pc/revcom.pdf>).



- EPA (2002b): Revision of National Recommended Water Quality Criteria. Federal Register 67(249):79091-79095. (<http://www.epa.gov/fedrgstr/EPA-WATER/2002/December/Day-27/w32770.htm>).
- Freeman R.A., W.H. Everhart (1971). Toxicity of aluminum hydroxide complexes in neutral and basic media to rainbow trout. Transactions of the American Fisheries Society 100: 644-658
- Gundersen, D.G., S. Bustaman, W.K. Seim, and L.R. Curtis (1994). pH, hardness, and humic acid influence aluminum toxicity to rainbow trout in weakly alkaline waters. Canadian Journal of Aquatic Sciences 51: 1345-1355.
- Moore, A. and C.P. Waring (1996). Sublethal effects of the pesticide Diazinon on olfactory function in mature male Atlantic salmon parr. Journal of Fish Biology 48: 758-775.
- Moore, A. and C.P. Waring (1998). Mechanistic effects of a triazine pesticide on reproductive endocrine function in mature male Atlantic salmon (*Salmo salar* L.) parr. Pesticide Biochemistry and Physiology 62: 41-50.
- OEHHA (2001). *Chemicals in Fish: Consumption of Fish and Shellfish in California and the United States*. Final Report. Pesticide and Environmental Toxicology Section. Office of Environmental Health Hazard Assessment. California Environmental Protection Agency. Oakland, California.
- Scholz, N.L., N.K. Truelove, B.L. French, B.A. Berejikian, T.P. Quinn, E. Casillas, and T.K. Collier (2000). Diazinon disrupts antipredator and homing behaviors in chinook salmon (*Oncorhynchus tshawytscha*). Canadian Journal of Fisheries and Aquatic Sciences 57: 1911-1918.
- Stephan, C.E., D.I. Mount, D.J. Hansen, J.H. Gentile, G.A. Chapman, and W.A. Brungs (1985). Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. United States Environmental Protection Agency PB85-227049.
- Sweet, L.I., D.R. Passino-Reader, P.G. Meier, and G.M. Omann (1998). Fish thymocyte viability, apoptosis, and necrosis: in-vitro effects of organochlorine contaminants. Fish & Shellfish Immunology 8: 77-90.
- USFWS (2000). Final Biological Opinion on "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California." <http://pacific.fws.gov/caltoxics/>.
- Waring, C.P. and A. Moore (1997). Sublethal effects of a carbamate pesticide on pheromonal mediated endocrine function in mature male Atlantic salmon (*Salmo salar* L.) parr. Fish Physiology and Biochemistry 17: 203-211.

Before the Environmental Quality Commission  
of the State of Oregon

In the Matter of City of Ashland	)	
Wastewater Treatment Facility	)	ORDER MODIFYING
Request for Modification of Waiver of	)	WAIVER OF OAR
340-41-007 (17)(a)(A)(i) ["Dilution Rule"]	)	OAR 340-41-007 (17)(a)(A)(i)
	)	

FINDINGS

The Department has made the following findings:

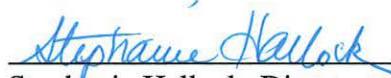
1. The City of Ashland owns and operates a wastewater treatment facility in Jackson County, Oregon which discharges to Ashland Creek.
2. On March 16, 1992, the Environmental Protection Agency approved the Bear Creek Total Daily Maximum Loads (TMDLs) for biochemical oxygen demand (BOD), ammonia nitrogen, and total phosphorus.
3. The City of Ashland initially chose spray irrigation during the summer months to comply with the wasteload allocations in the TMDL.
4. In 1998, the EQC granted the City of Ashland a conditional waiver of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"]. This waiver is for the high flow season only and is conditional on the City enhancing stream flows.
5. The City of Ashland has subsequently chosen a chemical/physical treatment option to comply with the wasteload allocations in the TMDL which will meet water quality standards for dissolved oxygen. This option will not, however, meet the minimum design criteria of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"].
6. The City of Ashland has requested extension of the waiver through the summer months and elimination of the requirement to enhance stream flows.
7. The Department has reviewed the City's request, finds that beneficial uses will be protected, and supports the request for waiver.

ORDER

A waiver of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"] for the City of Ashland's wastewater treatment facility is hereby granted.

Dated this 24<sup>th</sup> day of May.


On behalf of the Commission

  
Stephanie Hallock, Director  
Department of Environmental Quality



State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director   
**Subject:** Agenda Item C, Action Item: Dilution Rule Waiver Modification – City of Ashland Wastewater Treatment Facility  
May 20, 2004 EQC Meeting

**Department Recommendation** The Department recommends that the Environmental Quality Commission (EQC, Commission) approve the City of Ashland's request to modify the dilution rule waiver. This modification will extend the waiver through the summer months and eliminate the requirement to enhance stream flows. Environmental studies and technical analysis show that the dissolved oxygen standard will be protected in Ashland and Bear Creeks without the application of the dilution rule requirements.

**Background** The City of Ashland wastewater treatment facility (WWTF) serves a population of over 20,000 and discharges to Ashland Creek approximately ¼ mile upstream of the confluence with Bear Creek. In 1990, the Department drafted the Bear Creek Total Maximum Daily Loads (TMDLs) for biochemical oxygen demand (BOD), ammonia nitrogen, and total phosphorus. These TMDLs were approved by EPA on March 16, 1992. At that time, the WWTF was not capable of removing ammonia, phosphorus, or BOD to the levels required by the TMDLs. The implementation schedule in the TMDL allowed the City until December 31, 1994 to comply. The City has been operating under a Mutual Agreement and Order since that time.

The City reviewed several alternatives in an effort to meet (1) the water quality standards, (2) the TMDL requirements and (3) the minimum design criteria, including the "dilution rule." Additional details regarding the alternatives are available in Attachment C on pages 16-18. The only alternative that met all these requirements was to cease all discharge and connect to the Medford Area Regional Wastewater Treatment Facility. This option would have reduced stream flows below critical levels. Therefore, the City initially chose to irrigate the effluent during the summer months and enhance stream flows with other stored water.

In 1998, the EQC granted a waiver to the dilution rule during the winter only, with the condition that the City enhance stream flows (see Attachment A for the 1998 staff report). This waiver was granted based on the Department's determination that discharge of treated effluent would not cause a violation

of the dissolved oxygen criteria during the winter. The proposal complied with the dilution rule during the summer because no wastewater would have been discharged.

Because of the public opposition to the summer irrigation plan and issues regarding land use planning, the City decided to research additional treatment options. It was shown that a membrane filtration system could treat the wastewater to very low levels of BOD and phosphorus at reduced cost. The upgrade was completed in 2003 and the WWTF now produces wastewater that meets all the current TMDL requirements. The total project cost was approximately \$33 million.

The City's National Pollutant Discharge Elimination System (NPDES) permit for the WWTF expired on April 30, 2003 and now needs to be renewed. The City is requesting to modify their dilution rule waiver and EQC action on the waiver is needed to renew the permit.

#### **Key Issues**

##### **The Dilution Rule**

The dilution rule was established in the 1970's as a part of the minimum design criteria for new and upgraded WWTF. As a design criterion, it is applied to existing facilities when they undergo major modifications, such as Ashland's WWTF upgrade. The rule states that:

"Effluent BOD concentration in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) may not exceed one unless otherwise approved by the Commission."

The intent of this rule is to assure that receiving stream flows are large enough to adequately dilute oxygen demanding pollutants, such as treated sewage. It is based on the presumption that a maximum increase in the instream BOD concentration of 1 mg/L is protective of water quality. While water quality can be protected at higher instream BOD concentrations, the rule is an effective initial screening tool where water quality information is limited. When more information is available, an acceptable BOD level can be determined through modeling and subsequent monitoring.

##### **Compliance with the Dilution Rule**

Because Ashland's WWTF flow is large in comparison to the flow of Ashland and Bear Creeks, it would have had to produce effluent BOD concentrations of less than 0.41 milligrams per liter (mg/l) during the summer and less than 2.1 mg/l during the winter to comply with the



requirements of the dilution rule. (Details about these calculations and the volumes of creek and sewage flow are on page 17 of Attachment C.) It is currently beyond the means of conventional technology to meet these effluent concentrations. While advanced tertiary treatment systems are capable of producing very high quality effluent in the range of 2 mg/l, it would be extremely expensive to construct and operate a system that would consistently produce effluent below 2 mg/l.

#### **Water Quality Review**

Department water quality modeling indicates that the water quality criteria for dissolved oxygen will be met during the summer if the effluent BOD concentrations are less than 4 mg/l, which the upgraded WWTF can reliably produce. Therefore, the very low effluent limits derived from application of the dilution rule are unnecessary to protect water quality. In addition, the condition in the current waiver to enhance stream flows is unnecessary because the facility will maintain stream flows by continuing to discharge highly treated water during the summer months.

#### **Summary of Public Comments**

The proposed permit was placed on public notice on April 2, 2004. A public hearing will be held on May 3, 2004 and the public comment period ends on May 7, 2004. No comments have been received to date. A summary of public comments will be provided to the EQC during the May 20, 2004 meeting.

#### **Attachments**

- A. Draft Order for Waiver Modification
- B. NPDES Permit Notice of Public Hearing
- C. Draft NPDES Permit Evaluation Report with Attachments
- D. Draft NPDES Permit
- E. Staff Report, Minutes and Order from June 12, 1998 EQC Meeting

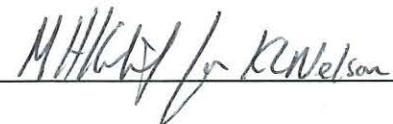
#### **Available Upon Request**

- Oregon Administrative Rules
- Bear Creek TMDL Documents

Approved:

Section:

Division:



Report Prepared By: Jonathan Gasik, MS, PE  
Phone: (541) 776-6010 x230

Before the Environmental Quality Commission  
of the State of Oregon

In the Matter of City of Ashland	)	
Wastewater Treatment Facility	)	ORDER MODIFYING
Request for Modification of Waiver of	)	WAIVER OF OAR
340-41-007 (17)(a)(A)(i) ["Dilution Rule"]	)	OAR 340-41-007 (17)(a)(A)(i)
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FINDINGS

The Department has made the following findings:

1. The City of Ashland owns and operates a wastewater treatment facility in Jackson County, Oregon which discharges to Ashland Creek.
2. On March 16, 1992, the Environmental Protection Agency approved the Bear Creek Total Daily Maximum Loads (TMDLs) for biochemical oxygen demand (BOD), ammonia nitrogen, and total phosphorus.
3. The City of Ashland initially chose spray irrigation during the summer months to comply with the wasteload allocations in the TMDL.
4. In 1998, the EQC granted the City of Ashland a conditional waiver of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"]. This waiver is for the high flow season only and is conditional on the City enhancing stream flows.
5. The City of Ashland has subsequently chosen a chemical/physical treatment option to comply with the wasteload allocations in the TMDL which will meet water quality standards for dissolved oxygen. This option will not, however, meet the minimum design criteria of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"].
6. The City of Ashland has requested extension of the waiver through the summer months and elimination of the requirement to enhance stream flows.
7. The Department has reviewed the City's request, finds that beneficial uses will be protected, and supports the request for waiver.

ORDER

A waiver of OAR 340-41-007 (17)(a)(A)(i) ["Dilution Rule"] for the City of Ashland's wastewater treatment facility is hereby granted.

Dated this \_\_\_\_\_ day of \_\_\_\_\_.

On behalf of the Commission

\_\_\_\_\_  
Stephanie Hallock, Director  
Department of Environmental Quality



**PUBLIC NOTICE**



State of Oregon  
Department of  
Environmental  
Quality

Western Region  
Water Quality  
750 Front St., Suite 120  
Salem OR 97301  
(503) 378-8240  
1-800-349-7677  
Fax: (503) 373-7944  
Permit Writer:  
Jonathan Gasik  
[www.deq.state.or.us](http://www.deq.state.or.us)

# Proposed NPDES Permit Renewal for the City of Ashland Wastewater Treatment Plant

**Notice issued:** April 2, 2004

**Hearing date:** May 3, 2004

**Hearing time:** 6:00 PM

Information session: 6:00 PM

Formal hearing: 6:30 PM

**Hearing location:**

Siskiyou Room  
Community Development/Engineering  
Services Building  
51 Winburn Way  
Ashland, Oregon

**Written comments due:** 5 p.m., May 7,  
2004

**Where can I send comments and get more  
information?**

DEQ - Salem Office, Attn: Jennifer Claussen,  
750 Front Street NE, Suite 120, Salem, OR  
97301-1039  
DEQ accepts comments by mail, fax and  
e-mail.

**Name:** Jennifer Claussen

**Phone:** (503) 378-8240 extension 247, or  
Toll-Free in Oregon (800) 349-7677.

**Mailing address:**

DEQ - Salem Office  
750 Front Street NE, Suite 120  
Salem, OR 97301-1039

**Fax:** (503) 373-7944

**E-mail:** [claussen.jennifer@deq.state.or.us](mailto:claussen.jennifer@deq.state.or.us)  
(E-mail comments will be acknowledged. If  
there is a delay between servers, e-mails may  
not be received before the deadline.)

**What are DEQ's responsibilities?**

The Oregon Department of Environmental  
Quality (DEQ) is the regulatory agency that  
helps protect and preserve Oregon's  
environment. DEQ is responsible for  
protecting and enhancing Oregon's water and  
air quality, for cleaning up spills and releases

of hazardous materials, and for managing the  
proper disposal of hazardous and solid wastes.  
One way DEQ does this is by requiring permits  
for certain activities.

The purpose of this notice is to invite you to  
make oral comments on this proposed permit at a  
hearing. You also may comment in writing.

**How can I review documents?**

You can review the draft permit and permit  
application at: DEQ Salem Office, 750 Front  
Street NE, Suite 120, Salem, OR 97301-1039  
Or:  
DEQ Medford Office, 201 W. Main, Medford,  
OR 97501  
To schedule an appointment in Salem please call  
(503) 378-8240. In Medford, please call (541)  
776-6010.

**Who is the applicant?**

City of Ashland  
20 East Main Street  
Ashland, Oregon 97520

**Where is the facility located?**

One quarter mile northwest of Nevada and Oak  
Streets in Ashland, Oregon

**What is proposed?**

DEQ proposes to renew a National Pollutant  
Discharge Elimination System (NPDES)  
wastewater discharge permit.

The treatment facility at Ashland is an activated  
sludge facility with a design average dry weather  
flow of 2.3 million gallons per day (mgd). The  
design maximum monthly flow and peak hour  
flow are 3.3 mgd and 8.5 mgd, respectively. The  
facility discharges treated wastewater to Ashland  
Creek at River Mile 0.25 which discharges to  
Bear Creek at River Mile 22.5.

In Oregon's 2002 List of Water Quality Limited  
Streams Integrated Report (303d list), the water  
quality of Bear Creek does not support the  
following beneficial uses during the periods  
listed:



Parameter	Season	Listing Status
Temperature	Summer	303(d) List
Fecal Coliform	Year Round	303(d) List
Dissolved Oxygen	Year Round	TMDL Approved
Chlorophyll a	Summer	TMDL Approved
Phosphorus	Spring/Summer/Fall	TMDL Approved
pH	Year Round	TMDL Approved
Ammonia	Spring/Summer/Fall	TMDL Approved
Aquatic Weeds Or Algae	Summer	TMDL Approved
Flow Modification	Year Round	Water Quality Limited Not Needing a TMDL
Habitat Modification	Year Round	Water Quality Limited Not Needing a TMDL

The proposed permit contains effluent limitations based on the waste load allocations in the TMDL.

The City has requested a waiver from the minimum design criteria for dilution which must be approved by the Environmental Quality Commission (EQC). DEQ's evaluation shows that compliance with the waste load allocation of the TMDL will adequately protect water quality and that compliance with the minimum design criteria for dilution is unnecessary. Therefore, the DEQ supports the City's request.

**Permit type:** NPDES

**Permit expiration:** Not to exceed 5 years

**What are the special conditions of this permit?**

The permittee is required to implement temperature reduction measures and monitor their effectiveness. Target water quality based thermal loads are established. The permittee is also prohibited from increasing thermal discharges beyond the currently permitted amount.

**Who is affected?**

Property owners and residents in the vicinity of the disposal site.

**Compliance history:**

This facility was last inspected October 2, 2003 and was found to be operating in compliance.

The monitoring reports for this facility were reviewed for the period since the current permit was issued, including any actions taken relating to effluent violations. The permit compliance conditions were reviewed and all inspection reports for the same period were reviewed. Based on this review, the following violations have been documented at this facility during the term of the current permit:

- On 3/1/1998, a notice of noncompliance was issued for installation of a sewage pump station without prior approval.
- On 1/21/1999, a notice of noncompliance was issued for violation of Schedule B monitoring requirements.
- On 9/1/1999, a notice of noncompliance was issued for violation of Schedule B monitoring requirements.
- On 12/7/1999, notice of noncompliance was issued for failure to submit an instream monitoring plan for Ashland Creek.
- On 12/1/2001, a notice of noncompliance was issued for submission of an incomplete Discharge Monitoring Report.
- On 3/27/2000, a notice of noncompliance was issued for spilling biosolids into public waters.
- On 7/1/2002, a notice of noncompliance was issued for submission of an incomplete Discharge Monitoring Report.

**What other DEQ permits are required?**

None

**What legal requirements apply?**

The NPDES permit is required in accordance with ORS 468B.050 and the federal Clean Water Act in order to discharge treated wastewater to public waters.

**What discretionary decisions might DEQ use in deciding to issue the permit?**

Water quality based effluent limitations are proposed. These limitations are calculated using statistical methods. The Department uses EPA guidance and best professional judgment in choosing critical case scenarios and statistical factors. The anti-degradation review also requires professional judgment.

**What happens next?**

DEQ will review and consider all comments received during the hearing and comment period.



Following this review, DEQ may issue the permit as proposed or modified, or deny the permit.

**Accessibility information**

*DEQ is committed to accommodating people with disabilities at our hearings. Please notify DEQ of any special physical or language accommodations or if you need information in large print, Braille or another format. To make these arrangements, contact DEQ Communications & Outreach at (503) 229-5696 or toll free in Oregon at (800) 452-4011.*

*People with hearing impairments may call DEQ's TTY number, (503) 378-3684.*

**Which of the facility's activities are not under DEQ's jurisdiction?**

Employee health and safety issues are regulated by the Occupational Health and Safety Administration (OSHA). Facility siting locations are under the jurisdiction of local zoning authorities. Associated building (excavation, grading, plumbing and electrical) permits are under the jurisdiction of local building authorities.

**What similar activities take place in the vicinity of the facility?**

The City of Medford operates a Regional Wastewater Treatment Facility which serves the City's of Talent, Phoenix, Medford, Jacksonville, Central Point, Eagle Point, White City, and some unincorporated areas within Jackson County. This facility is located on Kirtland Road in White City.

**What other facilities does this owner operate?**

The City of Ashland also operates a water treatment plant.

**What are the known health effects or environmental impacts of the permitted substances stored, disposed of, discharged or emitted by the facility?**

The impacts to the environment include dissolved oxygen depletion and localized transient increases in stream temperature. Water quality modeling predicts that dissolved oxygen criteria will be maintained. Bacteria and other human pathogens are present in untreated sewage and inadequately disinfected wastewater could impact public health. However, treatment processes including disinfection occur that significantly reduce the levels down to instream standards prior to discharge or reuse.

Ammonia may also be present in the effluent. However, the proposed permit requires removal of ammonia to non-toxic concentrations. The proposed permit also includes toxic metals, priority pollutant, and whole effluent toxicity testing. The City will be required to identify and eliminate any toxic pollutants which are found in toxic concentrations.

**How are the permitted substances measured?**

Schedule B of the NPDES permit requires the permittee to monitor and record various water quality effluent discharge parameters at a specific frequency. Monitoring must be performed in accordance with federal regulations (40 CFR Part 136) unless otherwise specified in the permit.

# PUBLIC NOTICE

Attachment C



State of Oregon  
Department of  
Environmental  
Quality

## National Pollutant Discharge Elimination System PERMIT EVALUATION AND FACT SHEET

March 8, 2004

### Oregon Department of Environmental Quality

201 W. Main Street  
Medford, Oregon  
541-776-6010

Permittee:	City of Ashland
	20 E. Main Street
	Ashland, OR 97520
	File Number: 3780
Current Permit:	NPDES Permit Number: 101609
	EPA Reference Number: OR002625-5
	Issue Date: August 28, 1998
	Expiration Date: April 30, 2003
Source Information	Ashland STP
	¼ Mile NW of Nevada St. and Oak St.
	Ashland, Oregon
	Latitude 42° 12' 49"N Longitude 122° 42' 48"
Receiving Stream:	Ashland Creek
	LLID: 1227202422154
	River Mile: 0.25
Proposed Action:	Renewal NPDES Major Domestic Permit
	Application Number: 985027 and 988564
	Date Received: December 6, 2002 and October 2, 2000
Source Contact:	Paula Brown, Public Works Director
	Phone: (541) 552-2411
Permit Writer:	Jonathan Gasik
	Phone: (541) 776-6010



# CITY OF ASHLAND NPDES Renewal Evaluation Report

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## INTRODUCTION

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The City of Ashland owns and operates a secondary wastewater treatment facility located in Ashland, Oregon. The treatment facility serves the residents of Ashland. Domestic wastewater is treated and discharged to Ashland Creek in accordance with National Pollutant Discharge Elimination System (NPDES) Permit number 101609. The NPDES Permit for the facility was issued on August 28, 1998 and expired on April 30, 2003.

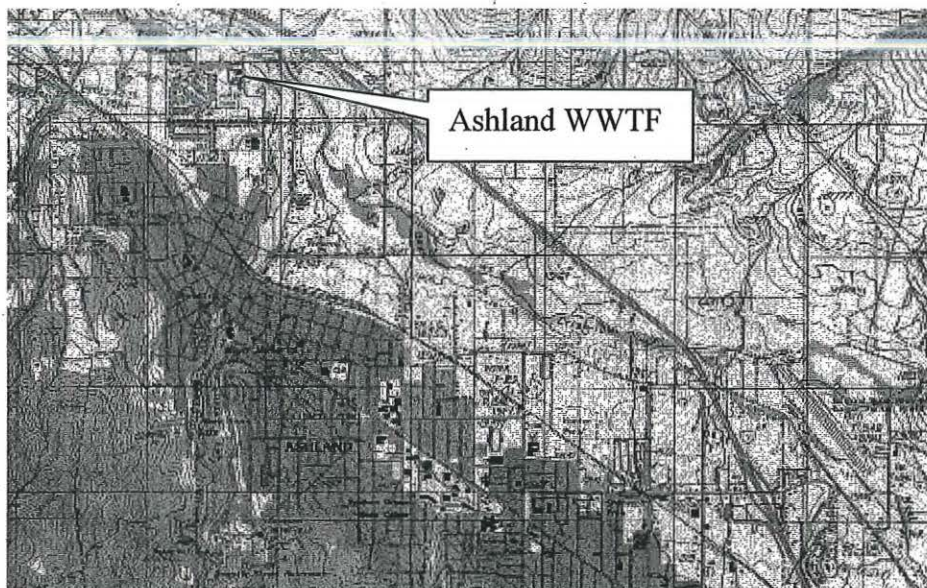
The Department received a renewal application on December 6, 2002. An application for modification of the permit was received on October 2, 2000. The permit shall not be deemed to expire until final action has been taken on the renewal application as per Oregon Administrative Rules (OAR) 340-045-0040. A renewal permit is necessary to discharge to state waters pursuant to provisions of Oregon Revised Statutes (ORS) 468B.050 and the Federal Clean Water Act. The Department proposes to renew the permit. This permit evaluation report describes the basis and methodology used in developing the permit.

This permit is a joint federal and state permit and subject to federal and state regulations. The Clean Water Act, the Code of Federal Regulations, and numerous guidelines of the Environmental Protection Agency provide the federal permit requirements. The Oregon Revised Statutes, Oregon Administrative Rules, and policies and guidelines of the Department of Environmental Quality provide the state permitting requirements.

## FACILITY DESCRIPTION

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The Ashland wastewater treatment facility (WWTF) receives wastewater primarily from residential and commercial sources from a population of approximately 20,000. It is located one quarter mile northwest of the corner of Nevada Street and Oak Street in Ashland, Oregon.





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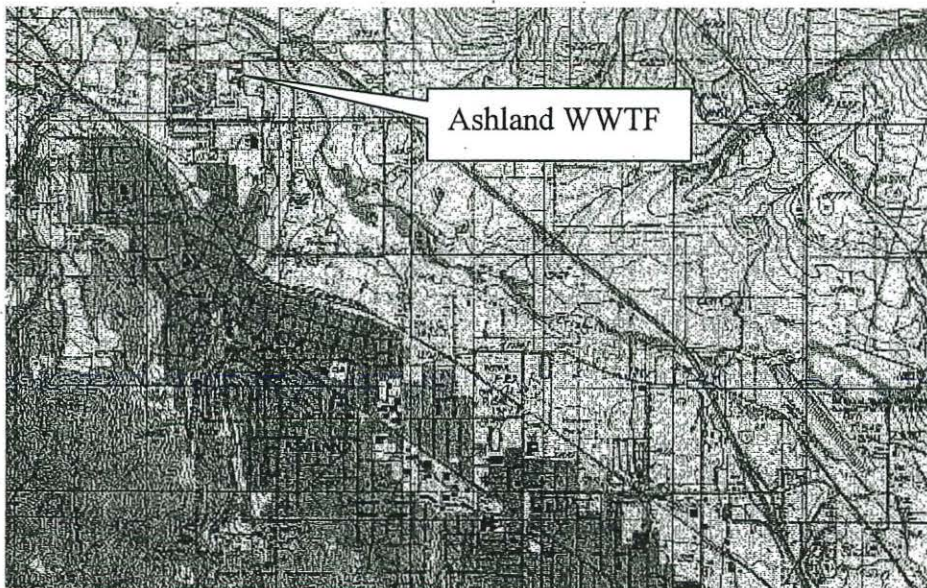
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## FACILITY DESCRIPTION

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## CITY OF ASHLAND NPDES Renewal Evaluation Report

The facility currently operates as an activated sludge facility with a design average dry weather flow of 2.3 million gallons per day (mgd). The design maximum month flow and peak hour flow are 3.3 mgd and 8.5 mgd, respectively. The dry weather flows do not include the high levels of infiltration and inflow that are associated with the winter in Oregon. Therefore, the design dry weather flows are used mostly to estimate how much treatment capacity there is for organic loads.

The facility contains headworks, two oxidation ditches, three secondary clarifiers, an ultraviolet (UV) disinfection unit, a membrane filtration system, and sludge treatment components (see Attachment #1). The headworks consist of gravity grit removal and a mechanical screen with a manual bar screen. The headworks has a design capacity of 10 mgd. Influent flow is measured after the headworks with a magnetic flow meter which has a capacity of 20 mgd.

Secondary treatment is achieved by the activated sludge process in the oxidation ditches. The Carrousel Oxidation Ditch System consists of two identical ditches with common walls. Each ditch consists of an anoxic basin and an aerobic basin. The combined return activated sludge (RAS) and wastewater, now called mixed liquor, enters the anoxic basin first, where it is used as a food source for the denitrification process. The flow enters the aerobic zone, or aeration basin, through a channel along the outside of the basin. The aerobic zone is a racetrack-shaped basin with surface aerators at each end. The aerators maintain the velocity in the racetrack and add the oxygen required for the biological process. Mixed liquor exits the basin over the adjustable weir on the overflow box on each basin and the flow from the two ditches is combined in a 30-inch diameter pipe terminating in the mixed liquor splitter box. This splitter box feeds the three circular secondary clarifiers, which complete the secondary process.

Disinfection is accomplished using ultraviolet light radiation. Treated effluent from the secondary clarifiers flows through two parallel pipelines, each with two inline disinfection units, to the re-aeration system. The wastewater is disinfected as it passes through the inline units and is irradiated with UV light. The disinfection system is designed to produce effluent containing less than 126 *E.coli* per 100 ml at flows up to 8.5 mgd and less than 23 total coliform per 100 ml at flows up to 4.5 mgd.

During the summer months, the City operates a phosphorus removal system. This system consists of alum precipitation and membrane filtration. Alum (aluminum sulfate) is added to the mixed liquor as it is discharged from the oxidation ditch. Phosphorus adsorbs onto the alum. The clarifiers serve as both settling and flocculation tanks. The effluent from the secondary clarifiers is then filtered with the Zeeweed 1000 membrane system to remove additional flocculated alum. The Zenon Zeeweed 1000 system is an outside-in hollow fiber membrane with a pore size of 0.02  $\mu\text{m}$ .

The outfall is a 180 foot long, 18 inch diameter pipeline that discharges into Ashland Creek.

Waste activated sludge is pumped to the lime stabilization system. However, the City is not currently lime stabilizing the sludge and the tanks are used for storage only. Sludge then flows to the sludge dewatering building where it is dewatered with two centrifuges with a capacity of 200 gallons per minute (gpm) each. After dewatering, the sludge is hauled to the Dry Creek Landfill near White City, Oregon.



## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

The plant is unmanned at night, but has 24 hour manned telemetry of alarms centralized at the police Department and a standby power generator. The City has six pump stations located at Nevada Street, North Main Street, Grandview Drive, Shamrock Lane, North Mountain Avenue and Ashland Creek. All pump stations have emergency backup generators and alarms which are connected to a security service for 24 hour coverage. Only the North Main pump station has a direct overflow line to waters of the state. However, this overflow line has been sealed. Ashland has not experienced any sewage overflows since the issuance of the last permit. The City has an ongoing collection system maintenance program to prevent collection system blockages and reduce inflow/infiltration. The proposed draft permit includes a condition requiring continuance of this program. A treatment plant bypass could result from a power failure combined with failure of the emergency generator or if a flow above 9.3 MGD occurred. However, the plant has never experienced flows this high, power service is reliable, and emergency power generators are well maintained.

The treatment plant was not designed for septage receiving. The proposed permit prohibits acceptance of septage unless approved by the Department.

### **Changes in Operation**

The Ashland WWTF was constructed in 1936 as a trickling filter facility with one primary and one secondary clarifier. Sludge was pumped directly to drying beds. Various modifications have been made over the years, including the addition of a second trickling filter. In 1974, a major upgrade was completed in which the two trickling filters were converted to activated sludge aeration basins, another secondary clarifier was added, and a new chlorine contact basin was constructed. In 1998, the City began construction of a major upgrade to the wastewater treatment plant. The upgrade initially included headworks improvements, replacement of the primary clarifier and aeration basins with two oxidation ditches, rehabilitation of the two existing secondary clarifiers, construction of a third secondary clarifier, and installation of an ultraviolet (UV) disinfection system. The purpose of these upgrades was to eliminate chlorine toxicity and provide adequate treatment during the high flow season. These upgrades were labeled Project A and were completed in 2001.

To comply with the requirements of the Bear Creek Total Maximum Daily Load (TMDL), the City proposed to improve a 840-acre site to allow for irrigation of the treated wastewater and land application of treated biosolids. This was known as Project B. In 2001, the City decided against moving forward with Project B due to considerable public opposition. The City chose instead to install a phosphorus removal system to allow for continued discharge to public waters during the summer months.

As construction progressed, the City determined that additional improvements were needed. Replacement of the Ashland Creek pump station, construction of an alkaline stabilization facility for sludge, and installation of sludge centrifuges were added through change orders. All these improvements were completed in 2003.



## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

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## CITY OF ASHLAND NPDES Renewal Evaluation Report

### Biosolids Management and Utilization

The management of biosolids generated by the City's facility is regulated by Title 40 of the Code of Federal Regulations Part 503 (40 CFR Part 503) [2] and OAR Chapter 340 Division 50.

Waste sludge accumulations are disposed of as a solid waste in a landfill and are not considered biosolids. Because of this compliance with the federal biosolids regulations (40 CFR Part 503) is not required and no biosolids monitoring is proposed. Proper monitoring is to be prescribed by the receiving landfill in accordance with the solid waste rules.

The treatment plant does, however, have the ability to meet the requirements of Part 503 through lime stabilization. Should the City wish to use these facilities in the future, they will need to submit an approvable Biosolids Management Plan with request for permit modification. The approval process will require public involvement.

Though not required by the permit, Ashland conducted chemical testing of biosolids. The latest monitoring data, from a sample taken on January 29, 2004 is shown below:

<u>Pollutant</u>	<u>1/29/2004</u>	<u>Ceiling Limit</u>	<u>§503.13 Table 3 Limit</u>
Arsenic	44.8 mg/kg	75 mg/kg	41 mg/kg
Cadmium	10.3 mg/kg	85 mg/kg	39 mg/kg
Copper	1630 mg/kg	4300 mg/kg	1500 mg/kg
Lead	109 mg/kg	840 mg/kg	300 mg/kg
Mercury	Not analyzed	57 mg/kg	17 mg/kg
Molybdenum	26.8 mg/kg	75 mg/kg	75 mg/kg
Nickel	94.2 mg/kg	420 mg/kg	420 mg/kg
Selenium	34.3 mg/kg	100 mg/kg	36 mg/kg
Zinc	3610 mg/kg	7500 mg/kg	2800 mg/kg

For all pollutants analyzed, the concentrations in the sludge are below the ceiling limits. Therefore, the sludge is likely suitable for land application. However, the pollutant concentrations for arsenic, copper, and zinc exceed the §503.13 Table 3 limit. Therefore, the concentrations of these pollutants would need to be reduced for Ashland to produce an Exceptional Quality biosolid.

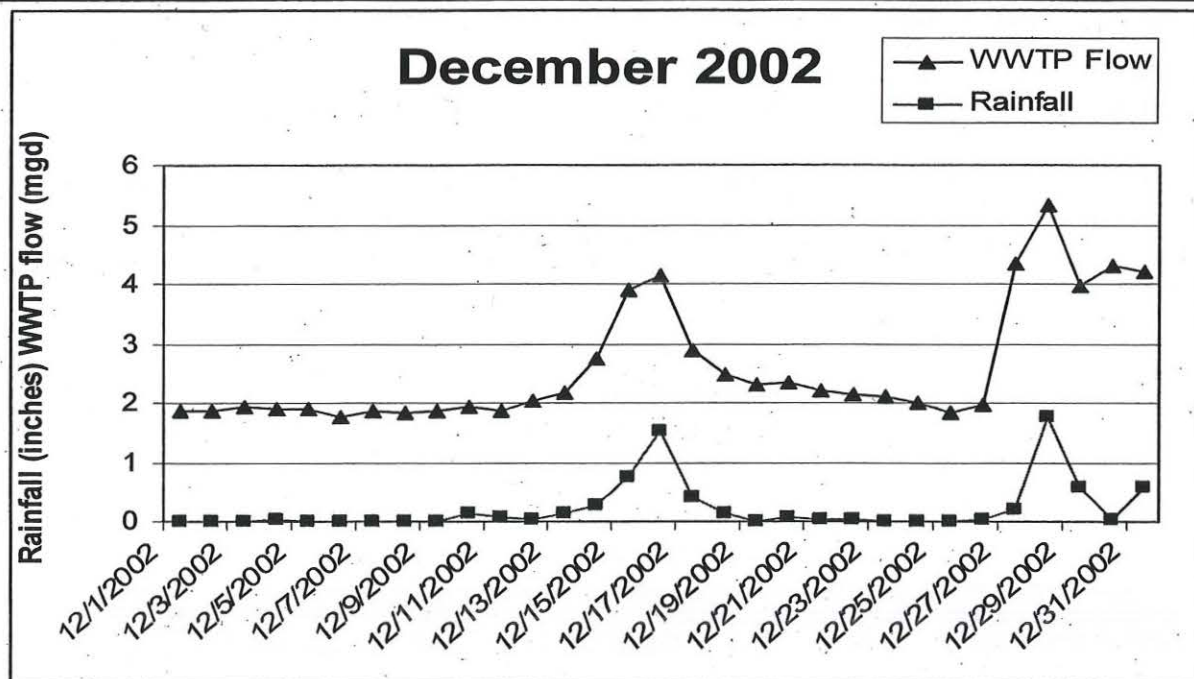
### Inflow and Infiltration (I/I)

During the dry weather period (May 1 through November 30) of 2003, the plant's average flow was 2.13 mgd with a daily maximum flow of 2.48 mgd in May. Based on the current flows, this facility is at 93% of design dry weather flows.

During the wet weather period of 2002/2003, the average flow to the facility was 2.45 mgd with a daily maximum flow of 5.32 on December 28, 2002. This flow was in response to a storm event of approximately 2 inches:



## CITY OF ASHLAND NPDES Renewal Evaluation Report



Peak flows are about 2.5 times the dry weather average, which is not considered excessive. With comparable average dry and wet weather flows, there is strong indication that the collection system does not have a severe Inflow and Infiltration (I/I) problem.

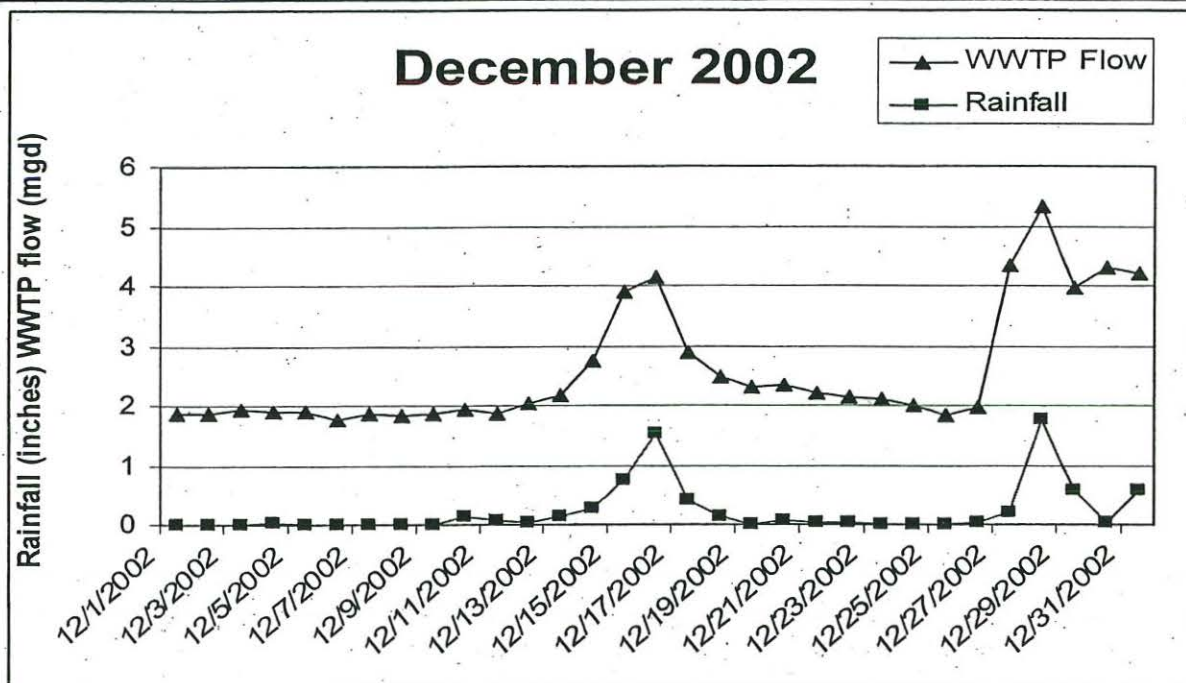
### Industrial Pretreatment

The City has no pretreatment program and has not performed an industrial pretreatment survey. Past permits did not have a pretreatment requirement because the facility was not experiencing any upset conditions and because of the lack of any significant industrial discharges to the collection system. During the last permit period, the facility has not experienced any significant upset conditions and sludge analysis indicates that the sludge does not contain significant levels of industrial pollutants. Under these conditions the Department has not typically required a pretreatment survey. Therefore, no requirement for an industrial pretreatment survey is recommended in this renewal.

### Outfalls

The current NPDES Permit contains three outfalls; 001, 002, and 003. Outfall 001 allows the treatment facility to discharge treated effluent into Ashland Creek at River Mile 0.25. The outfall is a 180 foot long, 18 inch diameter pipeline that discharges into Ashland Creek. Ashland Creek discharges into Bear Creek about 1,600 feet downstream of the outfall.

The permit allows the City to irrigate treated effluent by irrigation through Outfall 002 in accordance with OAR 340, Division 55 during the summer season upon approval of a reclaimed water use plan. However, the City does not currently have the facilities to irrigate reclaimed water, nor has the City submitted a reclaimed water use plan. While the City does not have any current plans to irrigate reclaimed water, the City would like to keep the option of irrigation.



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## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

Outfall 003 (Emergency Overflow from the Ashland Creek Pump Station) has been eliminated and will be deleted from the permit.

### **Groundwater Issues**

All units at the Ashland WWTF are of concrete manufacture. No lagoons or ponds are used in the process. Based on the Department's current information, this facility has a low potential for adversely impacting groundwater quality. Therefore, Schedule D of the proposed permit states that no groundwater evaluations will be required during this permit cycle. The permit also includes a condition in Schedule A that prohibits any adverse impact on groundwater quality.

### **Storm water Issues**

General NPDES permits for storm water are required for facilities with a design flow of greater than 1 MGD if storm water is collected and discharge from the plant site. The facility has a storm water collection system and all storm water at this facility is processed through the wastewater treatment system. This facility does not discharge storm water therefore no storm water permit is necessary.

## **RECEIVING WATER**

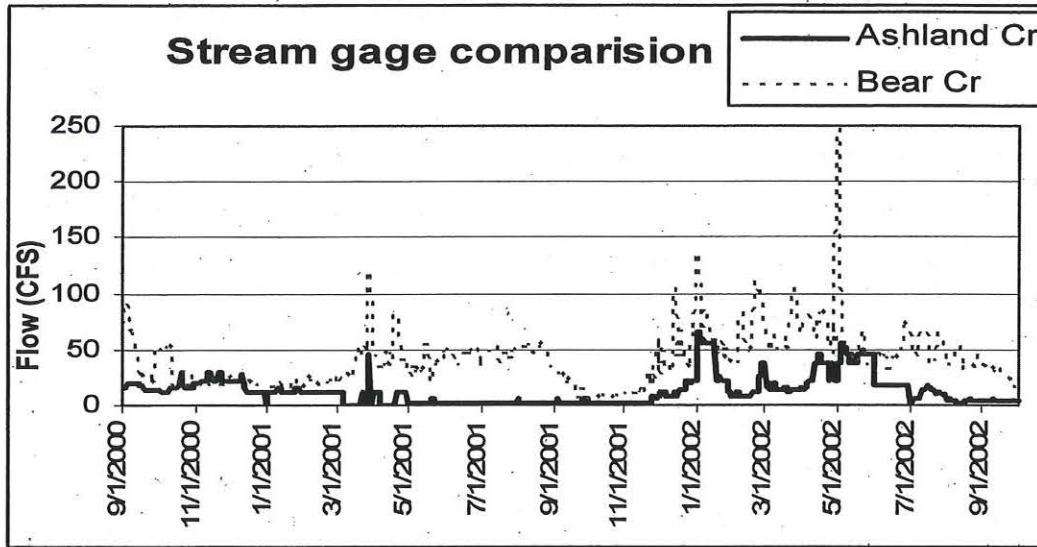
### **Hydrologic Characteristics**

The WWTF discharges to Ashland Creek approximately one quarter mile upstream of the confluence of Ashland and Bear Creeks. The United States Geological Survey (USGS) does not currently maintain any stream gauging stations on Ashland Creek. Prior to 1982, the USGS maintained gages on West Fork Ashland Creek and East Fork Ashland Creek. However, these gages **cannot** be used to estimate the flows near the WWTP because they are above Reeder Reservoir. To get a better estimate of the stream flows at the WWTP, the City installed a stream gage and has been collecting stream flow data just upstream of the WWTP discharge since August of 2000. The USGS has also maintained stream gages in Bear Creek below Ashland Creek and in Bear Creek at Medford.

For critical condition water quality modeling, the EPA recommends using the minimum seven day average flow with a ten year recurrence (7Q10). At least thirty years of flow data is considered optimal to calculate the 7Q10. While thirty years of data is not available for gages on Ashland Creek, it is available for the USGS in Bear Creek at Medford. Correlations can often be made between gages on streams in the same watershed. However, while some correlation exists between Ashland Creek and Bear Creek flows, the correlation is insufficient to establish a mathematical relationship between the two flows. The Ashland and Bear Creek flows are presented in the following graph:

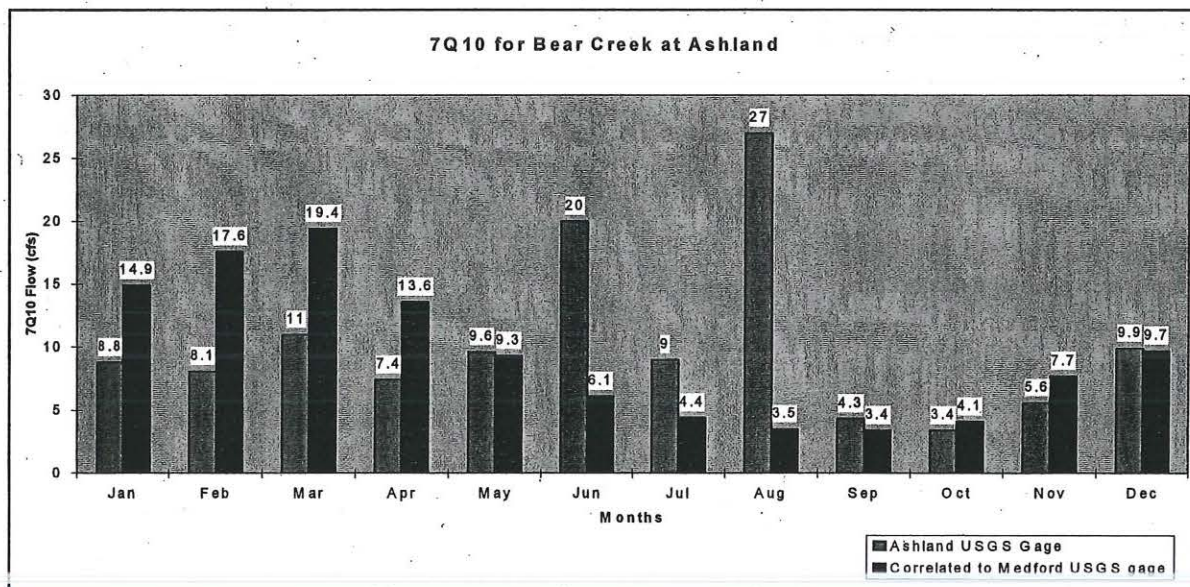


## CITY OF ASHLAND NPDES Renewal Evaluation Report



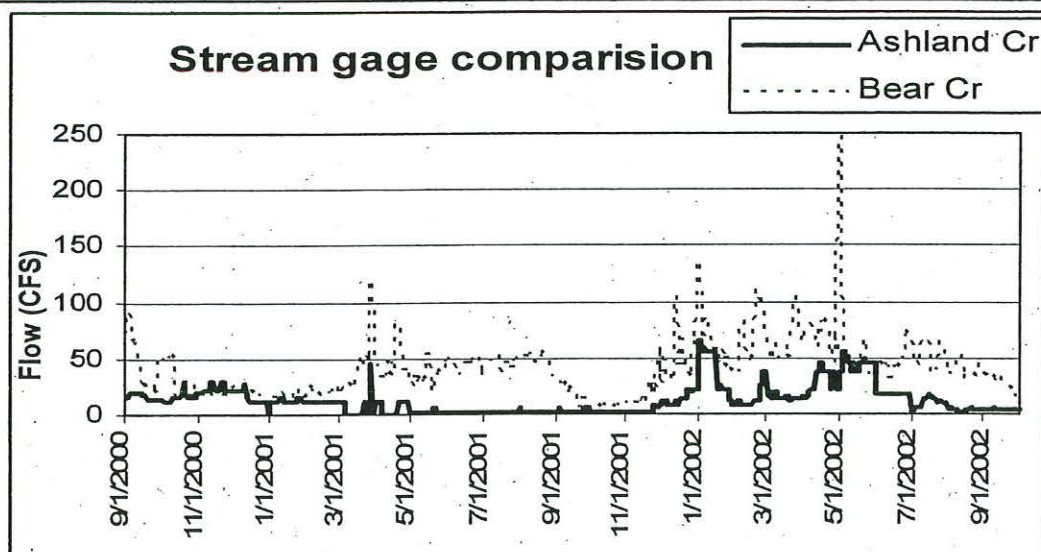
Any far field effects, such as dissolved oxygen sag, will be expressed in Bear Creek because the short distance from the discharge to Bear Creek. For this reason, water quality analysis and modeling has been focused on Bear Creek.

The flows in Bear Creek are largely influenced by irrigation practices. During the irrigation season (roughly May through September), the creek is used as a conveyance to transfer water from Howard Prairie, Hyatt and Emigrant Reservoirs to agricultural property in the Bear Creek Valley. The flows in the upper stretches of the creek commonly exceed 100 cfs, while the flows in the lower stretches are often below 1 cfs. The lowest flows in Bear Creek near Ashland occur immediately after the irrigation season and before the rains begin. During this time, flows of less than 4 cfs are not uncommon. In July 1990, the USGS installed a stream gage at RM 21.0. This is just downstream of the confluence of Ashland and Bear Creeks. The monthly 7Q10s were calculated based on the data from this gage. Also, the city's consulting engineers prepared an evaluation [8] which calculated the monthly 7Q10s based on a correlation to the Bear Creek at Medford USGS gage. The 7Q10s are shown below:



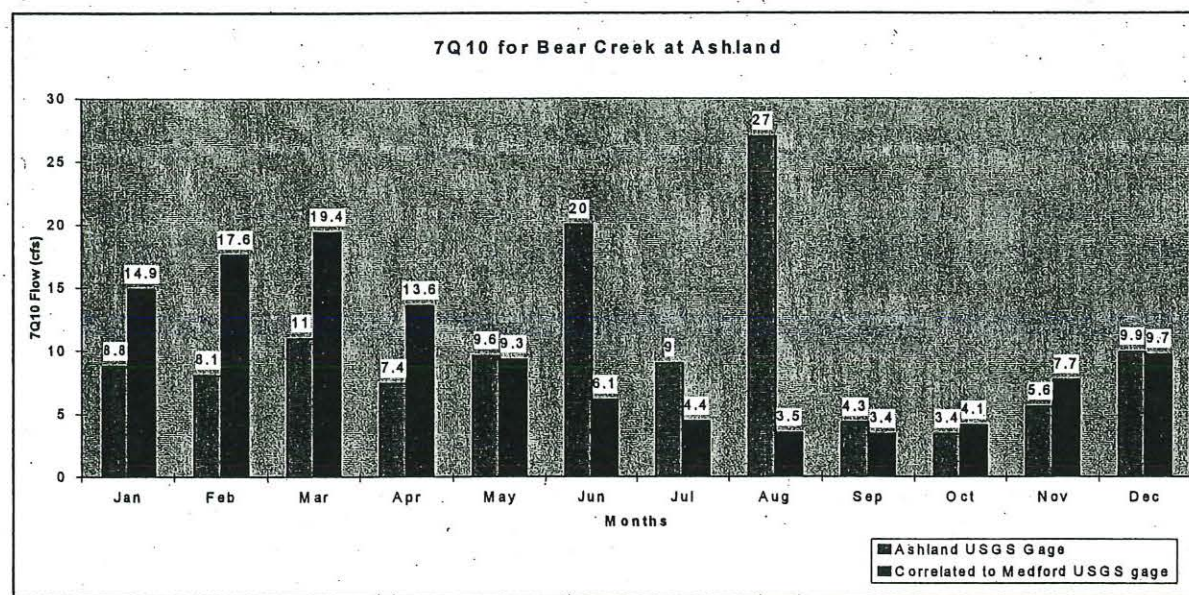


# CITY OF ASHLAND NPDES Renewal Evaluation Report



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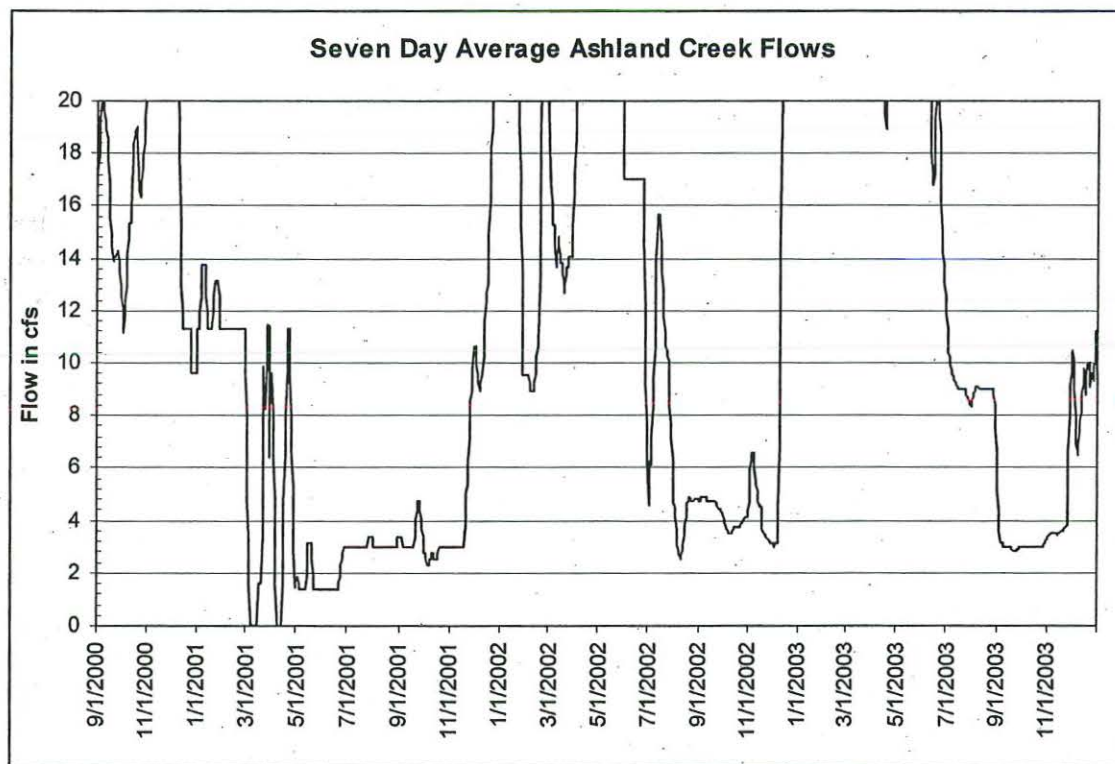




## CITY OF ASHLAND NPDES Renewal Evaluation Report

The summertime irrigation influence can clearly be seen in this graph with the dry weather irrigation season (June - August) 7Q10s based on the Ashland USGS gage being much higher than those based on a correlation with the Medford USGS gage. However, flow seasons are divided into high flow (December - April) and low flow (May - November). The critical low flows during these periods are virtually identical. Therefore, for the purposes of this evaluation, the low flow season 7Q10 is 3.4 cfs and the high flow season 7Q10 is 9.9 cfs. However, because the gage is downstream of the discharge, these flows include the flows from the WWTP and Ashland Creek. When the WWTP discharge is subtracted, the low flow season stream 7Q10 is 1.4 cfs and the high flow season stream 7Q10 is 7.6 cfs.

As stated above, while some correlation exists between Ashland Creek and Bear Creek flows, the correlation is insufficient to establish a mathematical relationship between the two flows. The City has collected some stream flow data for Ashland Creek. However, the City has had difficulty in placement of the stream gage during low flows. Therefore, the accuracy of this data is questionable. This data is presented in the following graph of the seven day average Ashland Creek stream flows:



The critical low flow condition can be roughly estimated if it assumed that the critical low flows in each stream will occur during the same times, which are the months of October and December for the low flow and high flow seasons, respectively. From this data, the seven day average flows in Ashland Creek are approximately 3 cfs when the seven day average flows in Bear Creek downstream of Ashland Creek are around 10 cfs. Therefore, for the purposes of a rough estimation, the 7Q10 in Ashland Creek is 3 cfs. The lowest seven day average flow in Bear Creek during the overlapping time period (September 1, 2004 through September 30, 2002) was 5.3 cfs



## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

and the lowest recorded flow was 4 cfs. The lowest recorded flow in Ashland Creek during this time is 1.3 cfs. Therefore, for the purposes of a rough estimation, the low flow 7Q10 flow in Ashland Creek is estimated to be below 1 cfs.

### **Mixing Zone Analysis**

OAR 340-041-0053 states that the Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone. The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided the water within the mixing zone is free of materials in concentrations that will cause acute toxicity to aquatic life as measured by the acute Whole Effluent Toxicity (WET) method and outside the boundary of the mixing zone is free of materials in concentrations that will cause chronic toxicity. The mixing zone must also:

- be as small as possible,
- avoid overlap with any other mixing zone to the extent possible,
- be less than the total stream width as necessary to allow passage of fish and other aquatic life,
- minimize adverse effects on the indigenous biological community,
- not threaten public health, and
- minimize the effects on other designated beneficial uses outside the mixing zone.

During low flow conditions, the discharge from the wastewater treatment facility comprises the majority of the flow in Ashland Creek. Therefore, there is very little dilution available to reduce any toxicity in the effluent. For this reason, the previous permit did not contain a mixing zone. The Department is proposing to assign a mixing zone for temperature only as allowed by recent revisions to the temperature standard.

## CITY OF ASHLAND NPDES Renewal Evaluation Report

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## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

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### **Receiving Stream Water Quality**

Ashland WWTF discharges to Ashland Creek approximately one quarter mile upstream of the confluence of Bear Creek and Ashland Creek. Bear and Ashland Creeks are in the Rogue River Basin. OAR 340-041-0271 Table 271A lists the beneficial uses for which water quality will be protected. Included in Table 271A for Ashland Creek are: public and private domestic water supply, industrial water supply, irrigation, livestock watering, fish and aquatic life (including salmonid passage, rearing and spawning), wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, and hydro power.

OAR 340-041-0271 also designates fish uses. Figure 271A: Fish Use Designations, Rogue Basin, Oregon, identifies Ashland Creek as salmon and trout rearing and migration habitat. Figure 271B: Salmon and Steelhead Spawning Use Designations, Rogue Basin, Oregon, identifies the designated salmon and steelhead spawning use period as October 15 through May 15.

The present water quality in Ashland Creek and Bear Creek is detrimental to cold water fish such as trout and salmon. Impacts are attributable to low dissolved oxygen (DO), high pH, toxic discharges, and temperature. In Oregon's 2002 List of Water Quality Limited Streams Integrated Report (303d list), the water quality of Bear Creek does not support the following beneficial uses during the periods listed:

## CITY OF ASHLAND NPDES Renewal Evaluation Report

Parameter	Season	List Date	Listing Status
Temperature	Summer	1998	303(d) List
Fecal Coliform	Winter/Spring/Fall	1998	303(d) List
Dissolved Oxygen	Winter/Spring/Fall	1998	TMDL Approved
Chlorophyll a	Summer	1998	TMDL Approved
Phosphorus	Spring/Summer/Fall	1998	TMDL Approved
pH	Winter/Spring/Fall	1998	TMDL Approved
Ammonia	Spring/Summer/Fall	1998	TMDL Approved
Fecal Coliform	Summer	1998	303(d) List
pH	Summer	1998	TMDL Approved
Dissolved Oxygen	Spring/Summer	1998	TMDL Approved
Aquatic Weeds Or Algae		1998	TMDL Approved
Flow Modification		2002	Water Quality Limited Not Needing a TMDL
Habitat Modification		2002	Water Quality Limited Not Needing a TMDL

### Total Daily Maximum Load (TMDL)

On March 16, 1992, the United States Environmental Protection Agency (USEPA) approved the TMDL for Bear Creek for biochemical oxygen demand (BOD), ammonia nitrogen, and total phosphorus (Attachment #2). In addition to the water quality listing for phosphorus, the total phosphorus TMDL addresses the listings for chlorophyll a, pH, and aquatic weeds or algae.

### Dissolved Oxygen

Dissolved oxygen standards are contained in OAR 340-041-0016. The numeric criteria are based on the most sensitive beneficial uses. Salmonid fish rearing and spawning are the most sensitive of the beneficial uses listed for Bear Creek. From above, the Department has determined that Bear Creek and Ashland Creek provide spawning habitat from October 15 through May 15. The numeric criteria for waterbodies identified by the Department as active spawning areas during the spawning period is summarized as follows:

- *The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;*
- *Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.*
- *The special median intergravel dissolved oxygen concentration must not fall below 8.0 mg/l.*



## CITY OF ASHLAND NPDES Renewal Evaluation Report

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Fecal Coliform	Summer	1998	303(d) List
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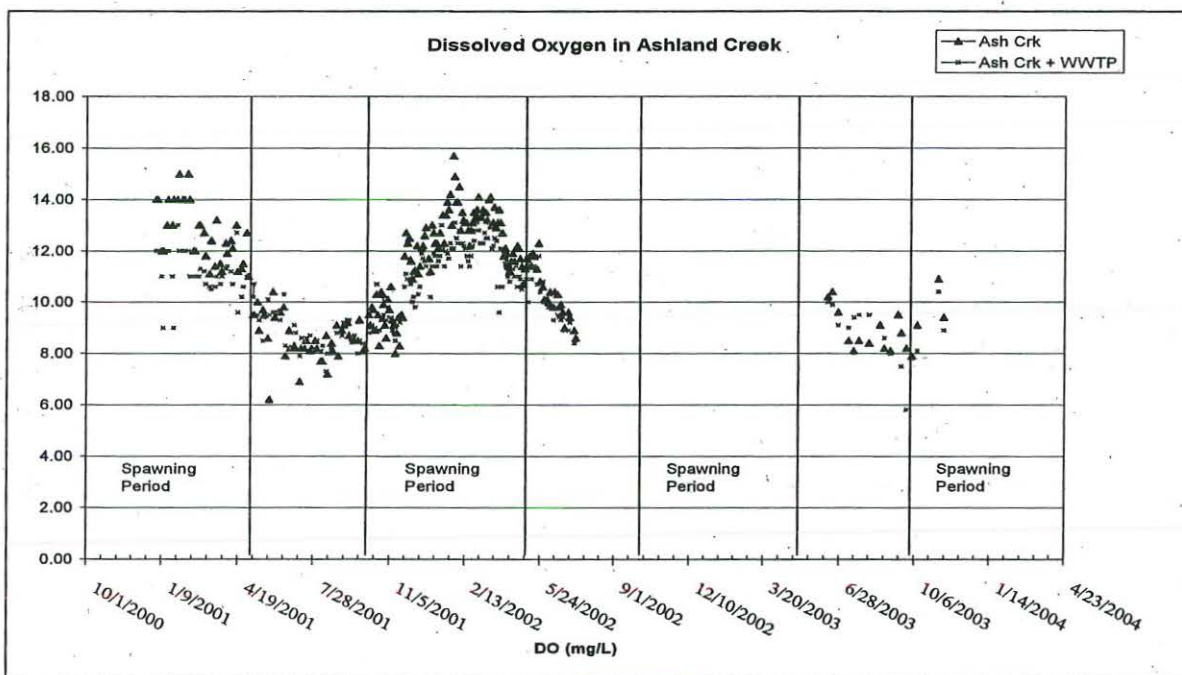
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## CITY OF ASHLAND NPDES Renewal Evaluation Report

During other times of the year, Bear Creek and Ashland Creek provide cold water habitat. The numeric criteria for these periods is summarized as follows:

- *The dissolved oxygen may not be less than 8 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l criteria, dissolved oxygen levels shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum.*

The City has collected data on the dissolved oxygen concentrations in Ashland Creek.



This data shows that while the dissolved oxygen in Ashland Creek frequently drops below 11.0 mg/l during the spawning season and 8 mg/l during the remainder of the year, it is generally above 9 mg/l and 6 mg/l, respectively. Therefore, additional dissolved oxygen information and intergravel dissolved oxygen studies are needed to determine if the dissolved oxygen standard is being met.

Biochemical Oxygen Demand (BOD) is exerted on natural streams by the biological activity. Food sources such as municipal effluent increase the biological activity and therefore increase the BOD and reduce the dissolved oxygen. With an abundant food supply, microbial activity causes a biological oxygen demand (BOD) which removes oxygen faster than it can be replenished by reaeration by diffusion and other means. These sources include materials such as ammonia creates a biochemical oxygen demand known as nitrogenous biochemical oxygen demand (NBOD).



## CITY OF ASHLAND NPDES Renewal Evaluation Report

Excessive algal growth also causes low dissolved oxygen in Bear Creek. During the day, algal photosynthesis removes carbon dioxide from the water and releases oxygen. At night, photosynthesis ceases and algal and animal respiration removes oxygen from the water. Excessive algal growth also results in excessive algal respiration which causes the dissolved oxygen to drop to levels which are harmful to aquatic life.

Phosphorus is the principal nutrient stimulating the growth of algae in Bear Creek. Department studies have shown that phosphorus concentrations of 0.01 to 0.1 mg/l are sufficient to cause accelerated algal growth. Upstream of the Ashland WWTF discharge the phosphorus concentration is about 0.08 mg/l. At Valley View Road, downstream of the Ashland WWTF discharge, the concentration of phosphorus is about 0.5 mg/l. DMRs shows that the WWTF discharge contains about 4 to 5 mg/l phosphorus, even after measures (such as adding alum from the Ashland water filtration plant to the headworks and restricting the sale of phosphate detergent in the City) were taken by the City of Ashland to reduce the phosphorous put into the system.

For these reasons, the Bear Creek Total Maximum Daily Load was developed for Bear Creek and promulgated in 1990. These instream criteria are summarized as follows:

Season	Ammonia Nitrogen Nitrogen as N (mg/l)	Instream Five-day Biochemical Oxygen Demand (mg/l)	Total Phosphorus as P (mg/l)
Low Flow (May-Nov) <sup>1</sup>	0.25	3.0	0.08
High Flow (Dec-Apr) <sup>2</sup>	1.0	2.5	none

1 - As measured at the Valley View Road Sampling Site

2 - As measured at the Kirtland Road Sampling Site

While these instream criteria were removed as part of the revisions to OAR 340 Division 41 in 2003, they remain the basis of the TMDL.

As mentioned above, new dissolved oxygen standards were adopted after the TMDL was set for Bear Creek. The TMDL's have been re-calculated, and are presented in Technical Memorandum revising TMDL for Bear Creek [Attachment #3].

Effluent from wastewater treatment plants typically contains depressed dissolved oxygen levels because of the treatment processes. Often re-aeration occurs within the mixing zone. However, significant discharges to small streams can depress the dissolved oxygen levels in the receiving stream. The data show that the Ashland wastewater treatment plant effluent depresses the dissolved oxygen levels in Ashland Creek. Therefore, re-aeration is needed prior to discharge to the receiving stream.

### Toxics

Chlorine and ammonia are two potentially toxic pollutants that are commonly found in treated wastewater. Chlorine is commonly used as a disinfectant to reduce effluent bacteria counts to acceptable levels. Residual chlorine can be toxic to aquatic life. The Ashland WWTP, however, uses ultraviolet (UV) light as a disinfectant. Therefore, chlorine residual is not a pollutant of concern at this facility.



## CITY OF ASHLAND NPDES Renewal Evaluation Report

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## CITY OF ASHLAND NPDES Renewal Evaluation Report

Ammonia is a substance normally found in wastewater. The wastewater treatment processes, particularly aeration and biological treatment, can convert a large portion to nitrate and nitrite but the treated effluent still contains some ammonia. If ammonia may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality toxic criteria, it must be limited by the permit.

Prior to the Project A WWTP upgrades, Department data showed that the downstream of the WWTF discharge contains chronically toxic ammonia concentrations about forty percent of the time. The primary source of ammonia in Bear Creek was the WWTF discharge. Field surveys have also showed a decrease in the abundance and diversity of macroinvertebrate populations below the Ashland WWTF discharge. The effluent typically contained about 10 to 25 mg/l ammonia as nitrogen. The Project A upgrades in 2001 enabled the treatment plant to fully nitrify during most of the year. Since the upgrade, effluent concentrations have been consistently less than 2 mg/L.

The City conducted acute and chronic Whole Effluent Toxicity (WET) tests on WWTP effluent samples. The samples were collected during three 24-hour periods between January 9, 2001 and January 12, 2001. The acute *Ceriodaphnia dubia* and fathead minnow WET test indicated no statistically significant reduction in survival at the 100 percent concentration when compared to the control and survival in the 100 percent effluent. The chronic *Ceriodaphnia dubia* WET test indicated no statistically significant reduction in survival or reproduction at 100 percent effluent. The Fathead minnow chronic results indicated a statistically significant reduction in growth at the 30 percent effluent concentration. Therefore, additional WET testing will be necessary in this permit cycle.

### Temperature

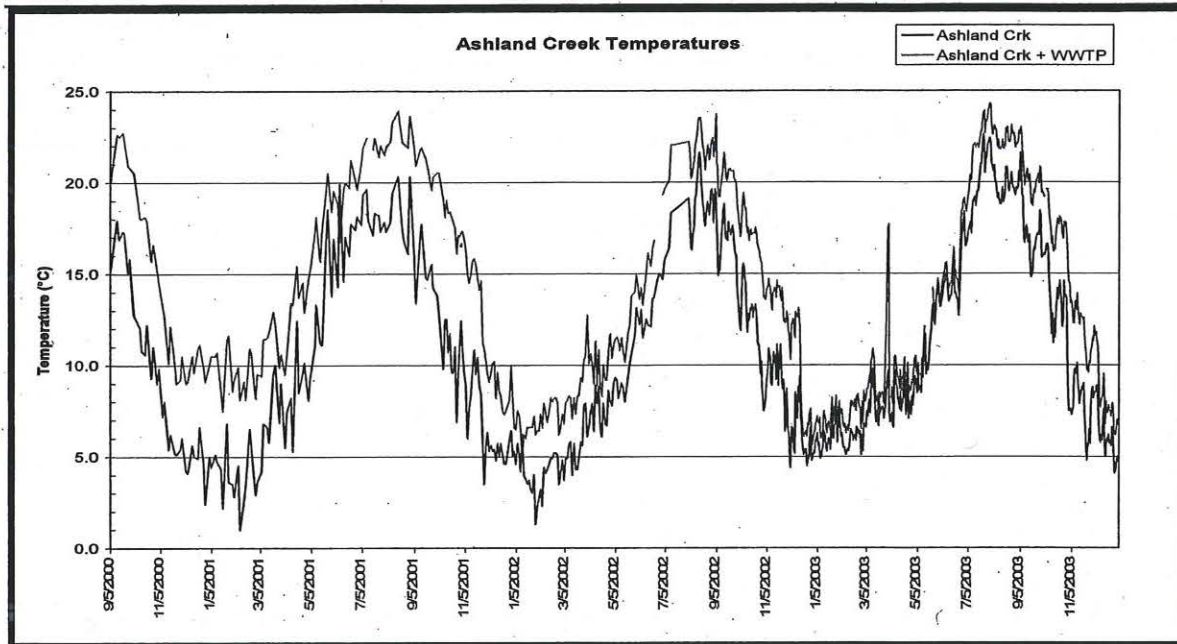
Stream temperatures are generally rising throughout the State of Oregon and many streams violate the applicable temperature standard in the summer. Elevated instream temperatures are detrimental to cold water fish. Instream temperatures below 60°F are optimal. Temperatures above 70°F limit growth and reproduction and those above 75°F are lethal. To address this issue, the Environmental Quality Commission adopted amendments to the OARs that revised the water quality standard for temperature in 1996 and again in 2003. The following discussion reviews these revisions as they apply to the Ashland WWTP discharge.

OAR 340-041-0028 establishes numeric criteria which are based on the biological cycles of aquatic life. Figure 271A: Fish Use Designations, Rogue Basin, Oregon, identifies Ashland Creek as salmon and trout rearing and migration habitat. Therefore, the biologically based numeric criterion for Ashland Creek is a seven-day average maximum temperature of 18.0 °C. Figure 271B: Salmon and Steelhead Spawning Use Designations, Rogue Basin, Oregon, identifies the designated salmon and steelhead spawning use period as October 15 through May 15. Therefore, the biologically based numeric criterion for Ashland Creek during this time period is a seven-day average maximum temperature of 13.0 °C.

The City has monitored temperature both upstream and downstream of the discharge since September 2000 and installed continuous monitors in August 2002. The following graph shows these measurements:



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OAR 340-041-0053 establishes temperature plume limitations. While the section of Ashland Creek that receives the WWTP discharge contains active redds, the temperatures do not exceed 13° C during the spawning period (October 15 through May 15). Also, the temperatures do not exceed 25° C at any time. However, during the months of July and August, the downstream temperatures exceed 21° C, while the upstream temperatures are typically less than 21° C. Therefore, the thermal plume exceeds the limitation established in OAR 340-041-0053(2)(d)(D).

On May 1, 2002, the City submitted a Temperature Management Plan. This plan provides information on the effects of the WWTP discharge on Ashland Creek and evaluates several alternatives to minimize the thermal impact. The recommended plan is to promote reclaimed water use, increase stream flow by offsetting existing water demand, and improve the riparian corridor for Ashland Creek. Therefore, Schedule C of the permit contains a permit condition requiring the City to implement this plan.

### Antidegradation Review - Evaluation of Surface Water Discharge

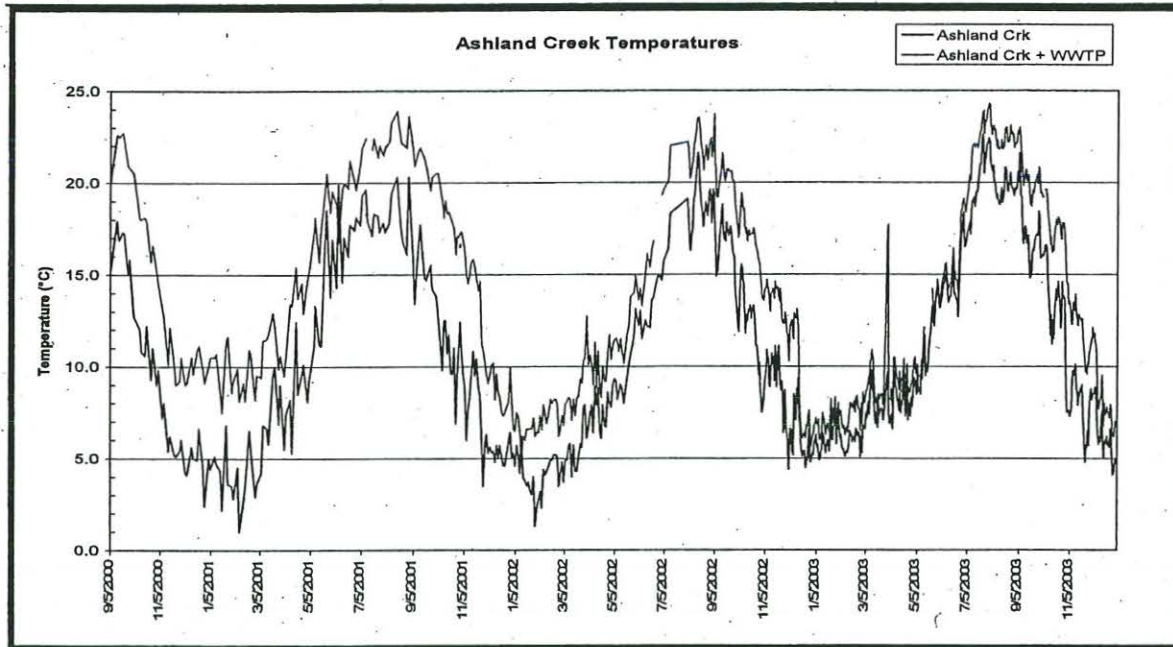
OAR 340-41-0004 describes the Environmental Quality Commission's (EQC) Antidegradation Policy for Surface Waters. In summary, the policy is intended to guide the decisions that affect water quality such that unnecessary degradation from point and nonpoint sources of pollution is prevented. An Antidegradation Review was performed on the proposed discharge during the evaluation of the assignment of proposed mass load limits (Attachment #4). The Department has determined the proposed discharge complies with the Antidegradation Policy for Surface Waters found in OAR 340-041-0004.

### Minimum Design Criteria for New or Modified Facilities

The recent upgrades to the WWTP are considered modifications and therefore the minimum design criteria apply. The minimum design criteria for new or modified sewage treatment facilities is contained in OAR 340-041-0007(17) [Statewide] and OAR 340-041-0275(3) [Rogue Basin specific]. The applicable criteria are summarized as follows:



## CITY OF ASHLAND NPDES Renewal Evaluation Report



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## CITY OF ASHLAND NPDES Renewal Evaluation Report

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- (a) During periods of low stream flows monthly average effluent concentrations shall not exceed 10 mg/l of BOD and 10 mg/l of SS.
- (b) During the period of high stream flows a minimum of secondary treatment or equivalent control and operation of all waste treatment and control facilities at maximum practicable efficiency and effectiveness.
- (c) Effluent BOD concentrations in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) shall not exceed one unless otherwise approved by the Commission.
- (d) Sewage wastes shall be disinfected, after treatment, equivalent to thorough mixing with sufficient chlorine to provide a residual of at least one part per million after 60 minutes of contact time.
- (e) Positive protection shall be provided to prevent bypassing raw or inadequately treated sewage to public waters.
- (f) More stringent waste treatment and control requirements may be imposed where special conditions may require.

The facility plan states that the upgraded WWTF will be able to meet all of these criteria except for the dilution criteria (item c above). A comparison of the flow in Bear Creek to the treatment facility effluent flow at critical conditions is summarized in the following table:

Season	7Q10 Stream Flow + Plant flow	Design Year Average Flow	Ratio
Summer	1.4 cfs + 3.4 cfs = 4.8 cfs	2.3 MGD = 3.4 cfs	1.4
Winter	7.6 cfs + 3.7 cfs = 11.0 cfs	2.4 MGD = 3.7 cfs	3.0

This would indicate that the WWTF would have to produce an effluent of less than 1.4 mg/l during the low flow season and less than 3.0 mg/l during the high flow season for Bear Creek discharges in order to meet the minimum dilution criteria. While data on seasonal flows in Ashland Creek is unavailable at this time, it would be expected to be less than that of Bear Creek. Consequently, for discharge to Ashland Creek, the pollutant concentration would have to be less than that for Bear Creek discharge to meet these criteria.

The City of Ashland has requested a waiver to OAR 340-041-0007(A)(i). Prior to the last permit renewal, the City of Ashland had reviewed several alternatives to meeting the requirements of the Bear Creek TMDLs. The primary alternatives and estimated long term (20 year) costs are as follows:

- 1) Eliminate the WWTF and connect the City's sewage collection system to the Regional Facility which discharges to the Rogue River in White City. (\$31 million)
- 2) Upgrade the WWTF to allow irrigation of the effluent on land for reuse during the low flow season and discharge during the high flow season. (\$30 million)



## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

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- 3) Upgrade the WWTF to utilize wetlands technology for phosphorus polishing and discharge year round. (\$35 million)
- 4) Upgrade the WWTF to remove phosphorus chemically and physically and discharge year around. (\$49 million)

Of the above options, only option 1 would meet the design criteria of the dilution rule for both low flow and high flow seasons because there would be no discharge to Ashland or Bear Creeks. Option 2 would meet the dilution rule criteria during the low flow season, again because there would be no discharge to Ashland or Bear Creeks. Options 3 and 4 would not meet the dilution rule criteria. It is currently beyond the means of conventional technology to meet the requirements of the dilution rule for a discharge at Ashland's current outfall location because of the relatively high flows from the WWTF with respect to the stream flows.

The City initially chose spray irrigation on city owned property during the low flow season as a preferred option. In 2001, the City discovered that membrane filtration (a relatively new technology) could treat the wastewater to very low levels of biochemical oxygen demand at reduced cost and chose that option instead.

The dilution rule is a "rule of thumb" that helps prevent water quality violations (particularly dissolved oxygen violations in small receiving streams) by ensuring adequate dilution in the receiving stream. Department water quality modeling indicates that the water quality criteria for dissolved oxygen can be met without meeting the requirements of the dilution rule. With the exception of temperature, the proposed permit requires water quality standards to be met at the end of the pipe. The temperature standard will be met though a combination of riparian improvements and water reuse. Therefore, the Department supports the request for waiver. Upon completion of the public comment process, the request for waiver will be presented to the Environmental Quality Commission for consideration.

### **PERMIT HISTORY**

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#### **Previous Permit Actions**

National Pollutant Discharge Elimination System (NPDES) Permit number 101609 was issued on August 28, 1998 and expired on April 30, 2003. The Department received a renewal application on December 6, 2002. The permit shall not be deemed to expire until final action has been taken on the renewal application.

At the time the previous permit was issued, the City proposed to meet the requirements of the Bear Creek Total Daily Maximum Load (TMDL) by ceasing discharge to public waters during the water quality limited time period. The proposal included installation of a Level II reclaimed water system on a 900-acre City-owned parcel. In response, the Department issued a permit that prohibits discharge during the months of May through October, and limits discharge during the month of November. The City began construction of the wastewater treatment plant upgrades in 1998.



## CITY OF ASHLAND NPDES Renewal Evaluation Report

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- 3) Upgrade the WWTF to utilize wetlands technology for phosphorus polishing and discharge year round. (\$35 million)
- 4) Upgrade the WWTF to remove phosphorus chemically and physically and discharge year around. (\$49 million)

Of the above options, only option 1 would meet the design criteria of the dilution rule for both low flow and high flow seasons because there would be no discharge to Ashland or Bear Creeks. Option 2 would meet the dilution rule criteria during the low flow season, again because there would be no discharge to Ashland or Bear Creeks. Options 3 and 4 would not meet the dilution rule criteria. It is currently beyond the means of conventional technology to meet the requirements of the dilution rule for a discharge at Ashland's current outfall location because of the relatively high flows from the WWTF with respect to the stream flows.

The City initially chose spray irrigation on city owned property during the low flow season as a preferred option. In 2001, the City discovered that membrane filtration (a relatively new technology) could treat the wastewater to very low levels of biochemical oxygen demand at reduced cost and chose that option instead.

The dilution rule is a "rule of thumb" that helps prevent water quality violations (particularly dissolved oxygen violations in small receiving streams) by ensuring adequate dilution in the receiving stream. Department water quality modeling indicates that the water quality criteria for dissolved oxygen can be met without meeting the requirements of the dilution rule. With the exception of temperature, the proposed permit requires water quality standards to be met at the end of the pipe. The temperature standard will be met though a combination of riparian improvements and water reuse. Therefore, the Department supports the request for waiver. Upon completion of the public comment process, the request for waiver will be presented to the Environmental Quality Commission for consideration.

### PERMIT HISTORY

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In 2001, the City decided against moving forward with the reclaimed water project and instead chose to install a phosphorus removal system to allow for continued discharge to public waters during the summer months. Therefore, this proposed permit renewal includes effluent limitations and conditions allowing summer discharge.

### Current Permit Limits

The current permit limits are as follows:

a. Outfall Number 001 (Wastewater Treatment Plant Discharge)

- 1) May 1 - November 30: No discharge to state waters. However, during the month of November on any day that the average stream flow from the previous seven days exceeds the flow in the following table (as measured at the USGS stream gage Bear Creek below Ashland, Gage No. 14354200), discharge will be allowed up to the flow in the following table. During this time, the December 1 - April 30 effluent limitation will apply.

When 7 day average flows at USGS gage Bear Creek @ Ashland exceed:	The allowable discharge to Ashland Creek is:
20 cfs	0.7 mgd
40 cfs	1.4 mgd
80 cfs	2.9 mgd
120 cfs	4.5 mgd
160 cfs	5.8 mgd
200 cfs	7.1 mgd

- 1) December 1 - April 30 :

Parameter	Average Effluent Concentrations			Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lb/day
	Monthly	Weekly	Daily			
CBOD <sub>5</sub>	25 mg/l	40 mg/l		400	920	1500
TSS	30 mg/l	45 mg/l		400	920	1500
Ammonia	1.1 mg/l		2.2 mg/l			
Chlorine [See Note 1/]	7 µg/l		12 µg/l			

- 3) Other parameters:

Dissolved Oxygen	No single sample shall be less than 9.0 mg/l. [ See Note 2/ ]
<i>E. coli</i>	Shall not exceed a monthly average of 126 organisms per 100 ml and no single sample shall exceed 406 organisms per 100 ml. (See

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	Note 3/)
pH	Shall be within the range 6.5 - 8.5.
BOD <sub>5</sub> and TSS percent	Shall not be less than 85% monthly efficiency average removal efficiency

### Compliance History

This facility was last inspected on October 2, 2003 and was found to be operating in compliance with the permit. The following Notices of Noncompliance (NON) have been issued for violations documented at this facility since 1998:

Date of Violation	Type of Enforcement Action	Description of Violation
3/1/1998	Notice of noncompliance	Installation Of Sewage Pump Station Without Dept. Approval
1/21/1999	Notice of noncompliance	Violations Of Schedule B Monitoring Requirements
9/1/1999	Notice of noncompliance	Failure To Do Required Monitoring (DMRs Did Not Contain Specific Necessary Data. Also, Errors Were Found In The DMRs.)
12/7/1999	Notice of noncompliance	Failure To Submit An Instream Monitoring Plan For Ashland Creek.
12/1/2001	Notice of noncompliance	Submitted Incomplete DMR.
3/27/2000	Notice of noncompliance	Two Biosolid Spills Occurring In March, 2000; One Spill Flowed Into Cove Creek; The Other Spill Flowed Into A Natural Drainage & Into The Talent Irrigation Canal. Also, City Of Ashland Failed To Report The Spills Within The Time Allowed.
7/1/2002	Notice of noncompliance	Submitted Incomplete DMR.

NON's are informal enforcement actions. Formal enforcement actions include Notice of Permit Violation (NPV), Civil Penalties (CP) and administrative orders (such as an MAO). The following formal enforcement actions have been taken since 1998:

Date of Enforcement Action	Type of Enforcement Action	Description of Violation
8/30/2002	NPV	Discharging wastes (biosolids) to waters of the state and placing wastes (biosolids) where they are likely to enter waters of the state. Failure to report a spill within the 24 hours. Failure to submit an instream monitoring plan as required in Schedule C of the permit. Failure to perform required monitoring. Failure to submit complete DMRs.

No penalties have been assessed. The other violations are either considered to be minor and/or have been corrected. Therefore, the Department considers this facility to be in substantial compliance with the terms of the current permit.



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	Note 3/)
pH	Shall be within the range 6.5 - 8.5.
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## **CITY OF ASHLAND NPDES Renewal Evaluation Report**

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The Department has not received any water quality related complaints about this facility.

### **PERMIT LIMITATIONS**

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Two categories of effluent limitations exist for NPDES permits: 1) Technology based effluent limits, and 2) Water quality based effluent limits. Technology based effluent limits have been established by EPA rules. Technology based effluent limits were established to require a minimum level of treatment for industrial or municipal sources using available technology. Water quality based effluent limits are designed to be protective of the beneficial uses of the receiving water and are independent of the available treatment technology.

In addition, to comply with the Department's antidegradation policy, the existing permit limits must be considered when performing a permit renewal. These may be technology based limits, water quality based limits, or limits based on best professional judgment. When renewing a permit, the most stringent of technology based, water quality based, and existing effluent limits must be applied.

#### **Technology Based Effluent Limits**

EPA has established secondary treatment standards for domestic wastewater treatment facilities. The standards are found in 40 CFR Part 133. This facility must achieve a biochemical oxygen demand (BOD<sub>5</sub>) and suspended solids (TSS) monthly average of 30 mg/L and a weekly average of 45 mg/L. The pH must be between 6.0 and 9.0. In addition, the facility must remove at least 85% of the influent BOD<sub>5</sub> and TSS.

Oregon Administrative Rules establish minimum design criteria for domestic treatment facilities. In the Rogue Basin the BOD<sub>5</sub> and TSS minimum design criteria is 10 mg/L as a monthly average in the summer period and secondary treatment in the winter period. In addition, there are requirements for disinfection and dilution of oxygen demanding pollutants.

#### **Water Quality Based Effluent Limits**

Water quality based effluent limits are necessary when the technology based effluent limits do not adequately protect beneficial uses. TMDL waste load allocations are an example of water quality based effluent limits. The proposed permit includes limitations based on the Bear Creek TMDL waste load allocations (see discussion below under Schedule A). Water quality based effluent limits may also be necessary to protect beneficial uses against toxic pollutants. Pollutant parameters should be limited if there is a reasonable potential for the discharge to cause or contribute to an excursion above any state water quality criteria or standard. Because of this, effluent limits for ammonia are proposed. In addition, thermal load limitations are proposed because the effluent has the potential to cause stream temperatures to exceed the criteria.

### **PERMIT DRAFT DISCUSSION**

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The proposed permit limits and conditions are described below. Refer to the proposed permit and the discussion above when reviewing this section.



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### Face Page

The face page provides information about the permittee, description of the wastewater, outfall locations, receiving stream information, permit approval authority, and a description of permitted activities. The permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system. The facility currently discharges only to Ashland Creek approximately 0.25 miles upstream of the confluence of Ashland Creek and Bear Creek. The City is planning to spray irrigate reclaimed water in the future, therefore an outfall for spray irrigation included in the draft permit. The irrigation outfall will be designated as Outfall 002. As the water quality requirements are different for each of these outfalls, different limitations and monitoring requirements are set in the draft permit.

In accordance with OAR Chapter 340, Division 49, all permitted wastewater collection and treatment facilities are to receive a classification based on the size and complexity of the systems. The treatment and collection systems will remain Class IV and Class III respectively.

### Schedule A, Waste Discharge limitations

Schedule A contains the effluent limitations established for this facility:

Oregon uses three methods to calculate effluent limitations for biochemical oxygen demand: 1) Technology based limits (minimum design criteria), 2) Water quality based limits, and 3) Treatment facility performance based limits. The following calculates the effluent limitations from these three methods and the compares the results. The most protective limitations are chosen as the permit limits.

#### Technology Based Effluent Limits

EPA has established secondary treatment standards for domestic wastewater treatment facilities. The standards are found in 40 CFR Part 133. Because the treatment facility nitrifies year round, carbonaceous biochemical oxygen demand (CBOD) will provide more accurate information on treatment plant performance. EPA allows the optional use of CBOD in these circumstances. EPA recommends setting the CBOD limit 5 units lower than the BOD limits. Therefore, the technology based effluent limitation is a monthly average limit of 25 mg/L and a weekly average limit of 40 mg/l.

Oregon Administrative Rules also establish minimum design criteria for domestic treatment facilities. The minimum design criteria for municipal treatment plants in the Rogue Basin for BOD are a concentration limitation of 10 mg/l for summer discharge and 30 mg/l for winter discharge (OAR 340-041-0275(3)). Permit concentration effluent limits based on these minimum design criteria would be as follows:

Season	Monthly Average	Weekly Average
Low Flow	10 mg/l	15 mg/l
High Flow	30 mg/l	45 mg/l



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In accordance with OAR Chapter 340, Division 49, all permitted wastewater collection and treatment facilities are to receive a classification based on the size and complexity of the systems. The treatment and collection systems will remain Class IV and Class III respectively.

### Schedule A, Waste Discharge limitations

Schedule A contains the effluent limitations established for this facility:

Oregon uses three methods to calculate effluent limitations for biochemical oxygen demand: 1) Technology based limits (minimum design criteria), 2) Water quality based limits, and 3) Treatment facility performance based limits. The following calculates the effluent limitations from these three methods and the compares the results. The most protective limitations are chosen as the permit limits.

#### Technology Based Effluent Limits

EPA has established secondary treatment standards for domestic wastewater treatment facilities. The standards are found in 40 CFR Part 133. Because the treatment facility nitrifies year round, carbonaceous biochemical oxygen demand (CBOD) will provide more accurate information on treatment plant performance. EPA allows the optional use of CBOD in these circumstances. EPA recommends setting the CBOD limit 5 units lower than the BOD limits. Therefore, the technology based effluent limitation is a monthly average limit of 25 mg/L and a weekly average limit of 40 mg/l.

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Season	Monthly Average	Weekly Average
Low Flow	10 mg/l	15 mg/l
High Flow	30 mg/l	45 mg/l



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### Water Quality Based Effluent Limitations

As discussed above, instream dissolved oxygen and BOD water quality standards have been set. To calculate effluent limits necessary to comply with these instream criteria, the Department uses a computer model called Qual-IIe. A considerable amount of data has been collected for Bear Creek and used as inputs for the model. A description of the model and the output are provided below.

The Dissolved Oxygen TMDL was issued September 24, 1990 and contains the following final wasteload allocations based on the stream flow in Bear Creek:

	<10 cfs	10 – 15 cfs	15 – 30 cfs	> 30 cfs
CBOD	59 ppd	86 ppd	113 ppd	161 ppd
NBOD	45 ppd	45 ppd	45 ppd	45 ppd

Nitrogenous biochemical oxygen demand (NBOD) is that portion of BOD exerted by ammonia degradation. As discussed below, ammonia limits are based on toxicity and are roughly equivalent to 12 ppd NBOD ( $1.2 \text{ mg/l} \times 4.35 \times 2.3 \text{ mgd} = 12 \text{ mg/l NBOD}$ ). The extra NBOD load can be transferred to the CBOD load as follows:

	<10 cfs	10 – 15 cfs	15 – 30 cfs	> 30 cfs
CBOD	92 ppd	119 ppd	146 ppd	194 ppd

In 1997, the Department reevaluated the wasteload allocations to determine compliance with the revised dissolved oxygen standard. The concentrations necessary to achieve compliance during the critical low flow condition are presented in the following table:

Season	Concentration
Low Flow	4.0 mg/l
High Flow	30 mg/l

The model predicts that if these loads are maintained for the respective season, under seasonal critical low flows, the dissolved oxygen in the water column will drop to about 9.0 mg/l for the low flow season and 9.5 mg/l for the high flow season. While the dissolved oxygen numeric criterion is 11.0 mg/l, an allowance for a lower water column dissolved oxygen of 9.0 mg/l is made provided that the intergravel dissolved oxygen is above 8.0 mg/l.

Because the effluent concentration varies, EPA recommends a statistical method for converting WLAs into permit limits. The WLA is first converted into a long term average (LTA) and the LTA is converted into average monthly limits (AML) and maximum daily limits (MDL). Attachments #4 and #5 contain spreadsheets with these calculations. Coefficients of variance were calculated from the plant data for CBOD. A seven day averaging period was used because biochemical oxygen demand is exerted over time. For CBOD, EPA recommends using the 95% probability basis for calculation of the LTA and 95% and 99% probability basis be use for calculation of the AML and MDL, respectively. From the spreadsheet, the water quality based concentration limits are as follows:

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Season	Monthly Average	Weekly Average
Low Flow	4 mg/l	5 mg/l
High Flow	30 mg/l	39 mg/l

The most protective limits are the water quality based limits during the low flow season and the technology based limits during the high flow season. Therefore, the proposed CBOD concentration limits are as follows:

Season	Monthly Average	Weekly Average
Low Flow	4 mg/l	5 mg/l
High Flow	25 mg/l	40 mg/l

These concentration limits are then converted into mass load limits based on the year 2020 design flows as follows:

effluent limit (mg/l) x flow (MGD) x 8.34 lbs/gal = monthly ave. mass load (lbs/day)

Mass loadings based on waste load allocations and rounded to two significant figures are provided in the following tables (See attachment #4 for concentration calculations):

Critical Low Flow Season:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.3 mgd *	4 mg/l	77
Weekly Average	2.8 mgd **	5 mg/l	120
Daily Maximum	3.8 mgd **	8 mg/l	250

\* - value from facilities plan [8]

\*\* - values based on ratios to monthly average flow from existing treatment facility data of 1.25:1 and 1.75:1 for weekly average and daily maximum flows.

This critical low flow period occurs approximately from September 1 through October 1. During the months of May, June, July, and August, the flows in Bear Creek are significantly higher due to irrigation transport. Also, during the month of November stream flows increase substantially toward the latter part of the month. From the calculations above, the 7Q10 flows during this period are around 10 cfs. Therefore, the CBOD load limits during this time period can be established using the TMDL wasteload allocations for the 10 – 15 cfs flow regime (119 ppd). This is approximately 6 mg/L on a monthly average. Using the same procedure as above, the non-critical low flow season limits are as follows:

Non-Critical Low Flow Season:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.3 mgd *	6 mg/l	120
Weekly Average	2.8 mgd **	9 mg/l	210
Daily Maximum	3.8 mgd **	12 mg/l	380



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Season	Monthly Average	Weekly Average
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The most protective limits are the water quality based limits during the low flow season and the technology based limits during the high flow season. Therefore, the proposed CBOD concentration limits are as follows:

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Low Flow	4 mg/l	5 mg/l
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### High Flow Season:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.4 mgd *	30 mg/l	600
Weekly Average	4.4 mgd *	39 mg/l	1,400
Daily Maximum	6.1 mgd *	53 mg/l	2,700

\* - values from facilities plan amendment [5]

OAR 340-041-0061(10)(b) requires DEQ to set mass load limits for new or expanded treatment facilities based upon the treatment plant's capabilities at projected flows. During the high flow season the treatment plant is capable of meeting much lower CBOD concentrations than required by the above calculated limitations. The high flow season BOD limitations based on treatment facility performance are presented as follows:

### High Flow Season

Flow condition	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.4 mgd *	20 mg/l	400
Weekly Average	4.4 mgd *	25 mg/l	920
Daily Maximum	6.1 mgd *	30 mg/l	1500

\* - values from facilities plan amendment [5]

These limits meet both the technology based and water quality based criteria and are used in the draft permit.

### November Effluent Discharge Limits

During the last permit renewal, the City requested and received flow-based effluent limits during the month of November. This was because the City was not planning to install nutrient removal abilities and would need to discharge during the water quality limited period. Since the City has installed treatment facilities which are capable of removing phosphorus, the Department is proposing to remove these limits at this time. Discharges during November will be subject to the low flow period limitation.

### Dissolved Oxygen Limits

Because of the limited amount of dilution available in Ashland Creek, low dissolved oxygen in the wastewater will depress the dissolved oxygen concentration in the stream. In this case, reareation of the wastewater prior to discharge is necessary to bring the dissolved oxygen concentrations up to an acceptable level. Therefore, an initial effluent limitation of 9.0 mg/l is included in the proposed permit.

It is very difficult to bring treated municipal effluent up to 9 mg/l. Therefore, the city has requested that the dissolved oxygen limit be lowered to a more achievable level (7 mg/l), provided that there is enough mixing in the immediate vicinity of the outfall to bring the



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dissolved oxygen up to 9 mg/l. Additional information is needed to confirm that adequate mixing and instream recreation occurs. Therefore, the Department has placed a note in Schedule A the dissolved oxygen limitation may be modified should the intergravel dissolved oxygen studies required in Schedule B show that the intergravel dissolved oxygen is consistently above 8 mg/l.

### Total Suspended Solids (TSS) Limits (Outfall 001)

The minimum design criteria for municipal treatment plants in the Rogue Basin for TSS is a concentration limitation of 10 mg/l for low flow season discharge and 30 mg/l for high flow season discharge (OAR 340-41-375(1)(a) & (b)). There are no other regulations on TSS limits and the TMDLs do not address TSS. Therefore, TSS concentration limits in the draft permit are as follows:

Season	Monthly Average	Weekly Average
Low Flow	10 mg/l	15 mg/l
High Flow	30 mg/l	45 mg/l

Again, for new or expanded treatment facilities, OAR 340-41-026(9)(b) requires that mass load limits for BOD<sub>5</sub> or CBOD<sub>5</sub> and TSS be set based upon the treatment plant's capabilities at projected flows. The membrane filtration system is capable of producing very high quality effluent and should be capable of consistently producing an effluent quality of 5 mg/l or less. This concentration is used as the basis of the mass limits with the multipliers of 1.5 and 2 used for the weekly and daily concentrations. Using this procedure, the TSS mass limits based on treatment facility performance are presented as follows:

#### Low Flow Season:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.3 mgd *	5 mg/l	96
Weekly Average	2.8 mgd **	7.5 mg/l	180
Daily Maximum	3.8 mgd **	15 mg/l	480

\* - value from facilities plan [8]

\*\* - values based on ratios from treatment facility data of 1.25:1 (weekly average : monthly average) and 1.75:1 (daily maximum : monthly average).

The TSS high flow season mass loading limits were calculated in the previous permit renewal and are repeated as follows:

#### High Flow Season

Flow condition	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.4 mgd *	20 mg/l	400
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### BOD5 and TSS Percent Removal

40 CFR 133.103(a)(3) and (b)(3) specify a 30 day average of not less than 85 percent BOD and TSS removal efficiency, respectively for secondary treatment processes. The primary purpose of this requirement is to encourage municipalities to operate and maintain their collection systems in such a manner as to reduce or eliminate as much inflow and infiltration into the systems as possible. Therefore, this requirement is included in the proposed permit.

### Phosphorus Limits

The 1990 Bear Creek TMDL established a wasteload allocation for Ashland of 2 pounds per day for phosphorus. This wasteload allocation was based on the meeting a target criteria of 0.08 mg/l (80 µg/l). The same method as described above for calculation of CBOD effluent limitations is used to convert the single wasteload allocation to permit limits (See Attachment #6).

	Monthly Average	Daily Maximum
Total Phosphorus	85 µg/l	121 µg/l

The primary concern with phosphorus is that it stimulates aquatic plant growth. Therefore, the quantity of phosphorus is of primary concern. For this reason, the proposed permit contains mass load limits as follows:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.3 mgd *	85 µg/l	1.6
Daily Maximum	3.8 mgd **	161 µg/l	5.1

\*\* - values based on ratios from treatment facility data 1.75:1 (daily maximum : monthly average).

Phosphorus is limited during the low flow season only.

### Ammonia Nitrogen Limits

Ammonia is toxic to fish and is a nutrient which causes algal growth. The TMDL for ammonia is based on meeting an instream concentration of 0.25 mg/l during the low flow season and 1.0 mg/l during the high flow season. The toxicity TMDL wasteload allocations for the Ashland wastewater treatment plant are stream flow based as follows:

	Stream Flow Past Ashland (cfs)			
	<10	10-30	30-60	>60
Median load	64 ppd	103 ppd	262 ppd	500 ppd
Maximum 1 hour	183 ppd	298 ppd	756 ppd	----

The dissolved oxygen TMDL wasteload allocations for the Ashland wastewater treatment plant was 45 pounds per day.

## CITY OF ASHLAND NPDES Renewal Evaluation Report

Ammonia-N limitations are also based on the toxicity standards of OAR Chapter 340 Division 41 Table 20. The ammonia criteria currently in Table 20 is based on EPA's Quality Criteria for Water (1986), which is also known as the "Gold Book" criteria. The criteria for ammonia is both pH and temperature dependant. The DEQ is currently in the process of revising the toxicity criteria and is proposing to adopt the EPA 1999 criteria for ammonia. The EPA 1999 acute criterion is pH dependant and the chronic criterion is both pH and temperature dependant. Effluent limitations based on both the Gold Book and 1999 criteria are presented below.

Ashland Creek is too small to set a mixing zone which would allow for fish passage. Therefore, "end-of-the-pipe" compliance is suggested for toxics. Since the concentration of ammonia in the effluent is variable, the permit limits should consider this variability and ensure that the instream limits are not exceeded under normal conditions. For this purpose, the EPA has developed a statistical method of setting limits for toxic substances using a two value wasteload allocation (acute and chronic). The DEQ has developed a spreadsheet to calculate water quality based effluent based on this method. A more complete description of the method can be found in the Technical Support Document [10].

### *Toxicity based limits - Low Flow Season*

During the summer months, Ashland Creek is effluent dominated below the wastewater treatment plant discharge. From the discharge monitoring reports, the upper 75<sup>th</sup> percentile effluent temperature is 21°C. The upper effluent limitation for pH is 8.0. Therefore, using a pH of 8.0 and a temperature of 21°C and the DEQ spreadsheet for calculating permit limitations based on a two value wasteload allocation, the concentration limits are as follows (Attachment #7):

Average Monthly Limit = 0.52 mg/l  
Maximum Daily Limit = 1.2 mg/l

### *High Flow Season*

Ashland Creek is also effluent dominated below the wastewater treatment plant discharge during the low flow periods in winter months. From the discharge monitoring reports during this season, the upper 75<sup>th</sup> percentile effluent temperature is 15°C. The upper effluent limitation for pH is 8.0. Therefore, using a pH of 8.0 and a temperature of 15°C and the DEQ spreadsheet for calculating permit limitations based on a two value wasteload allocation, the concentration limits are as follows (Attachment #7):

Average Monthly Limit = 0.80 mg/l  
Maximum Daily Limit = 1.8 mg/l

### *EPA 1999 Ammonia Criteria*

The above ammonia limits were calculated using the EPA Gold Book Criteria and are considered interim limits. DEQ is proposing to adopt the EPA 1999 water quality criteria for ammonia. The City has requested effluent ammonia limitations based on this criteria (Attachment #8). The acute criterion is not temperature dependant in the updated criteria. Using the 1999 acute and chronic criteria in the EPA spreadsheet, the concentration limits are as follows (Attachment #9):



## CITY OF ASHLAND NPDES Renewal Evaluation Report

Ammonia-N limitations are also based on the toxicity standards of OAR Chapter 340 Division 41 Table 20. The ammonia criteria currently in Table 20 is based on EPA's Quality Criteria for Water (1986), which is also known as the "Gold Book" criteria. The criteria for ammonia is both pH and temperature dependant. The DEQ is currently in the process of revising the toxicity criteria and is proposing to adopt the EPA 1999 criteria for ammonia. The EPA 1999 acute criterion is pH dependant and the chronic criterion is both pH and temperature dependant. Effluent limitations based on both the Gold Book and 1999 criteria are presented below.

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	Average Monthly Limit	Maximum Daily Limit
Low Flow Season	1.2 mg/l	2.4 mg/l
High Flow Season	2.0 mg/l	3.3 mg/l

The proposed permit contains these limits which are to be effective upon EPA approval of the revised DEQ water quality toxics criteria for ammonia.

The TMDL wasteload allocation is based on mass loads. For comparison, mass loads during the low flow season based on the EPA 1999 water quality toxics criteria would be as follows:

Parameter	Design Year Flow	Concentration	Permit Limit (lb/day)
Monthly Average	2.3 mgd *	1.2 mg/l	23
Daily Maximum	3.8 mgd **	2.4 mg/l	76

\* - value from facilities plan [8]

\*\* - values based on ratios from treatment facility data of 1.25:1 (weekly average : monthly average) and 1.75:1 (daily maximum : monthly average).

Because the limitations based on the water quality toxics criteria are more protective than those based on either the toxicity TMDL or the dissolved oxygen TMDL wasteload allocations, the water quality based limits are included in the proposed permit.

### Chlorine Residual

The treatment facility uses ultra-violet light to disinfect the treated wastewater. For discharges to waters of the state, no chlorine or chlorine compounds may be used for disinfection purposes and no chlorine residual will be allowed in the effluent due to chlorine used for maintenance purposes. Chlorine may be used to disinfect water destined irrigation on land (i.e. reclaimed water).

### Temperature Limits

#### *Summer*

Ashland and Bear Creeks are water quality limited for temperature during the summer. Prior to the completion of a temperature TMDL, each NPDES point source that discharges into a temperature water quality limited water is allowed a "Human Use Allowance" [OAR 340-041-0028(12)(b)(A) ]. Each point source may cause the temperature of the water body to increase up to 0.3 degrees Celsius above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the mixing zone, whichever is more restrictive. The proposed permit includes a temperature mixing zone which allows for mixing with twenty five percent of the stream flow. Therefore, assuming a stream flow of 1 cfs, the applicable Excess Thermal Load (ETL) based on this rule is 2.8 million kcals/day (See Attachment #10). This limit will be applied as a weekly maximum from May 16 through October 14 each year.

#### *Winter*

Neither Ashland nor Bear Creeks are water quality limited for temperature during the winter. Therefore, the ETL during this time period is dependant upon the rolling 60 day average ambient



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water temperature between October 15 and May 15 [OAR 340-041-0028(11)(b)]. From the information provided, the rolling 60 day average ambient water temperature during this time period does not exceed 10°C. Under these conditions, a point source may not increase the stream temperature (after complete mixing of the effluent) more than 1 degrees Celsius above the ambient temperature unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach [OAR 340-041-0028(11)(b)(B)]. Therefore, assuming an estimated 7Q10 stream flow of 3.3 cfs, the applicable Excess Thermal Load (ETL) based on this rule is 21 million kcals/day as follows (See Attachment #11). This limit will be applied as a weekly maximum from October 15 through May 15 each year.

### *Existing Thermal Loads*

The above proposed thermal loads are new in this permit renewal. These water quality based thermal loads are compared to the existing thermal loads to determine if additional thermal reduction measures are needed. The existing thermal load calculation is based on the maximum thermal discharge that is currently expected to occur during the summer with the existing facility design flow and effluent temperatures. The existing summertime thermal load is calculated using the weekly average dry weather design (monthly average dry weather design flow times 1.5) and the difference between the maximum expected weekly average of daily maximum effluent temperature and the applicable stream temperature standard. The existing wintertime thermal load is calculated using the design maximum week wet weather flow and the difference between the maximum expected weekly average of daily maximum effluent temperature and the applicable stream temperature standard.

Summer (See Attachment #12): 78.3 million kcals/day

Winter (See Attachment #13): 37.5 million kcals/day

Because the existing thermal loads are greater than the water quality based thermal loads, additional thermal reduction measures during both spawning and non-spawning seasons are needed.

### *Summary Table*

<b>Limits to be met prior to implementation of temperature reduction measures</b>	
May 16 through October 14	78.3 million kcals/day
October 15 through May 15	37.5 million kcals/day
<b>Limits to be met prior to implementation of temperature reduction measures</b>	
May 16 through October 14	2.8 million kcals/day
October 15 through May 15	21 million kcals/day

### *Implementation*

As discussed above, the City is proposing to comply with the temperature requirements through increasing reclaimed water use, increasing stream flow by offsetting existing water demand, and



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water temperature between October 15 and May 15 [OAR 340-041-0028(11)(b)]. From the information provided, the rolling 60 day average ambient water temperature during this time period does not exceed 10°C. Under these conditions, a point source may not increase the stream temperature (after complete mixing of the effluent) more than 1 degrees Celsius above the ambient temperature unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach [OAR 340-041-0028(11)(b)(B)]. Therefore, assuming an estimated 7Q10 stream flow of 3.3 cfs, the applicable Excess Thermal Load (ETL) based on this rule is 21 million kcals/day as follows (See Attachment #11). This limit will be applied as a weekly maximum from October 15 through May 15 each year.

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### *Implementation*

As discussed above, the City is proposing to comply with the temperature requirements through increasing reclaimed water use, increasing stream flow by offsetting existing water demand, and



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improving the riparian corridor for Ashland Creek. A permit condition requiring the City to implement this plan is proposed in Schedule C of the permit.

The Department may in a permit issued under OAR chapter 340, division 045, or in a water quality certification under OAR 340, Division 48 include compliance schedules for the implementation of effluent limits derived from water quality criteria in this Division. Any compliance schedule in an NPDES permit must comply with provisions in 40 CFR §122.47 (including the requirement that water quality criteria must be achieved as soon as possible) and may be allowed only for water quality based effluent limits that are newly applicable to the permit. Therefore, the proposed permit contains interim thermal effluent limits equal to the existing thermal loads. Unless modified as discussed below, the water quality based thermal load limits will become effective 55 months after permit issuance.

The permit may be reopened and the maximum allowable thermal loads modified (up or down), when more accurate stream flow and effluent temperature data becomes available, to allow for a water quality credit trading program, and/or to incorporate the wasteload allocations of the Bear Creek Basin Temperature TMDL.

### Bacteria Limits

OAR 340-41-365 (2)(e) and OAR 340-41-120 outline the bacteria standards for discharge to surface waters in the Rogue Basin. On January 11, 1996, the Environmental Quality Commission adopted amendments to the OARs that revise the water quality standard for bacteria. For discharge into freshwater, the standard is based on *E. coli* bacteria and allows no more than a monthly log mean of 126 organisms per 100 ml. Also under this rule, no single sample shall exceed 406 organisms per 100 ml.

The new bacteria standard allows that if a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four hour intervals beginning within 28 hours after the original sample was taken. The fecal bacteria effluent limitations are achievable through proper operation and maintenance. Therefore, these limits are included in the draft permit. The limits are achievable through proper operation and maintenance.

### pH Limits

40 CFR 133.102 (b) states that the effluent values for pH shall be maintained within the limits of 6.0 to 9.0 which is the limit used in the current permit. However, OAR 340-41-365(d) states that the pH values shall not fall outside the range of 6.5 to 8.5 for freshwater in the Rogue Basin. Because no mixing zone is allowed, the draft permit includes the requirement that the pH of the effluent remain within the 6.5 to 8.5 range.

### Water Reuse (Outfall 002) Effluent Limitations

Ashland is anticipating using land application as one alternative to comply with the requirements of the temperature standard. Ashland is proposing to modify the wastewater treatment system to



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meet the instrumentation, reliability, and monitoring requirements of Level IV reclaimed water. A complete effluent reuse plan is needed prior to operation and the draft permit contains this requirement in Schedule C.

OAR Chapter 340, Division 55 contains the effluent reuse requirements. Based on the anticipated use, a minimum of Level IV treatment is required. The effluent limitations for this level of treatment are listed below:

Parameter	Permit Limit
Turbidity – 24-Hr mean	2 NTU
Turbidity – 5% of the time	5 NTU
Total Coliform - 7-Day Median	2.3 organisms per 100ml
Total Coliform - maximum	23 organisms per 100ml

Direct public contact is prohibited. Also, signs must be posted along fences and at gates.

### Schedule B - Minimum Monitoring and Reporting Requirements

Schedule B describes the minimum monitoring and reporting necessary to demonstrate compliance with the conditions of this permit. The authority to require periodic reporting by permittees is included in ORS 468.065(5). Self-monitoring requirements are the primary means of ensuring that permit limitations are being met. However, other parameters need to be monitored to collect information when insufficient information exists to establish a limit, but where there is a potential for a water quality concern.

In 1988, the Department developed a monitoring matrix for commonly monitored parameters. Proposed monitoring frequencies for all parameters are based on this matrix and, in some cases, may have changed from the current permit. The proposed monitoring frequencies for all parameters correspond to those of facilities of similar size and complexity in the state.

The Department recognizes that some tests do not accurately reflect the performance of a treatment facility due to quality assurance/quality control problems. These tests should not be considered when evaluating the compliance of the facility with the permit limitations. Thus, the Department is also proposing to include in the opening paragraph of Schedule B a statement recognizing that some test results may be inaccurate, invalid, or do not adequately represent the facility's performance and should not be used in calculations required by the permit.

Below is a discussion of some of the minimum monitoring requirements contained in the proposed permit:

#### Influent Monitoring

While we recommend that the City continue monitoring influent temperature, this information is not needed to determine permit compliance, nor does it provide any information regarding water quality. Therefore, the proposed permit does not contain a requirement to monitor influent



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meet the instrumentation, reliability, and monitoring requirements of Level IV reclaimed water. A complete effluent reuse plan is needed prior to operation and the draft permit contains this requirement in Schedule C.

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temperature. No other changes are made to the influent monitoring parameters. The frequency of monitoring is based on the matrix and will remain at 2/week for CBOD/TSS and 3/week for pH.

### Outfall 001 (Ashland Creek Outfall) Monitoring

Monitoring of effluent parameters is based on the matrix and the instream criteria requirements. Monitoring of many of the parameters is required on the current permit. However, flow meter calibration, dissolved oxygen, dissolved Ortho Phosphorus, and toxic metals are additional parameters to the permit. The additional requirement for monitoring of effluent dissolved oxygen is needed to monitor compliance with the dissolved oxygen limitation in the proposed permit. Dissolved Ortho Phosphorus monitoring is required to ensure compliance with the instream criteria. The Bear Creek TMDL suggests nutrient monitoring daily during the months of June through September and weekly the remainder of the year. However, the water quality limited period extends May through November. Therefore, the proposed monitoring frequency in the proposed permit is two per week during May through November and monthly monitoring the remainder of the year.

Because this facility is classed as a major discharger, the Department has required semi-annual whole effluent toxicity (WET) or bioassay tests using three species in the proposed permit. Bioassay tests are to be conducted in accordance with EPA test methods and procedural requirements as defined in Schedule D. The Department recognizes that the bioassay tests are quite expensive to conduct. If the results of the first year's bioassay tests show that the effluent samples are not toxic at the dilutions determined to occur at the Zone of Immediate Dilution and the Mixing Zone, no further bioassay testing will be required during this permit cycle. Also, federal rules now require a minimum of three priority pollutant scans during the permit cycle for major facilities.

The following lists the parameters and the sources from which the effluent monitoring frequency is based:

Item or Parameter	Minimum Frequency	Source
Total Flow (MGD)	Daily, measurement by totalizing meter	Matrix
Flow Meter Calibration	Semi-annual	Matrix
CBOD5	2/Week	Matrix
TSS	2/Week	Matrix
pH	3/Week	Matrix
Dissolved Oxygen	3/Week	Required as a measure of compliance with standard
<i>E. coli</i> Bacteria	2/Week	DEQ guidance
Temperature	Continuous	Required to determine compliance with permit conditions.
Nutrients: Ammonia Nitrogen	2/Week	Matrix
TKN, NO <sub>2</sub> +NO <sub>3</sub> -N, Total Phosphate, and Dissolved Ortho Phosphate	2/week (Jun-Nov) Monthly (Dec – May)	Bear Creek TMDL



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WET testing	Semi-annually	Matrix
Priority Pollutant Scan	Annually	Code of Federal Rules (CFRs)

### Outfall 002 (Reclaimed Water) Monitoring

Additional requirements are from Division 55 requirements and to monitor potential impacts to groundwater. The following lists the parameters and the sources from which the effluent monitoring frequency is based:

Item or Parameter	Minimum Frequency	Source
Quantity Irrigated (in/acre)	Daily	Division 55
Flow Meter Calibration	Semi-Annual, Verification	Matrix
Quantity Chlorine Used	Daily	Matrix
Chlorine Residual	Daily, Grab	Matrix
pH	2/Week, Grab	Matrix
Turbidity	Hourly, continuous	Division 55
Total Coliform	Daily, Grab	Division 55
Nutrients: (TKN, NO <sub>2</sub> +NO <sub>3</sub> -N, NH <sub>3</sub> , Total Phosphorus)	Quarterly	Matrix

### Ashland Creek Monitoring

As discussed above, Ashland Creek may be impacted by BOD loading, dissolved oxygen depletion, and turbidity loading from the Ashland WWTF effluent. During the last permit cycle, the City of Ashland collected information on the background conditions of Ashland Creek and to determine the impacts of the effluent on the stream. Additional monitoring of Ashland Creek is necessary to confirm compliance with water quality standards. Requirements for monitoring flow, dissolved oxygen and turbidity are continued from the last permit. Monitoring of Ashland Creek should be upstream of the outfall location to monitor background conditions and downstream to determine the water quality impacts. Ashland Creek instream monitoring is proposed as follows:

Item or Parameter	Minimum Frequency	Type of Sample
Flow (upstream)	Daily (Oct 15 - May 15)	Measurement
Dissolved Oxygen (Surface Water)	2/Month (Oct 15 - May 15)	Grab
Intergravel Dissolved Oxygen	Annually (Oct 15 - 31)	Study

### Biosolids Analysis and Monitoring

The City is currently landfilling the municipal sewage sludge. Therefore, the proposed permit only requires reporting of the quantity of sludge disposed and does not require sludge analysis.

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WET testing	Semi-annually	Matrix
Priority Pollutant Scan	Annually	Code of Federal Rules (CFRs)

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Item or Parameter	Minimum Frequency	Source
Quantity Irrigated (in/acre)	Daily	Division 55
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Quantity Chlorine Used	Daily	Matrix
Chlorine Residual	Daily, Grab	Matrix
pH	2/Week, Grab	Matrix
Turbidity	Hourly, continuous	Division 55
Total Coliform	Daily, Grab	Division 55
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In the event that the City requests and receives a permit modification to allow land application of biosolids, conditions requiring monitoring of the pathogen reduction, vector attraction reduction, and metals analyses will be added to the permit.

### **Reporting**

The reporting period is the calendar month. Discharge monitoring reports must be submitted to the Department monthly by the 15th day of the following month. The monitoring reports need to identify the principal operators designated by the Permittee to supervise the treatment and collection systems. The reports must also include records concerning application of biosolids and all applicable equipment breakdowns and bypassing.

Schedule B of the permit includes the requirement for the submittal of annual reports. Three conditions are standard language requirements concerning:

- inflow and infiltration control in the collection system;
- sludge disposal; and
- reclaimed water use.

The forth condition is a requirement to submit an annual report with the results of the intergravel dissolved oxygen study.

### **Schedule C, Compliance Schedules and Conditions**

The proposed permit includes two compliance conditions with compliance deadlines. The first is a proposed compliance schedule regarding compliance with water quality based effluent limits for temperature. The other condition requires the permittee to meet the compliance dates established in this schedule or notify the Department within 14 days following any lapsed compliance date.

### **Schedule D - Special Conditions**

The proposed permit contains nine special conditions. All of these conditions are standard language concerning: (1) No increases in thermal load, (2) Sludge management requirement, (3) WET test requirements, (4) Conducting a priority pollutant scan, (5) Reclaimed water use, (6) Operator certification, (7) Notification requirements, (8) Protection of groundwater, and (9) Acceptance of septage.

### **Schedule F, NPDES General Conditions**

All NPDES permits issued in the State of Oregon contain certain conditions that remain the same regardless of the type of discharge and the activity causing the discharge. These conditions are called General Conditions. These conditions can be changed or modified only on a statewide basis. The latest edition of the NPDES General Conditions is December 1, 1995 and this edition is included as Schedule F of the draft permit.

Section A contains standard conditions which include compliance with the permit, assessment of penalties, mitigation of noncompliance, permit renewal application, enforcement actions, toxic

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discharges, property rights and referenced rules and statutes. Section B contains requirements for operation and maintenance of the pollution control facilities. This section includes conditions for proper operation and maintenance, duty to halt or reduce activity in order to maintain compliance, bypass of treatment facilities, upset conditions, treatment of single operational events, overflows from wastewater conveyance systems and associated pump stations, public notification of effluent violation or overflow, and disposal of removed substances. Section C contains requirements for monitoring and reporting. This section includes conditions for representative sampling, flow measurement, monitoring procedures, penalties of tampering, reporting of monitoring results, additional monitoring by the permittee, averaging of measurements, retention of records, contents of records, and inspection and entry. Section D contains reporting requirements and includes conditions for reporting planned changes, anticipated noncompliance, permit transfers, progress on compliance schedules, noncompliance which may endanger public health or the environment, other noncompliances, and other information. Section D also contains signatory requirements and the consequences of falsifying reports. Section E contains the definitions used throughout the permit.

### **PERMIT PROCESSING/PUBLIC COMMENT/Appeal PROCESS**

The beginning and end date of the public comment period to receive written comments regarding this permit, and the contact name and telephone number are included in the public notice. The permittee is the only party having standing to file a permit appeal. If the Permittee is dissatisfied with the conditions of the permit when issued, they may request a hearing before the EQC or its designated hearing officer, within 20 days of the final permit being mailed. The request for hearing must be sent to the Director of the Department. Any hearing held shall be conducted pursuant to regulations of the Department.



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## ATTACHMENTS

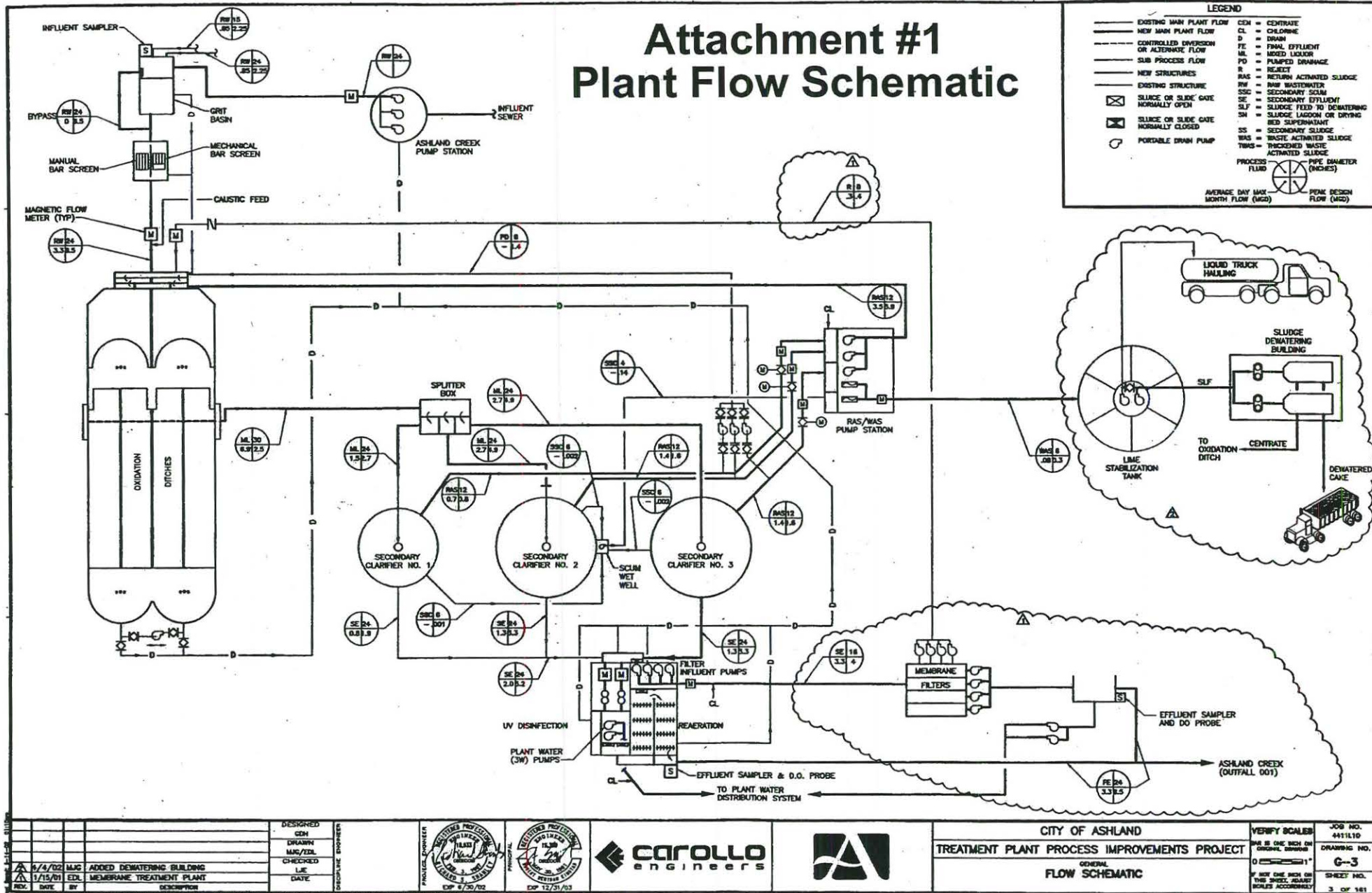
- Attachment 1 - Plant Flow Schematic
- Attachment 2 - Oregon Department of Environmental Quality, *Technical Memorandum revising TMDL for Bear Creek*, December 18, 1997
- Attachment 3 - Antidegradation Review Checklist
- Attachment 4 - BOD Wasteload Allocation Spreadsheet – Low Flow Season
- Attachment 5 - BOD Wasteload Allocation Spreadsheet – High Flow Season
- Attachment 6 - BOD Wasteload Allocation Spreadsheet - Phosphorus
- Attachment 7 - DEQ Spreadsheet for Ammonia Limit Calculations based on Gold Book Criteria
- Attachment 8 - Calculation of EPA 1999 Ammonia Criteria
- Attachment 9 - DEQ Spreadsheet for Ammonia Limit Calculations based on EPA 1999 Criteria
- Attachment 10 – Calculation of Thermal Waste Loads - Summer
- Attachment 11 – Calculation of Thermal Waste Loads - Winter
- Attachment 12 – Calculation of Interim Thermal Waste Loads - Summer
- Attachment 13 – Calculation of Interim Thermal Waste Loads - Winter

## REFERENCES

1. Oregon Administrative Rules Chapter 340
2. Title 40 Code of Federal Regulations
3. Oregon Revised Statutes
4. Brown and Caldwell, *City of Ashland Wastewater Facilities Plan*, September 1995
5. Carollo Engineers, *Wastewater Facility Plan Amendment, City of Ashland*, July 1997
6. Oregon Department of Environmental Quality, *Oregon's 1994 Water Quality Status Assessment Report (305(b) Report)*, 1994
7. Oregon Department of Environmental Quality, *Water Quality Mixing Zone Study*, August 1988
8. Scott A. Wells, Ph.D., P.E. and Robert Annear, *Flows and Water Quality Loading for Bear Creek*, prepared for Carollo Engineers, 5100 SW Macadam Ave, Suite 440, Portland, OR 97201, February 1997
9. Tchobanoglous, G., and Burton, Franklin L., *Wastewater Engineering*, Metcalf and Eddy, 1991, third ed.
10. EPA, *Technical support Document for Water Quality-based Toxics Control*, EPA publication EPA/505/2-90-001.
11. Stevenson, R. Jan, *Algal Ecology*, Academic Press, 1996



## Attachment #1 Plant Flow Schematic



<b>DESIGNED</b> <b>DRAWN</b> <b>CHECKED</b> <b>LIE</b> <b>DATE</b>				<b>DESIGNED ENGINEER</b> 		<b>DESIGNED ENGINEER</b> 						<b>CITY OF ASHLAND</b> <b>TREATMENT PLANT PROCESS IMPROVEMENTS PROJECT</b> <b>GENERAL</b> <b>FLOW SCHEMATIC</b>		<b>VERIFY SCALES</b> 1" = 10' HORIZONTAL 1" = 10' VERTICAL IF NOT ONE INCH ON THIS SHEET, SCALE ACCORDINGLY		<b>JOB NO.</b> 4411110 <b>DRAWING NO.</b> C-3 <b>SHEET NO.</b> 3 OF 181	
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## OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

## Memorandum

## WESTERN REGION - MEDFORD

**To:** City of Ashland Wastewater Treatment Facility File **Date:** December 18, 1997  
Boise Cascade North Medford Facility File

**From:** Gary Arnold, TMDL WQ Modeling Specialist  
DEQ Eugene Office

**Subject:** Technical Memorandum revising TMDL for Bear Creek  
File Nos. 3780 (Ashland) and 9539 (Boise)

**INTRODUCTION**

In 1990, the Department set waste load allocations for Bear Creek in the Rogue River basin. These waste load allocations were generated using Qual-Ile, a computer model which predicts effluent loadings that are allowable and still meet the instream criteria for biochemical oxygen demand (BOD) and dissolved oxygen. When the initial waste load allocations were set, a different water quality standard for dissolved oxygen was in effect. Since then, the dissolved oxygen standards have been revised to better reflect the needs of the most sensitive beneficial use (anadromous fish). This document contains results from using the same computer model to revise the TMDL waste load allocations for Bear Creek in light of the new dissolved oxygen requirements.

**METHOD**

All modeling was done using the windows version of Qual-Ile. The hydraulic and decay constants were unchanged from the ones used by Bob Baumgartner for the initial TMDL modeling in the late 1980s. The flow calibrations were updated with new flow information gathered since then. Water quality information was also updated to use the most current possible data. For the Ashland wastewater treatment facility, because the toxicity criteria of ammonia are more restrictive than the oxygen demand effects, it was assumed that the treatment facility would be discharging effluent below the toxic limit and this concentration of ammonia is used in the modeling scenario. The modeling was broken out into low flow season critical case scenario and high flow season critical case scenario. It was assumed that there would be a no discharge from the Boise Cascade log ponds during the low flow season.

**RESULTS SUMMARY**Low Flow Season Waste Load Allocations

The computer model predicts that the stream is capable of assimilating a BOD of 4.0 mg/l from the Ashland wastewater treatment facility at design flows during the critical low flow. While this loading will not cause a violation of the instream BOD criteria, the instream dissolved oxygen would be lowered to 8.7 mg/l. This loading could be allowable if it can be shown that the intergravel dissolved oxygen levels remain above 8.0 mg/l.



### High Flow Season Waste Load Allocations

The computer model predicts that the stream is capable of assimilating a BOD of 30.0 mg/l from the Ashland wastewater treatment facility at design flows during the critical low flows of the high flow season. This loading marginally meets the instream BOD criteria. While the instream dissolved oxygen is expected to be above 11.0 mg/l during the early winter (December), it is predicted to be below 11.0 mg/l in the late winter (April). Again, this loading could be allowable if it can be shown that the intergravel dissolved oxygen levels remain above 8.0 mg/l.

Modeling assumptions and results are attached. Please let me know if you have any questions.

GA

cc	Jon Gasik	DEQ- WR- Medford
	Dennis Belsky	DEQ- WR- Medford
	Bob Baumgartner	DEQ-NWR-Portland

### High Flow Season Waste Load Allocations

The computer model predicts that the stream is capable of assimilating a BOD of 30.0 mg/l from the Ashland wastewater treatment facility at design flows during the critical low flows of the high flow season. This loading marginally meets the instream BOD criteria. While the instream dissolved oxygen is expected to be above 11.0 mg/l during the early winter (December), it is predicted be below 11.0 mg/l in the late winter (April). Again, this loading could be allowable if it can be shown that the intergravel dissolved oxygen levels remain above 8.0 mg/l.

Modeling assumptions and results are attached. Please let me know if you have any questions.

GA

cc	Jon Gasik	DEQ- WR- Medford
	Dennis Belsky	DEQ- WR- Medford
	Bob Baumgartner	DEQ-NWR-Portland



# PUBLIC NOTICE

## ATTACHMENT #3

### ANTIDegradation REVIEW SHEET FOR A PROPOSED INDIVIDUAL NPDES DISCHARGE

#### City of Ashland NPDES Permit Issuance

1. What is the name of Surface Water that receives the discharge? Ashland and Bear Creeks

Briefly describe the proposed activity: NPDES Permit renewal

2. Is this surface water an **Outstanding Resource Water** or **upstream** from an **Outstanding Resource Water**?

No. Go to Step 3.

3. Is this surface water a **High Quality Water**?

No. Go to Step 4.

4. Is this surface water a **Water Quality Limited Water**?

Yes. Go to Step 13.

13. Will the proposed activity result in a Lowering of Water Quality in the **Water Quality Limited Water**?

No. Proceed with Permit Application. Applicant should provide basis for conclusion (see below).

This conclusion is explained and supported by data and evaluations included with the Permit Evaluation Report and attachments accompanying the proposed NPDES Permit.

The stream is WQL for the following parameters:

Parameter	Season	List Date	Listing Status
Temperature	Summer	1998	303(d) List
Fecal Coliform	Winter/Spring/Fall	1998	303(d) List
Dissolved Oxygen	Winter/Spring/Fall	1998	TMDL Approved
Chlorophyll a	Summer	1998	TMDL Approved
Phosphorus	Spring/Summer/Fall	1998	TMDL Approved
pH	Winter/Spring/Fall	1998	TMDL Approved
Ammonia	Spring/Summer/Fall	1998	TMDL Approved
Fecal Coliform	Summer	1998	303(d) List
pH	Summer	1998	TMDL Approved
Dissolved Oxygen	Spring/Summer	1998	TMDL Approved
Aquatic Weeds Or Algae		1998	TMDL Approved
Flow Modification		2002	Water Quality Limited Not Needing a TMDL
Habitat Modification		2002	Water Quality Limited Not Needing a TMDL

TMDLs have been approved for all WQL parameters except bacteria and temperature.

The proposed permit requires compliance with the WLAs in the TMDL.

The facility will meet the WQ standard for bacteria prior to discharge and therefore will not contribute to increased bacteria in the stream.

This is an existing source. Therefore, the thermal discharge is existing. Effluent temperature limitations are new to this permit renewal and are established at the existing thermal load until a temperature TMDL is completed.

Go to Step 24.

---

24. On the basis of the Antidegradation Review, the following is recommended:

- ☒ Proceed with Application to Interagency Coordination and Public Comment Phase.  
☐ Deny Application; return to applicant and provide public notice.

---

**Action Approved**

Section:	<u>Western Region Water Quality Permitting</u>
Review Prepared By:	<u>Jonathan D. Gasik, MS. PE</u>
Phone:	<u>(541) 776-6010 ext. 230</u>
Date Prepared:	<u>February 10, 2004</u>



The proposed permit requires compliance with the WLAs in the TMDL.

The facility will meet the WQ standard for bacteria prior to discharge and therefore will not contribute to increased bacteria in the stream.

This is an existing source. Therefore, the thermal discharge is existing. Effluent temperature limitations are new to this permit renewal and are established at the existing thermal load until a temperature TMDL is completed.

Go to Step 24.

---

24. On the basis of the Antidegradation Review, the following is recommended:

- ☒ Proceed with Application to Interagency Coordination and Public Comment Phase.  
☐ Deny Application; return to applicant and provide public notice.

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**Action Approved**

Section:	<u>Western Region Water Quality Permitting</u>
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Phone:	<u>(541) 776-6010 ext. 230</u>
Date Prepared:	<u>February 10, 2004</u>

## Attach 4 - BOD - low flow

### NPDES PERMIT LIMIT CALCULATIONS for BOD5 and Nutrients using a TMDL/WLA Basis

Facility:	City of Ashland - low flow	z(0.950) =	1.645
Waterbody:	Bear Creek	z(0.975) =	1.960
Pollutant:	CBOD	z(0.990) =	2.326
WLA =	4 mg/l		

coeff. variation, CV_1 =	0.49	Var, acute1 =	0.215192
period, TP_1 =	7 days	Var, TP1 =	0.033725
effluent samples/mo, ES_1 =	8 samples/month	Var, ES1 =	0.029571
effluent samples/wk, ESW_1 =	2 samples/week	Var, ESW1 =	0.113373

	LTA @ 95%	LTA @ 97.5%	LTA @ 99%
LTA 1-->	3	3	3
AML, 95%	4	4	3
AML, 97.5	4	4	4
AML, 99%	4	4	4
AWL, 95%	5	5	4
AWL, 97.5	5	5	5
AWL, 99%	6	6	5
MDL, 95%	6	5	5
MDL, 97.5	7	6	6
MDL, 99%	8	7	7



## Attach 5 - BOD - high flow

## NPDES PERMIT LIMIT CALCULATIONS for BOD5 and Nutrients using a TMDL/WLA Basis

Facility:	City of Ashland - high flow	$z(0.950) =$	1.645
Waterbody:	Bear Creek	$z(0.975) =$	1.960
Pollutant:	CBOD	$z(0.990) =$	2.326
WLA =	30 mg/l		

coeff. variation, CV_1 =	0.39	Var, acute1 =	0.141586
period, TP_1 =	7 days	Var, TP1 =	0.021496
effluent samples/mo, ES_1 =	8 samples/month	Var, ES1 =	0.018834
effluent samples/wk, ESW_1 =	2 samples/week	Var, ESW1 =	0.073297

	LTA @ 95%	LTA @ 97.5%	LTA @ 99%
LTA 1-->	24	23	22
AML, 95%	30	28	27
AML, 97.5	31	29	28
AML, 99%	32	31	29
AWL, 95%	36	34	32
AWL, 97.5	39	37	35
AWL, 99%	43	41	39
MDL, 95%	41	39	37
MDL, 97.5	46	44	42
MDL, 99%	53	51	48

**PUBLIC NOTICE****NPDES PERMIT LIMIT CALCULATIONS for BOD5 and Nutrients using a TMDL/WLA Basis**

Facility:	City of Ashland	z(0.950) =	1.645
Waterbody:	Bear Creek	z(0.975) =	1.960
Pollutant:	phosphorus	z(0.990) =	2.326
WLA =	80 µg/l		

coeff. variation, CV_1 =	0.43	Var, acute1 =	0.169658
period, TP_1 =	15 days	Var, TP1 =	0.012251
effluent samples/mo, ES_1 =	8 samples	Var, ES1 =	0.022849

	LTA @ 95%	LTA @ 97.5%	LTA @ 99%
LTA 1-->	67	65	62
AML, 95%	85	82	79
AML, 97.5	89	86	83
AML, 99%	94	91	87
MDL, 95%	121	117	113
MDL, 97.5	138	133	128
MDL, 99%	161	155	149



# Permit Limits - Chlorine and Ammonia

## PUBLIC NOTICE

Facility Name: **City of Ashland - Gold Book Criteria**

Attachment #7

Date: 3/8/2004

Dilution Values? (Y/N)	Y	calculated
Low Flow Dilution @ ZID =	1	*
Low Flow Dilution @ MZ =	1	*
High Flow Dilution @ ZID =	1	*
High Flow Dilution @ MZ =	1	*
	<b>Summer</b>	<b>Winter</b>
Effluent Flow (MGD) =	2.3	3.3
7Q10 (CFS) =	*	*
1Q10 (CFS) =	*	*
% dilution at MZ =	*	*
% dilution at ZID =	*	*

Summer data	Effluent	Stream	Mixed		
			ZID	MZ	
pH * =	8	8	8.0	8.0	( 6.5-9 )
Temp * =	21	21	21.0	21.0	° C
Alkalinity =	25	25			
Salmonids Present? (Y/N)		y			
Fresh Water ? (Y/N)		y			
Salinity	0	20	0.0	0.0	
Winter data					
pH * =	8	8	8.0	8.0	( 6.5-9 )
Temp * =	15	15	15.0	15.0	° C
Alkalinity =	25	25			
Salmonids Present? (Y/N)		y			
Fresh Water ? (Y/N)		y			
Salinity	0	20	0.0	0.0	

probability basis 99%  
(for WLA multipliers)

PARAMETER	WATER QUALITY CRITERIA		Back-ground	Allocations		CV	# Samples /Mo	Acute LTA	Chronic LTA	Min LTA	PERMIT LIMITS		PERMIT LIMITS	
	1 Hour (CMC)	4 Day (CCC)		Acute	Chronic						95%	99%	95%	99%
	mg/l	mg/l		mg/l	mg/l						Monthly	Daily	Monthly	Daily
<b>Low Flow Season</b>														
AMMONIA	5.23	0.71	0.20	5.23	0.71	0.6	8	1.68	0.38	0.38	0.52	1.17	9.96	22.46
<b>High Flow Season</b>														
AMMONIA	5.70	1.10	0.20	5.70	1.10	0.6	8	1.83	0.58	0.58	0.80	1.80	21.97	49.54

## PUBLIC NOTICE

## Attachment #8

## 1999 National Criteria for Ammonia

**Acute:** Enter yes if salmon are present and then enter pH value (acute criterion is not Temp dependent).

**Chronic:** Enter yes if salmon are present in early life stages and then enter pH and T.

Acute			Chronic				
Salmon			Early Life				
Present	pH	CMC*	Stages	pH	T	CCC**	2.5xCCC
no	7	36.1	yes	7	21	3.9	9.7
no	7.25	27.9	no	7.25	21	3.4	8.6
no	7.5	19.9	no	7.5	21	2.9	7.2
no	7.75	13.3	no	7.75	21	2.2	5.6
no	8	8.4	no	8	21	1.6	4.0
no	8.25	5.2	no	8.25	21	1.1	2.7
no	8.5	3.2	no	8.5	21	0.7	1.8
no	8.75	2.0	no	8.75	21	0.5	1.2
yes	7	24.1	yes	7	15	5.7	14.3
yes	7.25	18.6	yes	7.25	15	5.1	12.7
yes	7.5	13.3	yes	7.5	15	4.2	10.6
yes	7.75	8.9	yes	7.75	15	3.3	8.2
yes	8	5.6	yes	8	15	2.4	5.9
yes	8.25	3.5	yes	8.25	15	1.6	4.0
yes	8.5	2.1	yes	8.5	15	1.1	2.6
yes	8.75	1.3	yes	8.75	15	0.7	1.7

\* 1-hour average concentration not to be exceeded more than once every three years.

\*\* 30-day average concentration not to be exceeded more than once every three years  
(EPA recommends using the 30Q10 or 30B3)

In addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC  
(The 7Q10 or 4B3 should be used)



# Permit Limits - Chlorine and Ammonia

# PUBLIC NOTICE

Facility Name: City of Ashland - 1999 Ammonia Criteria

Attachment #9

Date: 3/8/2004

Dilution Values? (Y/N)	Y	calculated
Low Flow Dilution @ ZID =	1	*
Low Flow Dilution @ MZ =	1	*
High Flow Dilution @ ZID =	1	*
High Flow Dilution @ MZ =	1	*
	<b>Summer</b>	<b>Winter</b>
Effluent Flow (MGD) =	2.3	3.3
7Q10 (CFS) =	*	*
1Q10 (CFS) =	*	*
% dilution at MZ =	*	*
% dilution at ZID =	*	*

Summer data	Effluent	Stream	Mixed		
			ZID	MZ	
pH * =	*	*	#####	####	( 6.5-9 )
Temp * =	*	*	#####	####	° C
Alkalinity =	*	*			
Salmonids Present? (Y/N)		*			
Fresh Water ? (Y/N)		*			
Salinity	*	*	#####	####	
<b>Winter data</b>					
pH * =	*	*	#####	####	( 6.5-9 )
Temp * =	*	*	#####	####	° C
Alkalinity =	*	*			
Salmonids Present? (Y/N)		*			
Fresh Water ? (Y/N)		*			
Salinity	*	*	#####	####	

probability basis 99%  
(for WLA multipliers)

PARAMETER	WATER QUALITY CRITERIA		Back-ground	Allocations		CV	# Samples / Mo	Acute LTA mg/l	Chronic LTA mg/l	Min LTA mg/l	PERMIT LIMITS		PERMIT LIMITS	
	1 Hour (CMC)	4 Day (CCC)		Acute	Chronic						95%	99%	95%	99%
	mg/l	mg/l		mg/l	mg/l						Monthly	Daily	Monthly	Daily
											mg/l	mg/l	lb/day	lb/day
<b>Low Flow Season</b>														
AMMONIA	8.40	1.60	0.20	8.40	1.60	0.45	8	3.39	0.98	0.98	1.25	2.42	24.03	46.45
<b>High Flow Season</b>														
AMMONIA	5.60	2.40	0.20	5.60	2.40	0.33	8	2.79	1.66	1.66	2.00	3.33	54.99	91.73

# PUBLIC NOTICE

## Attachment #10

Name: Ashland - Summer

Date: 3/12/2004

Enter data into white cells below:

7Q10 = 1 cfs

Ambient Temperature or Criterion 18 °C

Effluent Flow = 2.3 mgd

Effluent Temperature 24 °C

Allowable increase = 0.3 °C

25% of 7Q10 = 0.25 cfs

25% dilution = 1.1 dilution =  $(Q_e + Q_r) / Q_e$

$\Delta T$  at edge of MZ = 5.61 °C

Reasonable Potential

Thermal Load Limit = 2.80 Million Kcals



# PUBLIC NOTICE

## Attachment #11

Name: Ashland \_ Winter

Date: 3/12/2004

Enter data into white cells below:

7Q10 = 3.3 cfs

Ambient Temperature or Criterion 13 °C

Effluent Flow = 3.3 mgd

Effluent Temperature 20 °C

Allowable increase = 1 °C

100% dilution = 2 dilution =  $(Q_e + Q_r) / Q_e$

$\Delta T$  at edge of MZ= 4.25 °C

Reasonable Potential

Thermal Load Limit = 20.6 Million Kcals

# PUBLIC NOTICE

## Attachment #12

Name: Ashland - Interim Summer Limits

Date: 3/12/2004

Kilocalories per day are calculated based on design flow and maximum effluent temperature

This is based on current loading and does not consider the stream temperature increase

This is for Antidegradation purposes only

Insert design flow, numeric criteria and maximum effluent temperature

(If the weekly average design flow is known, enter it in the orange square)

Design Flow (monthly average) = 2.3 MGD or 3.45 MGD weekly average

Numeric Criteria = 18.0 °C

Maximum Effluent Temperature = 24.0 °C

3.5 MGD X 3.785 = 13.1 M liters/day = 13.1 M kg/day

13.1 M kg/day X 6.0 °C X 1 kilocalorie/1° Δ T = 78.3 million kcals/day  
Excess Thermal Load  
(over Criteria)



# PUBLIC NOTICE

## Attachment #13

Name: Ashland - Interim Winter Limits

Date: 3/12/2004

Kilocalories per day are calculated based on design flow and maximum effluent temperature

This is based on current loading and does not consider the stream temperature increase

This is for Antidegradation purposes only

Insert design flow, numeric criteria and maximum effluent temperature  
(If the weekly average design flow is known, enter it in the orange square)

Design Flow (monthly average) = 3.3 MGD or 4.95 MGD weekly average

Numeric Criteria = 18.0 °C

Maximum Effluent Temperature = 20.0 °C

5.0 MGD X 3.785 = 18.7 M liters/day = 18.7 M kg/day

18.7 M kg/day X 2.0 °C X 1 kilocalorie/1° Δ T = 37.5 million kcals/day  
Excess Thermal Load  
(over Criteria)

# PUBLIC NOTICE

The City of Ashland submitted a Temperature Management Plan (TMP) to the Department on May 1, 2002. Below are the Department's review comments concerning the Plan.

## Current Conditions

The discharge cannot cause a measurable increase in stream temperature during any period the stream is water quality limited for temperature. The TMP contains some data on stream and effluent temperatures but does not fully describe daily, seasonal and yearly variations on stream temperatures nor does it unambiguously describe the average and worst case impacts of the discharge on stream temperature. If adequate information is not available, this should be stated and the temperature monitoring plan should ensure the appropriate data is collected.

## Salmonid Species

Section VI states that spawning, incubation and fry emergence occurs from November through June. However, that is based on only three of the salmonid species (Coho, winter steelhead and summer steelhead) present in Bear Creek. Section V indicates spring Chinook, rainbow trout and cutthroat trout also inhabit Bear Creek. Should the spawning, incubation or fry emergence period be expanded for any of these species? That could extend the time period that the 55 degree temperature would apply.

Threatened and Endangered (T&E) Species are present in Bear Creek year round. Therefore, the discharge will not be allowed to cause a measurable increase in stream temperature unless it can be demonstrated that the increase does not impact the biological integrity of the T&E species. Based on the data presented, it appears the City's discharge causes a very significant increase in stream temperature. In order for the Department to approve the TMP, the TMP must include a plan and schedule to either eliminate the temperature increase or demonstrate that there is no impact on biological integrity of the T&E species.

## Thermal Limits

At the current time, the Department is only including thermal load limits in permits for the season or seasons when the receiving stream is water quality limited for temperature. Bear Creek is only water quality limited for salmonid rearing during the summer. Therefore, the Department will likely propose a single thermal load limit based on the thermal energy that is in excess of the 64°F trigger temperature. The Department will use the design flow of the facility to calculate the thermal load limit.

## Temperature Monitoring Plan

The temperature monitoring program can be somewhat negotiable. Continuous monitoring of the effluent is generally preferred although other arrangements can be made if necessary. Temperature monitoring of the influent or discharges from various treatment processes or sidestream flows is discretionary but recommended. Instream temperature monitoring can be performed by the permittee or as part of a regional or watershed monitoring effort. Site selection, equipment placement and calibration, quality



assurance, data reporting, etc. should be conducted in accordance with the Department's *Water Quality Monitoring Guide Book*.

If the temperature monitoring program is described in the TMP with enough detail (sufficient for compliance determination), then the monitoring program need not be replicated in the permit. Much of the necessary information is present in the TMP but would have to be restated in a manner that clearly expresses the minimum monitoring requirements.

The City's SCADA system should be modified as soon as possible to begin recording influent and effluent temperature readings more frequently.

#### Implementation Plan

The TMP does not provide for an evaluation of low cost capital improvements and changes to internal and external management practices to reduce effluent temperature. You are strongly encouraged to propose low cost temperature reduction strategies that will initiate a cooling trend. Please amend the TMP to include a compliance schedule.

The TMP needs to acknowledge that the Rogue River Total Maximum Daily Load (TMDL) is scheduled to be issued in 2004. It is likely that the TMDL will assign a very low thermal Waste Load Allocation (WLA) to the City's discharge. The evaluation of potential capital improvements needs to be performed in such a way that the City will be able to begin implementation of the selected alternative(s) upon incorporation of the WLA into the renewal permit (currently scheduled for 2005). The implementation plan does not contain enough detail to convince the Department that alternatives will be selected or implemented. Compliance with the WLA needs to be achieved within the five year permit cycle of the renewal permit.

Given that the discharge can be up to 80 percent of Ashland Creek's flow, it does not seem reasonable to expect that riparian improvements (cooling the other 20 percent) will be able to result in compliance with the WLA. Because of the presence of T&E species, the temperature issue is a year-round problem rather than just summer time. The Department encourages the City to investigate innovative alternatives for year-round compliance.

assurance, data reporting, etc. should be conducted in accordance with the Department's *Water Quality Monitoring Guide Book*.

If the temperature monitoring program is described in the TMP with enough detail (sufficient for compliance determination), then the monitoring program need not be replicated in the permit. Much of the necessary information is present in the TMP but would have to be restated in a manner that clearly expresses the minimum monitoring requirements.

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The TMP does not provide for an evaluation of low cost capital improvements and changes to internal and external management practices to reduce effluent temperature. You are strongly encouraged to propose low cost temperature reduction strategies that will initiate a cooling trend. Please amend the TMP to include a compliance schedule.

The TMP needs to acknowledge that the Rogue River Total Maximum Daily Load (TMDL) is scheduled to be issued in 2004. It is likely that the TMDL will assign a very low thermal Waste Load Allocation (WLA) to the City's discharge. The evaluation of potential capital improvements needs to be performed in such a way that the City will be able to begin implementation of the selected alternative(s) upon incorporation of the WLA into the renewal permit (currently scheduled for 2005). The implementation plan does not contain enough detail to convince the Department that alternatives will be selected or implemented. Compliance with the WLA needs to be achieved within the five year permit cycle of the renewal permit.

Given that the discharge can be up to 80 percent of Ashland Creek's flow, it does not seem reasonable to expect that riparian improvements (cooling the other 20 percent) will be able to result in compliance with the WLA. Because of the presence of T&E species, the temperature issue is a year-round problem rather than just summer time. The Department encourages the City to investigate innovative alternatives for year-round compliance.



Expiration Date:  
 Permit Number: 101609  
 File Number: 3780  
 Page 1 of 23 Pages

# PUBLIC NOTICE

## NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Department of Environmental Quality  
 Western Region – Salem Office  
 750 Front Street NE, Suite 120, Salem, OR 97301-1039  
 Telephone: (503) 378-8240

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

### ISSUED TO:

City of Ashland  
 20 East Main Street  
 Ashland, Oregon 97520

### SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	R.M. 0.25
Reclaimed Water Reuse	002	

### FACILITY TYPE AND LOCATION:

Oxidation Ditch  
 Ashland STP  
 1/4 Mile NW of Nevada St. & Oak St.  
 Ashland

### RECEIVING STREAM INFORMATION:

Basin: Southern Oregon Coastal  
 Sub-Basin: Middle Rogue  
 Receiving Stream: Ashland Creek  
 LLID: 1227202422154 - 0.25 - D  
 County: Jackson

Treatment System Class: Level IV

Collection System Class: Level III

EPA REFERENCE NO: OR-002073-7

Issued in response to Application Nos. 988564 received 10/02/2000 and 985027 received 12/06/2002.  
 This permit is issued based on the land use findings in the permit record.

DRAFT

Michael H. Korten Hof, Water Quality Manager  
 Western Region

Date

### PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system and discharge to public waters adequately treated wastewaters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

	Page
Schedule A - Waste Discharge Limitations not to be Exceeded .....	2
Schedule B - Minimum Monitoring and Reporting Requirements .....	5
Schedule C - Compliance Conditions and Schedules.....	9
Schedule D- Special Conditions.....	10
Schedule F - General Conditions.....	14

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharge to an underground injection control system.

## SCHEDULE A

1. **Waste Discharge Limitations not to be exceeded after permit issuance.**

a. **Treated Effluent Outfall 001**

(1) **May 1 - August 31 and November 1 - November 30:**

Parameter	Average Effluent Concentrations (mg/L)			Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
	Monthly	Weekly	Daily			
CBOD <sub>5</sub>	10	15		120	210	380
TSS	10	15		96	180	480
Ammonia (see note 2)	0.52		1.2			
Phosphorus				1.6		5.1

(2) **September 1 - October 31:**

Parameter	Average Effluent Concentrations (mg/L)			Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
	Monthly	Weekly	Daily			
CBOD <sub>5</sub>	4	5		77	120	250
TSS	10	15		96	180	480
Ammonia (see note 2)	0.52		1.2			
Phosphorus				1.6		5.1

(3) **December 1 - April 30:**

Parameter	Average Effluent Concentrations (mg/L)			Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
	Monthly	Weekly	Daily			
CBOD <sub>5</sub>	25	40		400	920	1500
TSS	30	45		400	920	1500
Ammonia (See note 2)	0.80		1.8			

\* Average dry weather design flow to the facility equals 2.3 MGD. Mass load limits have been individually assigned.

(4)

Other parameters (year-round except as noted)	Limitations
<i>E. coli</i> Bacteria	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See Note 1)
pH	Shall be within the range of 6.5 - 8.5
CBOD <sub>5</sub> and TSS Removal Efficiency	Shall not be less than 85% monthly average for CBOD <sub>5</sub> and 85% monthly for TSS.
Dissolved Oxygen (Oct 15 though May 15)	Shall not be less than 9.0 mg/L
Excess Thermal Load (Oct 15 though May 15)	Shall not exceed 78 million kcals/day (See Note 3)
Excess Thermal Load (May 16 though Oct 14)	Shall not exceed 38 million kcals/day (See Note 3)



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Excess Thermal Load (Oct 15 though May 15)	Shall not exceed 78 million kcals/day (See Note 3)
Excess Thermal Load (May 16 though Oct 14)	Shall not exceed 38 million kcals/day (See Note 3)



- (5) Except as provided for in OAR 340-045-0080, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-041-0365, except in the following defined temperature mixing zone:

The allowable temperature mixing zone is that portion of Ashland Creek which allows for mixing of the treated effluent with 25 percent of the stream flow.

- (6) Raw sewage discharges are prohibited to waters of the State from November 1 through May 21, except during a storm event greater than the one-in-five-year, 24-hour duration storm, and from May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm.
- (7) If an overflow occurs between May 22 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase in risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.
- (8) Chlorine and chlorine compounds shall not be used as a disinfecting agent of the treated effluent and no chlorine residual shall be allowed in the discharged effluent due to chlorine used for maintenance purposes.

b. Reclaimed Wastewater Outfall 002

- (1) No discharge to state waters is permitted. All reclaimed water shall be distributed on land, for dissipation by evapotranspiration and controlled seepage by following sound irrigation practices so as to prevent:
- a. Prolonged ponding of treated reclaimed water on the ground surface;
  - b. Surface runoff or subsurface drainage through drainage tile;
  - c. The creation of odors, fly and mosquito breeding or other nuisance conditions;
  - d. The overloading of land with nutrients, organics, or other pollutant parameters; and,
  - e. Impairment of existing or potential beneficial uses of groundwater.
- (2) Prior to land application of the reclaimed water, it shall receive at least level IV treatment as defined in OAR 340-055 to:
- (a) Reduce Total Coliform to a seven-day median of 2.2 organisms per 100 mL and a maximum of 23 organisms per 100 mL.
  - (b) Reduce turbidity to a 24-hour mean of 2 Nephelometric Turbidity Units (NTUs) with no more than five percent of the samples during a 24-hour period exceeding 5 NTUs. This turbidity limitation shall be achieved immediately prior to disinfection.
- (3) Irrigation shall conform to the reclaimed water use plan once approved by the Department.
- c. No activities shall be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals shall be managed and disposed in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR 340-040)



**NOTES:**

1. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.
2. The ammonia limits were calculated using the EPA Gold Book Criteria and are considered interim limits. DEQ is in the process of adopting the EPA 1999 ammonia criteria. Upon approval by the EPA, the following limits will automatically be applied to the discharge without a permit modification:

Parameter	Average Effluent Concentrations (mg/L)		
	Monthly	Weekly	Daily
Ammonia (May 1 - November 30)	1.2		2.4
Ammonia (December 1 – April 30)	2.0		3.3

3. The Excess Thermal Load limits are interim limits that were calculated using the average dry weather design flow and an estimated maximum weekly effluent temperature. The Department also calculated water quality based Excess Thermal Limits using projected estimations of the worst case conditions. These water quality based Excess Thermal Limits will become effective 55 months after permit issuance, unless modified as described below:

Other parameters	Limitations
Excess Thermal Load (Oct 15 though May 15)	Shall not exceed 2.8 million kcals/day
Excess Thermal Load (May 16 though Oct 14)	Shall not exceed 21 million kcals/day

The Department recognizes that the estimation of critical stream flow conditions are based on minimal information and that additional stream flow information is needed to provide a more accurate estimate. Schedule B, condition 1.d. requires the Permittee to collect this additional stream flow information. Schedule C, condition 1 also allows time to implement thermal reduction activities and requires the Permittee to provide better estimates of the critical low flow conditions. Upon receipt of this additional information, the Department intends to recalculate the Excess Thermal Loads, re-open this permit, and modify the allowable thermal load.

The Permittee has chosen riparian improvements as a portion of their thermal reduction program. This permit may be re-opened, and the maximum allowable thermal load modified, when more accurate effluent temperature data becomes available or when a water quality credit trading plan is authorized by the Department.

In addition, upon approval of a Total Maximum Daily Load for temperature for this sub-basin, this permit may be re-opened and new temperature and/or thermal load limits assigned.

**NOTES:**

1. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.
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The Permittee has chosen riparian improvements as a portion of their thermal reduction program. This permit may be re-opened, and the maximum allowable thermal load modified, when more accurate effluent temperature data becomes available or when a water quality credit trading plan is authorized by the Department.

In addition, upon approval of a Total Maximum Daily Load for temperature for this sub-basin, this permit may be re-opened and new temperature and/or thermal load limits assigned.



## SCHEDULE B

1. **Minimum Monitoring and Reporting Requirements** (unless otherwise approved in writing by the Department).

The permittee shall monitor the parameters as specified below at the locations indicated. The laboratory used by the permittee to analyze samples shall have a quality assurance/quality control (QA/QC) program to verify the accuracy of sample analysis. If QA/QC requirements are not met for any analysis, the results shall be included in the report, but not used in calculations required by this permit. When possible, the permittee shall re-sample in a timely manner for parameters failing the QA/QC requirements, analyze the samples, and report the results.

a. **Influent**

Influent samples and measurements are taken just before the grit basin. All samples for toxics are taken in the same location.

Item or Parameter	Minimum Frequency	Type of Sample
CBOD <sub>5</sub>	2/Week	Composite
TSS	2/Week	Composite
pH	3/Week	Grab

b. **Treated Effluent Outfall 001**

The facility effluent sampling locations are the following:

- When using the membrane filtration system, effluent samples and measurements are taken from membrane building effluent well.
- When the membrane filtration system is not in use, effluent samples and measurements are taken from the re-aeration chamber just downstream of the UV disinfection system.

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Semi-Annual	Verification
CBOD <sub>5</sub>	2/Week	Composite
TSS	2/Week	Composite
pH	3/Week	Grab
<i>E. coli</i>	2/Week	Grab (See Note 1)
UV Radiation Intensity	Daily	Reading (See Note 3)
Pounds Discharged (CBOD <sub>5</sub> and TSS)	2/Week	Calculation
Average Percent Removed (CBOD <sub>5</sub> and TSS)	Monthly	Calculation
Ammonia (NH <sub>3</sub> -N)	2/Week	Composite
Nutrients		
TKN, NO <sub>2</sub> -NO <sub>3</sub> -N, Total Phosphorus, ortho phosphorus	2/Week (May 1 - Nov 30) Monthly (Dec 1 - Apr 30)	24-hour Composite
Toxics:		
Whole Effluent Toxicity (WET) test (See Note 2)	Semi-annually	See Schedule D condition 3
Priority Pollutant Scan	3 per year	See Schedule D condition 4

b. Treated Effluent Outfall 001 (continued)

Item or Parameter	Minimum Frequency	Type of Sample
Other Parameters:		
Dissolved Oxygen	2/Week (Oct 15 – May 15)	Grab
Temperature, Daily Max	Daily	Monitor (See Note 4)
Effluent Temperature, Average of Daily Maximums (See Note 4)	Weekly	Calculation
Excess Thermal Load (See Note 4)	Weekly	Calculation (See Note 5)

c. Reclaimed Wastewater Outfall 002

The reclaimed water sampling locations are the following:

- Turbidity shall be monitored immediately prior to the disinfection unit or addition of disinfection chemicals.
- Parameters other than turbidity shall be monitored after the disinfection unit.

Item or Parameter	Minimum Frequency	Type of Sample
Quantity Irrigated (inches/acre)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
Quantity Chlorine Used	Daily	Measurement
Chlorine Residual	Daily	Grab
pH	2/Week	Grab
Total Coliform	Daily	Grab
Turbidity	Hourly	Measurement
Nutrients (TKN, NO <sub>2</sub> +NO <sub>3</sub> -N, NH <sub>3</sub> , Total Phosphorus)	Quarterly	Grab

d. Ashland Creek Monitoring

Item or Parameter	Minimum Frequency	Type of Sample
Flow (upstream)	Daily	Measurement
Dissolved Oxygen (surface water)	2/month	Grab
Intergravel Dissolved Oxygen	1/year	Study

d. Sludge Management

Item or Parameter	Minimum Frequency	Type of Sample
Quantity of sludge disposed	Daily	Pounds of sludge disposed



b. Treated Effluent Outfall 001 (continued)

Item or Parameter	Minimum Frequency	Type of Sample
Other Parameters:		
Dissolved Oxygen	2/Week (Oct 15 – May 15)	Grab
Temperature, Daily Max	Daily	Monitor (See Note 4)
Effluent Temperature, Average of Daily Maximums (See Note 4)	Weekly	Calculation
Excess Thermal Load (See Note 4)	Weekly	Calculation (See Note 5)

c. Reclaimed Wastewater Outfall 002

The reclaimed water sampling locations are the following:

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- Parameters other than turbidity shall be monitored after the disinfection unit.

Item or Parameter	Minimum Frequency	Type of Sample
Quantity Irrigated (inches/acre)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
Quantity Chlorine Used	Daily	Measurement
Chlorine Residual	Daily	Grab
pH	2/Week	Grab
Total Coliform	Daily	Grab
Turbidity	Hourly	Measurement
Nutrients (TKN, NO <sub>2</sub> +NO <sub>3</sub> -N, NH <sub>3</sub> , Total Phosphorus)	Quarterly	Grab

d. Ashland Creek Monitoring

Item or Parameter	Minimum Frequency	Type of Sample
Flow (upstream)	Daily	Measurement
Dissolved Oxygen (surface water)	2/month	Grab
Intergravel Dissolved Oxygen	1/year	Study

d. Sludge Management

Item or Parameter	Minimum Frequency	Type of Sample
Quantity of sludge disposed	Daily	Pounds of sludge disposed

## 2. Reporting Procedures

- a. Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department's Western Region - Medford office by the 15th day of the following month.
- b. State monitoring reports shall identify the name, certificate classification and grade level of each principal operator designated by the permittee as responsible for supervising the wastewater collection and treatment systems during the reporting period. Monitoring reports shall also identify each system classification as found on page one of this permit.
- c. Monitoring reports shall also include a record of the quantity and method of use of all sludge removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

## 3. Report Submittals

- a. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. An annual report shall be submitted to the Department by February 1 each year which details sewer collection maintenance activities that reduce inflow and infiltration. The report shall state those activities that have been done in the previous year and those activities planned for the following year.
- b. For any year in which biosolids are land applied or used as land fill cover, a report shall be submitted to the Department by February 19 of the following year that describes solids handling activities for the previous year and includes, but is not limited to, the required information outlined in OAR 340-050-0035(6)(a)-(e).
- c. By no later than January 15 of each year, the permittee shall submit to the Department an annual report describing the effectiveness of the reclaimed water system to comply with approved reclaimed water use plan, the rules of Division 55, and the limitations and conditions of this permit applicable to reuse of reclaimed water.

### NOTES:

1. *E. coli* monitoring must be conducted according to any of the following test procedures as specified in **Standard Methods for the Examination of Water and Wastewater, 19th Edition**, or according to any test procedure that has been authorized and approved in writing by the Director or an authorized representative:

Method	Reference	Page	Method Number
mTEC agar, MF	Standard Methods, 18th Edition	9-29	9213 D
NA-MUG, MF	Standard Methods, 19th Edition	9-63	9222 G
Chromogenic Substrate, MPN	Standard Methods, 19th Edition	9-65	9223 B
Colilert QT	Idexx Laboratories, Inc.		

2. Beginning no later than January 1, 2005, the permittee shall conduct Whole Effluent Toxicity (WET) testing for a period of one (1) year in accordance with the frequency specified above. If the WET tests show that the effluent samples are not toxic at the dilutions determined to occur at the Zone of Immediate Dilution and the Mixing Zone, no further WET testing will be required during this permit cycle. Note that WET test results will be required along with the next NPDES permit renewal application.



3. The intensity of UV radiation passing through the water column will affect the systems ability to kill organisms. To track the reduction in intensity, the UV disinfection system must include a UV intensity meter with a sensor located in the water column at a specified distance from the UV bulbs. This meter will measure the intensity of UV radiation in mWatts-seconds/cm<sup>2</sup>. The daily UV radiation intensity shall be determined by reading the meter each day. If more than one meter is used, the daily recording will be an average of all meter readings each day.
4. Temperature shall be continuously monitored with a maximum of 20 minute increments. The maximum value recorded during a 24 hour period shall be reported on the monthly reports. In the event the continuous temperature recorder malfunctions, Permittee shall record grab measurements at one-hour intervals. Instrumentation malfunctions shall be noted on the monthly reports.
5. Calculated as follows:  
(Weekly average of daily maximum effluent temperatures in °C - applicable summer stream temperature standard, 18°C) X (Weekly average of daily flow in MGD) X 3.785 = Excess Thermal Load, in Million Kcals/day.

3. The intensity of UV radiation passing through the water column will affect the systems ability to kill organisms. To track the reduction in intensity, the UV disinfection system must include a UV intensity meter with a sensor located in the water column at a specified distance from the UV bulbs. This meter will measure the intensity of UV radiation in mWatts-seconds/cm<sup>2</sup>. The daily UV radiation intensity shall be determined by reading the meter each day. If more than one meter is used, the daily recording will be an average of all meter readings each day.
4. Temperature shall be continuously monitored with a maximum of 20 minute increments. The maximum value recorded during a 24 hour period shall be reported on the monthly reports. In the event the continuous temperature recorder malfunctions, Permittee shall record grab measurements at one-hour intervals. Instrumentation malfunctions shall be noted on the monthly reports.
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(Weekly average of daily maximum effluent temperatures in °C - applicable summer stream temperature standard, 18°C) X (Weekly average of daily flow in MGD) X 3.785 = Excess Thermal Load, in Million Kcals/day.



## SCHEDULE C

### Compliance Schedules and Conditions

1. Within two years of permit issuance, the permittee shall complete the thermal reduction measures recommended in the Wastewater Treatment Plant Temperature Management Plan (April 2002). These measures are as follows:

MP-1: The City will develop a market evaluation and water recycling plan. The planning process will include a public education component about the water quality of Ashland's effluent, a market survey, opportunities to increase stream flow by offsetting existing irrigation demand, and the development of infrastructure needs and costs to meet existing and future market demand for recycled water.

MP-4: The City will develop and implement a riparian corridor improvement plan for Ashland Creek. The plan would include temperature modeling to predict the benefits of modifying the riparian corridor, identification of stream reaches that need improvement, and the development of effective and needed modifications. In addition to improving temperature, the planning would focus on improving both in-stream and riparian habitat, reducing flooding, and improving aesthetics.

Within three years of permit issuance, the permittee shall submit a report detailing the effectiveness of measures MP-1 and MP-4. The report shall include information collected on Ashland Creek, including daily stream flow and temperatures. The report shall also provide estimates of critical low flows. If the water quality based excess thermal limits in Schedule A, Note 3 are not achieved, the report shall include an evaluation of the cost effectiveness of additional temperature reduction measures and a selected preferred alternative. Upon Department review and approval, the permittee shall implement the preferred alternative.

2. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than fourteen days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he/she determines good and valid cause resulting from events over which the permittee has little or no control.

## SCHEDULE D

### Special Conditions

1. Prior to increasing thermal load (flow or temperature) beyond the current permit limitations, the Permittee shall notify the Department and apply for and be issued a permit modification allowing the increase.
2. The facility's sludge is currently disposed of in a Department approved landfill as a solid waste (either in a landfill cell or is used as interim cover). Disposal must be in accordance with OAR Chapter 340, Division 93. Proper waste monitoring would be prescribed by the landfill in accordance with that rule. Monitoring and reporting as biosolids is not required under this permit.
3. **Whole Effluent Toxicity (WET) Testing**
  - a. The permittee shall conduct whole effluent toxicity tests as specified in Schedule B of this permit.
  - b. WET tests may be dual end-point tests, only for the fish tests, in which both acute and chronic end-points can be determined from the results of a single chronic test (the acute end-point shall be based upon a 48-hour time period).
  - c. **Acute Toxicity Testing - Organisms and Protocols**
    - (1) The permittee shall conduct 48-hour static renewal tests with the *Ceriodaphnia dubia* (water flea) and the *Pimephales promelas* (fathead minnow).
    - (2) The presence of acute toxicity will be determined as specified in **Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms**, Fourth Edition, EPA/600/4-90/027F, August 1993.
    - (3) An acute WET test shall be considered to show toxicity if there is a statistically significant difference in survival between the control and 100 percent effluent, unless the permit specifically provides for a Zone of Immediate Dilution (ZID) for biotoxicity. If the permit specifies such a ZID, acute toxicity shall be indicated when a statistically significant difference in survival occurs at dilutions greater than that which is found to occur at the edge of the ZID.
  - d. **Chronic Toxicity Testing - Organisms and Protocols**
    - (1) The permittee shall conduct tests with: *Ceriodaphnia dubia* (water flea) for reproduction and survival test endpoint, *Pimephales promelas* (fathead minnow) for growth and survival test endpoint, and *Raphidocelis subcapitata* (green alga formerly known as *Selenastrum capricornutum*) for growth test endpoint.
    - (2) The presence of chronic toxicity shall be estimated as specified in **Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms**, Third Edition, EPA/600/4-91/002, July 1994.
    - (3) A chronic WET test shall be considered to show toxicity if a statistically significant difference in survival, growth, or reproduction occurs at dilutions greater than that which is known to occur at the edge of the mixing zone. If there is no dilution data for the edge of the mixing zone, any chronic WET test that shows a statistically significant effect in 100 percent effluent as compared to the control shall be considered to show toxicity.



## SCHEDULE D

### Special Conditions

1. Prior to increasing thermal load (flow or temperature) beyond the current permit limitations, the Permittee shall notify the Department and apply for and be issued a permit modification allowing the increase.
2. The facility's sludge is currently disposed of in a Department approved landfill as a solid waste (either in a landfill cell or is used as interim cover). Disposal must be in accordance with OAR Chapter 340, Division 93. Proper waste monitoring would be prescribed by the landfill in accordance with that rule. Monitoring and reporting as biosolids is not required under this permit.
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  - c. **Acute Toxicity Testing - Organisms and Protocols**
    - (1) The permittee shall conduct 48-hour static renewal tests with the *Ceriodaphnia dubia* (water flea) and the *Pimephales promelas* (fathead minnow).
    - (2) The presence of acute toxicity will be determined as specified in **Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms**, Fourth Edition, EPA/600/4-90/027F, August 1993.
    - (3) An acute WET test shall be considered to show toxicity if there is a statistically significant difference in survival between the control and 100 percent effluent, unless the permit specifically provides for a Zone of Immediate Dilution (ZID) for biotoxicity. If the permit specifies such a ZID, acute toxicity shall be indicated when a statistically significant difference in survival occurs at dilutions greater than that which is found to occur at the edge of the ZID.
  - d. **Chronic Toxicity Testing - Organisms and Protocols**
    - (1) The permittee shall conduct tests with: *Ceriodaphnia dubia* (water flea) for reproduction and survival test endpoint, *Pimephales promelas* (fathead minnow) for growth and survival test endpoint, and *Raphidocelis subcapitata* (green alga formerly known as *Selenastrum capricornutum*) for growth test endpoint.
    - (2) The presence of chronic toxicity shall be estimated as specified in **Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms**, Third Edition, EPA/600/4-91/002, July 1994.
    - (3) A chronic WET test shall be considered to show toxicity if a statistically significant difference in survival, growth, or reproduction occurs at dilutions greater than that which is known to occur at the edge of the mixing zone. If there is no dilution data for the edge of the mixing zone, any chronic WET test that shows a statistically significant effect in 100 percent effluent as compared to the control shall be considered to show toxicity.

e. Quality Assurance

- (1) Quality assurance criteria, statistical analyses and data reporting for the WET tests shall be in accordance with the EPA documents stated in this condition and the Department's **Whole Effluent Toxicity Testing Guidance Document**, January 1993.

f. Evaluation of Causes and Exceedances

- (1) If toxicity is shown, as defined in sections c.(3) or d.(3) of this permit condition, another toxicity test using the same species and Department approved methodology shall be conducted within two weeks, unless otherwise approved by the Department. If the second test also indicates toxicity, the permittee shall follow the procedure described in section f.(2) of this permit condition.
- (2) If two consecutive WET test results indicate acute and/or chronic toxicity, as defined in sections c.(3) or d.(3) of this permit condition, the permittee shall evaluate the source of the toxicity and submit a plan and time schedule for demonstrating compliance with water quality standards. Upon approval by the Department, the permittee shall implement the plan until compliance has been achieved. Evaluations shall be completed and plans submitted to the Department within six months unless otherwise approved in writing by the Department.

g. Reporting

- (1) Along with the test results, the permittee shall include: 1. The dates of sample collection and initiation of each toxicity test; 2. The type of production; and 3. The flow rate at the time of sample collection. Effluent at the time of sampling for WET testing should include samples of required parameters stated under Schedule B, condition 1. of this permit.
- (2) The permittee shall make available to the Department, on request, the written standard operating procedures they, or the laboratory performing the WET test, are using for all toxicity tests required by the Department.

h. Reopener

- (1) If WET testing indicates acute and/or chronic toxicity, the Department may reopen and modify this permit to include new limitations and/or conditions as determined by the Department to be appropriate, and in accordance with procedures outlined in Oregon Administrative Rules, Chapter 340, Division 45.

4. The permittee shall perform chemical analysis of its effluent for the specific toxic pollutants listed in Appendix J, Table 2 of 40 CFR Part 122. The effluent samples shall be 24-hour daily composites, except where sampling volatile compounds. For volatile compounds, six (6) discrete samples (not less than 100 mL) collected over the operating day are acceptable. The permittee shall take special precautions in compositing the individual grab samples for the volatile organics to insure sample integrity (i.e. no exposure to the outside air). Alternately, the discrete samples collected for volatiles may be analyzed separately and averaged.

5. The permittee shall meet the requirements for use of reclaimed water under Division 55, including the following:

- a. All reclaimed water shall be managed in accordance with the approved Reclaimed Water Use Plan. No substantial changes shall be made in the approved plan without written approval of the Department.



- b. No reclaimed water shall be released by the permittee to another person, as defined in Oregon Revised Statute (ORS) 468.005, for use unless there is a valid contract between the permittee and that person that meets the requirements of OAR 340-055-0015(9).
  - c. The permittee shall notify the Department within 24 hours if it is determined that the treated effluent is being used in a manner not in compliance with OAR 340-055. When the Department offices are not open, the permittee shall report the incident of noncompliance to the Oregon Emergency Response System (Telephone Number 1-800-452-0311).
  - d. No reclaimed water shall be made available to a person proposing to recycle unless that person certifies in writing that they have read and understand the provisions in these rules. This written certification shall be kept on file by the sewage treatment system owner and be made available to the Department for inspection.
6. The permittee shall comply with Oregon Administrative Rules (OAR), Chapter 340, Division 49, "Regulations Pertaining To Certification of Wastewater System Operator Personnel" and accordingly:
- a. The permittee shall have its wastewater system supervised by one or more operators who are certified in a classification and grade level (equal to or greater) that corresponds with the classification (collection and/or treatment) of the system to be supervised as specified on page one of this permit.

**Note:** A "supervisor" is defined as the person exercising authority for establishing and executing the specific practice and procedures of operating the system in accordance with the policies of the permittee and requirements of the waste discharge permit. "Supervise" means responsible for the technical operation of a system, which may affect its performance or the quality of the effluent produced. Supervisors are not required to be on-site at all times.

- b. The permittee's wastewater system may not be without supervision (as required by Special Condition 7.a. above) for more than thirty (30) days. During this period, and at any time that the supervisor is not available to respond on-site (i.e. vacation, sick leave or off-call), the permittee must make available another person who is certified at no less than one grade lower than the system classification.
- c. If the wastewater system has more than one daily shift, the permittee shall have the shift supervisor, if any, certified at no less than one grade lower than the system classification.
- d. The permittee is responsible for ensuring the wastewater system has a properly certified supervisor available at all times to respond on-site at the request of the permittee and to any other operator.
- e. The permittee shall notify the Department of Environmental Quality in writing within thirty (30) days of replacement or redesignation of certified operators responsible for supervising wastewater system operation. The notice shall be filed with the Water Quality Division, Operator Certification Program, 811 SW 6th Ave, Portland, OR 97204. This requirement is in addition to the reporting requirements contained under Schedule B of this permit.
- f. Upon written request, the Department may grant the permittee reasonable time, not to exceed 120 days, to obtain the services of a qualified person to supervise the wastewater system. The written request must include justification for the time needed, a schedule for recruiting and hiring, the date the system supervisor availability ceased and the name of the alternate system supervisor(s) as required by 7.b. above.



- b. No reclaimed water shall be released by the permittee to another person, as defined in Oregon Revised Statute (ORS) 468.005, for use unless there is a valid contract between the permittee and that person that meets the requirements of OAR 340-055-0015(9).
  - c. The permittee shall notify the Department within 24 hours if it is determined that the treated effluent is being used in a manner not in compliance with OAR 340-055. When the Department offices are not open, the permittee shall report the incident of noncompliance to the Oregon Emergency Response System (Telephone Number 1-800-452-0311).
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7. The permittee shall notify the DEQ Western Region - Medford Office (phone: (541) 776-6010) in accordance with the response times noted in the General Conditions of this permit, of any malfunction so that corrective action can be coordinated between the permittee and the Department.
8. The permittee shall not be required to perform a hydrogeologic characterization or groundwater monitoring during the term of this permit provided:
  - a. The facilities are operated in accordance with the permit conditions, and;
  - b. There are no adverse groundwater quality impacts (complaints or other indirect evidence) resulting from the facility's operation.

If warranted, at permit renewal the Department may evaluate the need for a full assessment of the facilities impact on groundwater quality.

9. Permittee shall not accept septage without written approval from the Department.

**NPDES GENERAL CONDITIONS  
(SCHEDULE F)**

**SECTION A. STANDARD CONDITIONS**

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468B.025 and is grounds for enforcement action; for permit termination, suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Water Pollution and Permit Condition Violations

Oregon Law (ORS 468.140) allows the Director to impose civil penalties up to \$10,000 per day for violation of a term, condition, or requirement of a permit.

In addition, a person who unlawfully pollutes water as specified in ORS 468.943 or ORS 468.946 is subject to criminal prosecution.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application shall be submitted at least 180 days before the expiration date of this permit.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions

This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

- a. Violation of any term, condition, or requirement of this permit, a rule, or a statute;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.



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(SCHEDULE F)**

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- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

The permittee shall comply with any applicable effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

8. Permit References

Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

**SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS**

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is insignificant to the quality and/or quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes them to become inoperable, or



substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited unless:

- (a) Bypass was necessary to prevent loss of life, personal injury, or severe property damage;
- (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities; retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (c) The permittee submitted notices and requests as required under General Condition B.3.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

c. Notice and request for bypass.

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in General Condition D.5.

4. Upset

- a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

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- (c) The permittee submitted notices and requests as required under General Condition B.3.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

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- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:



- (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (2) The permitted facility was at the time being properly operated;
- (3) The permittee submitted notice of the upset as required in General Condition D.5, hereof (24-hour notice); and
- (4) The permittee complied with any remedial measures required under General Condition A.3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Treatment of Single Operational Event

For purposes of this permit, A Single Operational Event which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definitions

- (1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.
- (2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.
- (3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

b. Prohibition of overflows. Overflows are prohibited unless:

- (1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and

(3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

- c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.
- d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

**SECTION C. MONITORING AND RECORDS**

1. Representative Sampling

Sampling and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and shall be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than  $\pm 10$  percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.



(3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

- c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.
- d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

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3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties of Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than \$20,000 per day of violation, or by imprisonment of not more than four years or both.

5. Reporting of Monitoring Results

Monitoring results shall be summarized each month on a Discharge Monitoring Report form approved by the Department. The reports shall be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated. For a pollutant parameter that may be sampled more than once per day (e.g., Total Chlorine Residual), only the average daily value shall be recorded unless otherwise specified in this permit.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean, except for bacteria which shall be averaged as specified in this permit.

8. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Records Contents

Records of monitoring information shall include:

- a. The date, exact place, time and methods of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;



- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

**SECTION D. REPORTING REQUIREMENTS**

1. Planned Changes

The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

**SECTION D. REPORTING REQUIREMENTS**

1. Planned Changes

The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.



4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

5. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within 24 hours, unless otherwise specified in this permit, from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Emergency Response System).

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. If the permittee is establishing an affirmative defense of upset or bypass to any offense under ORS 468.922 to 468.946, and in which case if the original reporting notice was oral, delivered written notice must be made to the Department or other agency with regulatory jurisdiction within 4 (four) calendar days. The written submission shall contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected;
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
- e. Public notification steps taken, pursuant to General Condition B.7.

The following shall be included as information which must be reported within 24 hours under this paragraph:

- a. Any unanticipated bypass which exceeds any effluent limitation in this permit.
- b. Any upset which exceeds any effluent limitation in this permit.
- c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in this permit.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

6. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under General Condition D.4 or D.5, at the time monitoring reports are submitted. The reports shall contain:

- a. A description of the noncompliance and its cause;

- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

7. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

8. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Information

A person who supplies the Department with false information, or omits material or required information, as specified in ORS 468.953 is subject to criminal prosecution.

10. Changes to Indirect Dischargers - [Applicable to Publicly Owned Treatment Works (POTW) only]

The permittee must provide adequate notice to the Department of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;
- b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

11. Changes to Discharges of Toxic Pollutant - [Applicable to existing manufacturing, commercial, mining, and silvicultural dischargers only]

The permittee must notify the Department as soon as they know or have reason to believe of the following:

- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:

- (1) One hundred micrograms per liter (100 µg/L);



- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

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The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

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- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:

- (1) One hundred micrograms per liter (100 µg/L);

- (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
  - (4) The level established by the Department in accordance with 40 CFR 122.44(f).
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
- (1) Five hundred micrograms per liter (500 µg/L);
  - (2) One milligram per liter (1 mg/L) for antimony;
  - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
  - (4) The level established by the Department in accordance with 40 CFR 122.44(f).

#### **SECTION E. DEFINITIONS**

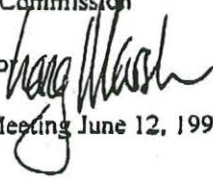
1. BOD means five-day biochemical oxygen demand.
2. TSS means total suspended solids.
3. mg/L means milligrams per liter.
4. kg means kilograms.
5. m<sup>3</sup>/d means cubic meters per day.
6. MGD means million gallons per day.
7. Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
8. FC means fecal coliform bacteria.
9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.
10. CBOD means five day carbonaceous biochemical oxygen demand.
11. Grab sample means an individual discrete sample collected over a period of time not to exceed 15 minutes.
12. Quarter means January through March, April through June, July through September, or October through December.
13. Month means calendar month.
14. Week means a calendar week of Sunday through Saturday.
15. Total residual chlorine means combined chlorine forms plus free residual chlorine.
16. The term "bacteria" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.
17. POTW means a publicly owned treatment works.



State of Oregon  
Department of Environmental Quality

Memorandum

Date: June 1, 1998

To: Environmental Quality Commission  
From: Langdon Marsh, Director   
Subject: Agenda Item N, EQC Meeting June 12, 1998

Statement of Purpose

The City of Ashland has requested a waiver to OAR 340-41-375 (c) [ "Dilution Rule"].

Background

The City of Ashland operates a secondary wastewater treatment facility (WWTF) that serves the City of Ashland in Jackson County. Ashland WWTF discharges to Ashland Creek approximately one quarter mile upstream of the confluence with Bear Creek.

In 1995, the Department and the City of Ashland entered into a Mutual Agreement and Order (MAO) which requires the City to upgrade the wastewater treatment facilities (WWTF) to meet the requirements of the Bear Creek Total Maximum Daily Loads (TMDLs). This upgrade is considered a modification and therefore the minimum design criteria of OAR 340-41-375 apply. One of the minimum design criteria for new or modified sewage treatment facilities is OAR 340-41-375 (c), also known as the "dilution rule":

(c) Effluent BOD concentrations in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) shall not exceed one unless otherwise approved by the EQC;

Ashland has selected a preferred treatment option to meet Bear Creek TMDL requirements that is a combination of inplant upgrades, and dry season irrigation. Discharge would occur during the winter when flows in Ashland and Bear Creeks is adequate to assimilate the treated sewage and protect beneficial uses. The Department has reviewed the treatment concept and is satisfied that the winter period instream TMDL requirements set for Bear Creek for ammonia and BOD will be met.

However, during statistically derived low flows in Bear Creek during the winter period (ie 7Q10 meaning seven day average minimum flow at a 10 year reoccurrence) Ashland projects that their effluent flows, with secondary treatment, will not always meet the dilution requirement of OAR 340-41-375(c). Adding tertiary treatment would be additional expense to Ashland and likely would not be enough to always meet the dilution requirement. Discharged BOD would have to be less than 3 mg/L or less. In practice, well designed and operated sewage plants cannot reliably meet treatment levels approaching 5 mg/L, particularly in winter when ambient temperatures and inflow/infiltration cause process performance fluctuations. Requiring Ashland to meet the dilution rule during expected winter discharge periods would be setting the stage for permit violations.

The dilution rule was a component of the 1975 basin management plan for the Rogue Basin, including Bear Creek. The intent of the Commission when adopting this rule is described in the basin plan:

"The intent of this section [dilution rule] is to assure that following a high degree of treatment, effluents are adequately diluted to protect the public health, aesthetics, aquatic life and beneficial uses of the waterway. It is further intended that this section be one of the primary mechanisms to insure protection of water quality in headwater streams."

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Agenda Item N, EQC Meeting Page 2

The intent is for the design criteria to be applied to the dilution of waste, not necessarily dissolved oxygen criteria. As a design criteria it is applied to design conditions of the WWTF. The facility plan states that the upgraded WWTF will be able to meet all of the minimum design criteria of OAR 340-41-375 except for the dilution criteria.

While the WWTF discharges to Ashland Creek, seasonal flow data for Ashland Creek is unavailable. Department efforts in modeling water quality has focused on Bear Creek because the time of travel from the outfall to Bear Creek is minimal. Therefore the biochemical oxygen demand from the WWTF has a much greater effect on Bear Creek than on Ashland Creek. The proposed NPDES renewal permit requires the City to monitor flows in Ashland Creek and perform semi-annual intergravel dissolved oxygen (IGDO) studies in the gravels in Ashland Creek downstream of the discharge. Also, while the proposed permit will require the discharge to meet all water quality standards prior to discharge to Ashland Creek, the Department had concerns about the effluent causing a fish passage barrier due to temperature gradient, salinity gradient, odor, or other parameters not covered by the water quality standards. Mr. Mike Evanson, ODFW Regional Fisheries Biologist, has stated that provided the water quality standards are met, the discharge should not cause a fish passage barrier in Ashland Creek.

As stated above, water quality modeling has focused on impacts to Bear Creek. A comparison of the critical low flows in Bear Creek to the treatment facility effluent flow at critical conditions is summarized in the following table:

Season	7Q10 Stream Flow + Plant flow	Design Year Average Flow	Ratio
Summer	1.4 cfs + 3.4 cfs = 4.8 cfs	2.2 MGD = 3.4 cfs	1.4
Winter	7.6 cfs + 3.7 cfs = 11.0 cfs	2.4 MGD = 3.7 cfs	3.0

This would indicate that the WWTF would have to produce an effluent of less than 1.4 mg/l during the low flow season and less than 3.0 mg/l during the high flow season in order to meet the minimum design criteria of OAR 340-41-375 (c) in Bear Creek. Since flows in Ashland Creek are less than flows in Bear Creek, the pollutant concentration would have to be less than that for Bear Creek discharge to meet this criteria.

The EQC has reviewed similar requests for relief from municipalities in the Portland area (Tualatin, McMinnville, Dallas, Rickreall Creek). It is not uncommon when TMDLs are established and waste load allocations set that the necessity for minimum dilution rule requirement is obviated when beneficial uses and water quality is otherwise fully protected. Circumstances for the request made by the City of Ashland appear to meet this threshold of acceptance.

**Authority of the Commission with Respect to the Issue**

Per OAR 340-41-375(c), the Commission has the authority to waive the dilution criteria.

**Alternatives and Evaluation**

The City of Ashland has reviewed several alternatives to meeting the requirements of the Bear Creek TMDLs. The primary alternatives and estimated long term (20 year) costs are as follows:

- 1) Eliminate the WWTF and connect the City's sewage collection system to the Regional Facility which discharges to the Rogue River in White City. (\$31 million)
- 2) Upgrade the WWTF to allow irrigation of the effluent on land for reuse during the low flow season and discharge during the high flow season. (\$30 million)



- 3) Upgrade the WWTF to utilize wetlands technology for phosphorus polishing and discharge year round. (\$35 million)
- 4) Upgrade the WWTF to remove phosphorus chemically and physically and discharge year around. (\$49 million)

Of the above options, only option 1 would meet the design criteria of the dilution rule for both low flow and high flow seasons because there would be no discharge to Ashland or Bear Creeks. Option 2 would meet the dilution rule criteria during the low flow season, again because there would be no discharge to Ashland or Bear Creeks. Options 3 and 4 would not meet the dilution rule criteria. It is currently beyond the means of conventional technology to meet the requirements of dilution rule for a discharge at Ashland's current outfall location because of the relatively high flows from the WWTF with respect to the stream flows.

In 1995, the City held several public meetings to discuss these options and variations of these options. For various reasons, the City has initially chosen spray irrigation on city owned property during the low flow season as a preferred option and have constructed a demonstration wetlands/soil filtration project to evaluate the possibility of using a natural system.

The City has completed engineering plans and specifications for the facility upgrades required for option 2. The Department has performed computer modeling which shows that, during the winter months, the higher pollutant concentrations produced by this proposed WWTF may be discharged to Ashland and Bear Creeks while maintaining water quality standards.

#### Summary of Public Input Opportunity

A discussion of the request for waiver was included in the NPDES renewal evaluation report [1] which was submitted for public comment on March 23, 1998. A public hearing was held on April 29, 1998 and the public comment period ended on May 8, 1998.

The Department received both oral statements during the public hearing and written comments during the public comment period. No comments were received regarding possible waiver of minimum dilution requirement of OAR 340-41-375(c) for Ashland.

Comments received addressed: 1) a concern that the preferred option of land application of effluent during the low flow season would further reduce instream water flows to a point that would detrimental to aquatic life and 2) a concern that placing the effluent and the biosolids on land would create a health and environmental problem in the area of application.

With regard to the first concern, the Department believes that it is better to have less water in the stream than to pollute the stream to a point where the instream criteria for dissolved oxygen, pH, temperature, and toxics are not being met. Also, the flows in Bear Creek are largely influenced by irrigation practices. During the irrigation season (roughly May through September), the creek is used to transfer water from Howard Prairie, Hyatt, Emigrant Reservoirs to agricultural property in the Bear Creek Valley. The flows in the upper stretches of the creek commonly exceed 100 cfs, while the flows in the lower stretches are often below 1 cfs. The lowest flows in Bear Creek near Ashland occur immediately after the irrigation season and before the rains begin. During this time, flows of less than 4 cfs are not uncommon. The proposed NPDES permit contains a requirement for the City to submit an instream water quantity management plan. The Department expects this plan to contain provisions for increasing the flows in Bear Creek during the critical low flow time after the irrigation season.

#### Conclusions

Typically, the Department has supported waiver of minimum dilution criteria when it is found that the waiver will not cause a water quality standard violation and/or there is adequate economic justification. As stated above, computer modeling has shown that a waiver of the dilution criteria for the high flow season will not cause a water quality standard violation. As importantly, beneficial uses in Ashland and Bear Creeks below Ashland treatment plant outfall will remain protected through enhanced efficiency and treatment plant upgrade.

However, the Department believes that the City's preferred option with maintaining low flow season instream flows at or above current levels provides the best overall environmental option. The condition for maintain instream flows is in the draft NPDES permit.

Therefore, the Department supports the request for waiver during the high flow season provided that the instream flows are maintained. A permit condition for an instream water management plan is included in the draft permit. Because the City's preferred option (option 2) would not require a waiver during the low flow season, the Department does not support the request for waiver of OAR 340-41-375 (c) during the low flow period.

#### Intended Future Actions

Should the Commission approve the waiver, the Department will issue the proposed NPDES renewal permit to the City of Ashland. Should the Commission deny the waiver, the Department will revise the proposed NPDES renewal permit to include the conditions of the dilution rule criteria.

#### Department Recommendation

It is recommended that the Commission approve the City of Ashland's request for waiver of the dilution rule during the high flow season provided that the instream flows are maintained as detailed in the attached draft Commission Order. It is further recommended that the Commission deny the City of Ashland's request for waiver of the dilution rule during the low flow season.

#### Attachments

- 1) Draft Commission Order approving waiver of the dilution rule during the high flow season and denying the waiver during the low flow season.

#### Reference Documents (available upon request)

1. "FACT SHEET and NPDES WASTEWATER DISCHARGE PERMIT RENEWAL EVALUATION for City of Ashland", Oregon Department of Environmental Quality, March 16, 1998
2. Proposed Draft NPDES renewal permit for City of Ashland
3. Oregon Administrative Rules Chapter 340
4. Title 40 Code of Federal Regulations
5. Oregon Revised Statutes
6. Brown and Caldwell, *City of Ashland Wastewater Facilities Plan*, September 1995
7. Carollo Engineers, *Wastewater Facility Plan Amendment, City of Ashland*, July 1997
8. Oregon Department of Environmental Quality, *Oregon's 1994 Water Quality Status Assessment Report* (305(b) Report), 1994
9. Oregon Department of Environmental Quality, *Water Quality Mixing Zone Study*, August 1988



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Agenda Item N, EQC Meeting Page 5

10. Scott A. Wells, Ph.D., P.E. and Robert Annear, *Flows and Water Quality Loading for Bear Creek*, prepared for Corollo Engineers, 5100 SW Macadam Ave, Suite 440, Portland, OR 97201, February 1997
11. Tchobanoglous, G., and Burton, Franklin L., *Wastewater Engineering*, Metcalf and Eddy, 1991, third ed.
12. Oregon Department of Environmental Quality, *Technical Memorandum revising TMDL for Bear Creek*, December 18, 1997
13. EPA, *Technical support Document for Water Quality-based Toxics Control*, EPA publication EPA/505/2-90-001.
14. Stevenson, R. Jan, *Algal Ecology*, Academic Press, 1996

Approved:

Section: \_\_\_\_\_

Division: \_\_\_\_\_

Report Prepared By: Jonathan Gasik. PE

Phone: 541-776-6010 x230

Date Prepared: May 14, 1998

Jdg

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OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY  
Memorandum  
WESTERN REGION - MEDFORD

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To: Kitty Purser  
Director's Office

Date: July 22, 1998

From: Jonathan Gasik, PE *Jonathan Gasik*  
Water Quality, Medford Office

Subject: June 12, 1998 EQC Meeting Minutes for Agenda Item N.  
Request for Waiver of "Dilution Rule" by City of Ashland  
File No. 3780

The item began with a summary from Jon Gasik, a DEQ water quality engineer. Jon explained that the City of Ashland is proposing to upgrade their wastewater treatment facility to meet the requirements of Bear Creek Total Maximum Daily Load (TMDL). The City has chosen to spray irrigate during the summer months and discharge during the winter months. The dilution rule requires that there be a minimum of 30-to-1 dilution during the winter months. The waiver was requested because historic flow data indicate that there are periods during the winter months when this dilution ratio would not be met.

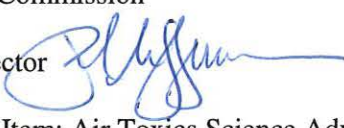
The Department's evaluation showed that water quality criteria would be met and beneficial uses would be protected. There was a brief discussion. Commissioner Reeve asked whether the project had been reviewed and approved. Jon Gasik, with the assistance of Paula Brown, Public Works Director for the City of Ashland, explained that final plans and specifications for Project A (wastewater treatment facility upgrades) have been received and are under review. While the DEQ has reviewed preliminary evaluation reports for Project B (effluent irrigation and biosolids management off-site), plans and specifications have not been submitted.

Chair Whipple stated that there was a lunch meeting and asked if there was time to vote. Commissioner Eden moved to approve the waiver. During her motion she stated that the Commission has recently received similar requests from other cities, that it is likely that the Commission will receive more requests in the future. She further stated that Commission should consider reviewing and perhaps modifying the "Dilution Rule" so that the Department does not have to bring every request for waiver to the Commission. Commissioner Mahan seconded the motion. The vote was unanimous to approve the waiver.



State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director   
**Subject:** Agenda Item D, Action Item: Air Toxics Science Advisory Committee  
May 20, 2004 EQC Meeting

**Department Recommendation** The Department recommends that the Environmental Quality Commission (EQC, Commission) concur with the Director's nomination of seven individuals (see Attachment 1) to serve on the Department's Air Toxics Science Advisory Committee (ATSAC).

**Background** In October 2003, the Oregon State Air Toxics Program (OAR 340-246-0010) was adopted by the Environmental Quality Commission. This rule was the result of a five-year process guided by two stakeholder advisory committees. It requires DEQ to form, with the concurrence of the EQC, an Air Toxics Science Advisory Committee (ATSAC).

The purpose of the ATSAC will be to provide DEQ, and in its jurisdiction, the Lane Regional Air Pollution Authority, with advice on the state air toxics program that is scientifically and technically sound, independent, balanced, useful, and timely. The ATSAC will confine itself to addressing technical, risk assessment, and engineering issues, as well as the adequacy of the scientific foundation on which a DEQ policy position is based. It will not address policy issues, risk management decisions, or the non-technical aspects of any DEQ policy position. The ATSAC is intended solely as a technical advisory body and not as a committee designed to reflect stakeholder views.

Per OAR 340-246-0070(2), the ATSAC must have at least 5, but no more than 7, members with relevant air toxics experience in the following six disciplines: (1) toxicology; (2) environmental science or engineering; (3) risk assessment; (4) epidemiology & biostatistics; (5) public health medicine (physician); and (6) air pollution modeling, monitoring, meteorology or engineering. One member could have more than one field of expertise (e.g., toxicology and risk assessment) or more than one member could be in the same general field but possess different specialties (e.g., air pollution engineering and air pollution modeling). ATSAC members will serve a three-year term, as volunteers without compensation.

DEQ used a three-step process, modeled on that used by U.S. EPA's Science Advisory Boards, to identify these candidates for ATSAC membership (see Attachment 2). This process included a formal public comment period. Only two comments (Attachment 3), were received by the deadline.

**Key Issues**

Key issues were:

- Specific technical discipline requirements (by rule). DEQ used its extensive contacts within the air quality and air toxics community to bring its need for technically qualified individuals to the awareness of this community. The response was not voluminous but DEQ did receive at least one nominee in each of the required disciplines. For some disciplines, there were enough nominees to offer a choice.
- Willingness and ability to serve. This is not a requirement, but is a consideration when attempting to constitute a volunteer committee of technical experts who are typically well compensated for their work. Here, the relative uniqueness and importance of the air toxics program was a factor.
- No conflicts of interest, as defined by ORS 240.020 (by rule). All of the candidates have submitted written (email) statements to the effect that they understand and will be in compliance with this statute while serving on the committee.

**EQC Action  
Alternatives**

Alternatives:

- Concur with nomination of all seven candidates provided in Attachment 1, as recommended. The ATSAC is essential to moving forward on the other elements of the State Air Toxics Program.
- Concur with none of the candidates. If none of these candidates is acceptable to the EQC, DEQ would begin the committee formation process over again. Since the pool from which to draw these specific types of technical expertise is limited, it is likely to require additional time (possibly as much as 6 months) to identify 5-7 new candidates with the requisite expertise willing to serve for free. There is also a chance that DEQ would be unable to identify a minimum of 5 new nominees.
- Concur with some, but not all, candidates. There are 2-3 otherwise qualified nominees who were not selected as candidates in the first round due either to overlapping expertise with, or slightly less specific qualifications than, a selected candidate. These could be brought forward as candidates if they have the requisite expertise and are still willing to serve. This would require DEQ to repeat the public comment portion of the screening step, adding 1-2 months to the process.

**Attachments**

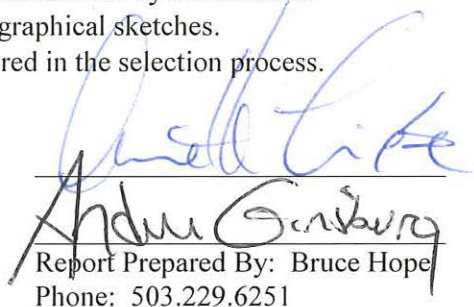
- Attachment 1 - Candidate names, affiliations, and expertise.
- Attachment 2 - Overview of candidate selection process
- Attachment 3 - Public comments received by the deadline.
- Attachment 4 - Candidate biographical sketches.
- Full list of candidates considered in the selection process.

**Available Upon  
Request**

Approved:

Section:

Division:

  
Report Prepared By: Bruce Hope  
Phone: 503.229.6251



Agenda Item D, Action Item: Air Toxics Science Advisory Committee  
 May 19-21, 2004 EQC Meeting  
 Attachment 1 - ATSAC Candidate Names, Affiliations, and Expertise

AIR TOXICS SCIENCE ADVISORY COMMITTEE Candidates for Membership							
NOMINEE	AFFILIATION	SELF-DESCRIBED EXPERTISE					
		MED	EPI	RSK	ESE	APS	TOX
Dr. Catherine Neumann	Oregon State Univ. (academic, Corvallis, OR)			•	•		•
Dr. Bill Lambert	Center for Research on Occupational and Environmental Toxicology (CROET), Oregon Health and Sciences Univ. (academic, Portland, OR)	•	•	•			•
Dr. Brian Patterson	Secor (consulting, Tualatin, OR)			•	•	•	
Ms. Candice Hatch	Bridgewater Group (consulting, Portland, OR)				•	•	
Dr. Patricia Toccalino	Oregon Graduate Institute, Oregon Health and Sciences Univ. (academic, Portland, OR)			•	•		•
Dr. Kent Norville	Air Sciences, Inc. (consulting, Portland, OR)			•		•	
Ms. Natalia Kreitzer	Southwest Clean Air Agency (government, Vancouver, WA)				•	•	

EXPERTISE KEY

MED Medicine (Physician) / Public Health  
 EPI Epidemiology / Biostatistics  
 RSK Risk Assessment  
 ESE Environmental Science / Environmental Engineering  
 APS Air Pollution Science (Pollution Modeling, Monitoring, Meteorology, Engineering)  
 TOX Toxicology

The process of identifying candidates for membership on the ATSAC had three steps: (1) solicitation, (2) screening, and (3) selection.

### **(1) SOLICITATION**

During the "solicitation" step, DEQ staff sought nominations for candidates from as wide a range of sources as was practical, including, but not limited to: (a) academic institutions, (b) government, public, and private organizations involved in work relevant to air toxics, (c) other federal, state, or local government agencies, (e) environmental and other non-governmental organizations, and (d) the public. In an effort to broaden the pool of experts from which panel members could be drawn, it was acceptable for any interested party to nominate themselves or others as candidates. Prospective candidates were asked to submit: a resume or curriculum vitae (CV) and a general biosketch which describes their: (a) current position, (b) educational background, (c) area of expertise (in one or more of the six specific disciplines listed above), (d) service on other advisory committees, and/or in professional societies, especially those associated with air toxics issues, (e) sources of recent grant and/or contract support, and (f) a statement of their availability during the next year. Submittals could be made by mail, email, or online. The submission period was open from November 10 to December 12, 2003, during which time a total of 12 nominations were received

### **(2) SCREENING**

During the "screening" step, which was completed on December 19, 2003, DEQ staff evaluated each of these 12 nominations on the basis of five criteria: (1) Level of expertise, knowledge, and experience in one or more of the six required disciplines, relative to the specific charge outlined above; (2) Availability and willingness to serve; (3) Scientific credibility and impartiality; (4) No actual or potential conflicts of interest (per ORS 240.020); and (5) Skills working in committees and advisory panels. DEQ's evaluation of each candidate, based on these criteria, resulted in a short list of candidates for membership on the committee. This short list was put out for public comment from February 9 to 27, 2004. Comments could be submitted by mail, email, or online. Only 2 comments were received by the deadline (Attachment 3), one requested additional information (which was supplied) and the other supported three of the candidates but neither was critical of any nominees' qualifications for service.

### **(3) SELECTION**

During the "selection" step, DEQ staff reviewed all information provided by each candidate, along with comments received from the public regarding their qualifications for service. The DEQ Air Quality Division Administrator then used this information, in consultation with DEQ staff, to nominate the seven candidates to the DEQ Director. The DEQ Director would now, with concurrence by the Environmental Quality Commission, formally appoint these seven candidates as the first ATSAC.





February 17, 2004

Bruce Hope, Ph.D.  
Air Quality Planning Section  
Department of Environmental Quality  
811 SW Sixth Avenue  
Portland, OR 97204

Subject: Comments Regarding the Air Toxics Science Advisory Committee  
Nominees

Dear Dr. Hope:

The Port of Portland (Port) appreciates the opportunity to review and comment on the short list of candidates nominated for the Air Toxics Science Advisory Committee (ATSAC) that will support the Oregon Air Toxics Program.

The Port recognizes that DEQ has made significant progress towards staffing the ATSAC with experienced persons. The biographies of the candidates demonstrate knowledge in a variety of subjects related to air quality and human health protection. However, it is not clear from the information provided whether the candidates have specific experience with the air quality issues related to mobile sources. Because the emissions inventory suggests that significant air quality challenges in the region are directly related to mobile sources, the Port believes the committee should include someone with transportation experience. The Port encourages DEQ to consider whether this expertise is missing from the current panel and, if it is, to add that skill set to the ATSAC.

Thank you for the opportunity to comment. The Port looks forward to working with DEQ on this important issue.

Sincerely,

Cheryl R. Koshuta  
Director, Environmental Affairs

cc: Chuck Shenk  
Steve Mrazek

RECEIVED  
FEB 23 2004  
AIR QUALITY DIVISION  
Dept. Environmental Quality

**From:** Kathryn VanNatta [nwppa@qwest.net]  
**Sent:** Friday, February 27, 2004 5:14 PM  
**To:** ATSAC  
**Cc:** Kathryn VanNatta  
**Subject:** ATSAC Nominations

NWPPA supports the following nominations for the ATSAC for their solid practical experience in risk assessment, environmental engineering and air pollution science. A thoughtful scientific approach to the ATSAC work is required and NWPPA believes these candidates will provide the on-the-ground working knowledge to assist the DEQ in its upcoming work.

Dr. Kent Norville  
Ms. Candice Hatch, P.E.  
Dr. Brian Patterson

Kathryn VanNatta  
NWPPA  
503-393-0007



**(1) Cathy M. Neumann**

Dr. Neumann is an Associate Professor in the Environmental Health and Safety Program (EHS) in the Department of Public Health at Oregon State University (OSU). She currently teaches graduate and undergraduate courses in toxicology, risk assessment, occupational health, air quality, and environmental health policy and regulations. Dr. Neumann received her Ph.D. from the University of Michigan in Biochemical Toxicology in 1989 and was a Postdoctoral Fellow in Immunotoxicology at OSU from 1989-1992. She then served as the State toxicologist for the Oregon Health Division (OHD) from 1992-1994. Her responsibilities at OHD included conducting human health risk assessments for a broad array of environmental contaminants and communicating potential risks to the public, state and local health officials and the media. She has authored over 40 peer-reviewed publications including journal articles, book chapters, and scientific abstracts in the areas of toxicology and environmental health. She is a member of the National Environmental Health Association.

**(2) William Lambert**

Dr. Lambert is an associate professor in the Department of Public Health and Preventive Medicine at Oregon Health and Science University and a scientist at the Center for Research on Occupational and Environmental Toxicology (CROET). He holds a Ph.D. from the Department of Epidemiology and Environmental Analysis at the University of California, Irvine and a BA degree from the Department of Biology at the University of California, Los Angeles. His areas of expertise are air pollution epidemiology, biostatistics, and toxicology. He has served on a number of advisory/regulatory committees, including: 1991-1994, City of Albuquerque/Bernalillo County Air Quality Control Board (Member, Vice-Chair, and Chair) 1993-1996, American Thoracic Society, Environmental Health Committee, primary author of State-of-Science review on ambient air pollution health effects 1997-2000, American Cancer Society Southwest Division, Skin Cancer Core Team (Chair) 1990-2000, American Lung Association, New Mexico Chapter, Air Quality Committee (Member and Chair) 1998-2000, Childhood Lead Poisoning Taskforce (Member) 1999-2000, Children's Indoor Environment Improvement Project (Member) 1999-2000, New Mexico Turning Point Environmental Health Initiative (Member) 2003-Present, Citizen's Advisory Group for Viewmaster Plant (invited expert). He is supported by grants from the NIEHS (National Institute of Environmental Health Sciences), ATSDR/CDC (Agency for Toxic Substances and Disease Registry), NIOSH (National Institute for Occupational Safety, NCI (National Cancer Institute) and Northwest Portland Area Indian Health Board.

**(3) Brian Patterson**

Dr. Patterson is currently employed as an environmental consultant with SECOR International Incorporated in Tualatin, Oregon. He holds a bachelor's degree in Chemistry and a doctorate degree in Physical Chemistry. His areas of expertise include risk assessment, air dispersion modeling, air receptor modeling, environmental regulatory review, and air quality permitting. He is currently finishing a year-long air emission risk assessment for the Lawrence Berkeley National Laboratory which has focused on dispersion modeling and risk/hazard assessment, worked with Oregon DEQ and public stakeholders to complete a similar study for the Swan Island area in Portland in 1997, and completed a graduate-level Risk Assessment and Toxicology course earlier this year.



#### **(4) Candice Hatch**

Ms. Hatch is an environmental engineer with more than 27 years of experience in air quality. Her work involves direction and performance of the technical analyses necessary for project evaluations. In addition, she has experience in task and project management for both industrial and governmental projects. Her air quality experience focuses on permitting of new and modified industrial facilities. She has prepared permit applications and obtained permits for facilities under Title V, prevention of significant deterioration (PSD), new source review, and state construction and operation permitting requirements. She has performed computer modeling, calculated emission inventories, and prepared air pollutant control equipment evaluations (i.e., BACT, RACT, and LAER) as required to satisfy these regulations. An understanding of regulations and the industry-agency negotiation process complements her technical skills. Examples of the variety of clients for whom she has performed air quality permitting services include steel mills, pulp and paper mills, wood products plants, aggregate mining and processing plants, asphalt refineries, petroleum terminals, silver mines, electronics manufacturers, magnetic tape manufacturers, biomass power plants, wood-treating plants, coal-fired power plants, and coal distribution facilities. Ms. Hatch has prepared environmental impact statements (EIS) for a mix of projects. She has evaluated several transportation projects, a gold mine, an oil pipeline system, an oil refinery, a hazardous waste treatment storage facility, solid waste landfills, wastewater treatment facilities, power plants and other industrial developments under national and individual state EIS requirements. Ms. Hatch has also written the air quality evaluations of proposed rocket launch facilities in Florida and Kwajalein. She holds a BS degree in Environmental Engineering from California Polytechnic State University and is a Registered Professional Engineer in Oregon and Ohio.

#### **(5) Patricia Toccalino**

Dr. Toccalino is currently an Assistant Professor in the Department of Environmental and Biomolecular Systems at the Oregon Health & Science University (OHSU). She received her B.S. in Environmental Health/Toxic Substance Control in 1987 from Oakland University in Rochester, MI, and her Ph.D. in Environmental Science and Engineering from the Oregon Graduate Institute in Beaverton, OR in 1992. Her areas of expertise are Risk Assessment, Environmental Science and Engineering, and Toxicology. She was recently elected to the Board of Directors (At-Large Academia Position) for the Pacific Northwest Chapter of the Society of Environmental Toxicology and Chemistry. She belongs to other professional organizations, several of which deal with toxic substances in air: Society for Risk Analysis (Dose-Response and Risk Communication Specialty Groups), American Chemical Society (Environmental Chemistry Division), Oregon Public Health Association, and the American Society for Microbiology. She has extensive experience serving on a variety of academic committees at OHSU including the Educational Policy Committee, Faculty Senate, Accreditation Committee, various Student Thesis and Advisory Committees, etc. Her recent sources of grant support include the U.S. Geological Survey and the National Science Foundation.

#### **(6) Kent Norville**

Dr. Norville is an Associate Atmospheric Scientist and project manager at Air Sciences Inc. in Portland, Oregon. He specializes in air quality dispersion modeling, data analysis, and model development. He has considerable experience with a wide variety of models for a number of



different public and private sector modeling applications. Applications include regulatory permit modeling, risk assessments, and environmental impact statements; dust fall and deposition studies; accidental release dispersion modeling; visibility modeling; water vapor cloud assessments; odor assessments; transportation conformity and hot spots dispersion modeling; meteorological data processing and assessments; specialized modeling; and custom model development. He has provided modeling assistance to a number of industrial clients, including aluminum producers, wood product facilities, pulp and paper facilities, metal processors, cement plants, mining operations, food producers, electric power producers, composting facilities, and waste treatment facilities. Dr. Norville is experienced with risk assessment methods and applications. He has worked on a variety of different risk and toxics projects, including EPA superfund sites, public municipalities, and private industries across the United States. He has conducted modeling analyses of many toxic compounds, including: BTEX compounds associated with refinery and fuel depots, lead and zinc impacts from contaminated road dust, particulate emissions from open-pit cement operations, PAH and HF emissions from smelters, vinyl chloride and TEC emissions from treatment plants, solvent emissions from semiconductor facilities, and dioxin and heavy metal emissions from hazardous waste incinerators. Much of the modeling work has been used to show compliance with Acceptable Source Impact Levels (e.g., Washington State), 1-in-a million cancer risks, chronic and acute hazard indexes (e.g., California's AB2588 program), and direct threshold levels used to assess both public and on-site worker health. He holds a Ph.D. degree in geophysics from the University of Washington and a B.S. degree in physics from the California Polytechnic University, San Luis Obispo.

**(7) Natalia Kreitzer**

Ms. Kreitzer received a B.S. degree in chemical engineering from Oregon State University and has been employed as an air quality engineer, first as a consultant and more recently as an air quality regulator. Her relevant engineering experience includes knowledge of sources of toxic emissions to the air, emission control strategies and current and future EPA regulations affecting toxics air emissions. For the past six years she has worked for the Southwest Clean Air Agency (SWCAA) in Vancouver, Washington and has been the air toxics coordinator at SWCAA since 2000. In addition, her duties include writing Air Discharge Permits for industrial facilities, inspecting industrial facilities and determining compliance with all applicable air regulations including Washington's toxic rule "Controls for New Sources of Toxic Air Pollutants." In 2002, she participated as a member of Washington's Mercury Chemical Action Plan Advisory Committee and assisted in the development of a plan to reduce mercury in the state of Washington.

State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director *S. Hallock*  
**Subject:** Agenda Item E, Rule Adoption: Proposed Noise Rules for Wind Energy Facilities  
May 20-21, 2004 EQC Meeting

**Department Recommendation** The Department recommends that the Environmental Quality Commission (EQC, Commission) adopt proposed rules to make application of noise standards to wind facilities more streamlined and easier to administer as presented in Attachment A.

**Background and Need for Rulemaking** In 1971, the state legislature directed DEQ to establish noise control regulations for categories of noise emission sources, including motor vehicles and aircraft. The regulations also establish standards, provide exception and variance procedures, and authorize enforcement.

In 1991, DEQ stopped administering the Noise Control Program. The agency was faced with a significant reduction in General Fund support, and, as a result of negotiations, the Legislature approved an agency budget that did not include funding for the noise program. Although DEQ's Noise Control Program has been suspended, the noise statutes and administrative rules remain in force. Regulated noise sources continue to be legally responsible for complying with the state noise laws. Enforcement now falls under the responsibility of local governments, and in some cases, other agencies. For example:

- Local governments may enact and enforce the state standards, or they may adopt their own standards and enforcement as long as the standards are consistent with or exceed the state standards.
- The Energy Facility Siting Council (EFSC), staffed by the Oregon Department of Energy (Energy), is authorized to approve the siting of large energy facilities in the state. In general, before a large energy facility may be built in Oregon, the developer must apply for a site certificate from EFSC. The applicant must show that it will comply with all applicable statutes and administrative rules, including DEQ's noise rules.



EFSC's unique siting authority includes the ability to determine the facility's compliance with most other applicable state agency regulations. Generally, agencies process their respective approvals or permits related to the source within EFSC's process and timeframes. In the case of noise regulations, however, DEQ no longer has a program. Therefore, EFSC directly administers DEQ's noise rules. Smaller energy facilities that are exempt from EFSC's authority may be subject to county noise regulations, and they must comply with the state regulations.

The EQC did not consider the special characteristics of wind energy facilities when the noise control rules were adopted in 1974. Under the existing noise rules, demonstrating compliance is more complicated and costly for wind energy facilities than it is for other regulated industrial sources and competing types of electric generating facilities. Consequently, the standards are difficult to administer for wind facilities. The proposed rules will maintain the public policy of protecting noise sensitive properties from excessive noise emissions without unnecessarily constraining the development of renewable energy sources. Wind and other renewable energy can reduce the amount of pollution that otherwise would occur by using fossil-fueled power plants.

Energy is conducting this rulemaking because of its role in administering and enforcing DEQ's noise rules in the energy facility siting process established by statute. Because DEQ's Noise Program has been suspended, DEQ lacks authority and funding to work on noise-related issues.

**Effect of Rule**

The proposed rules:

- Establish an assumed background ambient noise level of 26 dBA (decibels) or the actual ambient background level (see Attachment A, p. 2).
- Allow an increase of more than 10 dBA (as long as the Table 8 limits are not exceeded, see Attachment G) if the landowner has executed an easement to authorize the wind energy facility to increase the ambient noise levels (see Attachment A, p. 2).
- Determine the procedure and measurement point for determining if the wind energy facility will satisfy the ambient noise standard where a landowner has not waived the standard (see Attachment A, p. 2-3).
- Add a provision clarifying the Commission's suspension of the administration of the noise program (see Attachment A, p. 4).

<b>Commission Authority</b>	The Commission has authority to take this action under ORS 467.030.
<b>Stakeholder Involvement</b>	Energy held two informal advisory group meetings from August 2003 through October 2003. The purpose of the forums was to discuss and solicit input on how the state noise standards could better address the unique characteristics of wind energy. The group included representatives from wind industry, local government, professional noise consultants, and other interested parties (see Attachment C).
<b>Public Comment</b>	The formal comment period extended from January 1, 2004 through March 12, 2004. Four hearings were held on the proposed rules. Hearings were held in Portland and The Dalles on February 9, 2004, in Tillamook on February 23, 2004, and in Pendleton on March 9, 2004. The comment period was extended through the Commission's meeting of April 8 and 9, 2004 so that rulemaking participants could address the Commission directly and give their comments on the Draft Hearings Officer Report issued on March 22, 2004. Results of public input are provided in Attachment B.
<b>Key Issues</b>	<p>Energy's Hearings Officer Report (Attachment B, p. 10) includes a detailed discussion of these issues and recommendations based on public comment. A summary of key issues were:</p> <ol style="list-style-type: none"><li>1) Maintaining Table 8 limits on all wind energy facilities. The Table 8 test (Attachment G) refers to a table that lists maximum permissible statistical noise limits. Noise emitted from industrial sources must not exceed the Table 8 limits.</li><li>2) Providing that the background baseline is 26 dBA (decibels) for ambient wind energy facility noise unless evidence shows that the actual background level is higher. Establishing a baseline of 26 dBA provides a uniform approach in determining impacts of wind energy facilities.</li><li>3) Providing that any willing landowner may waive the ambient noise degradation standard for his or her property, while maintaining the Table 8 limits; such waiver must be recorded</li></ol>



as an easement or covenant with the county to accompany the legal title to the property.

- 4) Creating a standard protocol based on IEC 61400-11, developed by the International Electrotechnical Commission, the recognized international body for standards development activities. This standard would be used for modeling and measuring noise impacts from wind energy facilities to ensure compliance with the Commission's standards.

**Next Steps** Once adopted, these rules will be filed with the Secretary of State. The Department of Energy will be responsible for implementing the rules as they apply to the approval of site certificates for large wind energy facilities.

**Attachments**

- A. Proposed Rule Revisions
- B. Hearings Officer Report (includes Summary of Public Comments and Agency Responses)
- C. Informal Advisory Group List
- D. Relationship to Federal Requirements Questions
- E. Statement of Need and Fiscal and Economic Impact
- F. Land Use Evaluation Statement
- G. Table 8 – Statistical Noise Limits for Industrial and Commercial Sources

**Available Upon Request**

1. Cover Memorandum from Public Notice
2. Written Comment Received

Approved:

Division:



Report Prepared By: Rachel Sakata  
503-229-5659

Roberta Young  
503-229-6408

DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION 35

NOISE CONTROL REGULATIONS

Proposed Amendments

340-035-0035

Noise Control Regulations for Industry and Commerce

(1) Standards and Regulations:

(a) Existing Noise Sources. No person owning or controlling an existing industrial or commercial noise source shall cause or permit the operation of that noise source if the statistical noise levels generated by that source and measured at an appropriate measurement point, specified in subsection (3)(b) of this rule, exceed the levels specified in Table 7, except as otherwise provided in these rules.

(b) New Noise Sources:

(A) New Sources Located on Previously Used Sites. No person owning or controlling a new industrial or commercial noise source located on a previously used industrial or commercial site shall cause or permit the operation of that noise source if the statistical noise levels generated by that new source and measured at an appropriate measurement point, specified in subsection (3)(b) of this rule, exceed the levels specified in Table 8, except as otherwise provided in these rules. **For noise levels generated by a wind energy facility including wind turbines of any size and any associated equipment or machinery, subparagraph(1)(b)(B)(iii) applies.**

(B) New Sources Located on Previously Unused Site:

(i) No person owning or controlling a new industrial or commercial noise source located on a previously unused industrial or commercial site shall cause or permit the operation of that noise source if the noise levels generated or indirectly caused by that noise source increase the ambient statistical noise levels,  $L_{10}$  or  $L_{50}$ , by more than 10 dBA in any one hour, or exceed the levels specified in Table 8, as measured at an appropriate



measurement point, as specified in subsection (3)(b) of this rule, **except as specified in subparagraph (1)(b)(B)(iii).**

(ii) The ambient statistical noise level of a new industrial or commercial noise source on a previously unused industrial or commercial site shall include all noises generated or indirectly caused by or attributable to that source including all of its related activities. Sources exempted from the requirements of section (1) of this rule, which are identified in subsections (5)(b) - (f), (j), and (k) of this rule, shall not be excluded from this ambient measurement.

**(iii) For noise levels generated or caused by a wind energy facility:**

**(I) The increase in ambient statistical noise levels is based on an assumed background L50 ambient noise level of 26 dBA or the actual ambient background level. The person owning the wind energy facility may conduct measurements to determine the actual ambient L10 and L50 background level .**

**(II) The “actual ambient background level” is the measured noise level at the appropriate measurement point as specified in subsection (3)(b) of this rule using generally accepted noise engineering measurement practices. Background noise measurements shall be obtained at the appropriate measurement point, synchronized with windspeed measurements of hub height conditions at the nearest wind turbine location. “Actual ambient background level” does not include noise generated or caused by the wind energy facility.**

**(III) The noise levels from a wind energy facility may increase the ambient statistical noise levels L10 and L<sub>50</sub> by more than 10 dBA (but not above the limits specified in Table 8), if the person who owns the noise sensitive property executes a legally effective easement or real covenant that benefits the property on which the wind energy facility is located. The easement or covenant must authorize**

the wind energy facility to increase the ambient statistical noise levels,  $L_{10}$  or  $L_{50}$  on the sensitive property by more than 10 dBA at the appropriate measurement point.

(IV) For purposes of determining whether a proposed wind energy facility would satisfy the ambient noise standard where a landowner has not waived the standard, noise levels at the appropriate measurement point are predicted assuming that all of the proposed wind facility's turbines are operating between cut-in speed and the wind speed corresponding to the maximum sound power level established by IEC 61400-11 (version 2002-12). These predictions must be compared to the highest of either the assumed ambient noise level of 26 dBA or to the actual ambient background  $L_{10}$  and  $L_{50}$  noise level, if measured. The facility complies with the noise ambient background standard if this comparison shows that the increase in noise is not more than 10 dBA over this entire range of wind speeds.

(V) For purposes of determining whether an operating wind energy facility complies with the ambient noise standard where a landowner has not waived the standard, noise levels at the appropriate measurement point are measured when the facility's nearest wind turbine is operating over the entire range of wind speeds between cut-in speed and the windspeed corresponding to the maximum sound power level and no turbine that could contribute to the noise level is disabled. The facility complies with the noise ambient background standard if the increase in noise over either the assumed ambient noise level of 26 dBA or to the actual ambient background  $L_{10}$  and  $L_{50}$  noise level, if measured, is not more than 10 dBA over this entire range of wind speeds.

(VI) For purposes of determining whether a proposed wind energy facility would satisfy the Table 8 standards, noise levels at the appropriate measurement point are predicted by using the turbine's maximum sound power level following procedures established by IEC 61400-11 (version 2002-12), and assuming that all of the proposed wind facility's turbines are operating at the maximum sound power level.



(VII) For purposes of determining whether an operating wind energy facility satisfies the Table 8 standards, noise generated by the energy facility is measured at the appropriate measurement point when the facility's nearest wind turbine is operating at the windspeed corresponding to the maximum sound power level and no turbine that could contribute to the noise level is disabled.

(c) Quiet Areas ... (no changes)

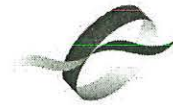
340-035-0110

Suspension of Commission and Department Responsibilities

In 1991, the Legislative Assembly withdrew all funding for implementing and administering ORS Chapter 467 and the Department's noise program. Accordingly, the Commission and the Department have suspended administration of the noise program, including but not limited to processing requests for exceptions and variances, reviewing plans, issuing certifications, forming advisory committees, and responding to complaints. Similarly, the public's obligations to submit plans or certifications to the Department are suspended.



**Oregon**  
Theodore R. Kulongoski, Governor



**OREGON**  
DEPARTMENT OF  
**ENERGY**

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*Attachment B*

Final Hearings Officer Report to the  
Oregon Environmental Quality Commission  
On Noise Rulemaking Standards for Wind Energy Facilities

(amending OAR 340-035-0035 and adopting new OAR 340-035-0110)

by  
Michael W. Grainey, Director  
Oregon Department of Energy  
April 19, 2004

**SUMMARY OF CHANGES FROM DRAFT HEARINGS OFFICER REPORT**

This Final Hearings Officer Report makes a few changes from the Draft Report issued on March 22, 2004, as a result of discussion at the Environmental Quality Commission meeting of April 9, 2004. These changes include the following:

- 1) reference to a specific version of the International Electrotechnical Commission's (IEC) protocol for measuring noise generated by wind turbines, IEC 61400.
- 2) language as to which legal instruments can be used for waiver of the ambient noise standard by a willing landowner.
- 3) a provision making clear that the noise rule provisions apply to wind energy facilities of any size.
- 4) reference to the IEC protocol in a manner that does not restrict the existing ability of a person to bring an action to assure compliance with the Commission's noise rules.

In addition some minor editing and clarifications which do not change the substance of the recommendations are also included in this Final Report.

**I. INTRODUCTION**

Nature of This Rulemaking

This is a joint rulemaking by the staff of the Oregon Department of Energy (ODOE) and the Oregon Department of Environmental Quality (DEQ) to amend the existing noise



control regulations of the Environmental Quality Commission (the Commission) to explicitly address requirements and standards for wind energy facilities.

As a result of an inter-agency agreement between ODOE and DEQ, staff from ODOE prepared the first draft of the rules; ordinarily, DEQ would staff a rulemaking proceeding for the EQC. However, at present, DEQ does not have authority or funding to work on noise-related issues. More than 12 years ago, the Legislature eliminated funding for the program, and DEQ enforcement of the State noise program was suspended.

Before beginning the formal rulemaking, ODOE staffed an informal period of comment and discussion with interested parties. The informal phase began in August 2003 and continued through October 2003. The proposed rules were submitted to the Secretary of State's Office and were posted on the ODOE website on 12/15/2003 ; they are referred to as the 12/15/03 proposed rules in this report. The 12/15/2003 proposed rules were published for hearing in the Secretary of State's Bulletin on January 2, 2004. ODOE staff conducted hearings and prepared this Hearings Officer report for the Commission to consider.

#### Summary of Hearings Officer Recommendations

As a result of the record developed in this proceeding, I recommend that the Commission adopt noise rules specific to wind energy facilities. I also recommend changes in the 12/15/03 proposed rules based on information provided by written and oral comments. Briefly, the revised rules proposed in this Hearing Officer's report would do the following:

- 1) Maintain the Commission's Table 8 limits on all wind energy facilities.
- 2) Provide that the background baseline is 26 dBA for ambient wind energy facility noise unless evidence shows that the actual background level is higher.
- 3) Provide that any willing landowner may waive the ambient noise degradation standard for his or her property, while maintaining the Table 8 limits; such waiver must be recorded with the county to accompany the legal title to the property.
- 4) Create a standard protocol based on IEC 61400, developed by the International Electrotechnical Commission, the recognized international body for standards development activities. This standard would be used for modeling and measuring noise impacts from wind energy facilities to ensure compliance with the Commission's standards.
- 5) Add a provision clarifying the Commission's suspension of the administration of the noise program.

The reasons for my recommendations are explained below, along with a more complete description of the changes. Also included in this package is a set of the revised proposed changes to the Commission's rules. A summary of all the written and oral comments is provided as an attachment to this report.



## **II. BACKGROUND AND REASON FOR RULEMAKING**

### **Energy Facilities and the Commission's Noise Standards**

The Commission determines the level of allowable noise impact through the noise regulations adopted in OAR Chapter 340, Division 35. The rules in OAR 340, Division 35, make up a statewide program of noise control to protect the health, safety and welfare of Oregon citizens from the hazards and deterioration of the quality of life imposed by excessive noise emissions. These rules implement Oregon law under ORS Chapter 467.

The Energy Facility Siting Council (EFSC) makes decisions whether to approve large energy facilities. EFSC's review process is a centralized process, consolidating the permits which would otherwise be issued by other state and local agencies. In addition to standards developed by EFSC, Oregon law gives EFSC authority to apply the standards of other state agencies, including the Commission's state noise rules, in the siting of energy facilities. "Energy facilities," which are within EFSC's jurisdiction as defined by ORS 469.300, include electric generation facilities above specified generation capacities. ODOE provides staff services to EFSC, including the technical review of applications for EFSC approval.

When a proposed facility is within the jurisdiction of EFSC, the developer must obtain a site certificate from EFSC before beginning construction of an energy facility. To issue a site certificate, Oregon law requires EFSC to apply the Commission's noise standards to the proposed facility and decide whether the facility would comply with those standards.

In general, wind power projects that have an average electric generating capacity less than 35 megawatts do not need site certificate approval from EFSC. EFSC does not administer or enforce the noise control regulations for these smaller wind power projects. Instead, local land use approval is typically required before construction. Local governments may address noise impacts from smaller wind power projects under their land use ordinances.

### **Why ODOE Believes Wind Energy Facilities Need a Specific Noise Standard Provision**

ODOE supports the development of electric generation from the state's wind resources as part of Oregon's energy policy goal in ORS 469.010: "to promote the efficient use of energy resources and to develop permanently sustainable energy resources." Wind energy facilities create no polluting emissions. Greater use of wind instead of fossil-fueled power plants can avoid the pollution created by use of oil, coal and natural gas to generate electricity.

Wind energy facilities are also generally quieter than fossil-fueled power plants, and other industrial facilities. However, wind energy facilities, if improperly sited, can produce noise in excess of the noise levels allowed under the Commission noise standards. Wind energy facilities generate noise from the turbine generator and gearbox as well as from the effect of the turbine blades cutting through the air.

Although the rules that are currently in place address noise emissions from industrial noise sources, the dependence of a wind energy facility on wind speed, both to generate power and to generate noise, makes wind energy facilities different from other types of industrial



facilities. The Commission did not consider wind energy facilities as a potential noise source when it initially adopted the rules in 1974. The Commission has not amended the rules to address wind energy facilities before now.

The purpose of this rulemaking proceeding is to recognize the special characteristics of wind energy facilities while protecting the public from unreasonable or harmful noise levels.

#### Application of the Current Noise Standards to Wind Energy Facilities

Under the current rules, a new noise source on a previously unused site must comply with two standards. These two standards are known as the "Table 8 test" and the "ambient degradation test."

The Table 8 test refers to a table that lists maximum permissible statistical noise limits. Noise emitted from industrial sources must not exceed the Table 8 limits. In addition, under the ambient degradation test, noise from industrial sources must not increase ambient noise levels by more than 10 dBA (decibels) in any one hour at the noise sensitive property.

To determine whether a new noise source meets the ambient degradation test, the rules require measurement of the *background* ambient noise level; that is, the ambient noise at the noise sensitive property without the new noise source present. The background level is then compared with the new ambient noise level, which includes the noise from the new noise source. By comparing these two ambient noise levels, one can determine whether the noise from the new source has increased the ambient noise level by more than 10 dBA.

Under the current rules, measurement of background ambient noise levels must conform to the Sound Measurement Procedures Manual (NPSC-1), which specifies that measurements "shall not be taken when the wind speed exceeds 10 mph" at the noise sensitive property. For most industrial noise sources, measuring ambient levels under low-wind conditions is not complicated.

The current noise rules do not address a source of noise that is dependent on, and varies with, the wind. Unlike other industrial noise sources, wind energy facilities produce noise only when the wind speed is high enough at the wind turbine to allow the turbine to begin generating electricity. This is called the wind turbine "cut-in speed." As the wind speed increases up to a certain point, turbines produce higher noise levels. At very high wind speeds, turbines automatically shut down to avoid turbine damage ("cut-out speed"). Thus, noise emissions that may be subject to the existing noise control regulations occur only under those wind conditions that are within the operating range of the wind turbine.

To demonstrate compliance with the ambient noise rules, the developer of a wind energy facility must provide noise measurement data under very specific wind conditions. It is difficult to predict when those conditions will occur. Collecting the data needed for demonstrating compliance with the current noise standards is complicated and more expensive for a wind energy facility than it is for a gas-fired power plant.

The Stateline Wind Project in Umatilla County is the only wind energy facility in Oregon that has applied to EFSC for a site certificate. EFSC has approved a site certificate for Stateline and has approved two subsequent amendments that added to the total number of



wind turbines that can be built at Stateline. In addressing the noise issue, EFSC applied the current noise rules for a "new industrial source located on a previously unused site" (OAR 340-035-0035). Testimony in this rulemaking proceeding indicated that the current ambient noise rule required the Stateline developer to reduce the number of wind turbines installed, without any benefit to residences or landowners.

### **III. RULEMAKING PROCESS**

Four hearings were held on the 12/15/03 proposed rules. Hearings were held in Portland and The Dalles on February 9, 2004, in Tillamook on February 23, 2004, and in Pendleton on March 9, 2004. Public comment was accepted on the 12/15/03 proposed rules through March 12, 2004. The comment period was extended through the Commission's meeting of April 8 and 9, 2004 so that rulemaking participants could address the Commission directly and give their comments on the Draft Hearings Officer Report issued on March 22, 2004.

### **IV. SUMMARY OF THE DECEMBER 15, 2003 PROPOSED RULES**

The 12/15/03 rules proposed by ODOE recommended the following changes in the current noise rules:

- 1) In determining the increase in the ambient statistical noise level, the background baseline is assumed to be 26 dBA. The wind developer would have the option to show that actual ambient background level is greater than 26 dBA.
- 2) The "actual ambient background level" is the measured noise level at the noise sensitive property, when the nearest turbine's hub-height wind speed is at turbine cut-in speed. This would establish a standardized protocol: i.e., a wind speed equal to the speed which starts the turbine (cut-in speed) at the turbine nearest the noise sensitive property.
- 3) The noise levels from a wind energy facility may increase the ambient statistical noise level by up to 15 dBA if the landowner where the wind turbine would be located consents. The consent must be in writing describing the increased condition of environmental noise due to the wind energy facility. The property where the wind turbine would be located must be the same parcel of land owned by the landowner who is agreeing to the increased noise level. This proposal was intended as a compromise to allow landowners some ability to waive ambient noise standards. Combined with the new exception provided in 6) below, the 12/15/03 proposed rules would provide more flexibility for landowners than current noise standards provide, while still complying with Table 8 limits.
- 4) For determining compliance with the ambient degradation noise standards the noise levels are predicted assuming that all turbines in the wind energy facility are operating at cut-in speed. This provision establishes a standardized protocol for modeling the



expected noise levels and for determining compliance after a wind energy facility has been built.

- 5) For determining compliance with Table 8, a wind energy facility is modeled and monitored for compliance at a hub-height wind speed of 16 meters per second (about 35 mph). This establishes a uniform method of determining compliance and takes into account the variation in turbine height and size that now exist.
- 6) An exception which can be issued by DEQ (if DEQ were implementing the program, and by EFSC for large wind facilities) for ambient noise levels exceeding 10 dBA up to 15 dBA is authorized for a landowner where the wind turbine is not located on the landowner's property. To request this exception, landowner written consent must be provided as in (3) above. In contrast to (3) above, an exception under this paragraph would have to be granted by DEQ (or by EFSC for large facilities) for the landowner's consent to become operative.
- 7) A provision is added clarifying the Commission's suspension of its administration of the entire noise program, including processing requests for exceptions, variances and other administrative procedures. This provision was included at DEQ's request.

## **V. SUMMARY OF MAJOR POINTS IN COMMENTS**

### **Introduction**

The testimony largely fell into three broad categories. Most people who testified supported establishing noise standards for wind energy facilities, but felt that the 12/15/03 rules only partially accomplished the necessary changes. Some persons testified in support of the changes proposed in the 12/15/03 draft but they also believed that further changes beyond the 12/15/03 draft were not necessary to accommodate wind. A third perspective was that the current Commission noise rules were adequate and that wind needed no special rules; these persons opposed any rules changes including the 12/15/03 draft. Each of these perspectives is summarized in more detail below.

### **Testimony of Those Supporting New Standards for Wind Energy Facilities**

Many people who testified, including wind energy supporters, farmers, ranchers and environmental organizations, supported the purpose of the rulemaking to establish more workable standards for wind energy facilities, but they believed that changes in the 12/15/03 draft did not effectively accomplish this goal. They supported the establishment of a baseline at 26 dBA and some of the other changes in the 12/15/03 draft. However, they believe that the rules should be amended further to provide the following:

- 1) any owner of property impacted by noise may consent to waive the ambient degradation rule on their property. The increase in ambient degradation can exceed 10 dBA up to any level so long as the levels in Table 8 continue to be

met. Any affected landowner, whether or not the wind turbines would be located on that land, may exercise this waiver. The waiver would be recorded as an easement on the property and would not require a separate memorandum describing environmental conditions required by the 12/15/03 draft;

- 2) the existing ambient rule of a 10dBA limit would apply to any landowner who did not wish to waive the ambient rule;
- 3) the Table 8 maximum limits would still apply to all wind energy projects.

These wind energy supporters also believe that the rules should address the pre-project L10, background level. (L10 refers to a noise level that is exceeded 10% of the time. L50 is a noise level exceeded 50% of the time.) They support deleting the L10 portion of the ambient degradation standard for wind project for two reasons: 1) the continuous nature of the noise source for wind facilities and; 2) meeting the L50 limit also meets the L10 requirements.

These wind energy supporters oppose the 12/15/03 rules' exception process from the noise rules. The exception would have to be approved by EFSC for large facilities, or by DEQ for small facilities, if the landowner gives written consent which must be recorded with the property deed. The exception would allow an increase in noise level of 15 dBA, resulting in a maximum noise level of 41 dBA.

These commenters believe that the exception is not helpful for providing certainty to wind developers because the exception is discretionary, i.e. an exception may not necessarily be granted even if the landowner is willing to agree. They believe that their proposal to allow any affected landowner to agree to waive the noise ambient standards as long as the Table 8 limits are met, is more workable and provides regulatory certainty for wind developers.

They are also concerned that the exception process would not be available as a practical matter since the 12/15/03 rules also provide that DEQ has suspended all requests for exceptions (as well as other procedures) under the noise program because of the lack of funding. They believe it is doubtful whether counties are delegated the authority to grant such exemptions in making local land use determinations.

Wind developers and their supporters also believe that the 12/15/03 draft provision to determine compliance by establishing a wind speed of 16 meters per second (35 mph) at hub height is not workable because sound power data at that wind speed are generally not available from the manufacturer. They believe sound power levels established according to IEC 61400 at the standard wind speed of 8 m/sec at 10 meter height are sufficient to determine compliance with Table 8. They indicate that turbine sound power levels determined in accordance with IEC 61400 are readily available from all manufacturers. They also suggest some clarification of compliance measurement conditions, so that noise generated by the wind alone (and not by the energy facility), does not constitute non-



compliance; and they believe that references to "indirect noise" are vague and should be eliminated.

Testimony of Those Supporting the 12/15/03 Draft Rules.

Some persons supported the 12/15/03 draft rules as more than adequate to take wind's uniqueness into account; they would not support the changes proposed by the prior group of commenters on the 12/15/03 draft rules. They also believe that a waiver of the ambient noise standards by individual landowners through agreements with developers is not justified. They further believe that the existing process the Commission has to grant an exemption is a practical and workable alternative and provides greater protection to the public.

One witness had worked for DEQ for many years and is now consulting for private industry on noise compliance issues. He supports the 12/15/03 draft rules as a reasonable accommodation to wind, while maintaining the basic DEQ noise rules. He proposed two amendments: 1) to clarify that the DEQ rules apply to large wind energy facilities sited by EFSC and to smaller wind energy facilities sited by local governments. Only residential scale wind turbines should be exempt from the DEQ noise standards. 2) to determine compliance the proposed rules require determination only at 16 meters/sec (35mph). He also suggested the rules should indicate a specified height level and a wind speed "not to exceed 16 meters/sec".

Another witness who is an acoustical engineer also supports the 12/15/03 draft in general but supports some other changes. He suggested that tests to determine compliance with the ambient standard be conducted at a range of 14-16 meters/second rather than just at 16 meters/second. He also supports a local government option to grant an exception to the ambient noise standard under the same conditions as provided for EFSC and DEQ in the 12/15/03 draft. He also suggested that DEQ provide guidance as to how local governments can use the noise standards, given the suspension of Commission and DEQ responsibilities in OAR 340-035-0110. He further believes the exception should have a requirement explaining why the noise regulation cannot be met in order for an exception to be granted.

In general, he supports the requirement that DEQ must issue an exception through an administrative process as the 12/15/03 draft provides, for a waiver of the ambient noise standard. He believes that the administrative process through DEQ provides added protection to the general public which would not be present in a private agreement between any landowner and a developer. He believes that the limited waiver provided to the landowner on whose land the turbine would be located as proposed in the 12/15/03, draft provides enough flexibility for wind and should not be expanded to any affected landowners as some commenters suggested.

Testimony of Those Not Supporting Separate Noise Standards for Wind

Some persons who testified felt that wind should be treated the same as other industrial noise generators and that there was no justification for any rule changes to treat wind differently. Two acoustical engineers and an energy architect provided testimony from this perspective.

One acoustical engineer stated that Oregon's current noise standards are some of the best in the country. He sees no need to make any changes in Oregon's noise standards. He does not support any of the changes in the 12/15/03 draft. He believes that the current Commission exception process adequately provides flexibility for increases of noise levels; he believes there is no justification to treat wind facilities different from other industrial facilities or other energy facilities which create noise. He believes that noise levels for wind can be accurately monitored and the ambient levels determined. As such there would be no justification for assuming the background of 26 dBA proposed by the 12/15/03 draft. He also indicated that the current process of variances from noise standards is workable, both for DEQ and for local governments.

Neither acoustical engineer supports the proposal to let landowners waive noise standards. They believe that waiver could have adverse impacts on neighboring persons. They also do not support any of the provisions in the 12/15/03 draft establishing special measuring requirements and procedures for measuring wind noise. They believe that all industrial commercial facilities have nuances of their operations that need to be taken into account in measuring noise levels. They believe that the current Commission rules provide for those nuances and wind facilities are no different than other facilities and should not be given special treatment compared to other industrial noise sources.

An architect involved in energy efficiency design and other energy projects also opposes any changes to the current noise rules. He believes that adverse environmental and health impacts may have been caused by wind projects. He claimed there have been numerous complaints about noise from people living near wind energy facilities. He also questions whether wind can be a reliable energy technology, and encourages greater reliance on energy efficiency to avoid the need for wind energy facilities. Because of the adverse impacts of wind and the lack of reliability of wind, he does not support any of the proposed changes to the noise standards for wind energy.

Other persons provided similar written comments opposing any changes in the current noise standards. They believe that there is no justification for treating wind energy facilities different from other industrial noise sources. They also believe that adverse health and environmental impacts could occur from changing the noise standards for wind energy facilities.



## **VI. HEARING OFFICER'S RECOMMENDATIONS: RESPONSE TO COMMENTS**

The revised rules proposed in this Hearing Officer's report would do the following:

- 1) Maintain the Commission's Table 8 limits on all wind energy facilities.
- 2) Provide that the background baseline is 26 dBA for ambient wind energy facility noise.
- 3) Provide that any willing landowner may waive the ambient noise degradation standard for his or her own property. Such waiver must be recorded with the county to accompany the legal title to the property.
- 4) Create a standard protocol based on IEC 61400 for modeling and measuring noise impacts from wind energy facilities to ensure compliance with the Commission's standards.
- 5) Add a provision clarifying the Commission's suspension of DEQ's administration of the noise program.

Each of these issues is discussed below.

### *1) Maintain the Commission's Table 8 limits on all wind energy facilities.*

Virtually everyone who testified urged continued applicability of the Table 8 standard for wind energy facilities. No one urged that Table 8 not continue to apply to wind. In particular, the L50 level of 50 dBA was supported by everyone, including those who wished to have the ability to waive the ambient standards, those who supported the 12/15/03 draft, and those who opposed any changes in the Commission's current noise rules. There is no reason, based on the hearing record, to change the applicability of Table 8 to wind or to modify the provisions in Table 8 for wind energy facilities.

### *2) Provide that the background baseline is 26 dBA for ambient wind energy facility noise.*

This was proposed in the 12/15/03 rules. Establishing a base line of 26dBA provides a uniform approach in determining impacts of wind energy facilities. It also addresses the problem of measuring a background where windspeed may be less than the speed necessary to start a wind energy facility (cut-in speed). This provision also eliminates technical difficulties of incurring wind noise at very low levels. Only one person of the more than 60 persons who testified opposed establishing a baseline of 26 dBA as a minimum ambient sound level. All of the other witnesses who addressed this issue either expressly supported 26 dBA or had no objection to it. While one acoustical engineer said that it was possible to measure at a lower level, he believed that 26 dBA is a reasonable level to assume as the minimum ambient sound level.

The level of 26 dBA is less than a soft whisper from 5 feet away (source: Beranek 1998). Requiring actual levels of measurement below this level is unnecessary, given the unlikely

benefit and the degree of difficulty in measuring accurately at those low levels. I believe that 26 dBA is a reasonable assumption for baseline of background levels. Where there is evidence that the actual background is higher, the proposed rules would provide an applicant the opportunity to demonstrate the actual minimum level.

- 3) *Provide that any willing landowner may waive the ambient noise degradation standard for his or her property. Such waiver must be recorded with the county to accompany the legal title to the property.*

The draft of 12/15/03 provided that a waiver by the landowner where the wind turbines would be located could waive the ambient degradation rule up to a 15 dBA increase over background. This would effectively allow a qualifying landowner to raise the noise level up to 41 dBA. Other landowners who also wished to allow noise from wind machines to affect their property could agree to a similar increase, but only upon approval of an exception by EFSC or DEQ. The 12/15/03 draft suggested that a 15 dBA increase was effectively a tripling of noise levels, and a 10 dBA increase a doubling of noise levels.

However, most people who commented, including landowners, renewable resource advocates and wind developers, believe the waiver should be afforded to any landowner, as long as the limits of Table 8 are maintained. I agree and recommend this position to the Commission.

Since the waiver by the landowner is voluntary, the ambient noise degradation requirements would continue to apply unless a landowner agreed to a waiver. I see no reason to distinguish between a landowner who owns the land where the turbines would be located and any other landowner impacted by the noise standards. If all affected landowners have the option to enter into a consent agreement with the wind developer, this provides certainty and a simpler process than the 12/15/03 draft proposal. The landowner who is unwilling to enter into such agreement still has the full protection of the ambient noise degradation standard, regardless of what his/her neighbor has done. It would make no difference to the level of protection of the ambient noise degradation standard whether the neighboring landowners who do waive the standard own the land where the wind turbines are located or not.

There is also a question whether the proposal to allow landowners to seek an exemption from DEQ is practical. As the new provision 340-035-0110 indicates, neither the Commission nor DEQ will process any requests for exemptions nor other administrative actions related to the noise standard. While EFSC may be able to grant exemptions for large wind facilities, smaller facilities would be approved by local governments. Not all local jurisdictions have adopted the Commission's noise standards. Even for those which have, it is not clear whether they may grant an exemption from the Commission rules.

I also agree that all affected landowners willing to waive the noise ambient standard should be able to do so as long as the Table 8 limits are maintained. The 12/15/03 draft allows only an increase in ambient noise of 15 dBA through the consent agreement waiver. While



an increase of 15 dBA may be a tripling of heard noise, the 41 dBA provided in the draft 12/15/03 still constitutes a very low level of noise, the average of a living room library (Beranek 1998). The Table 8 level of 50 dBA is well below any impact on health. 50 dBA is about the level of light traffic 100 feet away, rainfall or noise in a private business office. If landowners want to agree to this level of noise for compensation, I see no reason to deny them this ability to do so.

I also believe that requiring a written waiver to be filed with the county office which records deeds is sufficient notice of the waiver. Such a waiver "runs with the land" and becomes a legally binding easement on future landowners of the affected property. I do not see merit in the extra requirement (in the 12/15/03 proposed rules) of a memorandum which describes the environmental conditions of increased noise due to the wind energy facility. The language in question is vague and confusing. A waiver that indicates the decibel level agreed to should be sufficient to put potential future landowners on notice of the noise easements and covenants in force.

Moreover, a number of speakers indicated that most states, including neighboring states, do not have ambient noise levels at all for wind energy. Instead, those states require a total noise level similar to current Table 8. People who supported waiving the ambient degradation standard testified that these states recognize the difficulty of measuring ambient levels for wind energy facilities, and they provide greater encouragement for wind by not requiring an ambient noise standard.

The rules proposed with this Hearings Officer report do not go as far as these other states, since Oregon would still maintain the noise degradation standard of 10 dBA for a landowner not willing to waive this standard. However, the proposed rules would allow a willing landowner to waive those rules with the Table 8 limits in effect. I believe that this is a reasonable compromise since it provides some flexibility for wind for willing landowners, while maintaining the noise degradation standard for those unwilling to waive this standard.

Finally, a number of commenters suggested that European and South Australian standards for noise are more stringent than the Commission's current or proposed noise rules. Based on the information available to ODOE, however, I believe that the proposed changes are well within the range of these countries' noise standards.

The noise standards for wind energy facilities vary considerably by country in Europe but ambient noise standards from wind facilities in Sweden, Denmark, Germany, The Netherlands and Great Britain range from 35 to 45 dBA. Ambient noise standards in New Zealand and Australia vary between 35 and 40 dBA. These noise levels are L90 levels which are less conservative than the L50 values used by the Commission's rules. The proposed rules would allow the ambient noise level not to increase above 36 dBA (26 dBA background plus an ambient increase of 10 dBA) unless the landowner agreed to a waiver of the ambient rule. Some of these countries also allow landowner agreements to waive the ambient noise standards, including the Netherlands and South Australia.



*4) Create a standard protocol using IEC 61400-11 for modeling and measuring noise impacts from wind energy facilities to ensure compliance with the Commission's noise standards.*

I recommend the use of IEC 61400-11, to establish a standard protocol to determine compliance with the Commission's noise standards. This will simplify the methodology and assure more uniformity in evaluating the noise impact of wind energy facilities.

IEC stands for the International Electrotechnical Commission, which is the recognized international body for standards development activities. IEC 61400-11, "Wind turbine generator systems –Part 11: Acoustic noise measurement techniques" establishes the noise levels by rating the individual turbine from cut-in wind speed up to 95% of its electrical rated power level. The current version of IEC 61400-11 was published in December of 2002 and is referred to as version 2002-12.

The 12/15/03 rules proposed the following standard protocol for modeling and measuring noise impacts, to ensure compliance with the Commission's standards: (a) the use of a hub-height wind speed of 16 meters/second; (b) variable speed turbines and cut-in wind speeds; (c) waiver of L10; and (d) non-turbine related noise and indirect noise. Based on public comment discussed below, I believe that the IEC 61400-11 protocol (version 2002-12) is preferable and should be adopted by the Commission.

*4a) the use of a hub-height wind speed of 16 meters/second.*

The 12/15/03 draft rules provide that for purposes of predicting compliance with the Table 8 noise levels from proposed wind facilities, the appropriate measurements must assume the facility's turbines are operating at a hub-height of 16 meters/second (about 35 mph). To determine actual compliance with Table 8 noise levels, operating wind facility noise levels must also be measured based on the turbine operating at 16 m/sec.

ODOE staff believed that 16 m/sec represents a reasonable basis for determining the sound when the wind turbines are operating at full power generation. Speeds above 16 m/sec would likely create substantial noise from the wind itself, making it difficult to measure the actual noise created by the wind energy turbines. By establishing the measurement at hub-height, ODOE staff also believed that an accurate reading would be made regardless of the size and height of the turbine.

Some commenters suggested that 16 m/sec was not the right basis for determining noise. One acoustical engineer said that there was no reason to make a change to the current Commission rules to explicitly measure wind speed in this way (or to include other parameters different from other industrial facilities for measuring wind turbines). He believed that wind engineers could accurately make assumptions and take into account differences as they do for other industrial facilities.



Another witness expressed concern that wind speeds could be much higher, as high as 100 mph. He also objected to the use of hub-height since the noise level at a tower could be very different from noise levels at ground level. Instead, he encouraged numerous measurements at different locations and at different heights to determine noise level compliance.

One acoustical consultant suggested that the measurement protocol should specify a height level and require that the measurement occur when the wind speed does not exceed 16 m/sec. Another one suggested that there should be a range of measurements in the range of 14-16 m/sec to determine compliance.

A group of wind developers objected to the use of hub-height wind speeds. Instead, they suggested that the IEC 61400 ratings, assuming 8 m/sec at 10 meter height, be used, since turbine sound power levels that have been determined in accordance with IEC 61400 are readily available from all major manufacturers. One sound engineer objected to testing turbines at 8 m/sec at 10 meter height, since the turbines vary substantially in height and are much higher than 10 meters.

I recommend that the rule use the established maximum sound power level as determined by IEC 61400-11 (version 2002-12). Currently IEC is the only organization providing such ratings.

The maximum sound power level rating established by the IEC 61400-11 protocol does not mean that measurement is made at 8 m/sec and 10 meter height which was ascribed to that protocol by some commenters. The IEC rates each individual turbine at hub-height to determine maximum sound power levels. The 10 meter height is part of the IEC's calculation to standardize the results for comparison of different turbines.

Use of the IEC maximum sound power level provides the following:

- The power curve relates the turbine's electrical output power to the wind speed averaged over the rotor swept area. The wind speed can be determined from the measured electric power output. This is IEC's preferred method over wind speed measurements using anemometers.
- Sound measurements as a function of wind speeds are taken by recording the electrical power produced by the turbine and then calculating what the average wind speed over the rotor swept area must have been by using the electric power output curve.
- Correlation between measured sound power level and wind speed based on the measured electric power is very high, up to the point of maximum power.
- Because most turbines reach the maximum electrical power output around 12 to 15 m/s at hub height, sound power levels are not measured beyond that wind speed range (such as the 16 m/s as proposed in the 12/15/03 rules). Thus, turbine manufacturers are unable to provide noise data for wind speeds at 16 m/sec as a matter of course.
- Measurements show that the sound power levels generally do not increase beyond the 95% maximum power level. This can be explained because the noise emitted by a

wind turbine generator system is predominantly determined by the aerodynamic noise of the rotor blades, which is directly dependent on the blade tip speed. These blade noises grow with increasing wind speed until the maximum rotor speed (and thus power level) is reached. The wind speed still increases beyond that point but the rotational speed of the rotor, and thus the noise does not increase. However, some turbines with variable speed operation are sometimes being controlled in such a way as to limit noise generation. Therefore the use of the established maximum sound power level makes the most sense.

Using the IEC 61400-11 protocol would allow wind developers to provide sound power level information that is readily available for each model turbine using the IEC rating. At the same time, because IEC evaluates each turbine model individually, the impacts of different of hub-heights are also taken into account in determining maximum sound power level up to 95% power levels.

I also believe that the assumptions for wind measuring should not be left to the discretion of sound engineers, as was suggested by one commenter. Uniform guidance should be provided so the wind industry and affected citizens have certainty as to what the noise requirements are and how they are interpreted.

I also see no benefit to requiring a range of wind speeds as two other witnesses suggested to the extent that it differs from the IEC protocol. This approach lacks the certainty that is provided by the use of a standard independent rating based on actual power level.

#### *4b) Variable Speed Turbines and Cut-in Wind Speeds*

A related issue was whether noise levels for wind turbines with variable wind speeds can be accurately measured under the protocols established by the 12/15/03 proposed rules, which required measurement of wind turbine noise levels at cut-in speed. The sound level of variable turbines increases rapidly with only slight changes in wind speed from the cut-in wind speed, compared to wind turbines with constant speed.

The concern was raised that predicting or measuring the noise levels of variable speed turbines with the measurement requirements of the 12/15/03 proposed rules might significantly underestimate the noise level with slightly higher than cut-in wind speeds. I agree with that concern and have included a change to the 12/15/03 proposed rules. The use of the IEC 61400 maximum sound power level, as explained above, will address this issue.

One commenter suggested that adoption of rules be delayed so that the working group could evaluate this issue. However, I believe such a delay is not necessary. The IEC protocol does evaluate noise levels of variable windspeed turbines as well as those with constant speeds. The IEC process takes into account the quick rise in noise levels and



accurately rates the maximum sound power levels of variable turbines. The IEC protocol will result in a conservative method for both constant and variable speed turbines.

*4c) waiver of L10*

Wind developers also expressed concern about the pre-project L10 noise level and suggested that the L10 portion of the ambient degradation rule for wind projects be eliminated. They believe that the continuous noise created by wind justifies waiver of the L10 standard for wind facilities, as well as the fact that historical analysis of the L10 requirement indicates that if the L50 requirement is met, the L10 requirement is also satisfied. While this may be true in most cases, I do not recommend the elimination of the L10 requirement for ambient noise levels.

As noted previously, L10 refers to a noise level that is exceeded 10% of the time, and L50 is a noise level exceeded 50% of the time. With the adoption of 26 dBA as the assumed background, the concern raised in those comments is addressed in part, i.e., use by a wind developer of 26 dBA as background will reduce the need for pre-project monitoring for background noise.

These commenters clarified in response to the draft Hearings Officer Report that they were not suggesting a waiver of the L10 portion of the Table 8 standard, eliminating one concern I had with their request. However, if a developer seeks to show background is higher than 26 dBA, then the L10 and L50 measurements may both be important. This is particularly true where a landowner is not willing to waive ambient noise standards. A landowner not willing to waive the ambient degradation rule should continue to have the protection of the 10 dBA ambient degradation limit measured for both L10 and L50 (i.e. at noise levels exceeded 10% of the time and 50% of the time).

*4d) non-turbine related noise and indirect noise*

The 12/15/03 proposed rules referred to indirect noise from wind facilities. Concern was raised that the noise standards for wind energy facilities do not clearly state that the noise limits are noise levels attributed only to the wind machines; that noise from wind which is greater than the cut-in speed of the turbine not be incorrectly attributed to the noise created by the turbine rather than to the wind itself. Concern was also raised that the phrase "noise generated or indirectly caused by the wind energy facility" creates confusion and could lead to attribution to wind turbines noise not caused by them. I agree. The words "indirectly caused" have been dropped from the proposed rules and other language is included to clarify that the Table 8 application to wind energy facilities means the noise caused only by the wind energy facilities.

*5) Add a provision clarifying the Commission's suspension of DEQ's administration of the noise program.*

This provision was added at the request of DEQ to reflect the inability of the Commission and DEQ due to lack of funding to actively administer the noise program. There was no adverse comment by anyone on including this provision in the Commission's rules, although some expressed concern that DEQ was unable to actively administer the noise program. This rule provides useful clarification of the active administration of the noise rules and I recommend its adoption.

A number of people also suggested that the rules should provide for a role for local governments in making noise determinations for wind facilities. I do not recommend provisions to explicitly address the role of local governments, because existing state law already provides that determination. For large energy facilities, EFSC would determine compliance with the Commission's noise standards as it does for all applicable standards of other state agencies.

For wind energy facilities which are smaller than 35 megawatts and which are not subject to EFSC's jurisdiction, EFSC does not administer or enforce the noise control regulations for these smaller wind power projects. Instead, local land use approval is required before construction. Local governments may address noise impacts from wind power projects under their land use ordinances. Depending on the jurisdiction, local ordinances might or might not incorporate the state noise rules.

Amendment of the rules as proposed by this draft Hearings Officer report would not change local land use approval procedures. Local governments would continue to apply local ordinances in making land use decisions on small wind power projects. Not all local governments have adopted the state noise rules. In any county that has adopted the state noise regulations by reference in their local ordinances, the amended rules may apply. In those counties where the state noise regulations apply, the amended rules would simplify the noise impact analysis. The amended rules would not affect local government land use decisions in those jurisdictions that have not adopted the state noise rules in their land use ordinances.

**VII. ISSUES RAISED AT THE COMMISSION INFORMATIONAL MEETING OF  
APRIL 9, 2004**

Legal Counsel for the Commission raised two issues on the Draft Hearings Officer Report. The first issue was that incorporation of a separate protocol into state agency rules, such as IEC 61400, must either specify a particular version of that protocol, or include in the rules themselves a detailed narrative of the substance of the protocol. As originally written in the Draft Hearings Officer Report, the proposed rules could have provided an improper delegation of authority to the IEC and to other potential standard-setting organizations. To avoid this problem the rules proposed in this Final Report reference specifically the current version of IEC 61400-11, (version 2002-12) which was made effective in December of 2002



The second issue raised by the Commission's Counsel was the proper instrument for waiving the ambient noise rule so that future landowners would be bound by the agreement. The Commission's Counsel has indicated that the rules should provide the option to use either a covenant or an easement in order for a waiver of the ambient noise standard by a willing landowner to be effective on future landowners. Changes have been made in the rules on the landowner waiver provision to reflect Counsel's advice.

As a result of other discussion at the Commission hearing, language has been added clarifying that the proposed rules would apply to wind turbines of any size. Another clarification was made in response to comments which found the word "existing" to be confusing. The revised rules replace the phrase "existing wind energy facility" with the phrase "operating wind energy facility" to make it clear that the operational noise rules apply to any operating wind energy facility.

Finally, concern was raised at the Commission meeting that concerned citizens who think that the noise standards may be exceeded should have the ability to bring an action and have access to the information necessary to successfully bring that action. In the case of large wind energy facilities subject to the jurisdiction of the Energy Facility Siting Council, compliance with the Commission's noise standards would be one of the requirements of compliance with the site certificate issued by the Siting Council. Citizens have the right to bring complaints regarding compliance for large wind facilities to the Siting Council and the Council has ample authority to require the wind energy facility owner to demonstrate compliance. The Siting Council can require whatever information is needed from the facility owner to make that determination.

However, for smaller wind facilities not subject to the Siting Council's jurisdiction, the ability to bring a compliance action is more difficult since the Commission does not have an active enforcement program for its noise regulations, as noted previously. Where the local governments have adopted and are enforcing noise standards that meet or exceed the Commission's rules, the local governments presumably would have enforcement authority and the same ability as the Siting Council to acquire from the wind energy owner whatever information is needed to make that determination.

However, where no local governments have adopted such ordinances, enforcement of the wind noise standards, as well as the Commission's other noise standards is more difficult and the access to the necessary information to make a compliance determination is more problematic. While this rulemaking cannot address the broader issue of enforcement of the Commission's noise standards generally, resolution of complaints by citizens of noise from wind energy facilities should be no more difficult than for other noise generated by other industrial noise sources.

The rules have been revised to reference the IEC protocol in a manner that does not restrict the existing ability of a person to bring an action to assure compliance with the Commission's noise rules. Under the revised rules the IEC protocol is used to determine

whether a proposed wind facility would meet the Commission's ambient and Table 8 noise standards. The revised rules provide that determination of compliance with the Commission's noise standards must be based on actual measurement of noise levels created by the wind energy facilities.

(Note: the March 18 Information Memo to the Commission for the April 8 meeting contained a technical error. On page 3, the memo states:

"The measurement point is 25 feet from the most distant identified noise sensitive property (property used for sleep and schools, churches, hospitals and public libraries)."

OAR 340-035-0035 3) b) of the rule actually reads:

b) Unless otherwise specified, the appropriate measurement point shall be that point on the noise sensitive property, described below, which is further from the noise source:

- A) 25 feet (7.6 meters) toward the noise source from that point on the noise sensitive building nearest the noise source;
- B) That point on the noise sensitive property line nearest the noise source.

While the proposed rules make no changes in this provision, the Commission's Counsel recommended correcting this error for the record.)



## **VIII. ATTACHMENT: DETAILS OF COMMENTS**

### Portland Hearing, February 9, 2004

The hearing ran about two hours; about 20 people attended the hearing and 14 testified. They are listed below and the major points of their comments are briefly summarized.

Ann English Gravatt, representing Renewable Northwest Project (RNP): supports general effort to establish separate noise standards for wind energy facilities; supports right of landowners to waive ambient degradation rule up to Table 8 limit of 50 decibels (dBA) – such a waiver would be recorded as an easement that applies to the property for as long as specified in the easement agreement; supports the provision of the 12/15/03 draft rules that the assumption for noise evaluation purposes that pre-project ambient noise level is assumed to be 26 dBA. (See written testimony summary below for more issues covered).

Jerry Wilson: supports the 12/15/03 draft rules with a few changes including a definition of wind energy facilities covered by the rule and specifying requirements for operational oversight; does not support the right of a landowner to waive ambient degradation rule; believes that DEQ noise standards are important and should be made known to the public and local governments—i.e. 340-035-0110 should not be the basis for ignoring noise standards even if DEQ lacks the budget authority to actively enforce them. (See also written comments below.)

Andy Linehan, with CH2MHill: believes the 12/15/03 draft is an improvement but does not go far enough to make wind facilities competitive in Oregon with other states; supports right of landowners to waive ambient noise standards up to Table 8 limit of 50 dBA;

Rhett Lawrence, OSPIRG: supports right of landowners to waive ambient noise standards up to Table 8 limit; believes that benefits of wind energy outweigh any increased noise impact.

Peter Mostow: supports right of landowners to waive ambient noise standards up to Table 8 limit; believes that the use of easement restrictions is appropriate for wind noise like other issues including nuisances which property owners address through easements.

Roby Roberts, PPM Energy: supports right of landowners to waive ambient noise standards up to Table 8 limit; believes that this approach is comparable to what is allowed in other states.

Virinder Singh, Pacificorp: development of renewables is important to Pacificorp, which is relying heavily on renewables in meeting its energy needs in the next ten years; supports

maximum flexibility in developing renewable resources, including landowners rights to waive ambient noise level.

Russell Altermatt, of Altermatt Associates: indicates that Oregon's current noise standards are very good and sees no need to make changes in Oregon's noise standards; believes there is no justification to treat wind facilities different from other industrial facilities which create noise. – see also written comments below.

Scott Kringon, Vestas Wind Systems: supports right of landowners to waive ambient noise standards up to Table 8 limit; notes that wind facilities can't use noise mitigation measures, so there must be flexibility if wind facilities will be developed.

Mark Bastasch: with CH2Mhill and a noise consultant on wind energy projects, supports right of landowners to waive ambient noise standards up to Table 8 limit; believes that Massachusetts is only other state with ambient noise standards for wind, and has caused adverse impacts on wind development.

John DeMoss: represents a number of farmers and ranchers who want the flexibility to waive ambient noise standards; believes that noise levels above 50 dBA could be acceptable.

Brett Gray: supports right of landowners to waive ambient noise standards up to Table 8 limit;

Kerry Standlee, acoustical engineer: supports the 12/15/03 draft with some changes; suggests that tests to determine compliance with the ambient standard be conducted at a range of 14-16 meters/second rather than just at 16 meters/second; also supports a local government option to grant an exception to the ambient noise standard under the same conditions as provided for DEQ in the 12/15/03 draft; believes the exemption should have a requirement explaining why the noise regulation cannot be met.

Mr. Standlee supports the requirement that DEQ must issue an exemption through an administrative process as the 12/15/03 draft provides, for a waiver of the ambient noise standard;. believes that the administrative process through DEQ for exemptions provides added protection to the general public which would not be present in a private agreement between any landowner and a developer; believes that the limited waiver provided to the landowner where the turbine would be located as proposed in the 12/15/03 draft provides enough flexibility for wind and should not be expanded to all affected landowners.

Mr. Standlee also suggests that DEQ provide guidance as to how local governments can use the noise standards, given the suspension of Commission and DEQ responsibilities in OAR 340-035-0110; also suggests dropping the use of the word "existing" to describe wind energy facilities in OAR 3440-035-0035 as it is confusing; "existing" could be understood to refer to pre-1975 facilities when the current noise rules were adopted by the Commission.



Sean Harding: supports development of wind and believes noise issues can be addressed without overly restrictive noise standards; recently developed residential-scale windpower in Tillamook County.

The Dalles Hearing, February 9, 2004

The hearing went about ninety minutes, with 30 people in attendance. Twenty-two people testified; they are listed below.

Mike McArthur, Sherman County Judge and Gary Thompson, Sherman County Commissioner: wind energy is very important to Sherman County; they believe that landowners should have the right to waive ambient noise standards up to the 50 dBA limit of Table 8; also believes that local planning commissions should have greater latitude to deal with these issues.

Ann English Gravatt, referenced comments at Portland hearing and written comments.

Dan Erickson: Wasco County Judge: agrees with Judge McArthur on ambient noise standards and the need for greater ability of local jurisdictions to adjust noise standards.

Kent Thomas: supports right of landowners to waive ambient noise standards.

Barbara Gray: supports right of landowners to waive ambient noise standards.

John Fields: supports right of landowners to waive ambient noise standards.

David Beasley, Superintendent-elect of Sherman County schools: wind energy development is important to Sherman County economically; supports right of landowners to waive ambient noise standards.

Paul Woodin; current rules are too restrictive and have adversely affected wind projects in Oregon; supports right of landowners to waive ambient noise standards.

Darrel Hart: supports right of landowners to waive ambient noise standards.

Allan Peterson: supports right of landowners to waive ambient noise standards.

Carole McKinster: supports right of landowners to waive ambient noise standards.

Melva Thomas: supports right of landowners to waive ambient noise standards.

Nancy Fields: supports right of landowners to waive ambient noise standards.

Sharon Spencer: supports right of landowners to waive ambient noise standards.

Don Hildebrand: supports right of landowners to waive ambient noise standards.

Mark Jackson: supports right of landowners to waive ambient noise standards.

Brett Gray: supports right of landowners to waive ambient noise standards.

Sandy McNabb: supports right of landowners to waive ambient noise standards.

Mark Bastasch, CH2MHill: supports right of landowners to waive ambient noise standards; also believes Oregon's current standard is too strict for wind development compared to Washington and other states.

Roby Roberts, PPM Energy: believes that wind developers need certainty, supports right of landowners to waive ambient noise standards up to 50 dBA limit in Table 8.

John DeMoss: supports right of landowners to waive ambient noise standards up to at least 50 dBA limit in Table 8.

Tillamook Hearing, February 23, 2004

The hearing ran about 45 minutes. Twelve people attended, and 9 persons spoke. They are listed below.

Mary Ann Sweet supports the development of wind energy, and supports using Table 8 limits without a separate ambient noise standard as the basis for wind energy facilities in Oregon. She also provided a written statement.

Larry Stein: believes that global warming from fossil fuels presents real risks and dangers; believes that wind energy has environmental benefits and should be encouraged through modifying the Commission's noise standards. He also provided a written statement.

Barry White: represents the United Brotherhood of Carpenters. He supports the effort to amend the noise standards for wind energy resources.

Tom Bender, an energy architect from Manzanita: expressed a number of concerns about wind energy facilities and their noise impacts; believes that the proposed noise standards do not take into account the interaction of wind noise with other noise; expressed concern about deterioration of wind energy equipment in Hawaii and elsewhere.

Mr. Bender supports renewable energy but believes that wind energy must be sited carefully to avoid adverse impacts; believes that energy efficiency should be a much higher priority and would reduce the need for new wind and other electricity resources; and also



believes that more emphasis on clean energy needs to be placed on cars and other mobile sources of pollution, not power plants.

Shirley Kalkhoven: who is on the Nehalem City Council, requested clarification of the legal significance and who would enforce new noise standards for wind energy facilities, given the fact that DEQ and the Commission are not actively administering or implementing the noise standards.

Ann Gravatt, Renewables Northwest Project (RNP), gave a brief summary of RNP's position provided at previous hearings: i.e. she supports the ability of any landowner to waive ambient limits up to the Table 8 limits for wind energy facilities; is proposing no change to Table 8 for wind energy facilities.

Sean Harding: believes that wind energy can be an important factor in bringing new jobs to Tillamook County; believes that the benefits of wind energy outweighs any adverse noise impacts; supports the use of the Table 8 limits as the noise limits for wind energy resources. He also provided a written statement and a report by the National Renewable Energy Lab on the noise impacts of wind energy facilities.

Mark Bastasch, works for CH2Mhill: supports right of landowners to waive ambient noise standards up to Table 8 limit; believes that newer wind turbines are quieter than older models; believes that the Table 8 limits are adequate to protect health impacts and take into account the cumulative impacts of noise.

John DeMoss: believes landowners should be able to waive the ambient standard, Oregon's maximum Table 8 noise level is restrictive enough, as Washington allows up to 70 dBA, which is 20 dBA higher than Table 8. He has a farm under some existing windfarms and has no problems with the noise levels there.

#### Pendleton Hearing, March 9, 2004

The hearing ran about an hour and 20 minutes. Nine persons spoke at the hearing. They are listed below.

Matt Wood: lives at the current Stateline Windfarm, about 1,00 feet away from the nearest turbine; has no problems with noise from the wind turbines and has seen minimal effect on wildlife, including birds and coyotes, from the turbines.

Jim Williams: lives in Helix and farms near the first wind project in the area; has seen no impact from noise and has seen benefits from wind through tax payments used to help the fire district.

Monty Hixson: has been a construction contractor on a number of wind facilities, supports wind development and believes noise is not an issue from wind machines; hears more noise from passing cars than from wind turbines.

Cliff Bracher: a landowner inside the Stateline Windfarm, leases farmland to Matt Wood; also supports wind energy development.

Dave Campbell: owns property at Stateline and has reseeded the land while wind turbines are operating; has had no problems with noise; one residence on his property has also not complained about noise.

Anne Walsh, FPL Energy: developed the Vansycle Ridge wind energy project; supports wind energy development, believes that willing landowners should be able to waive the ambient rule while maintaining Table 8 limits; also supports use of 26 dBA as background level; supports other changes in wind energy rules advocated by RNP to make wind energy easier to site in Oregon.

Mike McKay: has done electrical work on wind projects; believes that wind is much quieter than other power plants and supports wind development.

Kerrie Standlee: previously supported the 12/15/03 draft rules, but now believes they do not adequately take into account the noise levels from variable wind speed turbines; believes that witnesses who say noise levels of existing turbines is not a problem demonstrate that the existing noise levels are workable and will not prevent wind development; urges delay in adoption of the rules to further examine the impacts of variable windspeed turbines; see also written testimony provided at this hearing summarized below.

John DeMoss: disagrees with Mr. Standlee and supports the landowners' right to waive ambient noise standards; opposes a delay in adoption of new wind rules.

#### Written Comments Received Before Issuance of the Draft Hearings Officer Report

David Stewart-Smith, Oregon Department of Energy: 2/6/04, memo explaining the ODOE staff proposed amendments. Most of the points covered in the memo are incorporated in the prior sections of this Hearing Officer report entitled "Introduction", "Energy Facilities and Commission Noise Standards", "Why ODOE Believes Wind Energy Facilities Need a Specific Noise Standard Provision", "Application of the Commission's Noise Standards to Wind Energy Facilities" and "Initial ODOE Draft Proposal of 12/15/03".

Tillamook County Commissioner Tim Josi: 2/24/04, supports this rulemaking to make noise standards suitable for wind energy; supports establishing a minimum background level of 26 dBA and the compliance wind speed of 16 m/sec as more reasonable than high wind conditions.

Russell N. Altermatt, P.E., Altermatt Associates: 2/9/04, comments indicate that Oregon's current noise standards are some of the best in the country; sees no need to make any changes in Oregon's noise standards; believes that current EQC exemption process



adequately provides flexibility for increases of noise levels; believes there is no justification to treat wind facilities different from other industrial facilities or other energy facilities which create noise.

He does not support any of the changes in the 12/15/03 draft. He believes that current Commission exemption process adequately provides flexibility for increases of noise levels; believes there is no justification to treat wind facilities different from other industrial facilities or other energy facilities which create noise. He believes that noise levels for wind can be accurately monitored and the ambient levels determined. As such there would be no justification for assuming the background of 26 dBA proposed by the 12/15/03 draft.

Mr. Altermatt also believes that the current process of variances from noise standards is workable, both for DEQ and for local governments. He does not support the proposal to let landowners waive noise standards and believes that such power could have adverse impacts on neighboring persons; does not support any of the provisions in the 12/15/03 draft establishing special measuring requirements and procedures for measuring wind noise; believes that all industrial commercial facilities have nuances of their operations that need to be taken into account in measuring noise levels, the current Commission rules provide for those nuances; and wind facilities are no different than other facilities in this regard.

Ann English Gravatt, Renewable Northwest Project, (RNP): 2/9/04, supports some of the provisions of the draft proposed amendments, including the assumption for noise evaluation purposes that pre-project ambient noise level is assumed to be 26 decibels (dBA); believes that affected landowners should be able to waive the ambient degradation rule for their property; believes that there should be no restrictions on the landowner's right to waiver as long as the noise level complies with the limits of the existing. Table 8 rule (the most stringent limit of which is 50dBA).

Ms. Gravatt also believes that the rules should be amended to provide the following:

- 1) any owner of property impacted by noise may consent to waive the ambient degradation rule on their property. The increase in ambient can exceed 10 dBA up to any level so long as the levels in Table 8 continue to be met. Any affected landowner, whether or not the wind turbines would be located on that land, may exercise this waiver. The waiver would be recorded as an easement on the property and would not require a separate memorandum describing environmental conditions required by the 12/15/03 draft;
- 2) the existing ambient rule of a 10 dBA limit would apply to any landowner who did not wish to waive the ambient rule;
- 3) the Table 8 maximum limits would still apply to all wind energy projects.

Ms. Gravatt also supports deleting the L10 portion of the ambient degradation for wind project for two reasons: 1) the continuous nature of the noise source for wind facilities and;

2) that meeting the L50 limit also meets the L10 requirements. She also opposes the 12/15/03 draft proposal for an exemption process from the noise rules; she believes that the exemption is not helpful for providing certainty to wind developers because the exemption is discretionary, i.e. an exemption may not be granted even if the landowner is willing to agree. She believes that the proposal to allow any affected landowner to agree to waive the noise ambient standards up to the Table 8 limits is more workable and provides regulatory certainty for wind developers.

Ms. Gravatt is also concerned that the exemption process would not be available as a practical matter since the 12/15/03 rules also provide that DEQ has suspended all requests for exemptions (as well as other procedures) under the noise program because of the lack of funding; it is doubtful whether counties are delegated the authority to grant such exemptions in making local land use determinations.

Ms. Gravatt also believes that the 1/1/04 draft provision to determine compliance by establishing a wind speed of 16 meters per second (35 mph) at hub height is unnecessary, since the IEC 61400 wind speeds (8 m/sec at 10 meter height) are sufficient to determine compliance with Table 8. Turbine sound power levels determined in accordance with IEC 61400 are readily available from all manufacturers. She also suggests some clarification of compliance measurement conditions, so that noise generated by the wind alone (and not by the energy facility), does not constitute non-compliance; and she believes that references to "indirect noise" are vague and should be eliminated.

Proposed Rule Language for Oregon Noise Regulation of Wind Projects, received Feb. 24, 2004, by Ms. Gravatt of RNP, based on previous written testimony.

John V. Stahl, Pacific Wind Power LLC: February 9, 2004, support the RNP comments, especially the right of any landowner to waive ambient noise standards up to the Table 8 limit; supports the 26 dBA pre-project assumed noise level in the 12/15/03 draft rules, and supports making the regulation applicable to local jurisdictions.

Maureen Kirk, OSPIRG: supports wind development for economic benefits to consumers and for environmental reasons; supports the RNP proposals, including right of the landowners to waive ambient noise standards.

Mary Ann Sweet: supports the right of landowners to waive ambient noise standards and believes changes in the noise standards are necessary to encourage wind energy.

Larry Stein: supports the right of landowners to waive ambient noise standards and believes changes in the noise standards are necessary to encourage wind energy; believes that wind can help avoid reliance on fossil fuels and their adverse impacts on global warming.

Sean Harding: supports the right of landowners to waive ambient noise standards and use of Table 8 limits for wind energy facilities. Mr. Harding also provided a report prepared



by the National Renewable Energy Lab (NREL): "Acoustic Tests of Small Wind Turbines" by P. Migliuri, J. van Dam, and A. Hurley, NREL Report # AIAA 2004-1185. The report provides information on noise monitoring and evaluation of a number of small wind energy facilities capable of operating at very low wind speeds.

Tom Bender: raised a number of concerns about the noise impacts of wind energy facilities; including operational history in Hawaii and Wisconsin, adverse environmental and health impacts that may have been caused by wind projects, numerous complaints from people living near wind energy facilities. He also questions whether wind can be a reliable energy technology, and encourages greater reliance on energy efficiency to avoid the need for wind energy facilities. He does not support any of the proposed changes to the noise standards. He also objects to some of the current provisions in the existing noise rules which were not proposed for change in this rulemaking proceeding. These included definitions of "noise sensitive properties" and "quiet areas" and the peak response levels for impulse sounds among other issues.

John Hector: opposes changes to allow any landowner to waive ambient standards up to Table 8 limits, believes the 12/15/03 draft provides enough flexibility with some minor amendments, and believes that further loosening of noise standards for wind development is not justified.

Jerry Wilson: February 9, 2004, supports the 12/15/03 draft rules with a few changes including a definition of wind energy facilities covered by the rule and specifying requirements for operational oversight; also provides extensive background of the work done by the informal advisory committee before the 12/15/03 draft rules were issued; he believes that this draft with minor changes adequately takes into account the special features of wind energy facilities.

John Guynup, Currydale Farms: March 9, 2004, believes development of wind is very important for economic development, supports more flexible standards for noise to encourage wind energy development, including the ability to waive ambient noise levels and other provisions recommended by RNP.

Kerrie Standlee: March 8, 2004, recommends a delay in adoption of the rules so that the informal working group can be reconstituted to evaluate remaining technical issues; he is particularly concerned that the 12/15/03 draft rules which he previously supported do not adequately address the noise levels from newer variable speed wind turbines; both the provisions on ambient noise levels and Table 8 limits may be accurately determined for constant speed turbines in the 12/15/03 draft rules, but not the impact of variable speed turbines; he also disagrees with RNP's analysis that the ambient degradation rule is not needed to protect public health; reliance solely on Table 8 limits could result in higher noise levels than USEPA's recommended health and safety levels.

Mark Bastasch: March 12, 2004, opposes delaying adoption of the rules and believes reconstituting the informal advisory group would not result in consensus; also disagrees with other portions of Mr. Standlee's comments.

Tom Hare, US Bureau of Land Management, January 27, 2004, supports the proposed rulemaking changes to encourage wind energy development.

Tom McClara: February 15, 2004, has concerns about the noise created by a lumber mill in southern Oregon and seeks help to enforce noise standards.

Ann Gravatt, Renewable Northwest Project, March 12, 2004, opposes any delay in taking action on noise standards for wind energy facilities; believes that the rulemaking record has been sufficiently thorough for action to be taken;

A number of emails in correspondence, March 10, 2004 through March 12, 2004 between Mark Bastasch and Kerrie Standlee further explaining their most recent respective statements.

Carol Dillin, Portland General Electric: March 11, 2004, supports making changes in the noise standards to encourage wind energy development.

Katie Fast, March 12, 2004, supports wind energy development, supports allowing any landowner to waive the ambient noise degradation rules; believes the waiver in the 12/15/03 draft of the rules is too restrictive.

Ken Thompson, opposes changes in the noise rule to make it easier to site wind in rural areas, believes that there is too much industrialization occurring in exclusive farm use areas. Mr. Thompson provided three attachments to his written testimony: an East Oregonian 2004 calendar cover, showing many wind machines on farmland; an excerpt from the National Wind Coordinating Committee "Permitting of Wind Energy Facilities Handbook" and the Umatilla County Wind Utilization Process", October 2002, by Mr. Thompson.

Catharine Lawton: March 11, 2004, opposes changes in the current noise rules; opposes the 12/15/03 draft rules; believes noise from wind turbines should be limited to a maximum of 40 dBA, or no more than 5 dBA over background ambient noise levels which a number of European countries have done; believes wind turbines present health hazards from excessive noise, opposes allowing landowners to waive ambient noise degradation standards; opposes making special noise rules for wind energy facilities; suggests that South Australia's noise guidelines be considered for adoption.; also encourages international certification of wind turbines.

Ann Vileisis, Kalmiopsis Audubon Society: opposes changes to treat wind different from other industrial facilities.



Written Comments Received After Issuance of the Draft Hearings Officer Report

David Van't Hof, Sustainability Advisor to Governor Kulongoski: 4/8/04, supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04, especially the changes which allow willing landowners to waive the ambient noise standards.

Judge Mike McArthur, Commissioner Sherry Kaeberg and Commissioner Gary Thompson, Sherman County Court: 4/7/04, support the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

Ann Gravatt, Renewable Northwest Project: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04 with two exceptions: 1) the L10 portion of the ambient degradation rule should be deleted for wind projects; 2) the ambient rule appears applicable to wind projects on previously used sites but not to other noise sources at such sites.

Shelley Tanquary: 4/5/04, opposes any changes to the noise standards because of concerns regarding potential environmental impacts.

Joanna and Roger Rieber: 4/8/04. oppose any changes to the noise standards because of potential adverse health impacts to humans and animals.

Pat Volz: 4/9/04, opposes any changes to the noise standards because of potential adverse health impacts.

Cathleen Moore: 4/9/04, opposes any changes to the noise standards because of potential adverse health impacts to humans and animals.

David Cornell, Curry County Coastal Alliance: 4/4/04, opposes any changes to the noise standards because of concerns regarding noise impacts from large wind energy facilities

John Hector: 4/9/04, opposes the changes recommended in the Draft Hearings Officer Report of 3/22/04, including the ability to waive ambient noise standards for wind energy facilities; objects to the fact that his prior comments were not adopted in the draft Hearings Officer Report.

Bruce and Pat Stannard: 3/30/04, oppose any changes to the noise standards because of concerns regarding noise impacts.

Sue Sweet Musser: expresses concern that any changes in noise rules not adversely affect quiet areas and the wildlife attracted by those quiet areas.

William L. Hanna: 3/26/04, opposes any changes to the noise standards because of concerns regarding noise impacts on health.

Melody Norass: opposes any changes to the noise standards because of concerns regarding potential environmental impacts.

Kerry Standlee: 4/8/04, opposes the changes recommended in the Draft Hearings Officer Report of 3/22/04; believes these changes go to far in modifying Oregon's noise regulatory program to assist wind development; opposes use of IEC 61400 as the basis for determining compliance with Commission noise rules, opposes the ability to waive the ambient noise standard, and believes the changes would be difficult to administer; recommends the Commission defer action until further changes in the proposed rules can be evaluated.

Gerald T. Wilson: 4/5/04, while supporting streamlining the permitting of wind energy facilities, he opposes the changes recommended in the Draft Hearings Officer Report of 3/22/04; believes these changes are inconsistent with longstanding Commission policy on noise regulation; recommends the Commission defer action until further changes in the proposed rules can be evaluated.



Janette K. Baxter: 4/5/04, opposes the changes recommended in the Draft Hearings Officer Report of 3/22/04; believes that the provisions establishing background at 26 dBA, allowing landowner waiver of ambient noise standards and other proposed changes will result in adverse impacts; believes that wind turbines should not be treated differently from other industrial noise sources; urges the Commission to adopt rule changes that will result in stricter noise standards and which will reduce the level of noise allowed from wind turbines.

Oral Comments Received at the Commission Meeting of April 9, 2004

Ann Gravatt of Renewable Northwest Project: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

Paul Woodin: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

Mark Bastasch: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

Dave Campbell: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

George Ward: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

John DeMoss: supports the rule changes recommended in the Draft Hearings Officer Report of 3/22/04.

Kerrie Standlee: expressed concern about the ability of citizens to assure compliance with the Commission's noise standards for smaller wind energy facilities not subject to the Siting Council's jurisdiction under the changes proposed in the Draft Hearings Officer Report of 3/22/04.



May 20-21, 2004 EQC Meeting

Oregon Department of Energy Rulemaking Proceeding  
Oregon DEQ Noise Control Regulations

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May 20-21, 2004 EQC Meeting

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State of Oregon  
DEPARTMENT OF ENERGY  
and  
DEPARTMENT OF ENVIRONMENTAL QUALITY

**Questions to be Answered to Reveal  
Potential Justification for Differing from Federal Requirements.**

**1. Are there federal requirements that are applicable to this situation? If so, exactly what are they?**

No.

**2. Are the applicable federal requirements performance based, technology based, or both with the most stringent controlling?**

Not applicable.

**3. Do the applicable federal requirements specifically address the issues that are of concern in Oregon? Was data or information that would reasonably reflect Oregon's concern and situation considered in the federal process that established the federal requirements?**

Not applicable.

**4. Will the proposed requirement improve the ability of the regulated community to comply in a more cost effective way by clarifying confusing or potentially conflicting requirements (within or cross-media), increasing certainty, or preventing or reducing the need for costly retrofit to meet more stringent requirements later?**

Yes. This rulemaking will clarify and simplify the application of the Noise Control Regulations to wind energy facilities. There should be some reduction in cost to the regulated community.

**5. Is there a timing issue which might justify changing the time frame for implementation of federal requirements?**

Not applicable.

**6. Will the proposed requirement assist in establishing and maintaining a reasonable margin for accommodation of uncertainty and future growth?**

Not Applicable

**7. Does the proposed requirement establish or maintain reasonable equity in the requirements for various sources? (level the playing field)**

The proposed rules take into account the nature of wind energy technology in application of the state noise standards and "level the playing field" for wind energy compared to other energy generation facilities.

**8. Would others face increased costs if a more stringent rule is not enacted?**

Not applicable.

**9. Does the proposed requirement include procedural requirements, reporting or monitoring requirements that are different from applicable federal requirements? If so, Why? What is the "compelling reason" for different procedural, reporting or monitoring requirements?**

No.

**10. Is demonstrated technology available to comply with the proposed requirement?**

Yes.

**11. Will the proposed requirement contribute to the prevention of pollution or address a potential problem and represent a more cost effective environmental gain?**

Yes. The proposed amendment of the Noise Control Regulations address the difficulty and expense of applying the current rules to wind energy facilities. The proposed rules will maintain reasonable limits on noise produced by wind energy facilities while simplifying administration of the regulations and making proof of compliance less costly.



**OREGON DEPARTMENT OF ENERGY and DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**Chapter 340**  
**Proposed Rulemaking**  
**STATEMENT OF NEED AND FISCAL AND ECONOMIC IMPACT**  
This form accompanies a Notice of Proposed Rulemaking

<b>Title of Proposed Rulemaking:</b>	Noise Control Regulations for wind energy facilities
<b>Need for the Rule(s)</b>	<p>The current noise rules were developed initially in 1974 at a time when significant large-scale, commercial wind energy development did not exist in Oregon. The proposed amendments simplify the applicable regulations and reduce the cost of compliance. The goals are to provide noise regulations specific to wind energy facilities consistent with public policy, to improve the application of the rules to these facilities and to provide a greater degree of certainty to the process.</p> <p>The Oregon Department of Energy (Energy) will conduct the rulemaking. The Energy Facility Siting Council has the authority to administer other agency rules which affect energy facilities subject to the Council jurisdiction.. Because of the termination of DEQ's Noise Program in 1991, DEQ does not have authority or funding to work on noise-related issues.</p>
<b>Documents Relied Upon for Rulemaking</b>	<ul style="list-style-type: none"> <li>▪ ORS Chapter 467</li> <li>▪ DEQ Noise Control Regulations Table 8</li> <li>▪ DEQ Sound Measurement Procedures Manual (NPCS-1)</li> <li>▪ Memorandum from Director to Environmental Quality Commission, dated September 4, 1974 regarding the initial adoption of DEQ rules relating to noise pollution from industrial and commercial sources.</li> </ul> <p>Copies of the documents relied upon in the development of this rulemaking proposal can be reviewed at the Department of Energy, 625 Marion Street NE, Salem, Oregon. Please contact Kathy Stuttaford (503-378-4128) for times when the documents are available for review.</p>
<b>Statutory Authority and Statute the Rule is Intended to Implement</b>	ORS 467.030 directs the Environmental Quality Commission to adopt rules relating to the control of levels of noise emitted into the environment of this state.
<b>Fiscal and Economic Impact</b>	
<b>Overview</b>	<p>The proposed amendments apply to wind energy facilities. "Wind energy facilities" are energy facilities defined in ORS 469.300(10)(a)(J) or that are otherwise subject to the jurisdiction of the Energy Facility Siting Council (Council) under ORS 469.320(9). The rulemaking may also affect smaller wind power projects under local ordinances that incorporate the DEQ noise control regulations by reference.</p> <p>Under ORS 469.320, a site certificate is required before construction of a wind energy facility. Under ORS 469.421, an applicant for a site certificate must pay all expenses incurred by the Council, Energy and the Oregon Department of Administrative Services related to the Council's review and decision of the council. The proposed amendments would not increase these costs.</p> <p>The proposed amendments would eliminate the need for a site certificate applicant to conduct measurement and analysis of background ambient noise levels. Under the existing rules, such measurement is necessary to demonstrate compliance with the noise standards. Elimination of this requirement would reduce the overall costs to industry.</p> <p>Smaller wind power projects that are not under the jurisdiction of the Council must receive local land use approval before construction. In any local government jurisdiction that has adopted the DEQ noise control regulations by reference in local land use ordinances, the proposed rules would eliminate the need to conduct measurement and analysis of background ambient noise levels. Elimination of this requirement would reduce the overall costs to industry.</p> <p>The proposed rules would also allow certain affected property owners to agree to a higher noise level than current rules provide.</p> <p>Under ORS 183.335(2)(b)(G) we request public comment on whether other options should be considered for achieving the rule's substantive goals while reducing negative economic impact of the rule on business.</p>
<b>General public</b>	The costs associated with the existing and proposed noise rules do not adversely affect the general public.
<b>Small Business</b>	Small wind energy projects (up to 35 megawatts average electric generating capacity) are excluded from the definition of "wind energy facilities" and are outside the jurisdiction of the Council, but are subject to the state noise statutes and rules. The effects of the proposed amendments on small wind energy projects is dependent



	upon whether the local government chooses to adopt, administer and enforce the DEQ rules and amendments through a local ordinance. In the case where the local government has adopted the DEQ noise rules, the proposed amendments would reduce the cost of demonstrating compliance with noise control regulations compared to current costs, by eliminating the need to measure background ambient noise levels. Neither DEQ nor Energy has information available on which to base a precise estimate of the potential incremental savings to developers of wind energy facilities. However, one industry representative has estimated the cost of noise studies in the range of \$10,000 to \$15,000 for one project.
<b>Large Business</b>	For large wind energy facilities subject to the Council's jurisdiction, the proposed amendments would reduce the cost of compliance with noise control regulations compared to current costs, by eliminating the need to measure background ambient noise levels. Neither DEQ nor Energy has information available on which to base a precise estimate of the potential incremental savings to developers of wind energy facilities. However, one industry representative has estimated the cost of noise studies in the range of \$10,000 to \$15,000 for one project.
<b>Local Government</b>	Local governments that have adopted the DEQ noise rules in local land use ordinances, and that choose to adopt the proposed rules, should find the proposed rule amendments simpler to administer for the reasons identified above. However, there may be no significant reduction in the overall administrative costs for land use review. Where the local government has not adopted the DEQ noise rules, the proposed rules would have no effect on local government.
<b>State Agencies</b>	Energy and the Council apply the noise rules through the administration of the energy facility siting law (ORS 469.300 et seq.). The proposed amendments would be simpler to administer than current rules because they would eliminate the need to verify analysis of ambient background noise measurements. In addition, the proposed amendments would establish other standard conditions for determining whether a proposed or existing wind energy facility would comply with the ambient degradation and Table 8 tests. These changes would eliminate uncertainty under the existing rules, which do not specify the conditions for making determinations. However, there may be no significant reduction in the overall administrative costs of reviewing a site certificate application. Neither DEQ nor Energy anticipates any fiscal or economic impacts from this proposed rulemaking on other state agencies.
<b>DEQ</b>	The amendments would have no fiscal impact on DEQ staffing, revenues or expenses because DEQ's noise program was terminated in 1991.
<b>Assumptions</b>	All cost assumptions are addressed above.
<b>Housing Costs</b>	The amendments would have <i>no effect</i> on the cost of development of a 6,000 square foot parcel and the construction of a 1,200 square foot detached single family dwelling on that parcel.
<b>Administrative Rule Advisory Committee</b>	Energy did not use a formal advisory committee in the development of this rulemaking. Instead, an informal public comment period preceded this notice of proposed rulemaking. To begin the informal comment period, Energy sent a notice by e-mail to all county planning departments and to a list of persons interested in wind energy permitting issues that included wind energy developers, labor unions, the League of Oregon Cities, the Oregon Department of Land Conservation and Development, the Oregon Farm Bureau and other interested persons. In addition, Energy mailed the notice to a list of 109 city planning departments. The notice explained the rulemaking process, provided background information on the noise rules and how they apply to wind energy facilities, explained the need for considering changes to the noise rules to better address the characteristics of wind energy facilities and invited participation in an informal, non-representative "advisory group." In addition, Energy posted similar information about the proposed rulemaking on its Internet website, providing contact information for any member of the public to join the group or submit comments. Further, Energy sent a special e-mail notice to representatives of ten environmental public interest groups in September, informing them of the ongoing discussion of possible amendments to the noise rules and inviting their comments. During the informal comment period (August through October 2003), Energy hosted a discussion of possible changes the noise rules via e-mail. Energy reviewed and considered approximately 400 e-mail messages about the noise rules during this informal discussion period. In addition, Energy conducted two workshops that were open to the public. Energy has continued to post information on its website about the rulemaking process. Energy has also continued to receive and consider comments on the noise rules since the conclusion of the informal comment period at the end of October. The comments Energy has received regarding the noise rules have significantly influenced the proposed rules.



State of Oregon  
DEPARTMENT OF ENERGY  
and DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal  
for

Amendment of Noise Control Regulations for wind energy facilities (OAR Chapter 340, Div. 35)

Land Use Evaluation Statement

**1. Explain the purpose of the proposed rules.**

This rulemaking proposes to amend the state noise control regulations for new industrial or commercial sources (OAR 340-035-0035) as they pertain to large wind energy facilities. The existing noise regulations, developed in 1974 did not envision wind energy facilities because wind power was not developed in the state. Consequently, the regulations are difficult to apply to wind technology. The Energy Facility Siting Council, through its statutory authority, applies the noise rules to facilities subject to the site certificate requirement (ORS 469.320). The proposed amendments will simplify the noise regulations for wind energy facilities and would reduce costs associated with obtaining a site certificate. In addition, proposed OAR 340-035-0110 gives notice of the termination of the Environmental Quality Commission's (EQC) and Department of Environmental Quality's (DEQ) responsibilities for administering the noise program and the public's obligations to submit plans or certifications to the DEQ. The DEQ noise program was terminated in 1991.

**2. Do the proposed rules affect existing rules, programs or activities that are considered land use programs in the DEQ State Agency Coordination (SAC) Program?**

Yes   x   No       

**a. If yes, identify existing program/rule/activity:**

Yes, however the affected activities relate to a program that no longer exists within DEQ. OAR 340-018-0030(1) identifies Air Quality Division activities that are identified as DEQ land use actions. When DEQ administered the state noise program, the noise regulations for new industrial and commercial sources were administered through the air quality permitting process. DEQ, with legislative approval, has not administered the noise program since 1991.

**b. If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?**

Yes        No   x   (if no, explain):

Not applicable. ORS 197.180(1) requires state agency compliance only to the extent that an agency is otherwise authorized by law to comply. As stated above, DEQ no longer administers a noise program, and therefore lacks authority to act nor has ability to exercise any discretion.

**c. If no, apply the following criteria to the proposed rules.**

Not applicable

**In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.**

Not applicable

**3. If the proposed rules have been determined a land use program under 2. above, but are not subject to existing land use compliance and compatibility procedures, explain the new procedures the Department will use to ensure compliance and compatibility.**

Not applicable

Oregon Department of Energy Rulemaking Proceeding  
Oregon DEQ Noise Control Regulations

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**“Table 8”**

<b>Statistical Noise Limits for Industrial and Commercial Sources</b>		
<b>Maximum Permissible Statistical Noise Levels (dBA)</b>		
<b>Statistical Descriptor</b>	<b>Daytime (7:00 AM - 10:00 PM)</b>	<b>Nighttime (10:00 PM - 7:00 AM)</b>
L <sub>50</sub>	55	50
L <sub>10</sub>	60	55
L <sub>1</sub>	75	60
The hourly L <sub>50</sub> , L <sub>10</sub> and L <sub>01</sub> noise levels are defined as the noise level equaled or exceeded 50 percent, 10 percent and 1 percent of the hour, respectively.		





## US ARMY CHEMICAL MATERIALS AGENCY

### Umatilla Chemical Agent Disposal Facility Start of Agent Operations Status

Presented to:  
Oregon Environmental Quality Commission

Presented by:  
Don Barclay, PM-ECW Site Project Manager  
Doug Hamrick, WDC Project General Manager

20 May 2004



5/20/04 EAC Meeting Item F Handout



## Overview

US ARMY CHEMICAL MATERIALS AGENCY

# Project is Nearing Readiness to Begin the Destruction of Chemical Weapons





# Agenda

US ARMY CHEMICAL MATERIALS AGENCY

- Opening Comments
  - Mr. Michael Parker, Director Chemical Materials Agency (CMA)
  - Mr. Mark Evans, President Washington Demilitarization Company
  - Lt. Col. “Doc” Holliday, Commander Umatilla Chemical Depot
- What’s Been Done to Verify Readiness
- What’s Left to Be Done Before Operations
- What Will Happen After Operations Begin



# Verifying Readiness

US ARMY CHEMICAL MATERIALS AGENCY

- **Conducted Operational Readiness Review (ORR)**
  - Yearlong Process
  - Reviewed 27 Functional Areas
    - Covered 1256 Criteria
    - Documented Compliance by Responsible Manager
    - Verified Compliance by ORR Board
    - Findings Identified / Verified Closed by ORR Board
  - Verified Staff Knowledge Level
    - Conducted 104 Interviews
    - Included Operations, Maintenance, Lab, Engineering Personnel, etc.
  - Conducted Integrated Operations Demonstration (IOD)
    - Completed 37 IODs Over 10 Day Period
    - Evaluated 18 Different Routine Operations / Contingencies
    - Covered all 4 Crews Over Day & Night Shift





# Verifying Readiness

US ARMY CHEMICAL MATERIALS AGENCY

- Conducted Additional Reviews
  - Completed Annual Center for Disease Control Review of Agent Monitoring
    - Verified Required Recommendations Implemented
    - Confirmed Monitoring Systems / Personnel Ready for Agent Operations
  - Conducted Surety Site Assist Visit by CMA
  - Performed Integrated Plant Run to Demonstrate Sustained Operations
  - Completed Chemical Weapons Convention Treaty Final Engineering Review to Verify Compliance
  - Completing Army Materiel Command Readiness Review
    - Covered Surety, Emergency Preparedness, Security, Environmental, Lab, Safety, Medical, Operations, etc.
    - Included 20 Personnel from Multiple Army Agencies
- Completed Community Outreach Survey
- DEQ Compliance Assessment Underway



# Remaining Activities

US ARMY CHEMICAL MATERIALS AGENCY

- Close Remaining ORR Findings
  - 25 Findings, Covering EQC Startup Approval, Permit Modification Requests, Regulatory Reports, Army Startup Approval, etc.
- Closeout Army Materiel Command Readiness Review
  - Review Completes Today
  - Close Findings from Review
- Obtain Remaining DEQ Approvals
  - Permit Modification Requests
  - Deactivation Furnace System / Liquid Incinerator Surrogate Trial Burn Reports
- Complete DEQ Compliance Assessment Actions
- Complete Implementation of Security Requirements
- Continue to Hone Operational Performance





# Agent Operations Activities

US ARMY CHEMICAL MATERIALS AGENCY

- Agent Operations Startup Approach
  - Slow and Deliberate Ramp Up
  - Stop If Anything Unexpected
  - Verification of System Response Prior to Next Step
  - Evaluation of Staff Personnel Before Increasing Feed Rate
  - Focused Oversight for First 2 Months
- Continue to Incorporate Lessons Learned
  - Internally from Crew to Crew
  - Externally from Other Sites
- Utilize Risk Management Approach
  - Monitor Tooele Experience with Mustard Processing
  - Implement New Agent Exposure Limits
  - Enhance Brine Reduction Area Efficiency



## Summary


US ARMY CHEMICAL MATERIALS AGENCY

# Project is Nearing Readiness to Begin the Destruction of Chemical Weapons



State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** May 5, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director   
**Subject:** Agenda Item I, Informational Item: Approval Process for Start of Agent Operations at UMCDF  
May 20, 2004 EQC Meeting

**Purpose of Item** To provide the EQC an overview and status of the process of approving the start of chemical agent operations at the Umatilla Chemical Agent Disposal Facility (UMCDF).

**Background** On March 8, 2002 the EQC approved a modification to the UMCDF Hazardous Waste Storage and Treatment Permit (HW Permit) to add certain requirements for the start of surrogate and agent operations at UMCDF. In accordance with Attachment 6 of the HW Permit, the Department authorized the start of surrogate operations on July 12, 2002. Condition D.11. of Attachment 6 requires that the Permittees obtain written authorization from the Commission for the start of agent shakedown operations. On behalf of the Commission the Department opened a public comment period on May 4, 2004 and prepared a "Compliance Assessment for the Start of Agent Operations" for public review. A copy of the May 4 Compliance Assessment is attached. The public comment period will remain open until June 7, 2004.

**Key Issues** Thirty-nine of the 69 requirements specifically identified by the Department as pre-requisites to the start of agent operations have been completed and are considered closed. The remaining 30 requirements include:

- Implementation of recommendations from the Centers for Disease Control regarding the chemical agent monitoring program;
- Completion of shakedown activities and a Performance Test on the Brine Reduction Area;
- Submittals related to the treatment of secondary waste;
- Completion of Washington Demilitarization Company's (WDC) "Operational Readiness Review" and closure of findings generated by the review process;
- Submittal, review, and approval of numerous permit modification requests;
- Completion of the Post-Trial Burn Health and Ecological Risk

Assessment Protocol;

- Completion of targeted compliance inspections by the Department;
- Submittal of operating procedures governing the movement of munitions from the igloos to UMCDF, and tracking the munitions within UMCDF as they move through processing lines.

The various open requirements are discussed in more detail in the Compliance Assessment.

**Next Steps**

Next steps:

- Public hearing on the start of chemical agent operations, May 20, 2004 in Hermiston.
- Completion of all actions by UMCDF and the Army that are required prior to EQC's authorization to start chemical agent operations.
- UMCDF submittal and Department review and approval of all required permit modification requests, trial burn reports, and other regulatory submittals that must precede the start of agent operations.
- Preparation of a staff report to EQC with an updated compliance assessment, response to public comments, and a recommendation regarding approval for start of chemical agent operations.
- EQC decision authorizing the start of chemical agent operations at UMCDF.

**EQC  
Involvement**

EQC will hold a public hearing in Hermiston at 7:00 p.m. on Thursday, May 20, 2004. Subsequently, after all other requirements necessary for the start of chemical agent operations have been met, the final step in the process will be EQC's authorization for UMCDF to begin.

**Attachments**

"Compliance Assessment for Start of Chemical Agent Operations," dated May 4, 2004.

Approved:

Division:



Report Prepared by: Dennis Murphey

Phone: 541/567-8297, ext 22



**Compliance Assessment  
Start of Chemical Agent Operations  
Umatilla Chemical Agent Disposal Facility  
Revision 0**

**HAZARDOUS WASTE STORAGE AND TREATMENT  
PERMIT NO. ORQ 000 009 431**



**Prepared By**

**Oregon Department of Environmental Quality  
Chemical Demilitarization Program  
256 E. Hurlburt, Suite 105  
Hermiston, OR 97838  
541-567-8297**

**May 4, 2004**

[DEQ Item No. 04-0679]

Compliance Assessment  
Start of Chemical Agent Operations  
Umatilla Chemical Agent Disposal Facility  
(Revision 0)  
May 4, 2004

HAZARDOUS WASTE STORAGE AND TREATMENT  
PERMIT NO. ORQ 000 009 431

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## LIST OF ACRONYMS

ACAMS	Automatic Continuous Air Monitoring System
ACDP	Air Contaminant Discharge Permit
ACS	Agent Collection System
ANCDF	Anniston Chemical Agent Disposal Facility
ASME	American Society of Mechanical Engineers
AWFCO	Automatic Waste Feed Cut-Off
BDS	Bulk Drain Station
BRA	Brine Reduction Area
CAIRA	Chemical Accident/Incident Response and Assistance
CDC	Centers for Disease Control and Prevention
CDP	[DEQ] Chemical Demilitarization Program
CFR	Code of Federal Regulations
CHB	Container Handling Building
CEMS	Continuous Emission Monitoring System
CMA	[U.S. Army] Chemical Materials Agency (formerly Program Manager for Chemical Demilitarization)
CMP	Comprehensive Monitoring Program
CMS	Carbon Micronization System
CSEPP	Chemical Stockpile Emergency Preparedness Program
DAAMS	Depot Area Air Monitoring System
DEQ	[Oregon] Department of Environmental Quality
DFS	Deactivation Furnace System
EOC	Emergency Operations Center
EONC	Enhanced Onsite Container (munition transport container)
EPA	U.S. Environmental Protection Agency
EQC	[Oregon] Environmental Quality Commission
FCC	Facility Construction Certification
FMC	Facility Modification Certification
FRP	Fiberglass Reinforced Piping
HDC	Heated Discharge Conveyor (part of the DFS)
HVC	Heating, Ventilation, and Cooling
HW	Hazardous Waste
IQRPE	Independent Qualified Registered Professional Engineer
JACADS	Johnston Atoll Chemical Agent Disposal System
LIC	Liquid Incinerator

LQCP	Laboratory Quality Control Plan
MAO	Mutual Agreement and Order
MDB	Munitions Demilitarization Building
MPF	Metal Parts Furnace
NOD	Notice of Deficiency
NON	Notice of Noncompliance
NOV	Notice of Violation
NPCD	[EPA] National Program Chemicals Division
NPDES	National Pollutant Discharge Elimination System (storm water discharge)
OCE	[DEQ] Office of Compliance and Enforcement
ORR	Operational Readiness Review
PAS	Pollution Abatement System
PCB	Polychlorinated Biphenyl
PFS	Pollution Abatement System Carbon Filter System
PMCD	[U.S. Army] Program Manager for Chemical Demilitarization (see CMA)
PMCSO	[U.S. Army] Project Manager for Chemical Stockpile Disposal (see PM ECW)
PM ECW	[U.S. Army] Program Manager for Elimination of Chemical Weapons (formerly Project Manager for Chemical Stockpile Disposal)
PMN	Perimeter Monitoring Network
PMR	Permit Modification Request
PostRA	Post-Trial Burn Health and Ecological Risk Assessment
QRA	Quantitative Risk Assessment
RCRA	Resource Conservation and Recovery Act
SDS	Spent Decontamination System
SOP	Standard Operating Procedure
STB	Surrogate Trial Burn
TOCDF	Tooele Chemical Agent Disposal Facility
TSCA	Toxic Substances Control Act
UMCD	Umatilla Chemical Depot
UMCDF	Umatilla Chemical Agent Disposal Facility
WDC	Washington Demilitarization Company
WPCF	Water Pollution Control Facility



Compliance Assessment  
Start of Chemical Agent Operations  
Umatilla Chemical Agent Disposal Facility

May 4, 2004

**EXECUTIVE SUMMARY**

The Umatilla Chemical Agent Disposal Facility (UMCDF) is located in northeastern Oregon at the Umatilla Chemical Depot (UMCD), about seven miles west of Hermiston, Oregon (about 175 miles east of Portland, Oregon). The UMCDF is a hazardous waste treatment facility that will use four incinerators to destroy the stockpile of chemical warfare agents (including the nerve agents GB and VX, and the blister agent HD—also known as “mustard”) that has been stored at UMCD since 1962. A Hazardous Waste Storage and Treatment Permit (HW Permit) was issued by the Oregon Environmental Quality Commission (EQC) in February 1997. Construction of UMCDF was completed in 2001 and since then the facility has been completing various systemization and testing activities, to include test burns on the incinerators using “surrogate” material to simulate chemical agent. UMCDF has indicated that it believes it will be ready to start operations with chemical warfare agents by the end of July, 2004.

Attachment 6 of the HW Permit requires that the UMCDF Permittees obtain the written approval of the EQC prior to starting chemical agent operations. On behalf of the EQC, the Oregon Department of Environmental Quality (DEQ) is assessing the status of UMCDF’s compliance with the requirements of various environment permits. This document reflects the results of the compliance assessment and discusses specific requirements remaining that the Department believes UMCDF must comply with prior to the EQC authorization to start chemical agent operations. The DEQ and EQC are also inviting the public to comment on UMCDF’s readiness to begin chemical agent operations.

This document, subsequent revisions, and any public comments received, will all become part of the decision-making process that the EQC will use to determine whether to approve the start of agent operations at UMCDF. A public comment period is open from May 4 through June 7, 2004. A public hearing before the EQC is scheduled for May 20, 2004 in Hermiston.

DEQ has identified a total of 69 discrete requirements that must be completed before UMCDF may begin agent operations. As of May 4, 2004, 39 requirements have been met and are considered closed. The Department is unable to conclude at this time that UMCDF is in full compliance with all requirements necessary for the start of agent operations. However, this document will be updated approximately every 30-45 days to reflect ongoing progress.

## 1. INTRODUCTION

On March 28, 2002 the Oregon Environmental Quality Commission (EQC or Commission) signed the "Findings and Conclusions of the Commission and Order," approving Permit Modification UMCDF-01-028-MISC(EQC), "Approval Process for UMCDF Operations." The Commission Order modified the Umatilla Chemical Agent Disposal Facility (UMCDF) Hazardous Waste Storage and Treatment Permit (HW Permit) to add requirements related to the start of operations at UMCDF (in addition to existing requirements). The new requirements were added to the HW Permit as Attachment 6, "Requirements for the Commencement of Unit and Facility Operations" (see Appendix A).

Attachment 6 of the HW Permit requires that UMCDF obtain the written approval of the Department prior to commencing hazardous waste operations (with surrogate material) and to obtain the written approval of the EQC prior to commencing agent operations. The Department approved the start of surrogate operations in July, 2002 after a public comment period and Compliance Assessment process similar to the one being undertaken here for the start of agent operations. It should be noted that many of the requirements the Department used to assess compliance prior to the start of surrogate operations were met in 2002 and are not repeated here, unless the requirement was related to an ongoing activity, such as submittals of quarterly reports.

For example, there were several requirements for the start of surrogate operations that related to various activities associated with emergency response operations. For example, there was a HW Permit condition that required UMCDF to obtain notification from the Office of the Governor that the Chemical Stockpile Emergency Preparedness Program (CSEPP) had achieved an adequate level of readiness prior to the start of hazardous waste operations. That condition was met in 2002 and there is no continuing requirement related to this condition; consequently it is not listed here as a requirement for starting agent operations. However, a condition requiring UMCDF to submit semi-annual progress reports on the status of CSEPP is still in force and is included here.

Attachment 6 of the HW Permit requires that the UMCDF Permittees obtain the written approval of the EQC prior to starting chemical agent operations. On behalf of the EQC, the Oregon Department of Environmental Quality (DEQ or Department) is assessing the UMCDF Permittees' compliance with the requirements of various environment permits. This document reflects the results of the compliance assessment and discusses specific requirements remaining that the Department believes UMCDF must comply with prior to the EQC authorization to start chemical agent operations.

This document, subsequent revisions, and any public comments received, will all become part of the decision-making process that the EQC will use to determine whether to approve the start of agent operations at UMCDF. A public comment period was opened on May 4, 2004 and will be held open until the close of business on June 7, 2004. A Request for Comments and Notice of Public Hearing ("Notice") was sent to the Umatilla mailing list on April 23, 2004. A public hearing before the EQC is scheduled



for May 20, 2004 in Hermiston, Oregon (see Appendix B for a copy of the Notice that includes information about the May 20 meeting and instructions on sending written comments.).

***The public is encouraged to provide oral comments to the EQC at the public meeting in Hermiston on May 20, 2004. Written comments (mail, e-mail, or fax) must be received by 5:00 p.m. on June 7, 2004.***

***(See Appendix B for information on the meeting and how to send comments.)***

A brief background and description of UMCDF and the HW Permit is presented below in Section 2. Section 3 describes the process that the Department used to develop the list of requirements that are listed in the tables in Appendix C and provides a summary of UMCDF compliance status with the various requirements. Section 4 is reserved for discussion of public comments received and will not be completed until another revision of this document is prepared after the close of the public comment period. Section 5 presents the Department's Conclusions about UMCDF's compliance status as of the date of this document.

## **2. DESCRIPTION OF UMCDF**

The Umatilla Chemical Agent Disposal Facility (UMCDF) is located in northeastern Oregon at the Umatilla Chemical Depot (UMCD), about seven miles west of Hermiston, Oregon (about 175 miles east of Portland, Oregon). The address is 78072 Ordnance Road, Hermiston, OR 97838-9544. The UMCDF is a hazardous waste treatment facility that will use four incinerators to destroy the stockpile of chemical warfare agents that has been stored at UMCD since 1962.

The chemical agents stored at UMCD include nerve agents and blister ("mustard") agents in liquid form. Nerve agents ("GB" and "VX") are contained in munitions, such as rockets, projectiles, and land mines, and in large containers, such as spray tanks, bombs, and "ton containers." Mustard agent is stored only in ton containers.

UMCDF includes two liquid injection incinerators (Liquid Incinerators 1 and 2) to destroy liquid nerve and blister agents, and two other high temperature furnaces that will thermally treat metal parts and destroy any explosives and propellants (the "Metal Parts Furnace" and the "Deactivation Furnace System"). Container handling, munitions disassembly, and incinerator loading is conducted within an enclosed building called the "Munitions Demilitarization Building" (MDB). Air emissions from the building and the incinerators will be filtered before being released to the atmosphere. Computer controls will shut down waste feed to the incinerators if proper operating conditions are not maintained or if chemical agent is detected in the exhaust from any of the four incinerators or the MDB.

The HW Permit to build and operate UMCDF was issued to the United States Army by the EQC and DEQ in February 1997.<sup>1</sup> Construction was completed in August 2001 and UMCDF then completed "systemization" (a pre-operational testing phase that involves testing components, instruments, and associated equipment using non-hazardous materials and waste feeds). UMCDF entered a new phase of testing operations in July 2002 when it began feeding "surrogate" material, a mix of chemicals that is designed to simulate the chemical agent itself, but is much less toxic. Operational testing of the incinerators and their pollution abatement systems begin with what is called a "shakedown" phase. The shakedown process allows the facility to test systems in an integrated operation and to train the facility staff in various operations and maintenance activities. When the facility has completed the shakedown phase on an incinerator, it must conduct a full-scale test known as a "trial burn."

Because of the extreme toxicity of chemical warfare agents, each incinerator at UMCDF must successfully pass a "surrogate trial burn" (STB) before chemical agent is fed to the furnace. Once UMCDF receives approval to start agent operations, each incinerator must go through the shakedown phase again (with chemical agent), and then successfully pass a chemical agent trial burn.

Three STBs have been conducted at UMCDF as of April, 2004. The STB on Liquid Incinerator 1 (LIC1) was conducted from January 27 through February 8, 2003. The STB on the Deactivation Furnace System (DFS) was conducted from September 26 through October 13, 2003. The STB on the Metal Parts Furnace (MPF) was conducted from January 15 through February 1, 2004. Liquid Incinerator 2 (LIC2) is scheduled to undergo a STB in June, 2004. Results to date indicate that the UMCDF incinerators will be able to meet performance and emission standards during agent operations.

### **3. COMPLIANCE REVIEW AND ASSESSMENT**

DEQ reviewed the conditions of the UMCDF HW Permit to develop a list of requirements for the start of agent operations in general, and requirements specific to the start of the Deactivation Furnace System and the Liquid Incinerator 1 (as the first incinerators that will process chemical warfare agent). Thirty-nine requirements were identified through review of the HW Permit. The DEQ often imposes additional conditions when it approves Permit Modification Requests or accepts Facility Construction/Modification Certification Packages. There were an additional 14 requirements identified during the review of conditional approvals.

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<sup>1</sup> There are three "Permittees" named on the UMCDF HW Permit. The U.S. Army Umatilla Chemical Depot and the U.S. Army Project Manager for Chemical Stockpile Disposal (now known as the Program Manager for Elimination of Chemical Weapons) are named as Owner and Operator of UMCDF. Washington Demilitarization Company (the Army's construction and operations contractor) was added to the HW Permit as a co-operator of UMCDF after being awarded the contract to build and operate UMCDF.



In addition to the permit governing treatment and disposal of hazardous waste, DEQ also regulates UMCDF through an air contaminant discharge permit and through water discharge permits. The Umatilla Chemical Depot (UMCD) is also governed by various regulations regarding the storage of hazardous waste and has been operating for many years under what is called "interim status." Interim status facilities must operate in compliance with all applicable regulations until such time that a site-specific permit is issued. The DEQ has prepared a draft hazardous waste storage permit for UMCD, but the storage permit has not yet been finalized. However, there are several conditions in the draft UMCD Storage Permit related to documents that must be submitted to the DEQ before chemical agent munitions may be moved from the storage igloos for transfer to UMCDF. Consequently, those requirements were included here.

UMCDF compliance with state and federal environmental regulations is overseen not only by the DEQ, but also by the U.S. Environmental Protection Agency (EPA). EPA issued a National Permit to the U.S. Army's demilitarization facilities under the Toxic Substance and Control Act (TSCA) that governs facilities that dispose of polychlorinated biphenyls (PCBs). The TSCA permit contains conditions specific to the start of agent operations at UMCDF.

Review of the various air, water, TSCA, and hazardous waste storage permits identified another 16 regulatory requirements that UMCDF must meet before starting chemical agent operations.

In summary, there were 39 requirements generated by review of the UMCDF HW Permit, 14 requirements generated by conditional Department approvals, and 16 requirements from review of other environmental permits, for a total of 69 discrete requirements that must be completed before UMCDF may begin agent operations. As of May 4, 2004, 39 requirements have been met and are considered closed. A summary of the various open requirements and UMCDF's current compliance status with each is presented below in sections 3.1 through 3.3. Section 3.4 presents a discussion and summary of regulatory enforcement actions that the Department has taken against UMCDF for environmental violations since the start of surrogate operations in July 2002.

### **3.1 Conditions of the UMCDF Hazardous Waste Storage and Treatment Permit**

Table C-1 in Appendix 1 ("Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit") lists 39 requirements related to conditions in the UMCDF Hazardous Waste Storage and Treatment Permit (HW Permit). Of the 39 requirements listed in Table 1, the Department has determined that UMCDF is in full compliance with 20 of them and these items are considered closed. Some of the requirements listed as closed are actually "continuing" requirements related to such things as submittal of quarterly or annual reports. "Closure" of these items for the purposes of this Compliance Assessment does not relieve UMCDF of continuing compliance with these types of requirements. The Department will monitor UMCDF's

ongoing compliance with these and other conditions of the HW Permit throughout the operating life of the facility.

Of the nineteen HW Permit requirements still open, two are related to obtaining final operating approvals from the U.S. Army Chemical Materials Agency (CMA) and the EQC (requirements 1-36 and 1-37). CMA has its own internal approval process for the start of chemical agent operations. These final approvals will probably be the last items to be closed. The remaining 17 open requirements listed in Table C-1 are discussed below.

Requirements 1- 8 and 1-19 are related to what is known as the "independent oversight program." The UMCDF HW Permit requires that the Permittees provide reports generated by agencies identified as "independent oversight agencies." One of these agencies is the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC). The CDC oversees the UMCDF chemical agent air monitoring program, and has conducted several on-site visits over the last few years. In November 2003 the CDC issued a "Technical Report" based on its most recent review of the UMCDF agent monitoring program. The 2003 Technical Report included numerous recommendations regarding improvements to the monitoring program at UMCDF, including recommendations to:

1. Improve Automatic Continuous Air Monitoring System (ACAMS) performance by minimizing sources of errors;
2. Add a second confirmation analysis technique within the laboratory to confirm ACAMS alarms;
3. Add a monitoring station to the Metal Parts Furnace discharge conveyor area;
4. Develop quality control procedures to verify the continuing viability of the new restrictors in the stack probe to pass chemical agent;
5. Institute quality control procedures to verify that ACAMS can reliably monitor at the 40 Time Weighted Average (TWA) level in an enhanced onsite container;
6. Develop and publish internal procedures that outline which Depot Area Air Monitoring System (DAAMS) tubes co-located with non-alarming ACAMS will be analyzed;
7. Install a charcoal trap on the gas chromatograph in the chemical agent standards room;
8. Relocate the inlet air for the Life Support System air.

The CDC conducted a follow-up visit in February 2004 to review UMCDF's progress in implementing the 2003 recommendations, and another visit is planned for May, 2004. The Department is holding these two requirements open until the CDC has completed its on-site reviews and prepares its final report.



Requirements 1-21 and 1-39 are related to the operation and testing of the Brine Reduction Area and the HW Permit requirement that the Brine Reduction Area be "operational and ready to treat pollution abatement system brines" by the time agent operations begin. The Permittees submitted a Brine Reduction Area Test Plan to the Department in 2003 that is currently in the review and approval process (see no. 1-20). However, the Department will not close requirements 1-21 or 1-39 until UMCDF has successfully demonstrated through an approved Performance Test that the Brine Reduction Area can operate at expected brine feed rates and stay within its permitted emission limits (see also requirement 2-6).

Requirements 1-23 and 1-24 are related to the approval of surrogate trial burn reports and operational parameters for Liquid Incinerator 1 (LIC1) and the Deactivation Furnace System (DFS), the first two furnaces necessary to begin chemical agent disposal operations. Both surrogate trial burn reports have been submitted to the Department. The Department has issued two Notices of Deficiency (NOD) on the LIC1 report, and is currently reviewing the Permittees' response to the second NOD. One NOD has been issued on the DFS report, but the Permittees' response is not due until May 28, 2004.

UMCDF was constructed without the Dunnage Furnace, the incinerator that was originally intended to treat secondary process wastes from UMCDF, such as lab waste, wood pallets, used protective suits, spent carbon from filter units, etc. There were also many questions about the disposition of similar chemical agent-contaminated wastes that had been generated by UMCD over the many years of maintaining the stockpile. Because of the concern that this waste not be stored indefinitely, the EQC imposed requirements through the HW Permit that UMCDF identify and permit treatment processes for all secondary waste streams expected to be generated by chemical agent operations and for all wastes currently stored at UMCD (which must be treated at UMCDF). Over the last several years UMCDF has submitted permit modification requests to deal with virtually all of the secondary waste streams, with the exception of spent carbon and multi-agent contaminated waste.

Requirements 1-28, 1-30, and 1-32 are all related to the storage and/or processing of secondary waste. Requirement 1-28 is related to modifying storage igloos to prepare for the storage of "high-level" agent-contaminated wastes pending processing at UMCDF—the Department requires further verification that the storage igloos have been modified appropriately to store this type of waste. Requirement 1-30 requires UMCDF to obtain Department approval of a permit modification request recently submitted to address how chemical agent monitoring will be conducted in the discharge area of the Metal Parts Furnace when it is processing secondary wastes. The permit modification request is currently under review.

The HW Permit also requires that the Permittees provide periodic updates on the status of the development of treatment technology for spent carbon, one of which is due just before the start of chemical agent operations (requirement 1-32). The Permittees have informed the Department of their intent to use the "Carbon Micronization System" to pulverize spent carbon for feed into the Deactivation Furnace System. This technology



was developed and used at the Johnston Atoll Chemical Agent Disposal System (JACADS). Other than spent carbon, the only secondary waste that has still not been permitted for treatment is waste that has been contaminated by more than one agent. Final treatment options for multi-agent contaminated wastes must be resolved through a permit modification request that will be submitted before the start of the second agent campaign (munitions containing GB nerve agent will be processed in the first "campaign," and VX munitions will be processed in the second campaign).

Requirements 1-33, 1-34, and 1-35 are all related to UMCDF's internal process known as an "Operational Readiness Review" (ORR). Attachment 6 of the UMCDF HW Permit requires that the Permittees provide to the Department certain reports generated by UMCDF's internal readiness review process. The ORR is being conducted by the Washington Demilitarization Company, as allowed by the U.S. Army Chemical Materials Agency "Policy Statement 28" (Preoperational Surveys and Operational Readiness Evaluations, dated August 26, 2003). The ORR generates "findings," which are categorized by significance. Category 1 findings are considered essential to the safety of personnel or the environment or the operational readiness of the system and must be resolved before the start of operations. Category 2 findings are not "immediately essential" to the safety of personnel or the environment or the operational readiness of the system, but must be scheduled for resolution. These three requirements relate to the submittal by the Permittees of ORR reports and statements that they have closed out all Category 1 findings and scheduled all Category 2 findings for resolution.

Requirement 1-2 is related to a computer monitoring system that has been installed at the DEQ's Chemical Demilitarization Program office in Hermiston. The monitoring system connects to UMCDF data recorders via a modem, and provides a means by which DEQ staff and the public can access current information about each of the treatment units at UMCDF, to include furnace temperatures, waste feed rates, pollution abatement system operating data, etc. The monitor was installed in the DEQ Hermiston office in May, 2002. However, DEQ is still working with UMCDF to come to agreement on maintenance criteria and the need to keep the screen display information current.

Requirement 1-18 is related to approval of a Post-Trial Burn Human Health and Ecological Risk Assessment (PostRA) Protocol. The PostRA protocol contains detailed information on how the DEQ will conduct the Post-RA after the completion of the first agent trial burn to assess whether operation of UMCDF will pose any unacceptable risks to the local population. The Protocol must be completed before the start of agent operations. The Department is finalizing the Protocol in response to public comments received during a comment period held in late 2003.

Requirements 1-3, 1-27, and 1-29 are all related to documents that must be reviewed and approved by the Department before the start of agent operations. UMCDF is replacing some of the piping used in the pollution abatement system. Because this is a permitted system, requirement 1-3 requires that a "Facility Modification Certification" package be submitted upon completion of the work to ensure the Department the design



and the work meet Oregon engineering standards. Requirement 1-27 is related to a munitions tracking system proposed for use at UMCDF that must receive Department approval prior to agent operations. The tracking procedure was submitted in 2003, but because the procedure had been revised, a new version was submitted in late April. It is still under Department review. Requirement 1-29 relates to a drawing and specification update that must be submitted within a specified time frame before agent operations.

### **3.2 Conditional Department Approvals**

Table 2 ("Compliance with Conditional Department Approvals") lists 14 requirements that were imposed as conditions when the Department approved certain Permit Modification Requests (PMRs) or accepted certain Facility Construction Certification (FCC) or Facility Modification Certification (FMC) Packages. Ten of the 14 requirements have been completed and are considered closed. Two of the remaining four open requirements (2-6 and 2-14) are related to Permit Modification Requests that must be approved by the Department before the start of agent operations. The other two open requirements in Table 2 (2-10 and 2-11) are related to specific inspections that the Department intends to perform (in addition to the Department's ongoing compliance inspection program).

Requirement 2-10 is related to the Department's intention to conduct a "last-minute" check of the agent-resistant floor coatings in the Munitions Demilitarization Building (MDB). Because of numerous human and mechanical activities within the MDB necessary for preparation for agent operations, the Department wants to ensure that any damage to the coatings was identified and repaired. Requirement 2-11 is also related to a specific inspection requirement, in this case, an inspection of the water-tightness of the MDB filter unit "vestibules." The vestibules had been found to be leaking in a previous inspection and have not yet been re-checked.

### **3.3 Requirements of Other Environmental Permits**

Table 3 ("Compliance with the Requirements of Other Environmental Permits") lists a total of 16 requirements from the Air Contaminant Discharge Permit, Water Pollution Control Facility Permits, National Pollution Discharge Elimination System Storm Water Discharge Permit, the UMCD draft Hazardous Waste Storage Permit, and the Toxic Substances Control Act Permit. All items associated with the Air Permit were found to be in compliance. The Department is still reviewing current compliance status with the water permits (requirements 3-8 and 3-9), and an onsite inspection is scheduled for mid-May. There is one open requirement (3-12) from the Toxic Substances Control Act (TSCA) Permit. TSCA is the federal program that regulates the treatment and disposal of wastes contaminated with polychlorinated biphenyls (PCBs). Under the National TSCA Permit issued for the Army's chemical demilitarization facilities, EPA must grant approval for the disposal of PCB-contaminated material. Because the first munition to be processed at UMCDF will be M-55 rockets (many of which include PCB-



contaminated material) UMCDF must receive EPA approval before they begin agent operations.

The remaining four requirements (3-13 through 3-16) are related to information that the Department must receive from the Umatilla Chemical Depot regarding procedures that will be followed during the movement of munitions from the storage igloos to UMCDF. These are requirements currently contained within the Draft UMCDF Hazardous Waste Storage Permit. Although the Draft UMCD Storage Permit has not yet been finalized and issued by the Department, this information must still be submitted early enough to allow Department review before the start of agent operations. UMCD has indicated that the information will be provided to the Department by mid-May.

### **3.4 UMCDF Compliance History**

The Department conducts regular compliance inspections of the UMCDF site and the UMCDF Permittees also do regular internal reviews of their compliance with the requirements of the HW Permit and with various other regulations governing the storage, management, and transportation of hazardous waste. The UMCDF Permittees submit a quarterly report to the Department describing any non-compliances that were identified during the quarter, and the corrective action to preclude recurrence. A summary of self-reported violations and Department enforcement actions (resulting from inspections or reports received directly from the Permittees) is provided below. Note that the summary is for actions taken during the time period July, 2002 (when UMCDF started hazardous waste operations) through April, 2004, and is limited to those actions involving UMCDF—enforcement actions taken against the Umatilla Chemical Depot involving only UMCD hazardous waste storage activities are not included here.

#### **Self-Reported Violations**

UMCDF provides the Department a report each quarter on a summary of any violations the UMCDF Environmental Compliance Department has noted. The quarterly report lists all violations noted by UMCDF's internal compliance program. It should be noted that significant violations, especially HW Permit violations, are communicated immediately upon discovery directly to the Department through other reporting mechanisms. UMCDF submitted seven quarterly reports covering self-reported non-compliances (and the corrective actions taken) for the period July 1, 2002 through March 31, 2004.

Most of the items listed in the reports are relatively minor violations and the Department did not usually take any formal enforcement action against UMCDF related to those violations. For example, there were some instances of improper management of hazardous waste such as aerosol cans, fluorescent lamps, and oil filters. In other cases there were paperwork errors involving shipment manifests, failure to record an inspection time on a log sheet or meet a reporting deadline, and failure to place an accumulation start date on containers used to manage hazardous wastes. Given the nature and complexity of hazardous waste storage and management regulations these types of



violations are not unusual for a large facility, and the Department believes that UMCDF took appropriate corrective action after violations were discovered.

The quarterly non-compliance reports also contain self-reported violations of HW Permit conditions governing the treatment of hazardous waste. These violations occurred during shakedown and testing operations as incinerators were brought on line and testing operations began. Several were related to control software issues that have since been corrected. In other instances UMCDF exceeded permitted emission limits for some metals during testing conducted prior to and during surrogate trial burn operations. The Department considered some of these violations to be significant enough to warrant the issuance of a Notice of Non-Compliance and/or a Notice of Violation and assessment of a civil penalty. These items are discussed below.

#### Department Enforcement Actions Against UMCDF

Since July 2002 the Department has issued eight Notices of Non-Compliance (NON) to UMCDF related to hazardous waste violations and two NONs to the Umatilla Chemical Depot (UCMD) for violations of UMCDF's Air Contaminant Discharge Permit (Air Permit). Violations of the Air Permit are issued only to UMCD because it is the sole permittee listed on the UMCDF Air Permit. Five of the 10 NONs in this time frame were referred to the Department's Office of Compliance and Enforcement (OCE) for further action and determination of whether a Notice of Violation (NOV) should be issued and a civil penalty issued. Three of the five referrals have so far resulted in an NOV and civil penalty—two of the referrals are still pending. In one case the Department and the Permittees held settlement negotiations and ultimately signed a Mutual Agreement and Order. A description of each of the 10 NONs (and associated NOV if applicable) issued since July 2002 is included in Appendix D.

#### **4. PUBLIC COMMENTS**

The public comment period on the Start of Agent Operations at UMCDF is open from May 4, 2004 through June 7, 2004. A public hearing is being held before the Environmental Quality Commission on May 20, 2004 at 7:00 pm in Hermiston, Oregon. Please see Attachment B for details on the hearing. The next revision of this document will be completed after the close of the public comment period and this section will contain a summary of public comments received.

## 5. CONCLUSION

As of the date of this document, the Department is unable to conclude that UMCDF is in full compliance with all requirements necessary to recommend approval of the start of agent operations. Although over half of the 69 requirements listed in the tables in Appendix C have been completed, there is still a considerable amount of work remaining for both UMCDF and the Department to close the remaining requirements. However, it was not unexpected that there would be numerous requirements remaining to be completed when the public comment period was opened. At this point, the Department anticipates that at least 15 of the 30 open requirements will be closed by mid-June, 2004.

Those requirements that pose the most significant challenge to both the UMCDF Permittees and the Department include the completion of the Brine Reduction Area Performance Test (and processing of the associated permit modification requests); the finalization and approval of the surrogate trial burn reports for Liquid Incinerator 1 and the Deactivation Furnace System (and processing of associated permit modification requests to finalize operating parameters for agent operations); and the review and processing of numerous other documents and permit modification requests that have already been submitted to the Department for review (or that UMCDF plans to submit in the near future).



## **APPENDIX A**

# **Requirements For Commencement Of Unit And Facility Operations**

**(Attachment 6 to the UMCDF Hazardous Waste  
Storage and Treatment Permit)**

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## **ATTACHMENT 6**

### **Requirements For Commencement Of Unit And Facility Operations**

#### Introduction

In accordance with Permit Condition II.A.5., the Permittee shall not introduce hazardous waste into any permitted hazardous waste treatment or storage unit until the requirements of this Attachment have been met. It is the purpose of this Attachment to clarify specific requirements that must be met prior to the commencement of Shakedown Period I (Surrogate Shakedown) and Shakedown Period II (Agent Shakedown) for the first incinerator to commence Shakedown Period I or II. This Attachment also includes requirements for commencement of Shakedown Period I or II on each individual incinerator, and requirements to be met prior to introducing hazardous waste into other permitted treatment and storage units.

#### **Requirements for Commencement of Operations of Permitted Hazardous Waste Treatment Or Storage Units**

Prior to introducing hazardous waste into any permitted treatment or storage unit, or commencing a Shakedown Period I or II for the Liquid Incinerators (LICs) 1 or 2, Deactivation Furnace System (DFS), or Metal Parts Furnace (MPF), the Permittee must:

- B.1. Be in compliance with all HW Permit Conditions applicable to the permitted treatment or storage unit;
- B.2. Be in compliance with applicable conditions located elsewhere in this Attachment; and
- B.3. Be in compliance with all applicable Permit Modification Request approval conditions imposed by the Department.

## **Requirements for Commencement of Shakedown Period I (Surrogate) on the First Incinerator**

Prior to commencing a Shakedown Period I (Surrogate) for the first incinerator, the Permittee must complete all of the following:

- C.1. No less than 30 days, nor more than 90 days, prior to the beginning of the first Shakedown Period I, the Permittee must notify the Department in writing that each of the UMCDF drawings in Volume V of the HW Permit Application, and the specifications contained in Volumes IV, VI, and VII, have been certified by a qualified Professional Engineer licensed in Oregon within the preceding 12 months, or that the Permittee has reviewed the specification(s) or drawing(s) and determined that no update is needed;
- C.2. The Permittee must submit Permit Modification Request(s) to the Department to add secondary wastes expected to be generated by UMCDF operations to the list of permitted waste feed streams to the Liquid Incinerators, Deactivation Furnace System and/or the Metal Parts Furnace;
- C.3. The Permittee must submit Permit Modification Request(s) to the Department to modify the Metal Parts Furnace (design and permitted waste feed streams) as necessary to treat personal protective equipment and other halogenated and non-halogenated plastics;
- C.4. The Permittee and the Department must have reached agreement on the procedure to ensure that specified Department staff will have adequate 24-hour access, without undue delay, to the Department's on-site work spaces both outside the double-fence area of UMCDF, and within UMCDF; and
- C.5. The Permittee must have written notification from the Department authorizing the start of surrogate shakedown operations.



## **Requirements for Commencement of Shakedown Period II (Agent) on the First Incinerator**

Prior to commencing a Shakedown Period II (Agent) for the first incinerator, or by the date specified, the Permittee must complete all of the following:

- D.1. The Permittee must implement a waste/munitions tracking procedure and system approved by the Department;
- D.2. The Permittee must obtain approval of the Class 3 Permit Modification Request UMCDF-00-004-WAST(3), "Permitted Storage in J-Block" providing additional permitted storage for secondary wastes generated by UMCDF operations. Any required physical and/or procedural changes necessary for the storage of secondary wastes must be implemented by UMCDF;
- D.3. No less than 30 days, nor more than 90 days, prior to the beginning of the first Shakedown Period II, the Permittee must notify the Department in writing that each of the UMCDF drawings in Volume V of the HW Permit Application, and the specifications contained in Volumes IV, VI, and VII, have been certified by a qualified Professional Engineer licensed in Oregon within the preceding 12 months, or that the Permittee has reviewed the specification(s) or drawing(s) and determined that no update is needed;
- D.4. The Permittee must complete the characterization and/or segregation of UMCD wastes and obtain Department approval of Permit Modification Request(s) to add all UMCD wastes to the list of permitted waste feed streams to the Liquid Incinerators, Deactivation Furnace System and/or the Metal Parts Furnace;
- D.5. No later than September 1, 2002, the Permittee must notify the Department in writing that a technical decision has been reached on the treatment method that will be utilized for agent-contaminated carbon. The notification must include supporting information concerning the basis for the decision;

- D.6. No less than 45 days, nor more than 90 days, prior to the beginning of the first Shakedown Period II, the Permittee must submit a progress report to the Department concerning the status of the design and implementation of the carbon treatment technology identified per Permit Condition D.5. of this Attachment;
- D.7. The Permittee must provide to the Department copies of any Pre-Operational Survey(s) and/or Operational Readiness Evaluation(s) conducted in accordance with the Program Manager for Chemical Demilitarization's (PMCD) Policy Statement No. 28 governing the conduct of such surveys or evaluations at demilitarization facilities;
- D.8. The Permittee must provide to the Department a verification statement that all nonconformances/observations designated as "Category 1" from Pre-Operational Surveys and/or Operational Readiness Evaluations have been resolved in accordance with PMCD's Policy Statement No. 28;
- D.9. The Permittee must provide to the Department the schedule for resolution of items identified in Pre-Operational Surveys and/or Operational Readiness Evaluations that were designated as "Category 2," in accordance with PMCD's Policy Statement No. 28;
- D.10. The Permittee must provide to the Department a copy of the PMCD authorization to start chemical agent operations; and
- D.11. The Permittee must have written notification from the Environmental Quality Commission authorizing the start of agent shakedown operations.
- D.12. No later than February 28, 2003, the Permittee must submit a Permit Modification Request to DEQ revising the Laboratory Quality Control Plan (LQCP), UM-PL-017 and Standard Operating Procedure (SOP) UM-0000-M-559 "Agent Extraction and Analyses of Wastes", located in Attachment D-2 of the UMCDF Hazardous Waste Permit Application.
- D.13. The Permittee must have the Brine Reduction Area operational and ready to treat pollution abatement system brines generated from agent operation.



## **APPENDIX B**

### **Request for Comments and Notice of Public Hearing**

**“Compliance Assessment for Start of Agent Operations”  
Umatilla Chemical Agent Disposal Facility**

# Public Notice: Request for Comments and Notice of Public Hearing

## Request for Public Comment Start of Agent Operations Umatilla Chemical Agent Disposal Facility (UMCDF) (Hazardous Waste Storage and Treatment Permit No. ORQ 000 009 431)

**Notice issued:** April 23, 2004

**Public Comment Period:**

May 4, 2004 through June 7, 2004.

**Written comments due:**

No later than 5:00 p.m., June 7, 2004

**Public Hearing:**

7:00 p.m., May 20, 2004.

Hermiston Community Center, 415 South  
Highway 395, Hermiston, OR 97838

DEQ staff will give a brief presentation before the hearing begins. The hearing will be held before the members of the Environmental Quality Commission (EQC), DEQ's governing body. The public is encouraged to comment during the hearing. Spanish translation will be provided.

**Who is affected?**

Residents in the Mid-Columbia Basin, particularly those living near the Umatilla Chemical Depot.

**Why is this hearing being held?**

The hearing on May 20, is being held in conjunction with the regular meeting of the EQC. The Commission must give its approval before incineration of chemical weapons can begin at the Umatilla Chemical Agent Disposal Facility (UMCDF). To provide continuing public involvement in the decision process, the EQC and DEQ are asking for public comments in regards to the readiness of the UMCDF to begin chemical agent incineration later in 2004. In addition, DEQ is seeking public comment on the initial results of a compliance assessment which will be available on May 4, 2004.

**What is a "compliance assessment"?**

The compliance assessment is a process the DEQ is using to review UMCDF's compliance with requirements in the facility's Hazardous Waste Storage and Treatment Permit (HW Permit) before the beginning of chemical agent operations. The EQC will consider the public comments in the process of determining whether UMCDF has met each of these permit requirements in addition to the overall readiness of UMCDF to begin agent operations.

**Where is UMCDF located?**

The UMCDF is located in northeastern Oregon at the Umatilla Chemical Depot, about seven miles west of Hermiston, Oregon (about 175 miles east of Portland, Oregon). The address is 78072 Ordnance Road, Hermiston, OR 97838-9544.

**What kind of facility is UMCDF?**

The UMCDF is a hazardous waste storage and treatment facility that will use four incinerators to destroy a stockpile of chemical warfare agents that has been stored at the Umatilla Chemical Depot since 1962. The chemical agent stockpile at UMCDF includes about 3,717 tons of nerve agents ("VX" and "GB") and blister ("mustard") agents in liquid form.

Nerve agents are contained in munitions, such as rockets, projectiles and land mines, and in large containers, such as spray tanks, bombs, and "ton containers." Mustard agent is stored only in ton containers. All of the chemical warfare agents are highly toxic.

**Who are the UMCDF Permittees?**

There are three Permittees named on the UMCDF HW Permit. The U.S. Army Umatilla Chemical Depot and the U.S. Army Program Manager for Elimination of Chemical Weapons (PMECW) are named as Owner and Operator of UMCDF, and Washington Demilitarization Company (the Army's construction and operations contractor) is named as a co-operator of UMCDF.

**What are DEQ's responsibilities?**

The DEQ is the state agency that helps protect Oregon's environment. One of DEQ's responsibilities is to oversee the management of hazardous wastes in Oregon by issuing and enforcing hazardous waste permits. In February 1997, the DEQ and the EQC issued a Hazardous Waste Storage and Treatment Permit (HW Permit) to the UMCDF. It is DEQ's responsibility, under the direction of the EQC, to ensure that UMCDF complies with all of the conditions of the HW Permit. One of those conditions requires UMCDF to obtain written



State of Oregon  
Department of  
Environmental  
Quality

Office of the  
Director  
Chemical  
Demilitarization  
Program

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Phone: (541) 567-8297  
(800) 452-4011  
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Contact: Shelly Ingram  
DEQ Item No. 04-0461

[www.deq.state.or.us](http://www.deq.state.or.us)



approval from DEQ before beginning chemical agent operations. DEQ maintains an office in Hermiston that houses the DEQ's Chemical Demilitarization Program (CDP). DEQ's CDP staff is devoted exclusively to overseeing activities related to the storage and disposal of chemical warfare agents at the Umatilla Chemical Depot.

### Where can I get more information?

Additional information about the EQC and the meeting agenda can be obtained at:  
<http://www.deq.state.or.us/about/eqc/eqc.htm>

Each of the Information Repositories listed below has information about UMCDF. You can also call, write, or e-mail the DEQ Office in Hermiston ([ingram.shelly@deq.state.or.us](mailto:ingram.shelly@deq.state.or.us)) to request a copy of the compliance assessment. The compliance assessment will be available on or about May 04, 2004. It will include a list of each HW Permit requirement that applies to the beginning of chemical agent operations and the DEQ's assessment of UMCDF's compliance status.

### How can I review documents?

You can review documents related to the Umatilla Chemical Agent Disposal Facility at the Hermiston DEQ office (please call ahead for an appointment) or at one of the following information repositories:

Hermiston Public Library  
235 E. Gladys Avenue  
Hermiston, OR 97838  
(541) 567-2882

Mid Columbia Library (Kennewick Branch)  
1620 S. Union St.  
Kennewick, WA 99336  
(509) 586-3156

Pendleton Public Library  
502 S.W. Dorion Avenue  
Pendleton, OR 97801  
(541) 966-0210

Portland State University Library  
951 S.W. Hall, Fifth Floor  
Portland, OR 97204  
(503) 725-4617

### How can I send comments?

DEQ will accept oral and written comments at the meeting on May 20, or written

comments by mail, fax and e-mail at any time during the comment period.

**Contact Name:** Shelly Ingram, Chemical Demilitarization Program, Hermiston DEQ.

**Phone:** 541-567-8297 (ext. 25) or toll free in Oregon (800) 452-4011.

**Mailing address:** DEQ Chemical Demilitarization Program, 256 E. Hurlburt, Suite 105, Hermiston, OR 97838

**Fax:** 541-567-4741

**E-mail:** [ingram.shelly@deq.state.or.us](mailto:ingram.shelly@deq.state.or.us)  
(Please include "Public Comment" in the subject line. E-mail comments will be acknowledged as soon as possible. The DEQ is not responsible for delays between servers that result in missed comment deadlines.)

### What happens next?

After the completion of the public comment period the DEQ will review and consider all oral and written comments received during the comment period. DEQ staff will prepare a report for the EQC with a recommendation on whether or not DEQ believes the EQC should approve the start up of chemical agent operations. The report will include an update to the compliance assessment, re-assessing progress made by UMCDF during the public comment period. The EQC will make a final decision at a meeting later in the year.

### Accessibility information

*DEQ is committed to accommodating people with disabilities at our hearings. Please notify DEQ of any special physical or language accommodations or if you need information in large print, Braille or another format. To make these arrangements, contact Shelly Ingram at (541) 567-8297 (ext. 25) or toll free in Oregon at (800) 452-4011.*

*People with hearing impairments may call DEQ's TTY number, (503) 229-6993.*

# **APPENDIX C**

## **Status of Applicable Requirements**


**“Compliance Assessment for Start of Agent Operations”  
Umatilla Chemical Agent Disposal Facility**



## STATUS OF APPLICABLE REQUIREMENTS

The tables in this Appendix list each of the specific requirements that the Department reviewed to assess the compliance status of the Umatilla Chemical Agent Disposal Facility (UMCDF) and their status as of May 4, 2004. The requirements are grouped into three tables. Table 1, beginning on page C-1, lists 39 requirements specifically called out in the UMCDF Hazardous Waste Storage and Treatment Permit (HW Permit). Table 2 (page C-18) lists 14 requirements that were imposed as conditions when the Department approved certain Permit Modification Requests or Facility Construction/Modification Certification Packages. Table 3 (page C-24) lists 16 requirements of other environmental permits. Of the 69 requirements listed in the three tables, the 30 that are still considered open are listed below:

Item No.	Open Requirements	Page No.
1-2	Installation and maintenance of computer monitor at DEQ office	C-2
1-3	Submittal of Facility Modification Certification for pipe replacement	C-3
1-8	Submittal of update to independent oversight program	C-5
1-18	Post-Trial Burn Health Risk Assessment Protocol	C-8
1-19	Implementation of agent monitoring program recommendations	C-8
1-21	Submittal of limited stack test plan for the Brine Reduction Area	C-9
1-23	Approval of surrogate trial burn report—Deactivation Furnace System	C-10
1-24	Approval of surrogate trial burn report—Liquid Incinerator 1	C-11
1-27	Approval of the Munitions Tracking Procedure	C-12
1-28	Implementation of modifications to J-block igloos	C-13
1-29	Update to drawings and specifications	C-13
1-30	Approval of the Discharge Airlock monitoring for the Metal Parts Furnace	C-14
1-32	Status of proposed carbon treatment technology	C-15
1-33	Submittal of reports from the Operational Readiness Review	C-15
1-34	Closure of Category 1 Findings	C-15
1-35	Closure schedule for Category 2 Findings	C-16
1-36	Approval from the U.S. Army Chemical Materials Agency	C-16
1-37	Approval from the Oregon Environmental Quality Commission	C-16
1-39	Results from the Brine Reduction Area Performance Test	C-17
2-6	Approval of Automatic Waste Feed Cutoffs for Brine Reduction Area	C-20
2-10	Inspection of the floor coatings in the Munitions Demilitarization Building	C-21
2-11	Inspection of the carbon filter vestibules	C-22
2-14	Implementation and approval of changes to carbon filter monitoring system	C-23
3-8	Water Discharge Permit Inspection	C-26
3-9	Storm Water Discharge Permit Inspection	C-27
3-12	Approval from the EPA to dispose of PCB-contaminated waste	C-28
3-13	Submittal of adverse weather procedures (UMCD)	C-28
3-14	Submittal of transportation plan (UMCD)	C-29
3-15	Submittal of training documentation (UMCD)	C-29
3-16	Submittal of road evaluation (UMCD)	C-29

<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-1	By February 5 of each year submit a Permit Modification Request updating Appendix A of Attachment H-3 (UMCDF Implementing Documents) of the Permit Application, or a letter documenting that an update is not necessary.	I.L.1. and Attachment 6, Condition B.1.	<p>A Class 1 Permit Modification Request (PMR) ["Annual Procedure Review and Update," UMCDF-03-017-MISC(1R)], was submitted on March 24, 2003. The processing of this PMR was suspended due to settlement negotiations on a Notice of Noncompliance (NON) that related to enforceability of UMCDF operating procedures. A Mutual Agreement and Order settling the NON was signed on January 29, 2004. The Department issued a Notice of Deficiency on this PMR on March 11, 2004. A response from the Permittees is due on May 13, 2004.</p> <p><b>Submittal of PMR UMCDF 03-017-MISC(1R) fulfilled this requirement.</b></p>	







- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.






Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.				
No.	REQUIREMENT	HW PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
1-2	Provide all necessary equipment to the Department for installation and maintenance of a remote computer monitoring station to provide unrestricted 24-hr access to key UMCDF operating and monitoring data.	I.N.1.v. and Attachment 6, Condition B.1.	<p>Monitoring equipment was installed at the DEQ Chemical Demilitarization Program office in Hermiston, Oregon on May 16, 2002 and maintenance criteria partially established on 7/23/02.</p> <p>The monitoring screens do not yet reflect current permit operating parameter limits. The Department and UMCDF are discussing finalization of maintenance criteria. UMCDF will be updating display screens to reflect current permit limits.</p>	☞



- (1) ☒ Closed, no further action needed (except ongoing compliance, where applicable).  
☐ Not yet complete.




<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-3	Prior to the re-introduction of hazardous waste into the Deactivation Furnace and Liquid Incinerator 1, obtain Department acceptance of the Facility Modification Certification (FMC) Package for the replacement of Fiberglass Reinforced Plastic (FRP) in the pollution abatement systems.	I.R. and Attachment 6, Condition B.1.	<p>The Department has not yet received FMC Packages for the current FRP replacement work.</p> <p>The Department approved a Class 1 Permit Modification Request (PMR) in early 2004 to replace failure-prone Fiberglass Reinforced Plastic (FRP) piping in the UMCDF pollution abatement systems with metallic piping. The Department has already accepted FMC packages for some FRP replacement work. UMCDF is currently doing additional replacement work on the DFS and LIC1 systems that must undergo the FMC process prior to re-introduction of hazardous waste into the system.</p>	
1-4	Updated as-built design document shall be submitted no less frequently than on an annual basis by permit modification request(s) that include the rationale for minor changes not previously approved by the Department.	II.A.2.iv and Attachment 6, Condition B.1.	<p>The required annual permit modification requests have been submitted.</p> <p><b>UMCDF has maintained compliance with this requirement.</b></p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.







<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-5	Notify DEQ of all temporary and minor changes made to the UMCDF permitted design within an operating day (within 12 hours—by 12:00 pm of the end of each operating day).	II.A.2.vi. and Attachment 6, Condition B.1.	UMCDF submits daily reports to the Department.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-6	Submit quarterly Comprehensive Monitoring Program (CMP) Reports (within 90 days of completion of sampling event) and place a copy of each quarterly report in the Hermiston Public Library.	II.A.4.iv. and Attachment 6, Condition B.1.	The most recent CMP Quarterly Report was received on January 27, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-7	Submit an annual CMP report that summarizes the sampling results from the previous four quarters and place a copy of the report in the Hermiston Public Library.	II.A.4.iv. and Attachment 6, Condition B.1.	The most recent CMP Annual Report was received on December 31, 2003.  <b>UMCDF has maintained compliance with this requirement.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.




<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-8	Maintain an independent oversight program and provide reports upon request by the DEQ. The independent oversight program is subject to review on a periodic basis.	II.E.5. and Attachment 6, Condition B.1.	<p>The independent oversight program was initially accepted by the DEQ on June 9, 2000. UMCDF provided an update to the Department on May 30, 2002, which was accepted on June 14, 2002. The Permittees submitted an update on April 12, 2004.</p> <p>The April 2004 independent oversight submittal is still under Department review. Note also Requirement 1-19—a report from one of the oversight agencies is expected in May, 2004.</p>	
1-9	Maintain the most current revision of the UMCD Chemical Accident/Incident Response and Assistance (CAIRA) Plan on file at the UMCD Emergency Operations Center (EOC) and provide a copy to the DEQ for review.	II.H.1.i and Attachment 6, Condition B.1.	<p>An updated version (change 5) of the CAIRA Plan was submitted to DEQ on June 23, 2003.</p> <p><b>UMCDF has maintained compliance with this requirement.</b></p>	
1-10	Submit semi-annual written progress reports on the status of the Chemical Stockpile Emergency Preparedness Program (CSEPP).	II.H.4. and Attachment 6, Condition B.1.	<p>The most recent CSEPP report was received January 20, 2004.</p> <p><b>UMCDF has maintained compliance with this requirement.</b></p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-11	Establish a "positive-pressurized" Emergency Operations Center (EOC) within 300 days of the effective date of the HW Permit.	II.H.5. and Attachment 6, Condition B.1.	EOC pressurization was demonstrated on December 12, 1997 (DEQ observed) and accepted on January 11, 1998.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-12	Within 90 days of the effective date of the HW Permit, adequately staff the EOC 24 hours a day, 7 days a week.	II.H.5. and Attachment 6, Condition B.1.	24-hour staffing was initiated on May 12, 1997 and accepted on October 21, 1997.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-13	Submit an annual statement (by March 31 of each calendar year) certifying that a program is in place to reduce the volume and toxicity of hazardous waste generated during the preceding calendar year (i.e. Pollution Prevention Certification).	II.I.1.ii. and Attachment 6, Condition B.1.	The most recent certification statement was submitted on March 11, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-14	Submit an annual report to DEQ Headquarters covering the activities of each permitted Hazardous Waste Management Unit for the preceding calendar year.	II.I.1.iii. and Attachment 6, Condition B.1.	The most recent certification statement was electronically submitted to Department Headquarters on March 17, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-15	Submit an insurance policy compendium by February 12 of each year that includes a signed statement attesting that the compendium represents liability coverage equal to, or in excess of, the amounts submitted to the EQC on July 11, 1997.	II.M. and Attachment 6, Condition B.1.	The most recent insurance compendium and signed statement was submitted on January 29, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-16	Submit executive summaries of trial burn reports (for trial burns conducted after issuance of the UMCDF HW Permit) for all other Chemical Stockpile Disposal Program facilities within 60 days of issuing the report to the applicable state or federal regulatory agency.	II.N.1.i. and Attachment 6, Condition B.1.	UMCDF has provided trial burn report summaries (and trial burn reports when requested) from other demilitarization facilities as required.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-17	Provide an annual inventory (by June 30 of each calendar year) of all Chemical Demilitarization Program Toxicity reports issued by the Army or its contractors pertaining to agents GB, VX and HD.	II.N.1.ii. and Attachment 6, Condition B.1.	The most recent toxicity report index was provided on April 22, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-18	UMCDF must receive notification from the DEQ that the Post Trial Burn Risk Assessment Protocol has been prepared.	II.N.3. and Attachment 6, Condition B.1.	<p>The DEQ has not yet provided the notification to UMCDF that the Post Trial Burn Risk Assessment Protocol is finalized.</p> <p>The Protocol is being finalized to respond to comments received during the comment period held in late 2003.</p>	
1-19	Provide a report indicating that UMCDF has satisfactorily responded to the recommendations regarding the UMCDF chemical agent air monitoring program as contained in the November 2003 Technical Report by the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), a UMCDF independent oversight agency.	VI.A.1.vii. and II.E.5. and Attachment 6, Condition B.1.	<p>A report from the CDC regarding UMCDF's response to the recommendations in the November 2003 Technical Report has not yet been submitted.</p> <p>The CDC conducted an onsite visit to UMCDF in February, 2004 to assess progress concerning the actions UMCDF has taken to implement the November 2003 recommendations. A follow-up visit is scheduled for May, 2004. The CDC has informed the Department that it will be preparing a report after the May visit.</p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.

<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-20	Submit a revised Brine Reduction Area (BRA) miscellaneous units performance test plan as a Permit Modification at least 180 days prior to proposed start date of performance test.	V.A.4.i. and Attachment 6, Condition D.13.	A Class 2 Permit Modification Request [UMCDF-03-010-BRA(2)] was received on April 8, 2003 but has not yet been approved by the Department.  <b>UMCDF has complied with this requirement.</b>	
1-21	Submit the Brine Reduction Area (BRA) limited stack test plan at least 90 days prior to the proposed start date of the limited stack test.	V.A.4.i. and Attachment 6, Condition D.13.	The limited stack test was intended to provide information relevant to operation of the BRA during surrogate operations. No limited stack test plan has been submitted because the BRA has not been used for surrogate operations.  Discussions are ongoing with the UMCDF Permittees on how the BRA Performance test (see No. 1-20) will generate the data originally expected to come from the limited stack test. This requirement will remain open until the issues are resolved through completion of No. 1-39.	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-22	Submit a quarterly report (within 30 days of the end of each calendar quarter) containing operating information for each incinerator (operating time, malfunctions, waste feed cut-offs, etc.).	VI.A.4.iii. and Attachment 6, Condition B.1.	The most recent quarterly report was submitted on January 23, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-23	The Permittee may not start agent operations in the Deactivation Furnace System until the Department has approved in writing both the surrogate trial burn test data and the operating parameters proposed as a result of the surrogate trial burn.	VI.A.5.iv. and Attachment 6, Condition B.1.	The surrogate trial burn data and the proposed operating parameters for the Deactivation Furnace System (DFS) have not yet been approved.  The DFS Surrogate Trial Burn (STB) was completed on October 13, 2003 and the STB Report was submitted on December 15, 2003. A Notice of Deficiency was issued on April 26, 2004. A response from UMCDF is due on May 28, 2004.	

- (1)  Closed; no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.

**Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.**

No.	REQUIREMENT	HW PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
1-24	The Permittee may not start agent operations in Liquid Incinerator 1 until the Department has approved in writing both the surrogate trial burn test data and the operating parameters proposed as a result of the surrogate trial burn.	VI.A.5.iv. and Attachment 6, Condition B.1.	<p>The surrogate trial burn data and the proposed operating parameters for the Liquid Incinerator 1 (LIC1) have not yet been approved.</p> <p>The LIC 1 Surrogate Trial Burn (STB) was completed on February 8, 2003 and the STB Report was submitted on May 8, 2003. A Notice of Deficiency (NOD) was issued on September 11, 2003 and a response was received on November 17, 2003. A second NOD was issued on February 6, 2004 and the response was received on March 30, 2004. The response to the second NOD is currently under Department review.</p>	
1-25	Submit a report of all quarterly Continuous Emission Monitoring (CEM) systems calibration error and annual CEM performance specification tests.	VI.A.8.ii. and Attachment 6, Condition B.1.	<p>The most recent quarterly report for the UMCDF furnaces was submitted on April 14, 2004.</p> <p><b>UMCDF has maintained compliance with this requirement.</b></p>	









- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.				
No.	REQUIREMENT	HW PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
1-26	Submit an annual report (by February 1 of each year) summarizing quality control problems experienced with stack gas monitors, chemical agent ventilation system monitors, and ambient air chemical agent monitors during the previous calendar year.	VII.A.5.i. and Attachment 6, Condition B.1.	The most recent annual report was submitted on January 29, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
1-27	The Permittee must implement a waste/munitions tracking procedure and system approved by the Department.	III.E.5. and Attachment 6, Condition D.1.	A Munitions Tracking Procedure (SOP UM-OP-015) was submitted to the Department on September 25, 2003. The SOP was subsequently revised and re-submitted to the Department on April 27, 2004.  The Munitions Tracking Procedure submitted on April 27, 2004 is currently under Department review.	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



**Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.**




No.	REQUIREMENT	HW PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
1-28	The Permittee must obtain approval of the Class 3 Permit Modification Request UMCDF-00-004-WAST(3), "Permitted Storage in J-Block" providing additional permitted storage for secondary wastes generated by UMCDF operations. Any required physical and/or procedural changes necessary for the storage of secondary wastes must be implemented by UMCDF.	Attachment 6, Condition D.2.	<p>UMCDF-00-004-WAST(3) was submitted on February 29, 2000 and approved by the Department on June 18, 2002.</p> <p>The Permittees submitted a letter on April 14, 2004 indicating that only those igloos required to start agent operations will have physical changes installed. The Department is requesting further information and will verify the status of physical changes to the igloos and the number of igloos affected.</p>	
1-29	No less than 30 days, nor more than 90 days, prior to the beginning of chemical agent operations the Permittee must notify the Department in writing that each of the UMCDF drawings and specifications in the HW Permit Application have been certified by a qualified Professional Engineer within the preceding 12 months, or that the Permittee has reviewed them and determined that no update is needed.	Attachment 6, Condition D.3.	<p>The updates to specifications and drawings (or the determination that no update is needed) have not yet been submitted.</p> <p>This submittal is not expected until late May or early June, 2004.</p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.






<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-30	The Permittee must complete the characterization and/or segregation of UMCD wastes and obtain Department approval of Permit Modification Request(s) to add all UMCD wastes to the list of permitted waste feed streams to the Liquid Incinerators, Deactivation Furnace System and/or the Metal Parts Furnace.	Attachment 6, Condition D.4.	<p>A Class 2 Permit Modification Request [UMCDF-03-035-WAST(2)] was received on July 22, 2003 and approved by the Department on March 19, 2004. A related PMR [UMCDF-04-008-MPF(1R)] was submitted to the Department on April 12, 2004 and is under review.</p> <p>UMCDF-04-008-MPF(1R) was submitted to resolve the remaining issue of chemical agent monitoring while processing secondary waste through the MPF. This PMR must be approved before this requirement can be closed.</p>	
1-31	No later than September 1, 2002, the Permittee must notify the Department in writing that a technical decision has been reached on the treatment method that will be utilized for agent-contaminated carbon. The notification must include supporting information concerning the basis for the decision.	Attachment 6, Condition D.5.	<p>The Permittees notified the Department on September 3, 2002 that UMCDF intends to utilize the Carbon Micronization System to treat spent carbon in the Deactivation Furnace System.</p> <p><b>UMCDF has complied with this requirement.</b></p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-32	No less than 45 days, nor more than 90 days, prior to the beginning of chemical agent operations the Permittee must submit a progress report to the Department concerning the status of the design and implementation of the carbon treatment technology identified per Permit Condition D.5. of this Attachment (See No. 1-31).	Attachment 6, Condition D.6.	The progress report on the proposed carbon treatment technology has not yet been submitted.  This submittal is not expected until late May or early June, 2004.	
1-33	The Permittee must provide to the Department copies of Operational Readiness Reviews conducted in accordance with Policy Statement 28 from the U.S. Army Chemical Materials Agency (CMA).	Attachment 6, Condition D.7.	Reports from the Operational Readiness Reviews have not yet been submitted to the Department.  Department staff have been participating as observers in the Operational Readiness Review process currently under way at UMCDF.	
1-34	The Permittee must provide to the Department a verification statement that all "Category 1" findings generated from the Operational Readiness Review have been resolved in accordance with CMA Policy Statement No. 28.	Attachment 6, Condition D.8.	The verification statement has not yet been submitted.  Category 1 findings must be closed before start of agent operations. As of May 3, 2004 there were 76 Category 1 findings remaining to be closed.	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-35	The Permittee must provide to the Department the schedule for resolution of Category 2 findings generated from the Operational Readiness Review.	Attachment 6, Condition D.9.	The resolution schedule has not yet been submitted.  Although Category 2 findings must not be resolved before the start of chemical agent operations, they must be at least scheduled for resolution. As of May 3, 2004 there were 69 Category 2 findings remaining to be closed.	
1-36	The Permittee must provide to the Department a copy of the U.S. Army Chemical Materials Agency's authorization to start chemical agent operations.	Attachment 6, Condition D.10.	No authorization from the U.S. Army Chemicals Material Agency has yet been submitted.  <b>The Department does not expect this authorization to be submitted until very close to the start of agent operations.</b>	
1-37	Obtain written notification from the Environmental Quality Commission authorizing the start of agent shakedown operations.	Attachment 6, Condition D.11	The Commission has not yet provided the written authorization to start agent shakedown operations.	




- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-1. Compliance with the Conditions of the Hazardous Waste Storage and Treatment Permit.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>HW PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
1-38	No later than February 28, 2003, the Permittee must submit a Permit Modification Request to DEQ revising the Laboratory Quality Control Plan (LQCP), UM-PL-017 and Standard Operating Procedure (SOP) for Agent Extraction and Analyses of Wastes.	Attachment 6, Condition D.12.	A Class 1 Permit Modification Request [UMCDF-03-011-WAST(1R)] was received on February 27, 2003 and is under Department review.  <b>UMCDF has complied with this requirement.</b>	
1-39	UMCDF must have the Brine Reduction Area (BRA) operational and ready to treat pollution abatement system brines generated from chemical agent operations.	Attachment 6, Condition D.13	UMCDF has started shakedown operations on the Brine Reduction Area. The BRA has not yet undergone a Performance Test.  This requirement will not be considered completed until the results of a successful performance test are submitted and reviewed by the Department.	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





[These are requirements from conditional approvals of Permit Modification Requests (PMR), Facility Construction Certifications (FCC) packages, and Facility Modification Certifications (FMC) packages. They could also be considered requirements of the HW Permit, Attachment 6, Condition B.3.]




<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-1	Submit Permit Modification Requests with the final approved baseline alarm and interlock matrices for Liquid Incinerator 2, Deactivation Furnace, Metal Parts Furnace, and the Brine Reduction Area.	UMCDF-02-012-MISC(1R), "Update of Section D-1 and Section D-1B-01 of Attachment D-3 of the Application"	The required permit modification requests have been submitted by the Permittees and approved by the Department.  <b>UMCDF has complied with this requirement.</b>	
2-2	Address the issues related to the scrubber tower packed bed minimum differential pressure Automatic Waste Feed Cut Off set point for the Deactivation Furnace system (DFS) and Metal Parts Furnace (MPF).	UMCDF-02-023-LIC(1R), "LIC 1 & 2 Scrubber dP AWFCO & Prealarm"	These issues were addressed through the review and approval process of the DFS and MPF surrogate trial burn plans submitted by the Permittees.  <b>UMCDF has complied with this requirement.</b>	
2-3	Within 30 days of relocating the scrubber caustic lines on the LIC1, LIC2, DFS and MPF systems submit a PMR to update the RCRA drawings showing the as-built construction of the approved changes.	UMCDF-02-008-PAS(1R), "Relocation of Scrubber Caustic Line"	These issues were addressed through two Class 1 permit modification requests submitted by the Permittees and approved by the Department.  <b>UMCDF has complied with this requirement.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-4	No later than March 31, 2003 the Permittees must provide the Department the results of the ongoing engineering evaluation of the brine strainer coating, along with the planned path forward to implement a long-term solution....".	UMCDF-03-008-PAS(1R), "Pollution Abatement System Brine Strainer Deviation"	UMCDF submitted the required engineering evaluation on April 15, 2003, which was accepted by the Department on May 2, 2003.  <b>UMCDF has complied with this requirement.</b>	
2-5	At least 30 days prior to the start of chemical agent operations, the Permittees must submit any PMRs necessary for implementation of the long-term solution for problems with the brine strainer coating s.	UMCDF-03-008-PAS(1R), "Pollution Abatement System Brine Strainer Deviation"	UMCDF submitted Permit Modification Request 03-025-PAS(1R) ("Pollution Abatement System Quench Brine Strainer Update") on June 5, 2003. The Department approved the PMR on June 27, 2003, which closed out the issues surrounding the PAS brine strainers.  <b>UMCDF has complied with this requirement.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-6	Submit a Permit Modification Request (PMR) to establish an automatic waste feed cut off set point for the Brine Reduction Area (BRA) Pollution Abatement System (PAS) Exhaust Stack Flow Rate and an operating range for the Drum Dryer Steam Pressure prior to conducting the BRA Performance Test.	UMCDF-03-053-BRA(1R), "Brine Reduction Area Shakedown"	No PMR has yet been submitted.  This PMR will reflect the results of the BRA shakedown testing and is not expected to be submitted to the Department until late May, 2004.	
2-7	Submit an addendum to the Container Handling Building (CHB) Facility Construction Certification (FCC) package with clarification of listed issues no later than February 8, 2002	Department Acceptance of FCC Package "CHB60"	The addendum was submitted to the Department on February 7, 2002  <b>UMCDF has complied with this requirement.</b>	
2-8	Conduct a Facility Construction Certification (FCC) prior to introduction of agent and/or decontamination after replacement of valve 11-PSV-026 [conservation vent for Agent Collection System (ACS) Tanks 101 and 102].	Department Acceptance of FCC Package "ACS 00/40"	The Facility Modification Certification (FMC) Package 029 (Agent Collection System) was accepted by the Department on March 2, 2004.	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-9	Upon acceptance of the Facility Construction Certification (FCC) of the Pollution Abatement System (PAS) common systems on May 22, 2002 the Department expressed concerns about the Non-Destructive Examination (NDE) weld testing for piping systems prior to the start of chemical agent operations.	Department Acceptance of FCC Package "PAS Common Systems"	On October 7, 2003 UMCDF submitted a letter to the Department in response to concerns about the NDE testing. The Department accepted the response on February 20, 2004. The issues have been resolved.  <b>UMCDF has complied with this requirement.</b>	
2-10	The Department indicated in its acceptance letter of the Facility Construction Certification (FCC) for the Munitions Demilitarization Building (MDB) that it would conduct a formal inspection of MDB floor coatings prior to agent operations.	Department Acceptance of FCC Package "MDB Systems"	The inspection has not yet been conducted by the Department.  <b>The inspection of the floor coatings in the MDB will not be conducted until immediately prior to agent operations.</b>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.






<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-11	The Department indicated in its acceptance of the Facility Construction Certification (FCC) Package of the Munitions Demilitarization Building (MDB) Heating, Ventilation, and Cooling (HVC) System that it would conduct a formal inspection of the filter unit vestibules to verify water tightness.	Department Acceptance of FCC Package "MDB HVC System"	<p>The Department conducted an inspection of the MDB HVC filter unit vestibules in April, 2004 and found that the vestibules were not watertight. A re-inspection will be conducted in May, 2004.</p> <p>This item will not be closed until the Department can verify through onsite inspection that the filter unit vestibules have been sealed and are watertight.</p>	
2-12	The Department required that the Permittees conduct an inspection of the Bulk Drain Stations (BDS) equipment before the Department would accept the BDS Facility Construction Certification (FCC) Package for the BDS.	Department Non-acceptance of FCC Package "BDS System"	<p>A revised FCC Package was submitted on August 21, 2002 and accepted by the Department on September 27, 2002.</p> <p><b>UMCDF has complied with this requirement.</b></p>	



- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.

<b>Table C-2. Compliance with Conditional Department Approvals.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>Permit Mod or FCC/FMC Package</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
2-13	The jam sensors on the Deactivation Furnace System (DFS) feed chutes and heated discharge conveyor (HDC) had not yet been installed at the time FCC was conducted on this portion of the DFS system. The UMCDF Permittees were requested to notify the Department upon completion of the work.	Department Acceptance of FCC Package "DFS Feed Chutes, Access Blast Doors, and HDC"	The Department observed the installation of the DFS jam sensors and sent a letter to the UMCDF Permittees on January 6, 2003 indicating this issue was closed.  <b>UMCDF has complied with this requirement.</b>	
2-14	All approved changes from this Permit Modification Request (PMR) must be installed and implemented prior to the start of chemical agent operations. A PMR must be submitted to incorporate into the HW Permit the new operating conditions for determining thermal equilibrium of the pollution abatement system carbon filter system (PFS).	UMCDF-03-014-PFS(2) "Carbon Filter System Agent Monitoring Changes"	No PMR has yet been submitted.	




- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





<b>Table C-3. Compliance with the Requirements of Other Environmental Permits.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
3-1	Air Pollution Control Discharge Permit (ACDP) No. 25-0024 requires that the Permittee develop an Emergency Safety Vent operating plan.	ACDP Condition 3.1.b.	UMCDF maintains a written plan for the operation of the pollution abatement system carbon filter system bypass.  <b>UMCDF has complied with this requirement.</b>	
3-2	ACDP No. 25-0024 requires that the Permittee develop and implement a written startup, shutdown, and malfunction plan for each incinerator and that a copy of the procedure be provided to the Department for prior authorization if UMCDF sources are expected to emit excess emissions of criteria pollutants during startup, shutdown, or scheduled maintenance.	ACDP Conditions 3.1.c. and 7.5.d.	UMCDF maintains a written startup, shutdown, and malfunction plan for each incinerator (UM-PL-059). A copy of the procedure is available for review but was not submitted to the Department because there are no UMCDF sources that are expected to emit excess emissions of criteria pollutants during startup, shutdown, or scheduled maintenance.  <b>UMCDF has complied with this requirement.</b>	
3-3	ACDP No. 25-0024 requires the Permittee to establish training programs that meet the applicable requirements of 40 CFR 63 and American Society of Mechanical Engineers (ASME) standards.	ACDP Conditions 3.1.i. and 3.1.ii.	UMCDF has developed and implemented a site-specific training program that meets the requirements.  <b>UMCDF has complied with this requirement.</b>	

(1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



**Table C-3. Compliance with the Requirements of Other Environmental Permits.**



No.	REQUIREMENT	PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
3-4	ACDP No. 25-0024 requires the Permittee to submit to the Department by March 15 of each year an annual report concerning operating parameters, changes which affected air contaminant emissions, major maintenance performed on pollution control equipment, and a summary of air quality complaints received	ACDP Condition 7.3.	The most recent annual report was received on March 9, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
3-5	ACDP No. 25-0024 requires the Permittee to submit to the Department by January 30 and July 30 of each year an Excess Emissions and Continuous Monitoring Performance Report and a Summary Report of Start-up and Shutdown Events Occurring During Report Period	ACDP Condition 7.4.	The most recent semi-annual reports were received on January 28, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
3-6	ACDP Permit No. 25-0024 requires that if more than 10 excess emission events or operating parameter limit violations occur during a 60-day period, the permittee must submit a written report within 5 calendar days of the 10 <sup>th</sup> violation.	ACDP Conditions 3.1.g. and 7.5.c.	The most recent report submitted under this permit condition was received on February 10, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	

(1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.







**Table C-3. Compliance with the Requirements of Other Environmental Permits.**

No.	REQUIREMENT	PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
3-7	ACDP No. 25-0024 requires that any time an action taken by the permittee during a startup, shutdown or malfunction is not consistent with the procedures specified in the Startup, Shutdown, and Malfunction plan, the permittee must report (by phone or fax) actions taken within 2 working days after commencing action, followed by a letter postmarked within 7 working days after the end of the event."	ACDP Condition 7.5.e.	The most recent report submitted under this permit condition was received on March 31, 2004.  <b>UMCDF has maintained compliance with this requirement.</b>	
3-8	Water Pollution Control Facilities (WPCF) Permit No. 101456 (issued March 4, 2003) requires that quarterly discharge and inspection reports be submitted to the Department within 15 days after the end of the quarter.	WPCF Permit No. 101456 Schedule B Conditions 2.a. and 2.b.	UMCDF submits quarterly reports to the Department's Water Quality Program.  A file review has been conducted by the Department's Water Quality (WQ) Program and determined that UMCDF has maintained compliance with the reporting requirement. The WQ Program intends to conduct an onsite inspection by the end of May. This item will be held open until the results of the inspection are known.	




- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



**Table C-3. Compliance with the Requirements of Other Environmental Permits.**

No.	REQUIREMENT	PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
3-9	The UMCDF National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit No. 200-J requires that discharge and inspection reports be submitted to the Department.	NPDES Permit 200-J	<p>UMCDF submits NPDES reports to the Department's Water Quality Program.</p> <p>A file review has been conducted by the Department's Water Quality (WQ) Program and determined that UMCDF has maintained compliance with the reporting requirement. The WQ Program intends to conduct an onsite inspection by the end of May. This item will be held open until the results of the inspection are known.</p>	
3-10	A National Permit was issued to the U.S. Army by the U. Environmental Protection Agency (EPA) National Program Chemicals Division (NPCD) pursuant to the Toxic Substances Control Act (TSCA) ("TSCA Permit") requires that prior to the start of operations UMCDF submit a report of the results of its campaign to detect and eliminate ancillary process equipment that contains (polychlorinated biphenyl) PCB contaminants.	TSCA Permit Condition 2.b.(1)	<p>On July 9, 2003 UMCDF submitted a report to the EPA NPCD titled "Evaluation of PCB Sources at Umatilla Chemical Agent Disposal Facility." On January 2, 2004 the EPA indicated that it accepted the report as meeting the requirements of this TSCA permit condition.</p> <p><b>UMCDF has complied with this requirement.</b></p>	




- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.





<b>Table C-3. Compliance with the Requirements of Other Environmental Permits.</b>				
<b>No.</b>	<b>REQUIREMENT</b>	<b>PERMIT CONDITION</b>	<b>STATUS UPDATE (As of May 4, 2004)</b>	<b>COMPLIANCE STATUS (1)</b>
3-11	The TSCA Permit requires UMCDF to submit to the NPCD certain required documents (e.g., RCRA application documents, trial burn plans and any modifications related to trial burn plans).	TSCA Permit Condition 2.b.(4)	Contact with the EPA TSCA Program indicates that UMCDF has provided the required information.  <b>UMCDF has complied with this requirement.</b>	
3-12	The TSCA Permit requires that UMCDF obtain written authorization from EPA to dispose of PCBs prior to beginning shakedown operations on M55 rockets with firing tubes containing 50 ppm PCBs.	TSCA Permit Conditions 1.c. and 2.e.(1)B.	UMCDF has not yet obtained written EPA approval to start shakedown operations with M55 rockets.  Approval from EPA is not expected to be received until just prior to the start of agent operations at UMCDF.	
3-13	The Draft Hazardous Waste (HW) Storage Permit for the Umatilla Chemical Depot (UMCD) requires UMCD to provide to the Department a copy of the UMCD Standard Operating Procedures (SOP) related to operational limitations during adverse weather conditions.	Draft UMCD HW Storage Permit Condition II.A.4.i	An SOP for operations during adverse weather conditions has not yet been submitted by UMCD.  The UMCD HW Storage Permit has not yet been issued. However, this SOP must be received at least 60 days prior to the movement of munitions from UMCD to UMCDF.	

- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.

**Table C-3. Compliance with the Requirements of Other Environmental Permits.**

No.	REQUIREMENT	PERMIT CONDITION	STATUS UPDATE (As of May 4, 2004)	COMPLIANCE STATUS (1)
3-14	The UMCD HW Storage Permit requires that copies be provided to the Department of the written SOPs addressing all aspects of the movement of munitions and bulk items (to include loading of the munitions into transport containers and onto transport vehicles, and other associated operational activities).	Draft UMCD HW Storage Permit Condition VI.A.1.	SOPs for transport operations have not yet been submitted by UMCD.  The UMCD HW Storage Permit has not yet been issued. However, this SOP(s) must be received at least 60 days prior to the movement of munitions from UMCD to UMCDF.	
3-15	The UMCD HW Storage Permit requires that documentation be provided to the Department concerning the training requirements for personnel responsible for munitions movement.	Draft UMCD HW Storage Permit Condition VI.A.2.	Documentation of training requirements has not yet been submitted by UMCD.  The UMCD HW Storage Permit has not yet been issued. However, this documentation must be received at least 60 days prior to the movement of munitions from UMCD to UMCDF.	
3-16	The UMCD HW Storage Permit requires that documentation be provided to the Department substantiating that the roads to be used for munitions movement have been evaluated and determined to be fully capable of safe usage under maximum load conditions.	Draft UMCD HW Storage Permit Condition VI.A.4.	Documentation of the road evaluation has not yet been submitted by UMCD.  The UMCD HW Storage Permit has not yet been issued. However, this documentation must be received at least 60 days prior to the movement of munitions from UMCD to UMCDF.	

- (1)  Closed, no further action needed (except ongoing compliance, where applicable).  
 Not yet complete.



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- (1) ~~Not yet complete.~~ ☒ Closed, no further action needed (except ongoing compliance, where applicable).  
☐ Not yet complete.

## **APPENDIX D**

### **SUMMARY OF DEPARTMENT ENFORCEMENT ACTIONS**

**“Compliance Assessment for Start of Agent Operations”  
Umatilla Chemical Agent Disposal Facility**



<b>Notice of Non-Compliance (NON):</b>	<b>ERH-02-001</b>
Date NON Issued:	September 4, 2001
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	Based upon an inspection conducted on August 26, 2002 the Department determined that the Permittees modified the Brine Reduction Area Tank system (a permitted hazardous waste management unit) by constructing a system to transfer brines to a tanker truck. The Permittees did not obtain Department approval of the modification through a Permit Modification Request. The Permittees responded to Violation 2 of the NON on September 17, 2002 and to Violation 1 on October 3, 2002.
Notice of Violation (NOV):	ER-03-043 and ER-03-044
Date Notice of Violation Issued:	February 10, 2004
Issued to:	PM ECW WDC
Amount of Civil Penalty Assessed:	PM ECW:       \$15,000 WDC           \$15,000
Resolution of Violation:	On February 27, 2004 PM ECW and WDC filed an Answer, Request for Hearing and Request for Informal Discussion on the Notices of Violation and Assessments of Civil Penalty. The Permittees contended that they followed the proper procedure for implementing a temporary modification and that no Permit Modification Request was required for the modification to the Brine Reduction Area Tank system. This case is still pending with the DEQ Enforcement Division.

<b>Notice of Non-Compliance (NON):</b>	<b>ERH-02-002</b>
<b>Date NON Issued:</b>	September 13, 2002
<b>Issued to:</b>	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
<b>Description of Violation:</b>	On August 24, 2002 the Permittees notified the Department that one of its laboratory personnel had left UMCD while carrying a small vial of diluted chemical agent used to calibrate the agent air monitoring devices. The Department determined that UMCD failed to follow its Standard Operating Procedure concerning the handling of dilute chemical agent standards. The Permittees responded to the NON on September 30, 2002.
<b>Notices of Violation (NOV):</b>	ER-02-169, ER-02-203, and ER-02-204
<b>Date Notices of Violation Issued:</b>	February 25, 2003
<b>Issued to:</b>	PM ECW WDC UMCD
<b>Amount of Civil Penalty Assessed:</b>	PM ECW: \$3,600 WDC: \$3,600 UMCD \$4,200
<b>Resolution of Violation:</b>	On March 14, 2003 the Permittees filed an Answer, Request for Hearing and Request for Informal Discussion on the Notices of Violation and Assessments of Civil Penalty. The Permittees contended that the Standard Operating Procedure was not an enforceable document. The Department and the Permittees entered negotiations and a Mutual Agreement and Order was signed on January 29, 2004. The Permittees agreed to pay a combined civil penalty of \$3,800. The Department agreed to act on a pending Permit Modification Request intended to clarify which UMCD operational procedures would be listed in the Permit Application and enforceable by the Department.



<b>Notice of Non-Compliance (NON):</b>	<b>ERH-02-003</b>
Date NON Issued:	September 18, 2002
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	On August 29, 2002 the Permittees notified the Department that a level indicator on Liquid Incinerator 1's quench tower did not operate properly during manual purging, a necessary regular maintenance activity. The Department determined that UMCD continued to feed hazardous waste when a required instrument was not operating properly. The Permittees responded to the NON on September 30, 2002.
Notices of Violation (NOV):	Not referred to DEQ's Office of Compliance and Enforcement
Date Notices of Violation Issued:	Not applicable
Issued to:	Not applicable
Amount of Civil Penalty Assessed:	Not applicable
Resolution of Violation:	The Permittees submitted a permit modification request on September 19, 2002 to allow UMCD to continue feeding hazardous waste even when this instrument was not operating properly during intermittent and short maintenance periods. The Department approved the request on September 23, 2002.

<b>Notice of Non-Compliance (NON):</b>	<b>ERH-02-004</b>
Date NON Issued:	September 13, 2002
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	On August 30, 2002 the Permittees notified the Department that five permitted emission rates for Liquid Incinerator 1 had been exceeded during a "mini-test" being conducted in preparation for surrogate trial burns.
Notices of Violation (NOV):	Not referred to DEQ's Office of Compliance and Enforcement
Date Notices of Violation Issued:	Not applicable
Issued to:	Not applicable
Amount of Civil Penalty Assessed:	Not applicable
Resolution of Violation:	No action was required, other than to comply with a plan previously agreed to regarding avoidance of future violations during testing activities.



<b>Notice of Non-Compliance (NON):</b>	<b>ERH-02-005</b>
Date NON Issued:	September 25, 2002
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	On September 10, 2002 the Permittees notified the Department that UMCDF had failed to notify the Department when the same automatic waste feed cutoff (AWFCO) occurred five times within 30 operating days. The Department determined that waste feed resumed to the Liquid Incinerator 1 after the fifth AWFCO without prior approval from the Department, a violation of the UMCDF HW Permit. The Permittees responded to the NON on October 2 and October 30, 2002.
Notices of Violation (NOV):	Not referred to DEQ's Office of Compliance and Enforcement
Date Notices of Violation Issued:	Not applicable
Issued to:	Not applicable
Amount of Civil Penalty Assessed:	Not applicable
Resolution of Violation:	The Permittees initiated appropriate corrective actions and provided the Department the information required in the NON.

<b>Notice of Non-Compliance (NON):</b>	<b>ERH-03-001</b>
Date NON Issued:	January 21, 2003
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	On October 1, 2002 the Permittees notified the Department that UMCDF had been processing hazardous waste in Liquid Incinerator 1 with some of required permit instrumentation disabled. The Department determined that UMCDF did not properly monitor operating conditions during hazardous waste processing, a violation of the UMCDF HW Permit. The Permittees responded to the NON on September 25, 2003 objecting to the classification of the violation. (This incident also resulted in an Air Contaminant Discharge Permit violation—see NON ERH-03-002.)
Notices of Violation (NOV):	ER-03-049 and ER-03-050
Date Notices of Violation Issued:	March 18, 2004
Issued to:	PM ECW WDC
Amount of Civil Penalty Assessed:	PM ECW: \$16,800 WDC: \$16,800
Resolution of Violation:	On April 6, 2004 PM ECW and WDC filed an Answer, Request for Hearing and Request for Informal Discussion on the Notices of Violation and Assessments of Civil Penalty. The Permittees contend that the Department had approved the disabling of the instrumentation. This case is still pending.



<b>Notice of Non-Compliance (NON):</b>	<b>ERH-03-002</b>
Date NON Issued:	January 21, 2003
Issued to:	Umatilla Chemical Depot (UMCD)
Description of Violation:	On October 1, 2002 the Permittees notified the Department that UMCDF had been processing hazardous waste in Liquid Incinerator 1 with some of required permit instrumentation disabled. The Department determined that UMCDF did not properly monitor operating conditions during hazardous waste processing, a violation of the Air Contaminant Discharge Permit. (This incident also resulted in a HW Permit violation—see NON ERH-03-001.)
Notices of Violation (NOV):	The NON was referred on February 28, 2003 to the DEQ Office of Compliance and Enforcement and is still pending.
Date Notices of Violation Issued:	Not applicable.
Issued to:	Not applicable.
Amount of Civil Penalty Assessed:	Not applicable.
Resolution of Violation:	Pending.

<b>Notice of Non-Compliance (NON):</b>	<b>ERH-03-005(a)</b>
Date NON Issued:	May 12, 2003
Issued to:	Umatilla Chemical Depot (UMCD)
Description of Violation:	The Permittees notified the Department that on March 29, 2003, during a test being conducted on the Deactivation Furnace System (DFS), UMCD exceeded the allowed semi-volatile emission rates (lead and cadmium combined). The Department determined that the exceedance was a violation of the Air Contaminant Discharge Permit.
Notices of Violation (NOV):	Not referred to DEQ's Office of Compliance and Enforcement
Date Notices of Violation Issued:	Not applicable
Issued to:	Not applicable
Amount of Civil Penalty Assessed:	Not applicable
Resolution of Violation:	The Department issued a letter on April 16, 2003 outlining the steps to be completed prior to resuming waste feed to the DFS. No additional corrective action was required.



<b>Notice of Non-Compliance (NON):</b>	<b>ERH-03-005(b)</b>
Date NON Issued:	July 18, 2003
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	During an inspection conducted by the Department on July 10, 2003, the inspector noted three containers that had not been labeled properly with an accumulation start date, a violation of hazardous waste management regulations.
Notices of Violation (NOV):	Not referred to DEQ's Office of Compliance and Enforcement
Date Notices of Violation Issued:	Not applicable
Issued to:	Not applicable
Amount of Civil Penalty Assessed:	Not applicable
Resolution of Violation:	Corrective action was taken immediately upon discovery and no additional action was required.

<b>Notice of Non-Compliance (NON):</b>	<b>ERH-03-006</b>
Date NON Issued:	August 18, 2003
Issued to:	Umatilla Chemical Depot (UMCD) U.S. Army Program Manager for Elimination of Chemical Weapons (PM ECW) Washington Demilitarization Company (WDC)
Description of Violation:	On August 11, 2003 the Permittees notified the Department that the Metal Parts Furnace (MPF) had processed hazardous waste when the pollution abatement system carbon filter system (PFS) were in "bypass" mode and offline. Operation of the MPF with the PFS offline is a violation of several conditions in the HW Permit. The Permittees responded on August 28, 2003 and again on September 15.
Notices of Violation (NOV):	The NON was referred to the DEQ Office of Compliance and Enforcement on October 13, 2003 and is still pending.
Date Notices of Violation Issued:	Not applicable.
Issued to:	Not applicable.
Amount of Civil Penalty Assessed:	Not applicable.
Resolution of Violation:	Pending.



# **APPENDIX E**

## **PUBLIC COMMENTS**

**“Compliance Assessment for Start of Agent Operations”  
Umatilla Chemical Agent Disposal Facility**

**[RESERVED]**

## **APPENDIX F**

### **Index of Related Documents**

#### ***“Compliance Assessment for Start of Agent Operations”***

**[RESERVED]**

**Note:** This Appendix will be completed in a later revision of the Compliance Assessment and will include a listing of documents related to closure of requirements (such as permit modification approvals, quarterly reports submitted, etc.). It will also include a listing of public notice documents, transcripts of public hearings, and public comments received.



## Status Update of Open Requirements

Start Of Chemical Agent Operations  
at the

Umatilla Chemical Agent Disposal Facility

May 20, 2004

Oregon Department of Environmental Quality

On May 4, 2004 the Department of Environmental Quality (Department) released for public review and comment a document titled "Compliance Assessment [for the] Start of Chemical Agent Operations" at the Umatilla Chemical Agent Disposal Facility (UMCDF). The Compliance Assessment included a listing of 69 environmental permit-related requirements that must be met before the start of chemical agent operations at UMCDF. When the Compliance Assessment was issued, 30 of the 69 requirements remained open. As of May 19, two requirements related to review and inspection of water pollution control facilities were closed, leaving 28 open requirements.

The Compliance Assessment grouped requirements into three areas: 39 requirements of the UMCDF Hazardous Waste Storage and Treatment Permit (Table 1 of Appendix C of the May 4 Compliance Assessment); 14 requirements imposed as part of Department approval of some Permit Modification Requests or Facility Construction/ Modification Certification Packages (Table 2); and 16 requirements of other environmental permits, such as UMCDF air and water permits (Table 3). The 28 requirements remaining open as of May 19, 2004 include the requirement that UMCDF obtain the written approval of the Environmental Quality Commission (EQC), which will be the last step in the review and approval process. For this status update, the remaining 27 open requirements have been grouped together into five categories:

1. Three (3) requirements associated with actions by other (federal) agencies;
2. Four (4) requirements associated with actions that must be taken by the Department, but no further action by UMCDF specific to the requirement is anticipated;
3. Eleven (11) requirements associated with activities requiring completion by UMCDF and submittal of documentation to the Department for review and/or approval; and
4. Nine (9) requirements related to documentation of UMCDF actions that have been submitted to the Department and are already under review (depending on the results of the Department's review, these items might require additional action by UMCDF).

Many of the open requirements are related to documents that must be submitted by UMCDF and then reviewed and/or approved by the Department. Upon completion of document reviews (such as permit modification requests, facility construction certification packages, various reports, etc.) the Department prepares and issues decision documents or, in some cases, requests additional information from UMCDF that the Department believes is necessary to support a final decision.

Consequently, most of the open requirements that require UMCDF action must be completed a minimum of three to four weeks in advance of any decision by the EQC to approve the start of agent operations. The next regularly scheduled meeting of the EQC is July 15-16, 2004, and the decision on whether or not to allow UMCDF to start operations has been tentatively placed on the agenda. However, the scheduled decision date could be moved to a later date if it becomes clear that critical requirements cannot be completed in sufficient time to allow adequate Department review and preparation of the necessary review documents for the EQC.

A table listing the open requirements is included on page 4. Each of the open requirements is discussed below.

### **1. Actions Needed from Federal Agencies**

There are three open requirements that are associated with actions pending by the U.S. Centers for Disease Control and Prevention (CDC) (requirements 1-8 and 1-19) and the Environmental Protection Agency (EPA) (requirement 3-12). The CDC is identified as one of UMCDF's "independent oversight agencies," focusing on the chemical warfare agent monitoring program at UMCDF. CDC has conducted several on-site visits to UMCDF as part of its review of the monitoring program, and made a series of recommendations to UMCDF concerning improvements to the agent monitoring program. UMCDF has been working with CDC to satisfactorily implement the recommendations. The Department is holding these two requirements open until the CDC has completed its on-site reviews and prepares a final report, expected to be available on or about June 24, 2004.

The EPA is responsible for enforcing the requirements of the Toxic Substances Control Act (TSCA) and has granted the U.S. Army a "national" TSCA Permit. TSCA is the federal program that regulates the treatment and disposal of wastes contaminated with polychlorinated biphenyls (PCBs). Under the National TSCA Permit issued for the Army's chemical demilitarization facilities, EPA must grant approval for the disposal of PCB-contaminated material. Because the first munition to be processed at UMCDF will be M-55 rockets (many of which include PCB-contaminated material) UMCDF must receive written EPA approval before they begin agent operations. Approval from the EPA's TSCA program for the operation of a chemical demilitarization facility is usually not granted until just before the start of agent operations. On May 17, 2004 UMCDF submitted a request to the EPA TSCA program for a waiver of some TSCA permit requirements—it is unknown when EPA will make a decision on the waiver request.

### **2. Actions Needed from the Oregon Department of Environmental Quality**

There are four items that require the Department to take an action before the requirement can be considered closed. Three of the four requirements (1-28, 2-10, and 2-11) are special inspections that the Department intends to conduct before the start of agent operations and the fourth requirement (1-18) is the completion of the protocol that will be used to conduct a human health and ecological risk assessment after test data have been collected from agent trial burns. Unless there are deficiencies noted in any of the inspections, none of these four requirements require additional action by UMCDF at this time.

### **3. Actions Needed from the Umatilla Chemical Agent Disposal Facility**

There are 11 requirements still requiring some action by UMCDF, all related to actions that UMCDF must complete and/or document for submittal to the Department. For example, UMCDF has been replacing some piping in the pollution abatement systems. These are permitted systems that originally required an independent Oregon professional engineer to certify that they were constructed in accordance to the approved design. Consequently, changes to such systems must be approved by the Department and then re-certified (requirement 1-3).

Three of the requirements (1-33, 1-34, and 1-35) are related to UMCDF's "Operational Readiness Review" (ORR) process, which generates "findings" that must be resolved before the start of agent operations. The open items require UMCDF to submit reports generated by the ORR process, to include verification that all "Category 1" findings (the most significant) have been closed and that all "Category 2" (less significant, but still must be resolved) findings have



been scheduled for closure. As of May 19, 2004 there were 25 open Category 1 findings and 62 open Category 2 findings. However, in some cases a single Category 1 finding actually represents multiple items that require closure.

Another set of three requirements (1-21, 1-39, and 2-6) are related to the operation and testing of the Brine Reduction Area, used to treat the pollution abatement system liquids by removing the water, leaving only a salt-like residue for disposal off-site. The UMCDF Hazardous Waste Storage and Treatment Permit requires that the Brine Reduction Area be "operational and ready to treat pollution abatement system brines" prior to the start of chemical agent operations. UMCDF is currently conducting "shakedown" testing of the Brine Reduction Area, and the required Performance Test of the system is scheduled to occur mid- to late June.

There are three requirements (1-29, 1-32, and 2-14) for submittal of information to the Department related to a status update on the treatment technology for spent carbon, an update to all drawings and specification included in the permitting documents, and implementation of recently approved changes to the agent monitoring system on the pollution abatement system carbon filter systems. None of these submittals have yet been received by the Department.

The final requirement (1-36) in this category of requirements is the approval for the start of chemical agent operations by the U.S. Army Chemical Materials Agency, which has not yet been granted to UMCDF.

#### **4. Items Awaiting Completion of Department Review and/or Approval**

There are nine open requirements related to various items that require the Department's review and/or approval. This category of requirements includes documents that have been submitted by UMCDF or by the Umatilla Chemical Depot (UMCD) that are currently under review and might require additional action by UMCDF (depending on the results of the Department's review). For example, UMCDF recently submitted a revised "Munitions Tracking Procedure" (requirement 1-27) and a permit modification request related to agent monitoring of one of the furnaces (1-30). UMCD recently submitted four documents related to the procedures that will be used to transport munitions from the storage igloos to UMCDF (3-13 through 3-16). Each of these documents must be reviewed by the Department.

The documents presenting perhaps the greatest level of effort by both the Department and UMCDF are those related to the review and approval of the Surrogate Trial Burn (STB) Reports for Liquid Incinerator 1 and the Deactivation Furnace System. Operating parameters for agent operations cannot be finalized and approved until these reports have received final approval (1-23 and 1-24). The final item in this group (1-2) is the need for UMCDF and the Department to come to an agreement on how the monitoring computer installed in the Department's Hermiston office will be maintained.

#### **Summary**

A significant amount of work remains for the Department, the UMCDF Permittees, and the U.S. Army Chemical Materials Agency prior to the start of chemical agent operations. The requirements listed in the Compliance Assessment and discussed above are by no means the only items that need to be accomplished. There are myriad peripheral and underlying activities to almost every item on the list. In addition, UMCDF is still conducting internal reviews, and the results of those reviews may add additional "Category 1 Findings" or highlight the need for other operational or procedural changes that must be implemented before the start of agent operations.

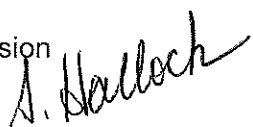
<b>Requirement No.<sup>1</sup></b>	<b>Open Requirements</b>
1-2	Installation and maintenance of computer monitor at DEQ office
1-3	Facility Modification Certification for pipe replacement
1-8	Independent oversight program
1-18	Post-Trial Burn Health Risk Assessment Protocol
1-19	Implementation of CDC's agent monitoring program recommendations
1-21	Submittal of limited stack test plan for the Brine Reduction Area
1-23	Approval of surrogate trial burn report—Deactivation Furnace System
1-24	Approval of surrogate trial burn report—Liquid Incinerator 1
1-27	Approval of the Munitions Tracking Procedure
1-28	Implementation of modifications to J-Block igloos
1-29	Update to drawings and specifications
1-30	Approval of the Discharge Airlock monitoring for the Metal Parts Furnace
1-32	Status of proposed carbon treatment technology
1-33	Submittal of reports from the Operational Readiness Review
1-34	Closure of Category 1 Findings
1-35	Closure schedule for Category 2 Findings
1-36	Approval from the U.S. Army Chemical Materials Agency
1-37	Approval from the Oregon Environmental Quality Commission
1-39	Successful results from the Brine Reduction Area Performance Test
2-6	Approval of Automatic Waste Feed Cutoffs for Brine Reduction Area
2-10	Inspection of the floor coatings in the Munitions Demilitarization Building
2-11	Inspection of the carbon filter vestibules
2-14	Implementation and approval of changes to carbon filter monitoring system
3-12	Approval from the EPA to dispose of PCB-contaminated waste
3-13	Submittal/review of adverse weather procedures (UMCD)
3-14	Submittal/review of transportation plan (UMCD)
3-15	Submittal/review of training documentation (UMCD)
3-16	Submittal/review of road evaluation (UMCD)

<sup>1</sup> The "Requirement No." is a reference to the requirements listed in the three tables included as Appendix C of the "Compliance Assessment [for the] Start of Chemical Agent Operations," May 4, 2004, Oregon Department of Environmental Quality.



State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director   
**Subject:** Agenda Item K, Action Item: Tax Credit Consideration  
May 21, 2004 EQC Meeting

**Proposed Action** Decide whether to take the action that the Department of Environmental Quality (DEQ, Department) recommends regarding the Pollution Control Facilities Tax Credits presented in this Staff Report.

**Key Issues** This agenda item includes results of a wood chipper survey (Attachment H) requested by the Environmental Quality Commission (EQC, Commission.) It is the first step in deciding if the wood chipper tax credit is an effective way to meet environmental goals.

**EQC Action Alternatives** Any application may be postponed to a future meeting if the EQC:

- Requires the Department or the applicant to provide additional information; or
- Makes a determination different from the Department's recommendation, and that determination may have an adverse effect on the applicant.

**Department Recommendation** The Department recommends that the EQC:

- Approve final certification of the **17** facilities detailed in Attachment B;
- Deny final certification of the **2** facilities presented in Attachment C; and
- Approve the correction to certificate number 10532 presented in Attachment D.
- Revoke **four** certificates numbered 4312, 4515, 10073, and 10083 presented in Attachment E.

Agenda Item K  
Action Item: Tax Credit Consideration  
May 21, 2004 EQC Meeting

**Attachments**

- A. Summary of Recommendations
- B. Background and References for Final Approvals
- C. Background and References for Denials
- D. Certificate Correction
- E. Certificate Revocations
- F. Tax Expenditure Liability Report
- G. Certified Wood Chipper Report
- H. Wood Chipper Survey Results


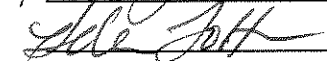
**Available Upon  
Request**

ORS 468.150 to 468.190 & OAR 340-016-0005 to 340-016-0080

Approved:

Section:

Division:

Report Prepared By: Maggie Vandehey  
Phone: 503-229-6878



# Attachment A

## Summary of Recommendations

Attachment B: **Recommended for Approval**

App #	Media	Applicant	Claimed	Certified	Difference	% Allocable	Maximum Percent	GF Liability 1	EQC Action
6420	UST	Exxon of Wilsonville LLC	101,108	82,444	-18,664	100%	50%	41,222	
6608	Air	Klamath Energy, LLC	2,530,247	2,206,921	-323,326	100%	50%	1,103,461	
6609	NPS	Eagle Ranch	24,245	24,245	0	100%	35%	8,486	
6617	Water	Weyerhaeuser Company	157,332	108,631	-48,701	100%	50%	54,316	
6618	Air	Weyerhaeuser Company	200,622	170,140	-30,482	100%	50%	85,070	
6627	Air	Georgia-Pacific Resins, Inc.	923,868	844,257	-79,611	100%	35%	295,490	
6642	Air	Merix Corporation	178,369	178,369	0	100%	35%	62,429	
6643	Water	Weyerhaeuser Company	507,253	451,135	-56,118	100%	50%	225,568	
6656	Air	Whittier Wood Products Co.	196,505	169,564	-26,941	100%	35%	59,347	
6660	Air	Columbia Steel Casting Co., Inc.	75,222	75,222	0	100%	50%	37,611	
6661	Air	TDY Industries, INC.	161,491	151,608	-9,883	100%	35%	53,063	
6670	Air	Columbia Steel Casting Co., Inc.	36,782	36,782	0	100%	35%	12,874	
6671	NPS	KLK Farm	123,900	123,900	0	100%	35%	43,365	
6681	Alt. FB	Mullen Farms, Inc.	299,725	296,036	-3,689	100%	35%	103,613	
6682	Alt. FB	Mark McKay Farms, Inc.	50,926	50,926	0	100%	35%	17,824	
6699	Mat. Rec.	Bend Garbage Company	175,000	175,000	0	100%	35%	61,250	
6704	NPS	Charles & Marcia Anderson	152,055	152,055	0	100%	35%	53,219	

<b>Apps</b>	<b>Sum</b>	<b>5,894,650</b>	<b>5,297,235</b>	<b>2,318,208</b>
<b>17</b>	Average	346,744	311,602	136,365
	Minimum	24,245	24,245	8,486
	Maximum	50,926	2,206,921	1,103,461

- General Fund (GF) Liability = certified cost \* % allocable \* maximum allowable %.

# Attachment A

## Summary of Recommendations

### Attachment C: Recommended for Denial

App #	Media	Applicant	Claimed	Certified	Difference	% Allocable	Maximum Percent	Media	EQC Action
6260		Merix Corporation	\$ 241,280		-241,280	100%	50%	Water	
6576		Signature Graphics, Inc.	128,874		-128,874	100%	50%	Mat. Rec.	

<b>Apps</b>	<b>Sum</b>	<b>370,154</b>
<b>2</b>	Average	185,077
	Minimum	128,874
	Maximum	241,280

### Attachment E: Certificate Correction

Certificate # 10532 - Cloudburst Recycling, Inc.

From 35% maximum tax credit to 50%

### Attachment F: Certificate Revocations

Certificate 4312 - The Ridge Company

Certificate 4515 - Hawk Oil Co.

Certificate # 10073 - William F. Rasmussen

Certificate # 10083 - Thomas N. Hanson




# Attachment B

## Background and References for Final Approvals

The Department recommends the Environmental Quality Commission approve certification of the 17 pollution control and material recovery facilities presented in this attachment. The individual application records and the Pollution Control Facilities Tax Credit regulations support the Director's Recommendation as shown at the top of each Review Report. The Department organized the reports by ascending application number under the following categories.

1. Air
2. Alternatives to Field Burning (shown as *Alt FB* on the tab)
3. Material Recovery (shown as *Mat Rec* on the tab)
4. Nonpoint Source Pollution Control (shown as *NPS* on the tab)
5. Underground and Aboveground Tanks Systems (shown as *UST* on the tab)
6. Water

The Commission's certification of these facilities could reduce taxes paid to the State of Oregon by a maximum of **\$2,318,208**.

### Definition of a "Pollution Control Facility"

The tax credit regulations provide the definition of a "pollution control facility." The regulations split the definition into several parts. The parts of the definition common to all pollution control facilities include a broad description of the asset, the environmental benefit, and the purpose of the facility:

Asset	Environmental Benefit	Pollution Control Purpose
<ul style="list-style-type: none"> <li>• Land</li> <li>• Structure</li> <li>• Building</li> <li>• Installation</li> <li>• Excavation</li> <li>• Machinery</li> <li>• Equipment</li> <li>• Devices</li> </ul>	Prevents, Controls, or Reduces: <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Water pollution</li> <li>• Solid waste</li> <li>• Hazardous waste</li> <li>• Used oil</li> </ul>	Required - Principal primary and most important purpose is to achieve the environmental benefit by complying with DEQ/EPA/LRAPA requirements  Voluntary - Sole sole or exclusive purpose is to achieve the environmental benefit - the benefit must be substantial

### Statutory Definition of "Pollution Control Facility"

ORS 468.155 Definitions for ORS 468.155 to 468.190 and 468.962

- (1)(a) As used in ORS 468.155 to 468.190 and 468.962, unless the context requires otherwise, "pollution control facility" or "facility" means any land, structure, building, installation, excavation, machinery, equipment or device, or any addition to,

reconstruction of or improvement of, land or an existing structure, building, installation, excavation, machinery, equipment or device reasonably used, erected, constructed or installed by any person if:

- (A) The principal purpose of such use, erection, construction or installation is to comply with a requirement imposed by the Department of Environmental Quality, the federal Environmental Protection Agency or regional air pollution authority to prevent, control or reduce air, water or noise pollution or solid or hazardous waste or to recycle or provide for the appropriate disposal of used oil; or
- (B) The sole purpose of such use, erection, construction or installation is to prevent, control or reduce a substantial quantity of air, water or noise pollution or solid or hazardous waste; or to recycle or provide for the appropriate disposal of used oil.

...

- (2)(a) As used in ORS 468.155 to 468.190 and 468.962, "pollution control facility" or "facility" includes a nonpoint source pollution control facility.

#### Eligibility and Purpose

##### OAR 340-016-0060 Eligibility

- (1) Eligible Facilities. Facilities eligible for pollution control tax credit certification shall include any land, structure, building, installation, excavation, machinery, equipment or device, or alternative methods for field sanitation and straw utilization and disposal. An eligible facility shall be reasonably used, erected, constructed or installed as:
  - (a) A new facility;
  - (b) An addition or improvement to an existing facility; or
  - (c) The reconstruction or replacement of an existing facility.
- (2) Purpose of Facility. The facility shall meet the principal purpose requirement to be eligible for a pollution control facility tax credit certification, or if the facility is unable to meet the principal purpose requirement, the facility shall meet the sole purpose requirement to be eligible for a pollution control tax credit:
  - (a) Principal Purpose Requirement. The principal purpose of the facility is the most important or primary purpose of the facility. Each facility shall have only one principal purpose. The facility shall be established to comply with environmental requirements imposed by the Department, the federal Environmental Protection Agency or a regional air pollution authority to control, reduce, or prevent air, water or noise pollution, or for the material recovery of solid waste, hazardous waste or used oil; or
  - (b) Sole Purpose Requirement. The sole purpose of the facility shall be the exclusive purpose of the facility. The only function or use of the facility shall be the control, reduction, or prevention of air, water or noise pollution; or for the material recovery of solid waste, hazardous waste or used oil.



## BACKGROUND

### APPROVALS: Air Pollution Control Facilities

The Department recommends that the Environmental Quality Commission approve **eight** air pollution control facilities. Each of these facilities disposes of or eliminates air pollution with the use of air cleaning devices. The Commission's certification of the facilities could reduce taxes paid to the State of Oregon by a maximum of **\$ 1,709,344**.

All **eight** applicants constructed facilities in response to a requirement imposed by the Department, the federal Environmental Protection Agency (EPA), or a regional air pollution authority. Commonly called "principal purpose facilities", their primary and most important purposes are to comply with requirements to control air pollution with the use of air cleaning devices. These facilities may serve other purposes but their main purpose is air pollution control.

#### Summary of Air Pollution Control Facilities

App #	Applicant	Certified	% Allocable	Maximum Percent	GF Liability
6608	Klamath Energy, LLC	\$2,206,921	100%	50%	\$ 1,103,461
6618	Weyerhaeuser Company	170,140	100%	50%	85,070
6627	Georgia-Pacific Resins, Inc.	844,257	100%	35%	295,490
6642	Merix Corporation	178,369	100%	35%	62,429
6656	Whittier Wood Products Co.	169,564	100%	35%	59,347
6660	Columbia Steel Casting Co., Inc.	75,222	100%	50%	37,611
6661	TDY Industries, INC.	151,608	100%	35%	53,063
6670	Columbia Steel Casting Co., Inc.	36,782	100%	35%	12,874

<b>Apps</b>	<b>Sum</b>	<b>\$3,832,863</b>	<b>\$ 1,709,344</b>
<b>8</b>	Average	479,107.86	213,668.06
	Minimum	36,782	12,874
	Maximum	2,206,921	1,103,461

#### Statutory Definition of an "Air Pollution Control Facility"

ORS 468.155 Definitions for ORS 468.155 to 468.190 and 468.962

...

(b) Such prevention, control or reduction required by this subsection shall be accomplished by:

...

(B) The disposal or elimination of or redesign to eliminate air contaminants or air pollution or air contamination sources and the use of air cleaning devices as defined in ORS 468A.005;

...

ORS 468A.005 provides the following pertinent definitions.

"Air contaminant" means a dust, fume, gas, mist, odor, smoke, vapor, pollen, soot, carbon, acid or particulate matter or any combination thereof.

"Air pollution" means the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby.

"Air contamination source" means any source at, from, or by reason of which there is emitted into the atmosphere any air contaminant, regardless of who the person may be who owns or operates the building, premises or other property in, at or on which such source is located, or the facility, equipment or other property by which the emission is caused or from which the emission comes.

An "Air-cleaning device" means any method, process or equipment that removes, reduces or renders less noxious air contaminants prior to their discharge in the atmosphere.

#### Eligibility

##### OAR 340-016-0060 Eligibility

...

(4) Eligible Activities. The facility shall prevent, reduce, control, or eliminate:

- (a) Air contamination by use of air cleaning devices as defined in ORS 468A.005 or through equipment designed to prevent, reduce or eliminate air contaminants prior to discharge to the outdoor atmosphere;

...





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

650 NE Holladay, Suite 700  
Portland, OR 97232

Organized as: LLC

Taxpayer ID: 01-0783017

### *Technical Information*

Klamath Energy, LLC generates electricity using four Pratt & Whitney natural gas-fired combustion turbines connected to two 13.8 kilovolt generators. The applicant constructed the generating facility to provide electricity only during high demand periods.

The applicant installed a water injection system to reduce nitrogen oxides (NO<sub>x</sub>) emissions on each of the four turbines. The system injects purified water into the combustion section of the turbine to reduce NO<sub>x</sub> emissions by 80%. The water injection system prevents the formation of 105 pounds per hour of NO<sub>x</sub> per turbine. The claimed facility consists of a water manifold injection skid that is connected to a combustion chamber injection nozzle system for each of the four turbines. The claimed facility also includes two water feed pumps manufactured by Gould Pump that supply water to the injection skids.

The applicant also installed a catalyst in each of the four exhaust stacks to reduce carbon monoxide (CO) emissions, carbon dioxide (CO<sub>2</sub>), and water. The catalyst has an 80% reduction efficiency. The claimed facility consists of catalyst media and support frames.

The applicant also claimed a TECO continuous emissions monitor (CEM) to record the amount of NO<sub>x</sub> and CO emitted during a given period.

### *Director's Recommendation*

**Approve Application No. 6608 @ a Reduced Cost**

Applicant: **Klamath Energy, LLC**

Certification of:

Facility Cost		\$2,206,921
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<b>\$1,103,461</b>

Certificate Period: **10 years**

### *Facility Identification*

4940 Hwy 97 South  
Klamath Falls, OR 97603

The certificate will identify the facility as:

**Four Pratt & Whitney water injection systems for NO<sub>x</sub> reduction and Four Pratt & Whitney catalyst systems for CO reduction.**

### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Klamath Energy, LLC **owns** the claimed facility that they use for recycling or material recovery.

### ***Eligibility***

**Timely Filing** Criteria

1999 Edition ORS  
468.173(1) OAR  
340-016-0007

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility before January 1, 2002, the applicant must submit the application within two years after the construction completion date.

Applied to this Application

The applicant **filed** the application **within** the two-year **filing requirement**. They completed construction on 08/13/2001 **and** submitted the application on 8/13/2003. The applicant did not submit the application before they completed construction or placed the facility into operation on 5/17/2002.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The claimed facility has a principal purpose. The water injection system and the CO converter catalyst comply with Sections 10 and 11 of the applicant's Air Contaminant Discharge Permit imposed by DEQ. The primary or most important purpose of the claimed facility is to reduce air pollution.



The continuous emissions monitoring system and its spare parts are not eligible for certification because the system does not reduce, prevent, or control air pollution. Its primary or most important purpose is to measure and record the amount of NO<sub>x</sub> and CO emissions that are released to the atmosphere. The Department subtracted the cost of the CEM and its spare parts from the claimed facility cost under the *Facility Cost* section below.

**Method** Criteria  
 ORS 468.155 The prevention, control, or reduction must be accomplished by the disposal or  
 (1)(b)(B) elimination of air contaminants, air pollution, or air contamination sources; and  
 the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The water injection system and the CO converter **meet the definition** of an air cleaning device as defined by ORS 468A.005. NO<sub>x</sub> and CO **meet the definition** of an air contaminant as defined by ORS 468A.005.

**Exclusions** Criteria  
 ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control  
 OAR 340-016- Facility. Any items that do not meet the definition are ineligible for certification.  
 0070(3)

Applied to this Application

There are no exclusions.

**Replacement** Criteria  
 ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified  
 pollution control facility is not eligible for the tax credit. However, there are  
 two exceptions:

1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The claimed facility is not a replacement facility.

**Maximum Credit** Criteria  
 1999 Edition The maximum tax credit is 50% of the certified facility cost if the applicant  
 ORS 468.173(1) completed construction before January 1, 2002 and submits the application  
 OAR 340-016-0007 before January 1, 2004.

Applied to this Application

The **maximum tax credit is 50%** because the applicant completed construction of the facility on 11/8/2001, and submitted the application on 8/14/2003.

**Facility Cost****Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are no subtractions.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the **actual cost** of the material recovery portion of the facility. The certified cost may not exceed the **taxpayer's own cash** investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Cost
	Claimed	\$2,530,247
<i>Purpose: Required</i>	Continuous emissions monitoring system and its spare parts	- \$323,326
	<b>Certified Cost</b>	<b>\$2,206,921</b>

**Facility Cost Allocable to Pollution Control****% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material



recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The claimed facility does not produce any revenue but the applicant has increased operating expense by \$13,400 per year. The facility's return on investment (Facility ROI) is less than the National ROI for 2001 (the year that the applicant completed constructing the claimed facility. The applicant did not investigate an alternative technology because the claimed facility met the applicant's Air Contaminant Discharge Permit requirements.

## ***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff assigned to the source is Thane Jennings from the Eastern Region who affirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes, and with EQC orders. The applicant is in the process of replacing their short-term air permit allowed by Oregon Administrative Rule for short-term energy projects that provided a streamlined permitting process. The applicant has submitted an application to obtain a standard Air Contaminant Discharge Permit and will be installing additional pollution control equipment to reduce emissions further. DEQ issued Air Permit #18-0024 on June 22, 2001.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

Tax Department CH1C28  
PO Box 9777  
Federal Way, WA 98063

Organized as: **C Corp**  
Taxpayer ID: **91-0470860**

### *Technical Information*

Weyerhaeuser Company processes raw logs into plywood at its Springfield, Oregon mill. Manufacturing process includes debarking, peeling, drying, lay-up, and finishing. The finishing process uses large sanders that create fine particulate matter (PM) emissions. The applicant installed a Torit-RFW-10 baghouse, a 36,000 ft<sup>3</sup> per minute fan, pneumatic piping and a fire suppression system to control PM emissions from a newly installed Kimwood sander. The baghouse captures 99% of the PM emissions created by the sander.

### *Taxpayer Allowed Credit*

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

### *Director's Recommendation*

**Approve Application No.6618 @ Reduced Cost**

Applicant: **Weyerhaeuser Company**

Certification of:

Facility Cost		\$170,040
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<u>\$85,020</u>

Certificate Period: **10 years**

### *Facility Identification*

419 South 28th Street  
Springfield, OR 97477

The certificate will identify the facility as:

**Dust Control System for Kimwood Sander**



Applied to this Application

DEQ will report the following information to the Department of Revenue:  
Weyerhaeuser Company owns the business that uses the Oregon property requiring the pollution control.

**Eligibility****Timely Filing**

1999 Edition ORS  
468.173(1) OAR  
340-016-0007

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility before January 1, 2002, the applicant must submit the application **within two years** after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 12/13/2001. The applicant completed construction or installation of the claimed facility on **11/6/2001** and filed the application on **11/6/2003**. The applicant filed the application within the two-year filing requirement.

**Purpose: Required**

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The baghouse complies with the Plant Site Emissions Limits for PM emissions in the applicant's Title V Operating Air Permit. Lane Regional Air Pollution Authority (LRAPA) issued the permit. The primary or most important purpose of the baghouse is to reduce air pollution.

The fire suppression system and interior ducting are not eligible for certification because their primary or most important purpose is fire protection and to remove the PM from the work area, respectively. Their principal purpose is not air pollution control. The Department subtracted the cost of these items from the claimed facility cost under the *Facility Cost* section below.

**Method**

ORS 468.155  
(1)(b)(B)

Criteria

The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The baghouse **meets the definition** of an air-cleaning device and PM meets the definition of an air contaminant as defined by ORS 468A.005.

**Exclusions** Criteria

ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification.  
OAR 340-016-0070(3)

Applied to this Application

There are no additional exclusions other than the items described in the *Purpose: Required* section above.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. However, there are two exceptions:

1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The State of Oregon has issued three Pollution Control Facilities Tax Credit Certificates to the previous owner of the plywood mill at this location. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria

ORS 468.173(1) The maximum tax credit is 50% of the certified facility cost if the applicant  
OAR 340-016-0007 completed construction before January 1, 2002.

Applied to this Application

The maximum tax credit is **50%** because the applicant completed construction of the facility on 11/6/2001.

***Facility Cost***



**Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost.  
The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are no subtractions.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the **actual cost** of the claimed facility. The certified cost may not exceed the **taxpayer's own cash** investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Cost
	Claimed	\$200,622
<i>Purpose: Required</i>	Fire Suppression System	- \$26,615
	Interior Ducting	- \$3,967
	<b>Certified Cost</b>	<b>\$170,040</b>

***Facility Cost Allocable to Pollution Control*****% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 10-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The facility captures sander dust that the applicant uses in the manufacture of particleboard. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2001, the facility's construction completion year. The applicant did not investigate an alternative technology.

## ***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The Lane Regional Air Pollution Authority (LRAPA) staff member assigned to the source is Robert Koster. Mr. Koster affirmed the applicant's statement that the facility and site are in compliance with LRAPA rules and statutes, and with EQC orders. LRAPA issued Title V Air Permit No. 20864 to the applicant on 12/13/2001.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air

#### Final Certification

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

Chemical Divisions  
2665 Highway 99 North  
Eugene, OR 97402

Organized as: **C Corp**

Taxpayer ID: **58-1576916**

### *Technical Information*

Georgia-Pacific Resins, Inc. manufactures specialty resins for the wood products industry. The resins are produced in one of three resin reactors, depending on the type of resin to be manufactured. The raw materials for the resins include formaldehyde, methanol, phenol and epichlorohydrin, which are pumped into the reactors from storage tanks. The pumping of these chemicals into the reactors creates emissions that are released to the atmosphere through the reactor's vent pipe. The EPA and DEQ have classified these emissions as Hazardous Air Pollutants (HAPs).

The applicant installed a regenerative thermal oxidizer (RTO) manufactured by Colt Technologies to capture and destroy the HAPs emissions by burning them at 1500°F. The RTO converts the HAPs to carbon dioxide and water. The claimed facility also includes exterior ducting from the three resin reactor vents to the RTO. The applicant also claimed a flammability sensor/controller system, emergency venting systems and a 1,000-gallon propane backup fuel system.

The RTO has a destruction removal efficiency of more than 96% and a capacity of 3,000 cubic feet per minute. The emission reductions are: phenol, 35 lbs./yr.; formaldehyde, 1,006 lbs./yr.; methanol, 5,461 lbs./yr.; and epichlorohydrin, 320 lbs./yr. The RTO is equipped with a heat recovery system used to preheat the incoming emissions.

### *Director's Recommendation*

**Approve Application No.6627 @ Reduced Cost**

Applicant: **Georgia-Pacific Resins, Inc.**

#### Certification of:

Facility Cost		\$844,257
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<hr/> \$295,490

Certificate Period: **10 years**

### *Facility Identification*

2665 Highway 99 North  
Eugene, OR 97402

The certificate will identify the facility as:

**A Regenerative Thermal Oxidizer  
manufactured by Colt Technologies**

***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue:

Georgia-Pacific Resins, Inc. owns the business that uses the Oregon property requiring the RTO.

***Eligibility*****Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 1/20/2003. The applicant completed construction or installation of the claimed facility on **1/19/2003** and filed the application on **11/14/2003**. The applicant filed the application within the one-year filing requirement.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005



Applied to this Application

The applicant claims the facility has a principal purpose. The reduction of HAP emissions by the RTO system complies with Section 8 of Stipulated Final Order Number 03-2521 between the applicant and the Lane Regional Air Pollution Authority (LRAPA). The RTO also reduces HAP emissions as required by the applicant's Air Contaminant Discharge Permit imposed by LRAPA. The primary or most important purpose of the claimed facility is to reduce air pollution.

The PREVEX Flammability Analyzer system and the emergency by-pass ducting system, which diverts the untreated emissions to atmosphere rather than the thermal are not eligible for certification because they do not reduce, prevent, or control air pollution. The primary or most important purpose of the flammability analyzer system is for fire protection. The primary or most important purpose of the emergency vent ducting is to allow the reactors to continue to operate when the RTO is shut down. The applicant also included the cost of inspection/maintenance platforms and ladders. The primary purpose of these items is not to reduce air pollution. The Department subtracted the associated costs from the claimed facility cost under the *Facility Cost* section below.

<b>Method</b>	<b>Criteria</b>
ORS 468.155 (1)(b)(B)	The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The RTO **meets the definition of** an air-cleaning device as defined by ORS 468A.005. HAPs **meet the definition of** an air contaminant as defined by ORS 468A.005.

<b>Exclusions</b>	<b>Criteria</b>
ORS 468.155(3) OAR 340-016- 0070(3)	The regulations exclude more than 40 items from the definition of a Pollution Control Facility. Exclusions include items that make an insignificant contribution to the pollution control purpose of the claimed facility. Any items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions** other than the items discussed under the *Purpose: Required* section above.

<b>Replacement</b>	<b>Criteria</b>
ORS 468.155(3)(e)	<p>The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. However, there are two exceptions:</p> <ol style="list-style-type: none"><li>1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original</li></ol>

facility; or

2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The claimed facility is **not a replacement facility**. The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this site.

**Maximum Credit** Criteria

ORS 468.173(3)(h) The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the facility is located within a designated distressed area as defined by the Economic and Community Development Department in ORS 285A.010.

Applied to this Application

The maximum tax credit is **35%** because the application was filed on 11/14/2003, and the applicant is located outside of the city limits of Eugene which is a designated economically distressed area as defined in ORS 285A.010, by the Economic and Community Development Department.

***Facility Cost***

**Subtractions** Criteria

- OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost.  
The claimed cost may not include:
- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
  - b) the amount of any government grants received to pay part of the facility cost;
  - c) the present value of any other state tax credits for which the investment is eligible; and
  - d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

The Department subtracted the ineligible costs discussed under the *Purpose: Required* section above. There are **no other subtractions**.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the actual cost of the facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiate the eligible facility cost. The documentation indicates that the claimed cost represents the **taxpayer's own cash investment**.



Referenced Section	Description of Ineligible Portion	Cost
	Claimed	\$923,868
Purpose: Required	PREVEX Flammability Analyzer and the emergency by-pass ducting system around the RTO. Includes 11 actuated valves and installation labor.	- \$44,611
	Platforms and ladders	- \$35,000
	<b>Certified Cost</b>	<b>\$844,257</b>

### ***Facility Cost Allocable to Pollution Control***

#### **% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

#### Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

#### **Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- The estimated annual percent return on the investment in the facility;
- Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- Any other relevant factors.

#### Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology.

## ***Compliance***

### ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

### Applied to this Application

The Lane Regional Air Pollution Authority (LRAPA) staff member assigned to the source is Robert Koster. Mr. Koster affirmed the applicant's statement that the facility and site are in compliance with LRAPA rules and statutes, and with EQC orders. The following permits apply to the site:

- Air Contaminant Discharge Permit No. 203129 issued on 12/04/2001, and
- NPDES Permit No. 101474 issued on 04/09/1997.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

1521 Poplar Lane  
Forest Grove, OR 97116

Organized as: **C Corp**  
Taxpayer ID: **93-13597**

### *Technical Information*

Merix Corporation manufactures multilayer rigid printed circuit boards. The applicant installed a new roll coater machine used to apply coatings and protective sealants to the top surface of the printed circuit boards. The coatings and protective sealants contain chemicals that create Volatile Organic Compounds (VOC) emissions as they dry.

The applicant installed a regenerative thermal oxidizer (RTO) along the northern wall of the factory to reduce the VOC emissions. The RTO combusts VOC-laden gases at 1,500 °F and converts the VOCs to carbon dioxide and water. The RTO destroys approximately 35,800 pounds per year of VOCs and has a destruction efficiency of > 95%. It has a flow rate of 2,845 standard cubic feet per minute.

### *Director's Recommendation*

**Approve Application No.6642**

**Applicant: Merix Corporation**

#### Certification of:

Facility Cost		\$178,369
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$62,429</u>

Certificate Period: **10 years**

### *Facility Identification*

23665 NE Halsey  
Wood Village, OR 97060

The certificate will identify the facility as:

**Airex Regenerative Thermal Oxidizer, M/N  
RTO-3.0, S/N 2354-3.0 RTO**

***Taxpayer******Allowed Credit***

ORS 315.304(4)

Criteria

The taxpayer who is allowed the credit must be:

- (a) The owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- (b) A person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue:

Merix Corporation owns the business that uses the Oregon property requiring the pollution control.

***Eligibility******Timely Filing***

1999 Edition

ORS 468.173(1)

OAR 340-016-0007

Criteria

The applicant must file the application **within two years** after the date that they completed construction of the facility. The final application, however, is not valid if the applicant submits the application before they complete construction or before they place the facility into operation.

Applied to this Application

The applicant **timely filed** the application within the two-year filing requirement. They completed construction on 12/05/2001 and submitted the application on 12/01/2003. The applicant did not submit the application before they completed construction or placed the facility into operation on 09/01/2003.

***Purpose: Required***

ORS 468.155

(1)(a)(A)

OAR 340-016-

0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The claimed facility has a principal purpose. The RTO complies with Section 2.1 of the applicant's Air Contaminant Discharge Permit (ACDP), which requires VOC emissions from the roll coater to be controlled. DEQ issued the ACDP. The primary or most important purpose of the claimed facility is to reduce air pollution.



**Method** Criteria

**ORS 468.155 (1)(b)(B)** The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The RTO **meets** the **definition** of an air-cleaning device and VOCs meet the definition of air pollution.

**Exclusions** Criteria

**ORS 468.155 (3)** The regulations provide a list of over 40 items excluded from the definition of a  
**OAR 340-016-070(3)** Pollution Control Facility. Items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

**ORS 468.155 (3)(e)** The replacement or reconstruction of all or part of a facility that has previously been certified as a pollution control facility under ORS 468.170 is not eligible for the tax credit with two exceptions:

- 1) the facility was replaced due to a requirement imposed by DEQ or EPA that is different than the requirement to construct the original facility; or
- 2) the applicant replaced the facility before the end of its useful life.

Applied to this Application

The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location; therefore, the facility is **not a replacement** facility.

**Maximum Credit** Criteria

**ORS 468.173(3)(f)** The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant filed the application on 12/01/03 and the certified facility cost is **\$178,369**.

**Facility Cost**

- Subtractions** Criteria  
 OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:
- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
  - b) the amount of any government grants received to pay part of the facility cost;
  - c) the present value of any other state tax credits for which the investment is eligible; and
  - d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application  
 There are **no subtractions**.

- \$ Certification** Criteria  
 ORS 468.170(1) The certified cost is limited to the actual cost of the material recovery portion of the facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application  
 Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$178,369
	None	0
	<b>Certified</b>	<b>\$178,369</b>

**Facility Cost Allocable to Pollution Control**

- % Certification** Criteria  
 ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application  
 The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsection below.

- Percentage** Criteria  
 ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.
- a. The extent to which the applicant uses the facility to recover and convert



- waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
  - c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
  - d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
  - e. Any other relevant factors.

Applied to this Application

The applicant and the Department considered the factors a. through e. above. The claimed facility does not produce salable or usable commodity. The average annual cash flow for the RTO is negative because there is an increase in expenditures associated with its operation. The Facility ROI, therefore, is less than the National ROI for 2001 (the year of construction completion.) This results in 100% of the facility cost being allocable to pollution control. The applicant did not investigate an alternative technology and there are no other relevant factors.

***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff member assigned to the source is Greg Grunow for air quality from the Northwest Region Office. Mr. Grunow has affirmed the applicant complies with its ACDP. DEQ has issued the following permits to the site: Air Contaminant Discharge Permit No. 26-0108 issued 3/7/01 and Industrial Wastewater Discharge Permit No. 319 issued on 12/22/02. The EQC has not certified any certificates at this location.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

#### *Applicant Identification*

Whittier Wood Products Co.  
P.O. Box 2827  
Eugene, OR 97402

Organized as: **S Corp**  
Taxpayer ID: **93-0623728**

#### *Technical Information*

Whittier Wood Products produces alder chairs, tables and home office furniture. The applicant constructed a new building and installed new wood working tools and equipment to collect the particulate matter (PM) emissions created by the new tools. The claimed equipment is a Carothers dust collector with 47,000 cubic feet per minute fan powered by a 200-hp electric motor. The fan draws the sawdust from the woodworking machines to the new dust collector. The applicant also claims a sawdust transfer system consisting of a 40-hp high-pressure blower and approximately 170 feet of piping to convey the sawdust from the new dust collector to an existing chip bin. The claimed facility also includes a spark detection/suppression system. The system has a 99.9% collection efficiency and captures over 980 tons of PM per year.

#### *Director's Recommendation*

**Approve Application No. 6656 @ Reduced Cost**

**Applicant: Whittier Wood Products Co.**

#### Certification of:

Facility Cost		<b>\$169,564</b>
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<b>\$59,347</b>

**Certificate Period: 10 years**

#### *Facility Identification*

3787 West 1<sup>st</sup> Avenue  
Eugene, OR 97402

The certificate will identify the facility as:

**Carothers Model 450TR12HEIFS Dust Collector**



***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue:  
Whittier Wood Products Co. owns the business that uses the Oregon property requiring the pollution control.

***Eligibility*****Timely Filing**

2001 Edition ORS  
468.165(6)

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 1/15/2003. The applicant completed construction or installation of the claimed facility on **1/15/2003** and submitted the application on **12/23/2003**.

**Purpose: Required**

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a **requirement imposed by DEQ, EPA, or LRAPA** to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The new dust collection system complies with the requirement in the applicant's Air Contaminant Discharge Permit issued by LRAPA. The permit prohibits the discharge of more than 0.1 grains of PM per cubic foot of exhausted air to the atmosphere. The primary or most important purpose of this system is to prevent

air pollution.

The sawdust transfer system from the new dust collector to an existing chip bin and the fire detection/suppression system are not eligible for certification because their primary and most important purposes are not to meet the permit requirements to reduce, prevent, or control air pollution. Their primary and most important purposes of the:

- sawdust transfer system is for material handling, and
- fire detection/suppression system is to prevent a fire in the baghouse from spreading to surrounding buildings and equipment.

The Department subtracted the associated costs from the claimed facility cost under the *Facility Cost* section below.

<b>Method</b> ORS 468.155 (1)(b)(B)	<u>Criteria</u> The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.
---	--

Applied to this Application

Particulate matter **meets the definition** of an air contaminant as defined by ORS 468A.005. The dust collector system meets the definition of an air-cleaning device because it prevents air contaminants from discharge to the atmosphere.

<b>Exclusions</b> ORS 468.155(3) OAR 340-016- 0070(3)	<u>Criteria</u> The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification.
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Applied to this Application

There are **no exclusions** other than the items described in the *Purpose: Required* section above.

<b>Replacement</b> ORS 468.155(3)(e)	<u>Criteria</u> The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:
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1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has issued 3 Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** of these previously certified facilities.

<b>Maximum Credit</b> ORS 468.173(3)(f)	<u>Criteria</u> The maximum tax credit is 35% if the applicant submitted the application
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between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on December 23, 2003 and the certified facility cost is **\$169,564**.

***Facility Cost***

- |                     |   |
|---------------------|---|
| <b>Subtractions</b> | <u>Criteria</u>   |
| OAR 340-016-0070(1) | <p>The applicant must provide documents that substantiate the claimed facility cost.</p> <p>The claimed cost may not include:</p> <ul style="list-style-type: none"> <li>a) the salvage value of a pre-existing facility if the applicant is replacing a facility;</li> <li>b) the amount of any government grants received to pay part of the facility cost;</li> <li>c) the present value of any other state tax credits for which the investment is eligible; and</li> <li>d) ineligible costs as set forth in OAR 340-016-0070(3).</li> </ul> |

Applied to this Application

Eugene Water and Electric Board issued the applicant an energy credit of \$4,703 for the project. The applicant subtracted the credit from the facility cost.

The applicant mistakenly subtracted \$5,000 for the salvage value of the new equipment. The installation of the claimed facility did not result in the sale of any scrapped equipment. The Department added \$5,000 to the claimed facility cost under the *Facility Cost* section below.

- |                         |   |
|-------------------------|---|
| <b>\$ Certification</b> | <u>Criteria</u>   |
| ORS 468.170(1)          | <p>The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.</p> |

Applied to this Application

Invoices substantiated the eligible facility cost and documents that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$196,505
	Salvage Value claimed by mistake	+\$5,000
<i>Purpose: Required</i>	Sawdust transfer system (includes labor)	-\$25,441
	Spark detection/suppression system	-\$6,500
	<b>Certified</b>	<b>\$169,564</b>

***Facility Cost Allocable to Pollution Control*****% Certification**    Criteria

ORS 468.170(1)    The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage**    Criteria

ORS 468.190(1)    The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a.    The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b.    The estimated annual percent return on the investment in the facility;
- c.    Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d.    Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e.    Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 10-year useful life. The claimed facility produces sawdust, which is a salable or useable commodity with annual revenues or costs savings of \$37,443. The annual expenditures are \$23,700. Considering the increase in the annual cash flow of \$13,743, the facility ROI is still less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology.

***Compliance*****ORS 468.180(1)**    Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.



Applied to this Application

The LRAPA staff member assigned to the source is Robert Koster. Mr. Koster affirmed the applicant's statement that the facility and site are in compliance with LRAPA rules and statutes, and with EQC orders. LRAPA issued permit number 208927 during December and permit number 2001208894 during August of 2002. DEQ issued an NPDES General Storm Water Permit No. 1200Z issued October 29, 1997.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

#### ***Applicant Identification***

Columbia Steel Casting Co., Inc.  
P. O. Box 83095  
Portland, OR 97283

Organized as: **S Corp**  
Taxpayer ID: **93-0336095**

#### ***Technical Information***

Columbia Steel Casting Co. manufactures alloy steel castings. The manufacturing process uses sand molds to shape the molten steel. The sand molds use clay and binders to provide the necessary bonding to maintain their shape. The applicant installed a new sand reclamation system to remove the clay and binders from the spent sand molds. The new reclamation system creates large amounts of airborne particulate matter (PM) emissions. The applicant claims a new baghouse that removes 1,700 tons of PM per year from the exhaust of the sand reclamation system. The claimed facility consists of a baghouse manufactured by LMC that contains 81 filter bags that have a 99.8% removal efficiency, a 4,800 cubic feet per minute fan powered by a 20 hp motor, and a steel support structure. The applicant mixes the material collected in the baghouse, mixes it with water and transfers it to the applicant's on-site landfill.

#### ***Director's Recommendation***

**Approve Application No.6660**

**Applicant: Columbia Steel Casting Co., Inc.**

#### **Certification of:**

Facility Cost		\$75,222
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<b>\$ 37,611</b>

**Certificate Period: 7 years**

#### ***Facility Identification***

Columbia Steel Casting Co., Inc.  
10425 N. Bloss Street  
Portland, OR 97203

The certificate will identify the facility as:

**LMC Dust Baghouse, Model 81-FTD-10-1/2**



### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Columbia Steel Casting Co., Inc. owns the business that uses the Oregon property requiring the pollution control.

### ***Eligibility***

**Timely Filing**

1999 Edition ORS  
468.173(1) OAR  
340-016-0007

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility before January 1, 2002, the applicant must submit the application **within two years** after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 12/28/2001. The applicant completed constructing the claimed facility on **12/21/2001** and submitted the application on **12/15/2003**.

**Purpose: Required**

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The new baghouse system complies with the applicant's Air Contaminant Discharge Permit that prohibits the discharge of more than 0.1 grains of PM per cubic foot of exhausted air to the atmosphere. The primary or most important

purpose of the claimed facility is to prevent air pollution.

**Method** Criteria  
ORS 468.155 (1)(b)(B) The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

Particulate matter **meets the definition** of an air contaminant as defined by ORS 468A.005. The baghouse system meets the definition of an air-cleaning device because it prevents the discharge of air contaminants to the atmosphere.

**Exclusions** Criteria  
ORS 468.155(3) OAR 340-016-0070(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria  
ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has issued 23 Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria  
ORS 468.173(1) OAR 340-016-0007 The maximum tax credit is 50% of the certified facility cost if the applicant completed construction before January 1, 2002.

Applied to this Application

The maximum tax credit is **50%** because the applicant completed construction of the facility on 12/21/2001.



**Facility Cost**

- Subtractions** Criteria  
 OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:
- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
  - b) the amount of any government grants received to pay part of the facility cost;
  - c) the present value of any other state tax credits for which the investment is eligible; and
  - d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

- \$ Certification** Criteria  
 ORS 468.170(1) The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The invoices represent the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$75,222
	None	0
	<b>Certified</b>	<b>\$75,222</b>

**Facility Cost Allocable to Pollution Control**

- % Certification** Criteria  
 ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

- Percentage** Criteria  
 ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.
- a. The extent to which the applicant uses the facility to recover and convert waste

- products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
  - c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
  - d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
  - e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 7-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2001, the facility's construction completion year. The applicant did not investigate an alternative technology.

## ***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff member assigned to the source is Gregg Dahmen in the Northwest region. Mr. Dahmen affirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ issued the following permits to the applicant at this site: NPDES No. 1200-COLS issued December 22, 1999; and Air Contaminant Discharge Permit No. 26-1869, issued September 24, 2002.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air

#### Final Certification

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

TDY Industries, Inc.

P.O. Box 460

Albany, OR 97321

Organized as: **C Corp**

Taxpayer ID: **952316677**

### *Technical Information*

TDY produces, refines, and forms zirconium and other non-ferrous metals. The applicant uses high-speed abrasive-wheel grinders (swing grinders) to remove surface defects from non-ferrous metal castings. The grinding process creates particulate matter (PM) emissions. Prior to the installation of the claimed facility, the applicant ducted the PM emissions from the swing grinders to a failing 33-year old cyclone. The applicant installed a Steelcraft dust collector that contains 80 filtering cartridges. The applicant also claims ducting from the swing grinders, a 25,000 cubic feet per minute blower, and a fire detection/suppression system. The system has a 99.9% collection efficiency and captures over 200,000 pounds of PM per year.

### *Director's Recommendation*

**Approve Application No.6661 @ Reduced Cost**

Applicant: **TDY Industries, INC.**

Certification of:

Facility Cost		\$151,608
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$53,063</u>

Certificate Period: **10 years**

### *Facility Identification*

1600 Old Salem Road, NE

Albany, OR 97321

The certificate will identify the facility as:

**Steelcraft Model C-80-2000 Dust Collector,  
Serial # F30297**



### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: TDY Industries, Inc. owns the business that uses the Oregon property requiring the pollution control.

### ***Eligibility***

**Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 6/20/2003. The applicant completed construction or installation of the claimed facility on **6/18/2003** and submitted the application on **12/18/2003**.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The new dust collection system complies with the requirement in the applicant's Title V Air Contaminant Discharge Permit that prohibits the discharge of more than 0.1 grains of PM per cubic foot of exhausted air to the atmosphere. The primary or most important purpose of this system is to prevent air pollution.

The fire detection/suppression system, the interior ducting, and the collection hood modifications are not eligible for certification because its primary and most important purpose is not to meet the permit requirements to reduce, prevent, or control air pollution. The primary and most important purpose of the:

- detection/suppression system is to prevent a fire in the baghouse from spreading to surrounding buildings and equipment.
- interior ducting is material handling; and
- hood and internal ducting is necessary to comply with the Oregon OSHA requirement to prevent employees from being exposed to airborne particulate.

The Department subtracted the cost of the fire detection/suppression system, the interior ducting, and the collection hood modifications from the claimed facility cost under the *Facility Cost* section below.

<b>Method</b>	<b>Criteria</b>
ORS 468.155 (1)(b)(B)	The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

Particulate matter **meets the definition** of an air contaminant as defined by ORS 468A.005. The baghouse system meets the definition of an air-cleaning device because it prevents air contaminants from discharge to the atmosphere.

<b>Exclusions</b>	<b>Criteria</b>
ORS 468.155(3) OAR 340-016-0070(3)	The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions** other than the items described in the *Purpose: Required* section above.

<b>Replacement</b>	<b>Criteria</b>
ORS 468.155(3)(e)	The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The claimed facility is **not a replacement** facility.

The State of Oregon has issued 127 Pollution Control Facilities Tax Credit

Certificates to the applicant at this location. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria

ORS 468.173(3)(f) The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on December 18, 2003 and the certified facility cost is \$151,608.

**Facility Cost**

**Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost and documents that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
<i>Purpose: Required</i>	Claimed	\$161,491
	Fire detection/suppression system	-6,708
	Interior ducting and hood	-3,175
	<b>Certified</b>	<b>\$151,608</b>



### ***Facility Cost Allocable to Pollution Control***

**% Certification**    Criteria

ORS 468.170(1)    The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage**    Criteria

ORS 468.190(1)    The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 10-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology.

### ***Compliance***

ORS 468.180(1)    Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff member assigned to the source is Gary Andes in the Western region. Mr. Andes affirmed the applicant's statement that the facility and site are

in compliance with Department rules and statutes, and with EQC orders. DEQ issued the following permits to the applicant at this site: NPDES General Storm Water Permit No. 1200Z issued July 26, 2002; NPDES Wastewater Discharge Permit No. 100522 issued September 30, 1988; and Title V Air Contaminant Discharge Permit No. 22-0547, issued August 6, 2003.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Air Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

PO Box 83095  
PO Box 83095  
Portland, OR 97283

Organized as: **S Corp**  
Taxpayer ID: **93-0336095**

### *Director's Recommendation*

Approve Application No. **6670**

Applicant: **Columbia Steel Casting Co., Inc.**

#### Certification of:

Facility Cost		\$36,782
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$12,874</u>

Certificate Period: **7 years**

### *Facility Identification*

10425 N Bloss Avenue  
Portland, OR 97203

The certificate will identify the facility as:

**Torit Dust Baghouse, Model 42HPH**

### *Technical Information*

Columbia Steel Casting Co. manufactures alloy steel castings. The manufacturing process uses sand to form casting molds. The applicant recently installed a system to clean used sand that was landfilled on the applicant's site several years ago. The process creates particulate matter (PM) emissions. The applicant installed a dust collection system to capture and reduce PM emissions. The claimed facility consists of a used Torit baghouse, a 6,000 cubic feet per minute LMC fan and exterior ducting. The baghouse has a collection efficiency of 99.8% and it removes approximately 100 tons of PM per year.

### *Taxpayer Allowed Credit*

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.



Applied to this Application

DEQ will report the following information to the Department of Revenue: Columbia Steel Casting Co., Inc. owns the business that uses the Oregon property requiring the pollution control.

***Eligibility*****Timely Filing**

2001 Edition ORS  
468.165(6)

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application **within one year** after the construction completion date.

Applied to this Application

The applicant **timely filed** the application. They completed construction on 02/14/03 and submitted the application on 01/20/04. The applicant did not submit the application before they completed construction or placed the facility into operation on 03/01/03.

**Purpose: Required**

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The new dust collection system complies with the requirement in the applicant's Air Contaminant Discharge Permit that prohibits the discharge of more than 0.1 grains of PM per cubic foot of exhausted air to the atmosphere. The primary or most important purpose of the claimed facility is to prevent air pollution.

**Method**

ORS 468.155  
(1)(b)(B)

Criteria

The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

Particulate matter **meets the definition** of an air contaminant as defined by ORS 468A.005. The baghouse system meets the definition of an air-cleaning device because it prevents air contaminants from discharge to the atmosphere.

**Exclusions** Criteria

ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification.  
 OAR 340-016-0070(3)

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has issued 23 Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria

ORS 468.173(3)(g) The maximum tax credit available to the applicant is **35%** if the applicant submitted the application between January 1, 2002, and December 31, 2008, inclusively; and if the certified facility cost **does not exceed \$200,000**.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on January 20, 2004 and the recommended certified facility cost is \$36,782.

**Facility Cost****Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the actual cost of the claimed facility. The certified

cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$36,782
	Ineligible	0
	<b>Certified</b>	<b>\$36,782</b>

***Facility Cost Allocable to Pollution Control***

ORS 468.190 (3) Criteria

If the cost of the facility (or facilities certified under one certificate) does not exceed \$50,000, the portion of the actual costs properly allocable shall be in the proportion that the ratio of the time the facility is used for prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or appropriately disposing of used oil bears to the entire time the facility is used for any purpose.

Applied to this Application

The certified facility cost is \$36,782 and the facility is used **100%** of the time for pollution control.

***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff member assigned to the source is Gregg Dahmen in the Northwest region. Mr. Dahmen affirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ issued the following permits to the applicant at this site: NPDES No. 1200-COLS issued December 22, 1999, and Air Contaminant Discharge Permit No. 26-1869, issued September 24, 2002.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



## BACKGROUND

### APPROVALS: Alternatives to Open Field Burning Facilities

The Department recommends the Commission approve **two** alternatives to open field burning facilities for certification as pollution control facilities. The Commission's certification could reduce taxes paid to the State of Oregon by a maximum of **\$121,437**.

The Department and the Commission have traditionally treated alternatives to open field burning as *principal purpose* facilities. This means that the applicant installed the facility to meet a DEQ or EPA requirement. DEQ required that the state reduce the maximum number of acres that are open-burned in compliance with acreage limitations and allocations under OAR 340-266-0060.

### Summary of Alternatives to Open Field Burning

App #	Applicant	Certified	% Allocable	Maximum Percent	GF Liability
6681	Mullen Farms, Inc.	\$ 296,036	100%	35%	\$ 103,613
6682	Mark McKay Farms, Inc.	\$ 50,926	100%	35%	\$ 17,824
<b>Apps</b>	<b>Sum</b>	<b>\$ 346,962</b>			<b>\$ 121,437</b>
<b>2</b>	Average	\$ 173,481			\$ 60,718
	Minimum	\$ 50,926			\$ 17,824
	Maximum	\$ 296,036			\$ 103,613

#### Statutory Definition of "Alternatives to Field Burning"

ORS 468.150 Field sanitation and straw utilization and disposal methods as "pollution control facilities."

After alternative methods for field sanitation and straw utilization and disposal are approved by the Department of Environmental Quality, "pollution control facility," as defined in ORS 468.155, shall include such approved alternative methods and persons purchasing and utilizing such methods shall be eligible for the benefits allowed by ORS 468.155 to 468.190 and 468.962.

[1975 c.559 §15; 1999 c.59 §136]

Note: 468.150 was enacted into law by the Legislative Assembly but was not added to or made a part of ORS chapter 468 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

## Eligibility

OAR 340-016-0060 Eligibility

...

(4) Eligible Activities. ...

...

(b) Alternatives to Open Field Burning. The facility shall reduce or eliminate:

- (A) Open field burning and may include equipment, facilities, and land for gathering, densifying, handling, storing, transporting and incorporating grass straw or straw based products;
- (B) Air quality impacts from open field burning and may include propane burners or mobile field sanitizers; or
- (C) Grass seed acreage that requires open field burning. The facility may include:
  - (i) Production of alternative crops that do not require open field burning;
  - (ii) Production of rotation crops that support grass seed production without open field burning; or
  - (iii) Drainage tile installations and new crop processing facilities.



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: Alternative to Field Burning**

### Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

17792 River Road NE  
St. Paul, OR 97137

Organized as: **S Corp**  
Taxpayer ID: **93-1192738**

### *Director's Recommendation*

**Approve Application No.6681 @ Reduced Price**

**Applicant: Mullen Farms, Inc.**

#### Certification of:

Facility Cost		\$296,036
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<b>\$103,613</b>

**Certificate Period: 10 years**

### *Facility Identification*

15021 River RD NE  
Gervais, OR 97026

The certificate will identify the facility as:

**One - 96' X 250' X 30' steel straw storage  
building**

### *Technical Information*

Mullen Farms, Inc. is a grass seed grower that owns 760 of those acres and leases 571 acres. One thousand and forty-four of those acres are under perennial grass-seed cultivation. The applicant installed a 96' by 250' steel clear span building that has a 30' eve that is capable of holding about 833 acres of straw. The building sits on cement footings and a cement floor over a gravel base. It has two 20' by 20' doors and three 24' by 20' doors. The applicant also claims a gravel drive. The building will store about 2,500 tons (or 1,110 acres) of the 3,650 tons of grass seed straw that the applicant produces.



### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Mullen Farms, Inc. owns the business that uses the grass seed acreage that requires an alternative to open field burning.

### ***Eligibility***

**Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application **within one year** after the construction completion date.

Applied to this Application

The applicant **timely filed** the application. The applicant completed construction or installation of the claimed facility on **12/23/2003** and submitted the application on **2/12/2004**. The applicant also submitted the application after completing construction and placing the facility into operation on 12/23/2003.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the new facility is to reduce air pollution by reducing the maximum acreage to be open-burned in compliance with OAR 340-266-0060 (Acreage Limitations, Allocations). That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The building helps the applicant comply with OAR 340-340-0060 imposed by DEQ.

**Method** Criteria

- ORS 468.150 The claimed facility must reduce or eliminate:
- OAR 340-016-0060 (4)(b) (a) Open field burning and may include equipment, facilities, and land for gathering, densifying, handling, storing, transporting and incorporating grass straw or straw based products;
- (b) Air quality impacts from open field burning and may include propane burners or mobile field sanitizers; or
- (c) Grass seed acreage that requires open field burning. The facility may include:
- Production of alternative crops that do not require open field burning;
  - Production of rotation crops that support grass seed production without open field burning; or
  - Drainage tile installations and new crop processing facilities.

Applied to this Application

The straw storage building reduces the grass seed acreage that requires sanitation by open field burning.

**Exclusions** Criteria

- ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. The regulations specifically exclude road improvements and external lighting. Any items that do not meet the definition are ineligible for certification.
- OAR 340-016-0070(3)

Applied to this Application

The applicant claimed **road improvements** and **exterior lighting**. The Department subtracted the costs of the ineligible items from the *Facility Cost* section below.

**Replacement** Criteria

- ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:
1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
  2. before the end of its useful life.

Applied to this Application

The claimed facility is **not a replacement** facility.

The State of Oregon has issued three Pollution Control Facilities Tax Credit Certificates to the applicant at this location for tractors and implements to remove the straw from the fields. The EQC issued a tax credit to the applicant for one 70' X 168' X 22' straw storage building located at 21612 River Road NE in St. Paul. The previously certified building is capable of storing 300 acres of straw.

**Maximum Credit** Criteria  
ORS 468.173(3)(h) The maximum tax credit is 35% if the claimed facility is located in an economically distressed area as defined by the Oregon Department of Economic and Community Development.

Applied to this Application  
The maximum tax credit is 35% because the straw storage building is located in Gervais, which is a distressed area.

### ***Facility Cost***

**Subtractions** Criteria  
OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application  
There are **no subtractions**.

**\$ Certification** Criteria  
ORS 468.170(1) The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application  
A project cost summary and a Certified Public Accountant's Cost Certification substantiate the eligible facility cost and shows that the claimed cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
<i>Exclusions</i>	Claimed	\$299,725
	Roadway	-2050.80
	Exterior lighting	-1637.72
	<b>Certified</b>	<b>\$296,036</b>

### ***Facility Cost Allocable to Pollution Control***

**% Certification** Criteria  
ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.



Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage**  
ORS 468.190(1)Criteria

The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 20-year useful life. The applicant stores the straw and gives it away. The claimed facility does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology and there are no other relevant factors.

***Compliance***

## ORS 468.180(1)

Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewer: Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: Alternative to Field Burning**

**Final Certification**

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Director's Recommendation*

**Approve** Application No.6682

Applicant: **Mark McKay Farms, Inc.**

Certification of:

Facility Cost		\$50,926
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$17,824</u>

Certificate Period: **10 years**

### *Applicant Identification*

19393 French Prarie Road NE  
St. Paul, OR 97137

Organized as: **S Corp**

Taxpayer ID: **93-0857251**

### *Facility Identification*

555 Ferschweiler Lane NE  
Gervais, OR 97026

The certificate will identify the facility as:

**52,043 feet of drainage tile**

### *Technical Information*

Mark McKay Farms, Inc. is a grass seed grower. The applicant claims tiling on 30 acres of a newly acquired 113-acre parcel identified as Tax Lot # R148 2,500 feet of 10", 717 feet of 8", 600 feet of 6", and 47,216 feet of 4" tubing into the ground. R & R Miller trenched 1,020 feet of 12" x 20 tile.

### *Taxpayer Allowed Credit*

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Mark McKay Farms, Inc. owns the business that uses the Oregon property requiring the pollution control.

**Eligibility****Timely Filing**

2001 Edition ORS  
468.165(6)

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 6/1/2003. The applicant completed construction or installation of the claimed facility on **10/21/2003** and filed the application on **2/12/2004**.

**Purpose: Required**

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

Criteria

The **principal purpose** of the **new facility** is to reduce air pollution by reducing the maximum acreage to be open-burned in compliance with OAR 340-266-0060 (Acreage Limitations, Allocations). That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Air Pollution" is the presence in the outdoor atmosphere of one or more air contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The applicant claims that the primary and most important purpose of the building is to comply with OAR 340-266-0060 by reducing the maximum acreage that will be open-burned and to reduce air pollution.

**Method**

ORS 468.150  
OAR 340-016-0060  
(4)(b)

Criteria

Alternatives to Open Field Burning. The facility must reduce or eliminate:

- (a) Open field burning and may include equipment, facilities, and land for gathering, densifying, handling, storing, transporting and incorporating grass straw or straw based products;
- (b) Air quality impacts from open field burning and may include propane burners or mobile field sanitizers; or
- (c) Grass seed acreage that requires open field burning. The facility may include:



- Production of alternative crops that do not require open field burning;
- Production of rotation crops that support grass seed production without open field burning; or
- **Drainage tile installations** and new crop processing facilities.

Applied to this Application

The claimed facility is a drainage tile installation

**Exclusions** Criteria

ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control  
OAR 340-016- Facility. Any items that do not meet the definition are ineligible for certification.  
0070(3)

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has issued four Pollution Control Facilities Tax Credit Certificates to the applicant and one at the address. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria

ORS 468.173(3)(h) The maximum tax credit is 35% if the claimed facility is located in an area that has been designated a distressed area, as defined in ORS 285A.010, by the Economic and Community Development Department.

Applied to this Application

The **maximum tax credit is 35%** because the claimed facility is located in Gervais which is a designated distressed area.

***Facility Cost*****Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost.  
The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the **actual cost** of the claimed facility. The certified cost may not exceed the **taxpayer's own cash** investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
None	Claimed	\$50,926
		0
	<b>Certified</b>	<b>\$50,926</b>

***Facility Cost Allocable to Pollution Control*****% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;

- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 20-year useful life. The claimed facility does not produce a salable or useable commodity. It has a slight revenue increase associated because the tiled land is capable of producing an increased yield. The resulting facility ROI is still less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology.

***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewer: Maggie Vandehey, DEQ



## BACKGROUND

### APPROVALS: Material Recovery Facilities

The Department recommends that the EQC certify **one** material recovery facility summarized below and represented in the attached Review Report. The pollution control certification of this facility could reduce taxes paid to the State of Oregon by a maximum of **\$61,250**.

#### Summary of Material Recovery Facilities

App #	Applicant	Facility Cost	% Allocable	Maximum Tax Credit	GF Liability
6699	Bend Garbage Company	\$ 175,000	100%	35%	\$ 61,250

#### Statutory Definition of "Material Recovery"

ORS 468.155 Definitions for ORS 468.155 to 468.190 and 468.962

- ...
- (b) Such prevention, control or reduction required by this subsection shall be accomplished by:
- ...
- (D) The use of a material recovery process which obtains useful material from material that would otherwise be solid waste as defined in ORS 459.005, hazardous waste as defined in ORS 466.005, or used oil as defined in ORS 459A.555; or
- ...

#### Eligibility

OAR 340-016-0060 Eligibility

- ...
- (4) Eligible Activities. The facility shall prevent, reduce, control, or eliminate:
- ...
- (d) Hazardous Waste, Solid Waste and Used Oil Material Recovery. The facility shall eliminate or obtain useful material from material that would otherwise be solid waste as defined in ORS 459.005, hazardous waste as defined in ORS 466.005, or used oil as defined in ORS 468.850. The facility shall produce an end product of utilization that is an item of real economic value and is competitive with an end product produced in another state. The facility shall produce the end product by mechanical processing, chemical processing; or through the production, processing, pre-segregation, or use of materials which:
- (A) Have useful chemical or physical properties which may be used for the same or other purposes; or
- (B) May be used in the same kind of application as its prior use without change in identity.



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: Material Recovery**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

61480 Parrell Road  
Bend, OR 97702

Organized as:

Taxpayer ID:

### ***Technical Information***

Bend Garbage Company, Inc. collects garbage and recyclable materials from residential and commercial customers. The applicant claims a shredding truck used for on-site shredding that allows the customer control of document destruction. The truck hauls the shredded material to a recycling center.

### ***Director's Recommendation***

**Approve** Application No. 6699

Applicant: **Bend Garbage Company, Inc.**

Certification of:

Facility Cost		\$175,000
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$61,250</u>

Certificate Period: **5 years**

### ***Facility Identification***

Same as the applicant's address.

The certificate will identify the facility as:

**One – 2000 Sterling L 8500 truck, VIN  
2FZBJCA5YAG51421, outfitted with  
one Shredfast shredding machine, Serial  
# SF310-1421**

## ***Taxpayer Allowed Credit***

### ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property; or
- c. Person who, as an owner, including a contract purchaser, or lessee, owns or leases a pollution control facility that is used for recycling, material recovery or energy recovery as defined in ORS 459.005.

### Applied to this Application

DEQ will report the following information to the Department of Revenue: Bend Garbage Company, Inc. owns the truck that they use for recycling or material recovery.

## ***Eligibility***

### **Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application **within one year** after the construction completion date.

### Applied to this Application

The applicant **timely filed** the application. The applicant submitted the application after purchasing the truck and placing it into operation on 3/6/2003. The applicant took possession of the truck on **3/6/2003** and they submitted the application on **3/1/2004**.

### **Purpose: Voluntary** Criteria

ORS 468.155 (1)(a)(B)  
OAR 340-016-0010(7)(a)(b)

The sole purpose, meaning the 'exclusive' purpose, of the claimed facility must be to prevent, control, or reduce a substantial quantity of solid waste, hazardous waste, or used oil.

“Solid waste” as defined by ORS 459.005: All useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or



animal solid and semisolid materials, dead animals and infectious waste as defined by ORS 459.386.

Applied to this Application

The claimed facility reduces, prevents, or controls a **substantial quantity of solid waste**. The truck collects and shreds approximately 260 tons of paper per year. Prior to purchasing the truck, customers had the option of bringing sensitive documents to the applican's location for shredding, disposing of the documents with the garbage or by other means such as burning. The volume of this type of recyclable material increased 500% over volumes collected prior to placing the truck into service.

**Method** Criteria

ORS 468.155 (1)(b)(D) The claimed facility must prevent, control, or reduce the waste material by the use of a material recovery process. The process must obtain useful material from material that would otherwise be solid waste, hazardous waste or used oil.

"Material Recovery" means any process, such as pre-segregation, for obtaining materials from solid waste, hazardous waste or used oil. The recovered material shall still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purpose. The recovered material shall have useful physical or chemical properties that yield a competitive end product of real economic value. The material recovery process does not include processes:

- a. In which the major purpose is the production of fuel from solid waste, hazardous waste or used oil which can be utilized for heat content or other forms of energy; or
- b. That burns waste to produce energy or to reduce the amount of waste. However, it does not eliminate from eligibility a pollution control device associated with a process that burns waste if such device is otherwise eligible for pollution control tax credit under these rules.

OAR 340-016-0010(7) Criteria  
 OAR 340-016-0060(4)(e) The facility produces an end product of utilization. It must be an item of real economic value and it must be competitive with an end product produced in another state. The facility must produce the end product by mechanical processing, chemical processing; or through the production, processing, pre-segregation, or use of materials which:

- (A) Have useful chemical or physical properties and which may be used for the same or other purposes: or
- (B) May be used in the same kind of application as its prior use without change in identity.

Applied to this Application

The applicant collects, shreds, and delivers the waste paper to a recycling center. The shredded paper will be used as secondary fiber in producing paper-based products.

**Exclusions** Criteria  
 ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution  
 OAR 340-016-0070(3) Control Facility. Any items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria  
 ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. However, there are two exceptions:

1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The State of Oregon has issued two Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** of these previously certified facilities.

**Maximum Credit** Criteria  
 ORS 468.170(3)(d) The maximum tax credit is 35% if the applicant submitted the  
 ORS 468.155(1)(b)(D) application between January 1, 2002 and December 31, 2008, inclusively, and the facility is used for material recovery or recycling, as those terms are defined in ORS 459.005.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on 3/1/2004, and the facility is **used in a material recovery** process.

***Facility Cost***

**Subtractions**    Criteria

OAR 340-016-0070(1)    The applicant must provide documents that substantiate the claimed facility cost.  
The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification**    Criteria

ORS 468.170(1)    The certified cost is limited to the actual cost of the material recovery portion of the facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

An invoice and a canceled check substantiated the eligible facility cost and shows that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$175,000
	Ineligible costs	0
	<b>Certified</b>	<b>\$175,000</b>

***Facility Cost Allocable to Pollution Control***

**% Certification**    Criteria

ORS 468.170(1)    The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Integral Facility* and *Percentage* subsections below.



**Integral Facility** Criteria

OAR 340-016-0075

(4)(a)

Facilities that are integral to the applicant's business must use an alternate method for calculating the percentage of the facility cost that is allocable to pollution control if the facility cost exceeds \$50,000. Examples of integral facilities include commercial solid waste and hazardous waste landfills, solid waste and hazardous waste recycling businesses, and environmental service providers.

The Commission may determine that a business is integral to the operation of the applicant's business if the business is unable to operate or is only able to operate at reduced income levels.

The law requires the Commission to use the following factors to determine whether a pollution control facility is integral to the operation of the applicant's business.

- a. The facility represents 25 percent or more of the total assets of the applicant's business; or
- b. The facility was constructed or installed in response to market demand for such pollution control facilities such as requirements imposed by DEQ, EPA or regional air pollution authority on parties unaffiliated with the applicant; or
- c. Where the facility allows the applicant to generate gross revenues at least 50% greater than could be or were without the facility; or
- d. The applicant's operating expenses for the facility are at least 50% of the operating expenses for the applicant's entire business.

Applied to this Application

The facility is **not integral** to the applicant's business.

**Percentage** Criteria

ORS 468.190(1)

The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above and a 5-year useful life. The applicant uses the truck to recover waste paper for its fiber content. The

applicant estimated the annual revenue from this service would be \$112,400 based on the actual revenue generated in the first year of operation. The estimated annual expenditures would be \$103,500 based on the first year of operation excluding depreciation, interest, and start-up expenses. With an average annual Cash Flow of \$8,900, the resulting Facility ROI (0.0) is less than the National ROI for 2003 (7.1), the year the applicant took possession of the truck. There are no related savings or other increases in costs. The applicant did not investigate an alternative method.

### ***Compliance***

#### ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

#### Applied to this Application

Don Bramhall in the Bend office of DEQ's Eastern Region stated, to the best of his knowledge, the applicant and the site comply with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: Maggie Vandehey, DEQ

## BACKGROUND

### APPROVALS: Nonpoint Source Pollution Control Facilities

The Department recommends that the Commission approve the certification of **three** facilities presented behind this tab. The recommendations include the approval of equipment used in direct-seeding operations. The Commission's certification could reduce taxes paid to the State of Oregon by a maximum of **\$105,070**.

#### Summary of NPS Pollution Control Facilities

App #	Applicant	Certified	% Allocable	Maximum Percent	GF Liability
6609	Eagle Ranch	\$ 24,245	100%	35%	\$ 8,486
6671	KLK Farm	\$ 123,900	100%	35%	\$ 43,365
6704	Charles & Marcia Anderson	\$ 152,055	100%	35%	\$ 53,219

<b>Apps</b>	<b>Sum</b>	<b>\$ 300,200</b>		<b>\$ 105,070</b>
<b>3</b>	Average	\$ 100,067		\$ 35,023
	Minimum	\$ 24,245		\$ 8,486
	Maximum	\$ 152,055		\$ 53,219

The law defines nonpoint source pollution control facilities as "...a facility that the Environmental Quality Commission has identified by rule as reducing or controlling significant amounts of nonpoint source pollution."<sup>1</sup> The Commission adopted rules that define "nonpoint source pollution"<sup>2</sup> and identify eligible "nonpoint source pollution control facilities"<sup>3</sup> as shown.

#### Statutory Definition of a "Nonpoint Source Pollution Control"

ORS 468.155 provides the definitions for ORS 468.155 to 468.190 and 468.962 provided in part below.

...  
(b) Such prevention, control or reduction required by this subsection shall be accomplished by:

...  
(2)(a) As used in ORS 468.155 to 468.190 and 468.962, "pollution control facility" or "facility" includes a nonpoint source pollution control facility.

(b) As used in this subsection, "nonpoint source pollution control facility" means a facility that the Environmental Quality Commission has identified by rule as reducing or controlling significant amounts of nonpoint source pollution.

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<sup>1</sup> ORS 468.155(2)(b)

<sup>2</sup> OAR 340-016-0010(8)

<sup>3</sup> OAR 340-016-0060(4)(h)



OAR 340-016-0010 provides the following pertinent definitions.

"Nonpoint Source Pollution" means pollution that comes from numerous, diverse, or widely scattered sources of pollution that together have an adverse effect on the environment. The meaning includes:

- (a) The definition provided in OAR 340-041-0006(17): "Nonpoint Sources" refers to diffuse or unconfined sources of pollution where wastes can either enter into or be conveyed by the movement of water to public waters; or
- (b) Any sources of air pollution that are:
  - (A) Mobile sources that can move on or off roads; or
  - (B) Area sources.

#### Eligibility

##### 340-016-0060 Eligibility

...  
(4) Eligible Activities. The facility shall prevent, reduce, control, or eliminate:

- ...  
(h) Nonpoint Source Pollution. Pursuant to ORS 468.155(2)(b), the EQC has determined that the following facilities reduce, or control significant amounts of nonpoint source pollution:
    - (A) Any facility that implements a plan, project, or strategy to reduce or control nonpoint source pollution as documented:
    - ...  
(B) Any facility effective in reducing nonpoint source pollution as documented in supporting research by:
    - ...  
(C) Wood chippers used to reduce openly burned woody debris; or
    - (D) The retrofit of diesel engines with a diesel emission control device, certified by the U.S. Environmental Protection Agency.
- ...



State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: NPS**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

32327 Oregon Trail Road  
Echo, OR 97826

Organized as: Partnership

Taxpayer ID: 93-0982974

### ***Technical Information***

Eagle Ranch Partnership owns and operates a carrot, lima bean, pea, wheat, grass seed, and corn farm in Umatilla County. The applicant had used conventional methods of cultivating and planting the fields. They tilled the fields three to seven times, depending on soil conditions at the time the fields were seeded. Tillage caused wind and water erosion of the soil. These conventional methods required an increased quantity of water, fertilizers, pesticide, and herbicide usage. The claimed facility allows the applicant to plant seed without disturbing the soil surface, which prevents soil erosion and improves water retention.

The applicant replaced his conventional cultivating and planting equipment with a John Deere 1700 10-row planter no-till drill. The claimed facility includes seed and fertilizer hoppers, and planting discs that insert the seed at the proper depth. The applicant uses an existing tractor to pull the claimed facility.

### ***Director's Recommendation***

Approve Application No. 6609

Applicant: **Eagle Ranch Partnership**

Certification of:

Facility Cost		\$24,245
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$8,486</u>

Certificate Period: 7 years

### ***Facility Identification***

32327 Oregon Trail Road  
Echo, OR 97826

The certificate will identify the facility as:

**One - John Deere 1700 10 row planter, model JH-6912, serial # A01700R695242**

### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Eagle Ranch Partnership owns the business that uses the Oregon property requiring the pollution control.

### ***Eligibility***

**Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 6/24/2003. The applicant completed construction or installation of the claimed facility on **9/24/2003** and submitted the application on **11/7/2003**.

**Purpose: Voluntary** Criteria

ORS 468.155 (2)  
OAR 340-016-  
0010(8)

The EQC has determined that the following facilities reduce, or control significant amounts of nonpoint source pollution:

- (a) Any facility that implements a plan, project, or strategy to reduce or control nonpoint source pollution as documented:
  - By one or more partners listed in the Oregon Nonpoint Source Control Program Plan; or
  - In a Federal Clean Air Act State Implementation Plan for Oregon; or
  - Any facility effective in reducing nonpoint source pollution as documented in supporting research by:
    - Oregon State University, Agricultural Experiment Station; or
    - The United States Department of Agriculture, Agriculture Research Service; or
    - The Oregon Department of Agriculture; or



- (b) Wood chippers used to reduce openly burned woody debris; or
- (c) The retrofit of diesel engines with a diesel emission control device, certified by the U.S. Environmental Protection Agency.

"Nonpoint Source Pollution" means pollution that comes from numerous, diverse, or widely scattered sources of pollution that together have an adverse effect on the environment. The meaning includes:

- (a) The definition provided in OAR 340-041-0006(17); or
- (b) Any sources of air pollution that are:
  - Mobile sources that can move on or off roads; or
  - Area sources.

Applied to this Application

The no-till drill **meets the definition** of a nonpoint source pollution control. In research done by the Oregon State University Agricultural Experiment Station, a no-till cropping system reduces non-point source air and water pollution by allowing the surface residue to act as a physical barrier to resist water and wind erosion. It also allows the soil to increase nutrient and moisture infiltration. Donald Horneck, an agronomist with the Oregon State University's Umatilla County Extension Office, provided supporting research on the applicant's behalf. The Department attached the letter to this report.

**Method** Criteria

ORS 468.155 (1)(b)(B) The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The no-till system of planting prevents airborne particulate matter, which meets the definition of an air contaminate as defined by ORS 468A.005.

**Exclusions** Criteria

ORS 468.155(3) OAR 340-016-0070(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. These items are ineligible for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or

2. before the end of its useful life.

Applied to this Application

The claimed facility is **not a replacement** facility. The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location.

**Maximum Credit**  
ORS 468.173(3)(f)

Criteria

The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on November 07, 2003 and the certified facility cost is **\$24,245**.

**Facility Cost**

**Subtractions**  
OAR 340-016-  
0070(1)

Criteria

The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification**  
ORS 468.170(1)

Criteria

The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$24,245
	None	
	<b>Certified</b>	<b>\$24,245</b>

**Facility Cost Allocable to Pollution Control**

ORS 468.190 (3) Criteria

If the cost of the facility (or facilities certified under one certificate) does not exceed \$50,000, the portion of the actual costs properly allocable shall be in the proportion that the ratio of the time the facility is used for prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or appropriately disposing of used oil bears to the entire time the facility is used for any purpose.

Applied to this Application

The certified facility cost is \$24,245 and the applicant uses the facility 100% of the time for pollution control.

## ***Compliance***

ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: NPS**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

PO Box 195

Ione, OR 97843

Organized as: **Partnership**

Taxpayer ID: **93-1194127**

### ***Director's Recommendation***

**Approve Application No. 6671**

**Applicant: KLK Farm**

Certification of:

Facility Cost		\$123,900
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<u>\$43,365</u>

Certificate Period: **10 years**

### ***Facility Identification***

64396 McNab Lane

Ione, OR 97843

The certificate will identify the facility as:

**One – Caterpillar, Model MT855 DRY, Serial #  
BCC30557**

### ***Technical Information***

KLK Farm is a dryland wheat farm. The farm grows wheat on approximately 6,750 acres. Applicant works Farm Numbers 915, 916 & 923 in Morrow County, and Farm Numbers 68, 69 & 498 in Gilliam County. The applicant purchased a Caterpillar Model MT855 to pull the no-till drill system certified on Tax Credit Application No. 6538 issued on 7/7/03. The new tractor has 100 more horsepower than the applicant's largest tractor which was inadequate to pull the no-till drill system.

With the no-till cropping system in place, KKL Farm has reduced the number of passes from up to 10 passes using the conventional method to three passes each year. The ability to maintain a surface residue (residue from a previous crop) has reduced the amount of non-point source pollution in airborne particulates and stormwater run-off. The residue crop also allows for improved infiltration rates and increased nutrient efficiency. Conventional methods of tilling left the soils susceptible to wind and water erosion.

***Taxpayer Allowed Credit***

ORS 315.304(4)

Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: KLK Farm Partnership owns the business that uses the Oregon property requiring the pollution control.

***Eligibility*****Timely Filing**

ORS 468.173(1)

OAR 340-016-0007

Criteria

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 10/24/2003. The applicant completed construction or installation of the claimed facility on **10/24/2003** and submitted the application on **1/21/2004**.

**Purpose: Voluntary**

ORS 468.155(2)

OAR 340-016-

0010(8)

Criteria

The EQC has determined that the following facilities reduce, or control significant amounts of nonpoint source pollution:

- (a) Any facility that implements a plan, project, or strategy to reduce or control nonpoint source pollution as documented:
  - By one or more partners listed in the Oregon Nonpoint Source Control Program Plan; or
  - In a Federal Clean Air Act State Implementation Plan for Oregon; or
  - Any facility effective in reducing nonpoint source pollution as documented in supporting research by:
    - Oregon State University, Agricultural Experiment Station; or
    - The United States Department of Agriculture, Agriculture Research Service; or
    - The Oregon Department of Agriculture; or
- (b) Wood chippers used to reduce openly burned woody debris; or

(c) The retrofit of diesel engines with a diesel emission control device, certified by the U.S. Environmental Protection Agency.

OAR 340-041-  
0006(17)

"Nonpoint Source Pollution" means pollution that comes from numerous, diverse, or widely scattered sources of pollution that together have an adverse effect on the environment. The meaning includes:

- (a) The definition provided in OAR 340-041-0006(17); or
- (b) Any sources of air pollution that are:
  - Mobile sources that can move on or off roads; or
  - Area sources.

#### Applied to this Application

The applicant claims the facility has a **voluntary purpose**. The no-till drill **meets the definition** of a nonpoint source air and water pollution control. In research done by the Oregon State University Agricultural Experiment Station, a no-till drill cropping system reduces non-point source air and water pollution by allowing the surface residue to act as a physical barrier to resist water and wind erosion. It also allows the soil to increase nutrient and moisture infiltration. Larry Lutchter, an agronomist with the Oregon State University's Morrow County Extension Office, provided supporting research on the applicant's behalf. The Department attached the letter to this report.

#### **Method**

ORS 468.155  
(1)(b)(B)

#### Criteria

The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

#### Applied to this Application

The no-till system of planting prevents airborne particulate matter, which meets the definition of an air contaminate as defined by ORS 468A.005.

#### **Exclusions**

ORS 468.155(3)  
OAR 340-016-  
0070(3)

#### Criteria

The regulations exclude over 40 items from the definition of a Pollution Control Facility. These items are ineligible for certification.

#### Applied to this Application

There are **no exclusions**.

#### **Replacement**

ORS 468.155(3)(e)

#### Criteria

The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.



Applied to this Application

The claimed facility is **not a replacement** facility. The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location.

**Maximum Credit**  
ORS 468.173(3)(f)

Criteria

The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on 1/21/2004 and the certified facility cost is **\$43,365**.

**Facility Cost**

**Subtractions**  
OAR 340-016-  
0070(1)

Criteria

The applicant must provide documents that substantiate the claimed facility cost.

The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**. The applicant subtracted the trade-in amount of \$64,141 from the cost of the new tractor facility prior to submitting the application.

**\$ Certification**  
ORS 468.170(1)

Criteria

The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Tractor \$241,141	
	Trade-In - 64,141	
	30% Usage -53,100	
	Claimed	\$123,900
	<b>Certified</b>	<b>\$123,900</b>

***Facility Cost Allocable to Pollution Control*****% Certification**    Criteria

ORS 468.170(1)    The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below. The applicant uses the tractor 70% of the time to pull the no-till drill. The applicant reduced the facility cost by \$53,100 for the 30% of the time the tractor is used for other purposes.

**Percentage**    Criteria

ORS 468.190(1)    The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a ten-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The new tractor results in an annual loss of \$3,627 because it has 100 more horsepower and weighs 30,000 pounds more than the tractor used to pulled conventional implements. The expenditures for fuel exceed the cost savings associated with the reduced number of passes over the field. Therefore, the resulting facility ROI is less than the National ROI for 2003, the facility's construction completion year. The applicant did not investigate an alternative technology and there are no other relevant factors.

***Compliance***ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

**Pollution Control Facility: NPS**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

Charles & Marcia Anderson Partnership  
dba: Western Grain

69530 Condon Highway  
Heppner, OR 97836

Organized as: Partnership  
Taxpayer ID: 93-1075464

### ***Technical Information***

Charles & Marcia Anderson own and operate a dry-land wheat farm near Heppner, Oregon. The applicant had used conventional methods of cultivating and planting the fields. They tilled the fields three to seven times, depending on soil conditions at the time the fields were seeded. Tillage caused wind and water erosion of the soil. These conventional methods required an increased quantity of water, fertilizers, pesticide, and herbicide usage. The claimed facility allows the applicant to plant seed without disturbing the soil surface, which prevents soil erosion and improves water retention.

The applicant replaced his conventional cultivating and planting equipment with the following seeding and fertilizing equipment: Conserva Pak seeder, John Deere Air Commodity Cart and a Micro-Trak Spraymate controller with valves. The commodity cart has two large seed hoppers that feed the seeder as it plants 12 rows at a time. The Micro-Trak Spraymate controller allows an application of fertilizer along with the seed. The applicant also purchased a Case Quad Trac tractor that they use to pull the no-till drill sixty percent of the time.

### ***Director's Recommendation***

**Approve Application No. 6704**

Applicant: Charles & Marcia Anderson Partnership  
dba Western Grain

Certification of:

Facility Cost		\$152,055
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		<b>\$53,219</b>

Certificate Period: 7 years

### ***Facility Identification***

69530 Condon Highway  
Heppner, OR 97836

The certificate will identify the facility as:

**One - Conserva Pak seeder, Model CP5112, Serial # 97-5**

**One - John Deere 1910 Air Commodity Cart, Serial # A01910T700107**

**One - Micro-Trak spraymate controller with valving**

**One - Case model IH STX450 Quad Trac tractor, serial # JEE0100941**

***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue:

Charles & Marcia Anderson Partnership is the owner of the business that uses the Oregon property requiring the pollution control.

***Eligibility*****Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date.

Applied to this Application

The applicant **timely** filed the application. The applicant submitted the application after completing construction and placing the facility into operation on 11/18/2003. The applicant completed construction or installation of the claimed facility on **11/18/2003** and submitted the application on **3/17/2004**.

**Purpose: Voluntary** Criteria

ORS 468.155 (2)  
OAR 340-016-  
0010(8)

The EQC has determined that the following facilities reduce, or control significant amounts of nonpoint source pollution:

- (a) Any facility that implements a plan, project, or strategy to reduce or control nonpoint source pollution as documented:
  - By one or more partners listed in the Oregon Nonpoint Source Control Program Plan; or
  - In a Federal Clean Air Act State Implementation Plan for Oregon; or
  - Any facility effective in reducing nonpoint source pollution as documented in supporting research by:
    - Oregon State University, Agricultural Experiment Station; or
    - The United States Department of Agriculture, Agriculture Research Service; or
    - The Oregon Department of Agriculture; or

- (b) Wood chippers used to reduce openly burned woody debris; or
- (c) The retrofit of diesel engines with a diesel emission control device, certified by the U.S. Environmental Protection Agency.

"Nonpoint Source Pollution" means pollution that comes from numerous, diverse, or widely scattered sources of pollution that together have an adverse effect on the environment. The meaning includes:

- (a) The definition provided in OAR 340-041-0006(17); or
- (b) Any sources of air pollution that are:
  - Mobile sources that can move on or off roads; or
  - Area sources.

Applied to this Application

The applicant claims the facility has a voluntary purpose. The no-till drill system is comprised of seeder, commodity cart, controller and a tractor to pull the unit. The claimed facility prevents a substantial quantity of air and water pollution, which **meets the definition** of a nonpoint source pollution control. In research done by the Oregon State University Agricultural Experiment Station, a no-till cropping system reduces non-point source pollution by allowing the surface residue to act as a physical barrier to resist surface erosion. It also allows the soil to increase nutrient and moisture infiltration. Larry Lutchter, an agronomist with the Oregon State University's Morrow County Extension Office, provided supporting research on the applicant's behalf. The Department attached the letter to this report.

**Method** Criteria

ORS 468.155 (1)(b)(B) The prevention, control, or reduction must be accomplished by the disposal or elimination of air contaminants, air pollution, or air contamination sources; and the use of an air cleaning device as defined in ORS 468A.005.

Applied to this Application

The no-till system of planting prevents airborne particulate matter, which meets the definition of an air contaminate as defined by ORS 468A.005.

**Exclusions** Criteria

ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. These items are ineligible for certification.  
OAR 340-016-0070(3)

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:



1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** facility.

**Maximum Credit**  
ORS 468.173(3)(f)

Criteria

The maximum tax credit is 35% if the applicant submitted the application between January 1, 2002 and December 31, 2008, inclusively, and the certified cost does not exceed \$200,000.

Applied to this Application

The maximum tax credit is **35%** because the applicant submitted the application on March 17, 2004, and the certified facility cost is **\$152,055**.

***Facility Cost*****Subtractions**

OAR 340-016-  
0070(1)

Criteria

The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification**

ORS 468.170(1)

Criteria

The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost and represents taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$152,055
	None	
	<b>Certified</b>	<b>\$152,055</b>

### ***Facility Cost Allocable to Pollution Control***

#### **% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

#### Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

#### **Percentage** Criteria

- ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.
- The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
  - The estimated annual percent return on the investment in the facility;
  - Any alternative methods, equipment, and costs for achieving the same pollution control objective;
  - Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
  - Any other relevant factors.

#### Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a seven-year useful life. The claimed facility has a cost savings of \$15,590 associated with it because there are fewer passes over the field, which reduces diesel usage and maintenance. The expenditures do not exceed the revenue. The resulting facility ROI is still less than the National ROI for 2003, the facility's construction completion year. The no-till drill is used 100% for pollution control and the tractor was used 60% of the time for pollution control. The applicant reduced the facility cost by \$44,000, claiming only 60% of the cost of the tractor. The applicant did not investigate an alternative technology and there are no other relevant factors.

### ***Compliance***

#### ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the

applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



## BACKGROUND

### APPROVALS:      **Underground and Aboveground Tank Systems**

The Department recommends that the Environmental Quality Commission approve **one** underground storage tank system. The principal purpose of upgrades to retail gas stations is to meet the federal Environmental Protection Agency's requirements for underground storage tanks and DEQ's requirements under OAR Chapter 340, Division 150. The EQC's certification of this facility could reduce taxes paid to the State of Oregon by a maximum of **\$41,222**.

#### **Summary of Tank Systems**

<b>App #</b>	<b>Applicant</b>	<b>Certified</b>	<b>% Allocable</b>	<b>Maximum Percent</b>	<b>GF Liability</b>
6420	Exxon of Wilsonville, LLC	\$ 82,444	100%	50%	\$ 41,222

#### Statutory Definitions

Underground and aboveground storage tanks qualify under both air and water pollution control sections of the pollution control facilities tax credit statutes. The definitions of air and water pollution are behind their respective tabs in this attachment.



State of Oregon  
Department of  
Environmental  
Quality

## ***Director's Recommendation***

**Approve Application No.6420 @ Reduced Cost**

**Applicant: Exxon of Wilsonville LLC**

Certification of:

Facility Cost		\$82,444
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<u>\$41,222</u>

**Certificate Period: 10 years**

## **Tax Credit Review Report**

**Pollution Control Facility: UST/AST**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

850 Lawson Avenue  
Woodburn, OR 97071-2932

Organized as: **LLC**

Taxpayer ID: **93-1243102**

### ***Facility Identification***

25410 SW 95th Avenue  
Wilsonville, OR 97070-7201

The certificate will identify the facility as:

**Two steel/fiberglass underground tanks, 1,970 feet of double wall flexible plastic piping, spill containment basins, automatic tank gauge system, overfill alarm, sumps, automatic shutoff valves, monitoring wells**

### ***Technical Information***

Exxon of Wilsonville LLC is a retail gas station. The applicant installed systems that meet EPA standards for tank systems. The applicant installed:

- Two steel/fiberglass storage tanks, 1,970 feet of fiberglass piping to provide secondary containment, monitoring wells, and spill containment basins to prevent soil or groundwater contamination;
- An automatic tank gauge to monitor product inventory and perform daily tank leak tests;
- An oil/water separator and drainage system to capture surface spills, and prevent gas and oil from entering storm drains;
- Automatic shutoff devices and an overfill alarm to prevent surface spills while pumping gas; and
- Containment sumps to capture possible leaks from entering soil or groundwater.

***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. **Owner**, including a contract purchaser, **of** the trade or **business** that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Exxon of Wilsonville LLC owns the business that uses the Oregon property requiring the pollution control.

***Eligibility*****Timely Filing** Criteria

1999 Edition ORS  
468.173(1) OAR  
340-016-0007

The applicant must submit the final application after completing construction of the facility and placing it into operation. If the applicant completed constructing the facility before January 1, 2002, the applicant must submit the application **within two years** after the construction completion date.

Applied to this Application

The applicant **timely filed** the application. The applicant completed construction or installation of the claimed facility on **12/20/2000** and filed the application on **12/20/2002**. The applicant also submitted the application after completing construction and placing the facility into operation on 12/21/2000.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ, EPA, or LRAPA to prevent, reduce, or control water and air pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Water Pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof. ORS 468B.005

"Air Pollution" is the presence in the outdoor atmosphere of one or more air



contaminants, or any combination thereof, in sufficient quantities and of such characteristics and of a duration as are or are likely to be injurious to public welfare, to the health of human, plant or animal life or to property or to interfere unreasonably with enjoyment of life and property throughout such area of the state as shall be affected thereby. ORS 468A.005

Applied to this Application

The facility **meets** the federal **Environmental Protection Agency's requirements** for underground storage tanks and DEQ's requirements under OAR Chapter 340, Division 150 for controlling air and water pollution.

<b><u>Method</u></b>	<b><u>Criteria</u></b>
ORS 468.155 (1)(b)(A)	The prevention, control, or reduction must be accomplished by disposal or elimination of industrial wastewater and the use of a treatment works for industrial waste as defined in ORS 468B.005.

"Industrial waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development or recovery of any natural resources.

"Treatment works" means any plant or other works used for the purpose of treating, stabilizing or holding wastes.

OAR-016-0025 (2)(g)	The facility must be used to detect, deter, or prevent spills or unauthorized releases.
------------------------	---

Applied to this Application

Petroleum products **meets the definition** of industrial waste and the claimed facility meets the definition of a treatment works. The upgraded system helps prevent petroleum contamination to the surrounding soil and ground water.

<b><u>Exclusions</u></b>	<b><u>Criteria</u></b>
ORS 468.155(3) OAR 340-016-0070(3)	The regulations exclude over 40 items from the definition of a Pollution Control Facility. The regulations exclude items that make an insignificant contribution to the pollution control purpose. These items are ineligible for certification.

Applied to this Application

Guidelines provide that \$1.64 per foot of product piping and 50% of the tank cost makes an insignificant contribution to pollution control purpose of the claimed facility. The Department subtracted the costs associated with the ineligible item(s) from the *Facility Cost* section below.

<b><u>Replacement</u></b>	<b><u>Criteria</u></b>
ORS 468.155(3)(e)	The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are two exceptions. The applicant replaced the facility:

1. because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. before the end of its useful life.

Applied to this Application

The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location. The claimed facility is **not a replacement** facility

**Maximum Credit** Criteria

ORS 468.173(1) The maximum tax credit is 50% of the certified facility cost if the applicant began construction or installation of the facility before January 1, 2001, and completed before January 1, 2004.

Applied to this Application

The **maximum tax credit is 50%** because the applicant began construction on 10/10/2000, completed construction on 12/20/2000, and submitted the application on 12/20/2002.

**Facility Cost****Subtractions** Criteria

OAR 340-016-0070(1) The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions** other than the costs listed under the *Exclusions* section.

**\$ Certification** Criteria

ORS 468.170(1) The certified cost is limited to the **actual cost** of the claimed facility. The certified cost may not exceed the **taxpayer's own cash** investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$101,108
<i>Facility Cost</i>	1970' Equivalent bare steel	
	Product Piping @ \$1.64 per foot	-\$3,231
	Equivalent bare steel tank @ 50% of tank cost	-\$15,433
	<b>Certified</b>	<b>\$82,444</b>

### ***Facility Cost Allocable to Pollution Control***

#### **% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

#### Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

#### **Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- The estimated annual percent return on the investment in the facility;
- Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- Any other relevant factors.

#### Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above, and a 10-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2000, the facility's construction completion year. The applicant did not investigate an alternative technology and there are no other relevant factors.



***Compliance***ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

DEQ staff in the Western region confirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ issued Registration Certificate Number 03-12040-2000-OPER to the site on 9/26/2000.

Reviewers: Maggie Vandehey, DEQ

## BACKGROUND

### APPROVALS: Water Pollution Control Facilities

The Department recommends that the Environmental Quality Commission approve **two** water pollution control facilities installed to dispose of or eliminate industrial waste and the use of treatment works for industrial waste as defined in ORS 468B.005. The Commission's certification of these facilities could reduce taxes paid to the State of Oregon by a maximum of **\$279,883**.

**Both** applicants constructed a facility in response to a Department of Environmental Quality or a federal Environmental Protection Agency requirement. This **principal purpose** facility's primary and most important purpose is to comply with a requirement to prevent, reduce, control, or eliminate water pollution.

### Summary of Water Pollution Control Facilities

App #	Applicant	Certified	% Allocable	Maximum Percent	GF Liability
6617	Weyerhaeuser Company	\$108,631	100%	50%	\$ 54,316
6643	Weyerhaeuser Company	\$451,135	100%	50%	\$ 225,568
<b>Apps</b>	<b>Sum</b>	<b>\$ 59,766</b>			<b>\$ 279,883</b>
<b>2</b>	Average	\$ 279,883			\$ 139,942
	Minimum	\$ 108,631			\$ 54,316
	Maximum	\$ 51,135			\$ 225,568

#### Statutory Definition of a "Water Pollution Control Facility"

ORS 468.155 provides the definition of a pollution control facility. Part of that definition describes how the applicant must accomplish the pollution control. For water pollution control facilities, the prevention, control, or reduction must be accomplished by "The disposal or elimination of or redesign to eliminate industrial waste and the use of treatment works for industrial waste as defined in ORS 468B.005."

ORS 468.155 Definitions for ORS 468.155 to 468.190 and 468.962

...  
(b) Such prevention, control or reduction required by this subsection shall be accomplished by:

...  
(A) The disposal or elimination of or redesign to eliminate industrial waste and the use of treatment works for industrial waste as defined in ORS 468A.005;  
...

ORS 468B.005 provides the following pertinent definitions.

"Industrial waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development or recovery of any natural resources.

"Treatment works" means any plant or other works used for the purpose of treating, stabilizing or holding wastes.

"Wastes" means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive or other substances which will or may cause pollution or tend to cause pollution of any waters of the state.

"Water pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

#### Eligibility

##### OAR 340-016-0060 Eligibility

...  
(4) Eligible Activities. The facility shall prevent, reduce, control, or eliminate:

- ...  
(d) Industrial Waste. The facility shall dispose of, eliminate or be redesigned to eliminate industrial waste and the use of treatment works for industrial wastewater as defined in ORS 468B.005; ...





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Water

#### Final Certification

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

Tax Department CH1C28

PO Box 9777

Federal Way, WA 98063

Organized as: **C Corp**

Taxpayer ID: **91-0470860**

### *Director's Recommendation*

**Approve Application No.6617 @ Reduced Cost**

Applicant: **Weyerhaeuser Company**

Certification of:

Facility Cost		\$108,631
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<b>\$54,316</b>

Certificate Period: **7 years**

### *Facility Identification*

1551 SW Lyle Street

Dallas, OR 97338

The certificate will identify the facility as:

**Storm Water Treatment System**

### *Technical Information*

Weyerhaeuser Company processes raw logs into lumber at its Dallas, Oregon, sawmill. The company measures and grades the log in the scaling area and stores them in the log yard. Prior to constructing the claimed facility, storm water runoff from the log scaling log yard and adjacent areas discharged to an existing undersized clarifier and a small bioswale that then discharged into Ash Creek. The storm water runoff contained levels of total suspended solids (TSS) that exceeded the applicant's 1200Z Storm Water Permit benchmark of 130 milligrams-per-liter (mg/l).

The claimed facility consists of a double-celled settling basin (A), which collects runoff from the log scaling area. Effluent from basin A gravity flows to a second settling basin (B). Basin B contains a pump that transfers the runoff 600 feet to a third settling basin (C). Storm water runoff from the log yard also gravity flows into basin C. Basin C discharges into a designed bio-treatment swale that biologically treats the storm water prior to discharging into the City of Dallas' storm water system. The claimed facility reduced the TSS from more than 6,000 mg/l to less than 130 mg/l.

***Taxpayer******Allowed Credit***

ORS 315.304(4)

Criteria

The taxpayer who is allowed the credit must be:

- a. The owner, including a contract purchaser, of the trade or business that utilizes Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. A person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

DEQ will report the following information to the Department of Revenue:

Weyerhaeuser Company owns the business that uses the Oregon property requiring the pollution control.***Eligibility******Timely Filing***

1999 Edition ORS

468.173(1) OAR

340-016-0007

Criteria

If the applicant completed constructing the facility before January 1, 2002, the applicant must submit the application within two years after the construction completion date. The final application, however, is not valid if the applicant submits the application before they complete construction or before they place the facility into operation.

Applied to this Application

The applicant **filed** the application **within the two-year filing requirement**. They completed construction on 11/15/2001 and submitted the application on 11/6/2003. The applicant submitted the application after they completed construction and placed the facility into operation on 11/15/2001.

***Purpose: Required***

ORS 468.155

(1)(a)(A)

OAR 340-016-

0060(2)(a)

Criteria

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ or EPA to prevent, reduce, or control water pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Water Pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof. ORS 468B.005

Applied to this ApplicationThe claimed facility has a **principal purpose**. The three settling basins, the

transfer pump, 600 feet of piping and the bio-treatment swale comply with the applicant's Storm Water Discharge Permit (SWDP.) The DEQ issued SWDP requires that the applicant prevent TSS from entering Ash Creek. The primary or most important purpose of the claimed facility is to prevent water pollution.

**Method** Criteria  
ORS 468.155 (1)(b)(A) The prevention, control, or reduction must be accomplished by disposal or elimination of industrial wastewater and the use of a treatment works for industrial waste as defined in ORS 468B.005.

"Industrial waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development or recovery of any natural resources.

"Treatment works" means any plant or other works used for the purpose of treating, stabilizing or holding wastes.

Applied to this Application

The three settling basins, pump, 600 feet of piping and the bio-treatment swale **meet the definition** of a treatment works. Contaminated storm water meets the definition of water pollution as defined under the *Purpose: Required* section above.

**Exclusions** Criteria  
ORS 468.155 (3) The regulations provide a list of over 40 items excluded from the definition of a  
OAR 340-016- Pollution Control Facility. Items that do not meet the definition are ineligible  
070(3) for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria  
ORS 468.155 (3)(e) The replacement or reconstruction of all or part of a facility that the State of Oregon previously certified as a pollution control facility under ORS 468.170 is not eligible for the tax credit with two exceptions. The applicant replaced the facility:

1) due to a requirement imposed by DEQ or EPA that is different than the requirement to construct the original facility; or

2) before the end of its useful life.

Applied to this Application

The State of Oregon issued 15 certificates to the applicant at this site. Five of the certificates were for treatment works for industrial waste.

The applicant replaced a previously certified facility in response to DEQ's requirement to reduce the amount of TSS entering Ash Creek. The replaced facility was a small clarifier and bioswale shown on the attached Certificate Number 4905. It did not adequately reduce TSS from the storm water runoff.



The claimed facility is eligible for **like-for-like replacement** cost shown under the *Facility Cost* section.

<b>Maximum Credit</b>	<u>Criteria</u>
ORS 468.173(1)	The maximum tax credit is 50% of the certified facility cost if the applicant
OAR 340-016-0007	completed construction before January 1, 2002.

Applied to this Application

The maximum tax credit is 50% because the applicant completed construction of the facility on 11/15/2001.

***Facility Cost***

<b>Subtractions</b>	<u>Criteria</u>
OAR 340-016-0070(1)	The applicant must provide documents that substantiate the claimed facility cost.
	The claimed cost may not include:
	a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
	b) the amount of any government grants received to pay part of the facility cost;
	c) the present value of any other state tax credits for which the investment is eligible; and
	d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

<b>\$ Certification</b>	<u>Criteria</u>
ORS 468.170(1)	The certified cost is limited to the <b>actual cost</b> of the claimed facility. The certified cost may not exceed the <b>taxpayer's own cash</b> investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost and show that the cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Claimed	Cost
<b>Replacement</b>	The Department calculated the like-for-like replacement cost of the original clarifier and bioswale based on Consumer Price Index (CPI) as described in Department guidance.		\$157,332
	Year Placed-in-Service	1999	
	Facility Cost	\$45,549	
	Like-for-like Factor X	1.0692	
	Like-for-like Replacement Cost	\$48,701	-\$48,701
		<b>Certified</b>	<b>\$108,631</b>

### ***Facility Cost Allocable to Pollution Control***

#### **% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

#### Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

#### **Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- The estimated annual percent return on the investment in the facility;
- Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- Any other relevant factors.

#### Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above. The claimed facility does not produce a salable or useable commodity, and there is no revenue or cost savings associated with it. The expenditures exceed the revenue, therefore the resulting facility ROI is less than the National ROI for 2001, the facility's construction completion year. The applicant did not investigate an alternative technology.

## ***Compliance***

### ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

### Applied to this Application

The DEQ staff member assigned to the source is Raghu Namburi in the DEQ Western Region office, who affirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes and with EQC orders. DEQ issued the following permit to the site: NPDES Storm Water Permit 1200Z, issued 07/22/97.

Reviewers: PBS Engineering and Environmental  
Maggie Vandhey, DEQ





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### Pollution Control Facility: Water Final Certification

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

### *Applicant Identification*

Tax Department CH1C28  
PO Box 9777  
Federal Way, WA 98063-9777

Organized as:

Taxpayer ID: 91-0470860

### *Director's Recommendation*

**Approve Application No.6643 @ Reduced Cost**

**Applicant: Weyerhaeuser Company**

Certification of:

Facility Cost		\$451,135
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<u>\$225,568</u>

Certificate Period: 10 years

### *Facility Identification*

3251 Old Salem Road  
Albany, OR 97321

The certificate will identify the facility as:

### **ASB Wastewater Effluent Screen Installation:**

- One - Suboscreen Model S78/78 manufactured by Andritz-Ruthner rotating screen**
- One - Andritz-Ruthner, Model AS-300 conveyor/compactor**
- One - ABB Automation pond level monitoring system**

### *Technical Information*

On 06/30/02, Weyerhaeuser Company purchased Willamette Industries' Albany mill. The mill produces kraft bag paper and linerboard. The manufacturing process includes an incoming paper and cardboard recycling process. This material can contain large amounts of plastic debris. Prior to constructing the claimed facility, the plastic debris entered the plant wastewater system and into the aerated wastewater treatment (ASB) pond. The system then discharged the treated wastewater and the plastic debris directly to the Willamette River. On 11/01/01, the DEQ issued a Notice of Civil Penalty to Willamette Industries for discharging the plastic debris. The applicant installed an effluent screen in response to the citation.

The claimed facility consists of a 19 ft. long, 8 ft. wide and 7½ ft. deep concrete basin that houses a horizontal rotating drum screen that removes the plastic debris from the treated wastewater as it leaves the ASB pond. The applicant also claimed a conveyor/compactor then removes the debris from the

screen and deposits it in a drop box. If the rotary screen becomes blocked, the level in the ASB pond will rise to the point it would overflow into the Willamette River. The applicant also claimed an emergency overflow system that discharges untreated wastewater directly to the Willamette River. Also claimed were ASB pond level sensors, remote alarms, video cameras, lights, remote video receivers and discharge flow monitoring equipment.

### ***Taxpayer***

#### ***Allowed Credit***

ORS 315.304(4) Criteria

- (a) The taxpayer who is allowed the credit must be:
  - (A) The owner, including a contract purchaser, of the trade or business that utilizes Oregon property requiring a pollution control facility to prevent or minimize pollution;
  - (B) A person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property;

#### Applied to this Application

DEQ will report the following information to the Department of Revenue: Weyerhaeuser Company owns the business that uses the Oregon property requiring the pollution control.

### ***Eligibility***

**Timely Filing** Criteria

2001 Edition ORS  
468.165(6)

If the applicant completed constructing the facility on or after January 1, 2002, the applicant must submit the application within one year after the construction completion date. The final application, however, is not valid if the applicant submits the application before they complete construction or before they place the facility into operation.

#### Applied to this Application

The applicant filed the application within the one-year filing requirement. They completed construction on 11/21/2003 and submitted the application on 11/28/2003. The applicant submitted the application after they completed construction and placed the facility into operation on 12/01/01.

**Purpose: Required** Criteria

ORS 468.155  
(1)(a)(A)  
OAR 340-016-  
0060(2)(a)

The principal purpose of the claimed facility must be to comply with a requirement imposed by DEQ or EPA to prevent, reduce, or control water pollution. That principal purpose must be the most important or primary purpose of the facility. The facility must have only one primary purpose.

"Water Pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or

to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof. ORS 468B.005

Applied to this Application

The claimed facility has a principal purpose. The rotary screen, the concrete basin, conveyor/compactor, and the ASB pond level sensors comply with the corrective action stated in the Notice of Civil Penalty to Willamette Industries issued by DEQ. The primary or most important purpose of the claimed facility is to prevent water pollution.

The applicant claimed the following components that are not eligible for certification because they make an insignificant contribution to controlling air pollution: 1) Discharge flow monitoring equipment used to report monthly treated wastewater volume discharged to the Willamette River. 2) The emergency overflow system, which provides a route for untreated wastewater to the Willamette River if a high level were to occur in the ASB pond. 3) The camera system monitoring the ASB pond level. The camera system visually allows the applicant to observe the pond from a remote location. Other level instrumentation monitors the level of the pond and will sound an alarm. The Department subtracted the associated costs from the claimed facility cost under the *Facility Cost* section below.

<b>Method</b>	<b>Criteria</b>
ORS 468.155	The prevention, control, or reduction must be accomplished by disposal or
(1)(b)(A)	elimination of industrial wastewater and the use of a treatment works for
	industrial waste as defined in ORS 468B.005.

**"Industrial waste"** means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development or recovery of any natural resources.

**"Treatment works"** means any plant or other works used for the purpose of treating, stabilizing or holding wastes.

Applied to this Application

The rotary screen, the concrete basin, conveyor/compactor and the ASB pond level sensors meet the definition of a **treatment works**. Contaminated wastewater meets the definition of **water pollution** as defined under the *Purpose: Required* section above.

<b>Exclusions</b>	<b>Criteria</b>
ORS 468.155 (3)	The regulations provide a list of over 40 items excluded from the definition of a
OAR 340-016-	Pollution Control Facility. The list includes items that make an insignificant
070(3)	contribution to pollution control. Items that do not meet the definition are
	ineligible for certification.

Applied to this Application



**There are no exclusions** except those items that make an insignificant contribution discussed in the *Purpose: Principal* section.

- |   |  |
|---|--|
| <p><b>Replacement</b></p> <p>ORS 468.155 (3)(e)</p> | <p><u>Criteria</u></p> <p>The replacement or reconstruction of all or part of a facility that has previously been certified as a pollution control facility under ORS 468.170 is not eligible for the tax credit with two exceptions:</p> <ol style="list-style-type: none"> <li>1) the facility was replaced due to a requirement imposed by DEQ or EPA that is different than the requirement to construct the original facility; or</li> <li>2) the facility was replaced before the end of its useful life.</li> </ol> |
|---|--|

Applied to this Application

The claimed facility is **not a replacement** facility. The State of Oregon has issued 18 Pollution Control Facilities Tax Credit Certificates to the previous owner of the paper mill at this location. Twelve certificates were for water quality

- |  |  |
|--|--|
| <p><b>Maximum Credit</b></p> <p>ORS 468.173(1)</p> <p>OAR 340-016-0007</p> | <p><u>Criteria</u></p> <p>The maximum tax credit is 50% of the certified facility cost if the applicant completed construction before January 1, 2002.</p> |
|--|--|

Applied to this Application

The maximum tax credit is 50% because the applicant completed construction of the facility on 12/01/01.

***Facility Cost***

- |   |  |
|---|--|
| <p><b>Subtractions</b></p> <p>OAR 340-016-0070(1)</p> | <p><u>Criteria</u></p> <p>The applicant must provide documents that substantiate the claimed facility cost.</p> <p>The claimed cost may not include:</p> <ol style="list-style-type: none"> <li>a) the salvage value of a pre-existing facility if the applicant is replacing a facility;</li> <li>b) the amount of any government grants received to pay part of the facility cost;</li> <li>c) the present value of any other state tax credits for which the investment is eligible; and</li> <li>d) ineligible costs as set forth in OAR 340-016-0070(3).</li> </ol> |
|---|--|

Applied to this Application

There are **no subtractions**.

- |  |  |
|--|--|
| <p><b>\$ Certification</b></p> <p>ORS 468.170(1)</p> | <p><u>Criteria</u></p> <p>The certified cost is limited to the actual cost of the claimed facility. The certified cost may not exceed the taxpayer's own cash investment in the facility or portion of the facility.</p> |
|--|--|

Applied to this Application

Invoices substantiated the eligible facility cost. The cost represents the taxpayer's own cash investment.

Referenced Section	Description of Ineligible Portion	Cost
	Claimed	\$507,253
<i>Purpose: Required</i>	Discharge Flow Monitoring Equipment	- 34,717
	Emergency Overflow System	- \$7,281
	Camera Monitoring System	- \$14,120
	<b>Certified Cost</b>	<b>\$451,135</b>

***Facility Cost Allocable to Pollution Control*****% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

Applied to this Application

The Department determined that **100%** of the facility cost is allocable to pollution control as discussed in the *Percentage* subsections below.

**Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant and the Department calculated the percentage of the facility cost allocable to pollution control according to the standard method in OAR 340-016-0075(3) while considering the factors a. through e. above and a 10-year useful life. The claimed facility does not produce a salable or useable commodity, and it does not have revenue or cost savings associated with it. The expenditures exceed the revenue, therefore, the resulting facility ROI is less than the National ROI for 2001, the facility's construction completion year. The applicant did not investigate an alternative technology.

***Compliance***ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The DEQ staff member assigned to the source is Bill Perry in the DEQ Western Region's Eugene office. Mr. Perry affirmed the applicant's statement that the facility and site are in compliance with Department rules and statutes and with EQC orders. DEQ has issued the following permits to the site:

- NPDES Storm Water Permit 1200Z, issued 07/22/97;
- NPDES Wastewater Permit Number 101345, issued 11/30/95; and
- Title V Air Permit Number 22-0471, issued 01/03/00.

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



# Attachment C

## Background and References for Denials

The Department recommends that the Environmental Quality Commission deny the **two** applications presented in this attachment. The two applications represent facilities that do not meet the definition of a pollution control facility.

### Summary of Facilities Recommended for Denial

App #	Applicant	Claimed Cost	% Allocable	Maximum Tax Credit	Media
6260	Merix Corporation	\$ 241,280	100%	50%	Water
6576	Signature Graphics, Inc.	128,874	100%	50%	Mat. Rec.

<b>Apps</b>	<b>Sum</b>	<b>370,154</b>
<b>2</b>	Average	185,077
	Minimum	128,874
	Maximum	241,280

#### Statutory Provision for Denying Certification - General

ORS 468.170 Action on application; rejection; appeal; issuance of certificate; certification.

- ...
- (2) If the commission **rejects** an application for certification, or certifies a lesser actual cost of the facility or a lesser portion of the actual cost properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or appropriately disposing of used oil than was claimed in the application for certification, the commission shall cause written notice of its action, and a concise statement of the findings and reasons therefore, to be sent by registered or certified mail to the applicant before the 120th day after the filing of the application.

ORS 468.190 Allocation of costs to pollution control.

- ...
- (2) The portion of actual costs properly allocable shall be from zero to 100 percent in increments of one percent. If zero percent, the commission shall issue an order **denying** certification.



State of Oregon  
Department of  
Environmental  
Quality

## ***Director's Recommendation***

**Deny Application No. 6260 – Ineligible Facility**

**Applicant: Merix Corporation**

**Claimed:**

Facility Cost		\$ 241,280
Percentage Allocable	X	100%
Maximum Percentage	X	50%

# **Tax Credit Review Report**

**Pollution Control Facility: Water**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

## ***Applicant Identification***

1521 Poplar Lane  
Forest Grove, OR 97116

Organized as: **C Corp**  
Taxpayer ID: **93-1135197**

## ***Facility Identification***

1521 Poplar Lane  
Forest Grove, OR 97116

The applicant identified the facility as:

**Micro Tek wastewater recycling system**

## ***Technical Information***

Merix Corporation manufactures advanced multilayer rigid circuit boards. The applicant claimed a wastewater recycling system (WRS) that consists of a rinse water feed tank; two activated carbon absorption columns for organic matter removal; and two cation and anion exchange columns for metal ion removal.

The water recycling system utilizes activated carbon columns and ion exchange columns to remove non-carbon organics, metallic ions, and negatively-charged ions. The facility treats rinse water generated from the applicant's manufacturing processes to be reused. Prior to the installation of the claimed facility, 5.5 million gallons of rinse water was discharged to the Clean Water Services (CWS) wastewater treatment system after being pretreated each year.

***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property.

Applied to this Application

Applicant is the **owner** of the business that uses the claimed facility.

***Eligibility***Timely Filing Criteria

1999 Edition

ORS 468.165(6)

The applicant must submit the application within two years after the date that they completed construction of the facility. The final application, however, is not valid if the applicant submits the application before they complete construction or before they place the facility into operation.

Applied to this Application

The applicant **submitted** the application **within** the **two-year requirement** by completing construction on 8/25/2001 and submitted the application on 8/23/2002. The applicant submitted the application after they completed construction and placed the facility into operation on 7/10/2002.

**Purpose: Voluntary** Criteria

ORS 468.155

(1)(a)(B)

OAR 340-016-

0060(2)(a)

The sole purpose, meaning the 'exclusive' purpose, of the claimed facility must be to prevent, control, or reduce a substantial quantity of water pollution.

“Pollution” or “water pollution” means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

Applied to this Application

The applicant claims the facility has the **sole purpose** of reducing a substantial quantity of water pollution.

The facility **does not reduce a substantial quantity of water pollution.**

The claimed facility utilizes ion exchange resin as the filter media that removes



metallic ions. When this filter media is full and cannot hold any more metal ions, the system goes through a backwash operation where hydrochloric acid strips the metal ions from the filter media. The backwash liquid contains a very high concentration of metal ions; the WRS does not treat the backwash liquid. The applicant provided data showing the Average Effluent Heavy Metals Concentration before and after installing the WRS. The data shows a reduction of 0.06 mg/l Average Effluent Heavy Metals Concentration with the claimed facility in place.

The facility does **not** have an **exclusive pollution control purpose**. The applicant's production process requires the use of clean water for rinsing. The applicant states in the application and in written communications with the Department that Merix Corporation installed the WRS to recycle 5.5 million gallons of rinse water. The WRS reduces CWS charges to the applicant for purchasing city water and discharging to the sewer. (See the *Percentage Allocable to Pollution Control* section below.)

The Department recommends that the EQC deny certification of the water recycling system because the claimed facility **does not** have an **exclusive** purpose to reduce a **substantial quantity** of water pollution.

#### **Method** Criteria

ORS 468.155 The prevention, control, or reduction must be accomplished by disposal or  
(1)(b)(A) elimination of industrial wastewater and the use of a treatment works for industrial waste as defined in ORS 468B.005.

"Industrial waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development or recovery of any natural resources.

"Treatment works" means any plant or other works used for the purpose of treating, stabilizing or holding wastes.

#### Applied to this Application

The Department was unable to determine that the WRS disposed of metal ions or eliminated the amount of metal ions ultimately discharged to CWS. (See the *Percentage Allocable to Pollution Control* section below.) The applicant's discharge meets the definition of an industrial waste and the claimed facility probably meets the definition of a treatment works.

#### **Exclusions** Criteria

ORS 468.155(3) The regulations provide a list of over 40 items excluded from the definition of a  
OAR 340-016- Pollution Control Facility. Items that do not meet the definition are ineligible  
0070(3) for certification.

#### Applied to this Application

The application record did not indicate that the applicant included any ineligible

costs.

### **Replacement Criteria**

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a facility that has previously been certified as a pollution control facility under ORS 468.170 is not eligible for the tax credit with two exceptions:

- 1) the facility was replaced due to a requirement imposed by DEQ or EPA that is different than the requirement to construct the original facility; or
- 2) the facility was replaced before the end of its useful life.

### Applied to this Application

The facility is **not a replacement** of a previously certified facility.

### **Maximum Credit Criteria**

ORS 468.173(1) The applicable percentage of the certified cost of a facility shall be 50% if the facility is certified under the 1999 Edition of ORS 468.155 to 468.190.

### Applied to this Application

The maximum tax credit would have been 50% because the applicant completed construction of the facility on 4/1/2001, and submitted the application on 8/23/2002.

### **Facility Cost**

Copies of invoices substantiated the claimed facility cost.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$241,280
	None	
	<b>Certified</b>	<b>0</b>

### **Percentage Allocable**

#### **% Certification Criteria**

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

ORS 468.190(2) The portion of actual costs properly allocable shall be from zero to 100 percent in increments of one percent. If zero percent, the commission shall issue an order denying certification.

Applied to this Application

The applicant claims the cost of the water recycling system is 100% allocable to water pollution control. The Department was unable to determine the percentage of the facility cost allocable to pollution control because the applicant did not submit a corrected cost worksheet.

**Percentage** Criteria  
 ORS 468.190(1)

The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

Applied to this Application

The applicant installed the WRS to produce cleaned water used in conjunction with a new manufacturing process. The application stated they realize annual savings of \$20,469 by recycling rinse water rather than purchasing clean water and discharging to the City's sewer system.

The WRS reduced wastewater discharge by 450,000 gallons per month. If Merix were to discharge this additional volume to Clean Water Services (CWS), the company would need to purchase additional discharge capacity. CWS sells capacity based on flow rates in units of 640 gallons per month. A unit sells for \$2,400. If Merix were to discharge all of the recycled water (5.4 million gallons per year or 450,000 gallons per month) to CWS, the purchase cost for the additional capacity would cost \$1,687,500. (450,000 gallons/640 gallons per unit x \$2,400 per unit = \$1,687,500.) This cost savings exceeded the cost of the facility. Had the applicant included that savings in the return on investment calculation the percentage allocable to pollution control would have been **zero percent**.



***Compliance***

The applicant claims the facility and site comply with Department rules and statutes. DEQ has issued the following permits to the applicant at this site.

NPDES Stormwater No. 1200-Z, issued October 28, 1997  
Air Discharge Permit No. 34-2678 issued July 11, 2002

Reviewers: PBS Engineering and Environmental  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

## *Director's Recommendation*

**Deny Application No. 6576**

**Applicant: Signature Graphics, Inc.**

The applicant claimed:

Facility Cost		\$128,874
Percentage Allocable	X	100%
Maximum Percentage	X	50%

# **Tax Credit Review Report**

**Pollution Control Facility: Material Recovery**

**Final Certification**

ORS 468.150 -- 468.190

OAR 340-016-0005 -- 340-016-0080

### ***Applicant Identification***

15040 NE Mason St.  
Portland, OR 97230

### ***Facility Identification***

15040 NE Mason St.  
Portland, OR 97230

Organized as: S Corporation  
Taxpayer ID: 93-0865434

The applicant identify the facility as:

**A Trimmed Paper Material Handling  
System**

### ***Technical Information***

The applicant owns and operates a commercial printing and bindery business. The operation of the business creates waste paper trimmings that the applicant sells as scrap paper. Prior to claiming the new system, the applicant's old system pneumatically conveyed waste paper trimmings from existing floor sweep pick-ups to an existing bailer. Employees manually collected trimmings in areas not serviced by the pre-existing system and placed them directly in 40-yard bins. The applicant then transported and sold the trimmings to recycling facilities.

The applicant added a second waste paper trimmings collection system to areas not serviced by the existing system. The applicant claimed the costs for relocating the existing pneumatic transfer system, five additional floor sweep pick-ups, 540 feet of new transfer pipe, one new material handling fan, a bag filter system, manual diverter valve, and the installation of a baler relocated from Kent, WA. The claimed second pick-up and transfer system, and the claimed second baler allowed the applicant to compact all waste paper trimmings into bales. The new system resulted in a reduction in labor costs, a higher selling price for the compacted scrap paper, and fewer trips to recycling facilities.

***Taxpayer Allowed Credit***ORS 315.304(4) Criteria

The Department of Revenue determines if the taxpayer is allowed the credit if one of the following conditions apply. The taxpayer is the:

- a. Owner, including a contract purchaser, of the trade or business that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property; or
- c. Person who, as an owner, including a contract purchaser, or lessee, owns or leases a pollution control facility that is used for recycling, material recovery or energy recovery as defined in ORS 459.005.

Applied to this Application

DEQ will report the following information to the Department of Revenue: Signature Graphics, Inc. owns the claimed facility that they use to recycle.

***Eligibility*****Timely Filing** Criteria

1999 Edition  
ORS 468.165 (6) and  
OAR 340-016-007

The applicant must submit the application within two years of the date that they completed construction of the claimed facility if they completed construction on or before December 31, 2001. The applicant must submit the final application after completing construction of the facility and placing it into operation.

Applied to this Application

The applicant **timely filed** the application. The applicant completed construction or installation of the claimed facility on 11/20/01 and submitted the application on 8/28/03. The applicant also submitted the application after completing construction and placing the facility into operation on 11/26/01.

**Purpose: Voluntary** Criteria

ORS 468.155 (1)(a)(B)  
OAR 340-016-  
0010(7)(a)(b)

The **sole purpose**, meaning the 'exclusive' purpose, of the claimed facility must be to prevent, control, or reduce a **substantial quantity of solid waste**, hazardous waste, or used oil.

“Solid waste” as defined by ORS 459.005: All useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid materials, dead animals and infectious waste as defined by ORS 459.386.



Applied to this Application

The Department determined that the claimed facility **does not** have a sole and exclusive purpose to **reduce**, prevent, or control a **substantial quantity of solid waste**. The claimed facility is a material handling system that provides the benefit of a clean and safe work environment while reducing labor costs, discussed in the bullets below. The application record does not show that the claimed facility increased the tonnage of recovered waste paper.

- The relocation of the existing waste paper trimmings collection system and the installation of the new transfer pipe and material transfer fan reduced labor hours used to manually collect the waste paper and load the 40-yard collection bins. Reduced labor cost of manually collecting the waste paper to keep the process area free of paper trimmings is the most important purpose of the collection and transfer system.
- The installation of the bag filter system is to prevent paper dust from exhausting into the workspace. The most important purpose of the bag filter is to comply with OSHA requirements to control employee exposure to air-borne particulate. The bag filter system also prevents the buildup of highly combustible dust within the building. Bag filters are generally eligible for the air pollution control tax credit if they prevent emissions to the atmosphere but they are not eligible for internal dust control.
- The diverter valve provides flexibility to convey the paper trimmings from the relocated existing conveying system to either the existing baler or the new baler. Its most important function is material handling.
- The baler transferred from Kent, Washington allows the applicant to sell compacted bales of waste paper to recycling facilities for a higher price than the applicant was receiving for loose waste paper. The most important purpose of the installation of the baler is to increase revenue.

The Department subtracted the costs associated with the above items from the claimed facility cost under the *Facility Cost* section below.

**Method** Criteria

ORS 468.155 (1)(b)(D) The claimed facility must prevent, control, or **reduce** the waste material by the **use of a material recovery process**. The process must obtain useful material from material that would otherwise be solid waste, hazardous waste or used oil.

"Material Recovery" means any **process**, such as **pre-segregation**, for obtaining materials from solid waste, hazardous waste or used oil. The recovered material shall still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused

or recycled for the same or other purpose. The recovered material shall have **useful physical** or chemical **properties** that yield a **competitive end product** of real economic value. The material recovery process does not include processes:

- a. In which the major purpose is the production of fuel from solid waste, hazardous waste or used oil which can be utilized for heat content or other forms of energy; or
- b. That burns waste to produce energy or to reduce the amount of waste. However, it does not eliminate from eligibility a pollution control device associated with a process that burns waste if such device is otherwise eligible for pollution control tax credit under these rules.

OAR 340-016-0010(7) Criteria

OAR 340-016-0060(4)(e) The facility produces an end product of utilization. It must be an item of real economic value and it must be competitive with an end product produced in another state. The facility must produce the end product by mechanical processing, chemical processing; or through the production, **processing**, pre-segregation, or use of materials which:

- (A) Have **useful chemical or physical properties** and which may be used for the same or other purposes: or
- (B) May be used in the same kind of application as its prior use without change in identity.

Applied to this Application

The baler compresses loose waste paper into bales that the applicant sells to recycling facilities. Baled waste paper commands a higher price.

**Exclusions** Criteria

ORS 468.155(3) The regulations exclude over 40 items from the definition of a Pollution Control Facility. Any items that do not meet the definition are ineligible for certification. The regulations specifically exclude maintenance, operation, or repair of a facility, including spare parts.

OAR 340-016-0070(3)

Applied to this Application

There are **no exclusions** except those discussed under the *Purpose: Voluntary* section.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a previously certified pollution control facility is not eligible for the tax credit. There are, however, two exceptions:

1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original facility; or
2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The claimed facility is **not a replacement** facility. The State of Oregon has not issued any Pollution Control Facilities Tax Credit Certificates to the applicant at this location.

**Maximum Credit** Criteria

1999 Edition      The maximum tax credit available to the applicant is **50%** if construction  
ORS 468.173(1)      of the facility was completed on or before December 31, 2001 and the  
OAR 340-016-0007      application was filed on or before December 31, 2003.

Applied to this application

The maximum tax credit would have been **50%** because the applicant completed construction of the facility on 11/20/01 and the Department received the application on 8/28/03.

**Facility Cost****Subtractions** Criteria

OAR 340-016-0070(1)      The applicant must provide documents that substantiate the claimed facility cost. The claimed cost may not include:

- a) the salvage value of a pre-existing facility if the applicant is replacing a facility;
- b) the amount of any government grants received to pay part of the facility cost;
- c) the present value of any other state tax credits for which the investment is eligible; and
- d) ineligible costs as set forth in OAR 340-016-0070(3).

Applied to this Application

There are **no subtractions**.

**\$ Certification** Criteria

ORS 468.170(1)      The certified cost is limited to the **actual cost** of the material recovery portion of the facility. The certified cost may not exceed the **taxpayer's own cash** investment in the facility or portion of the facility.

Applied to this Application

Invoices substantiated the eligible facility cost. The cost documentation indicates that the cost represents the taxpayer's own cash investment.



Referenced Section	Description of Ineligible Portion	Claimed
<i>Purpose: Voluntary</i>		Claimed
	Relocation of existing waster paper trimmings system, the five more floor sweep pick-ups, the 540 feet of transfer pipe with a new material handling fan,	\$128,874
	Bag filter system	-\$100,319
	Manual diverter valve	-\$11,386
	Installation of a baler from WA	-\$1,727
		-\$15,442
	<b>Certified</b>	<b>\$0</b>

### ***Facility Cost Allocable to Pollution Control***

#### **% Certification** Criteria

ORS 468.170(1) The certified "percentage allocable" is limited to the portion of the actual facility cost that is properly allocable to the prevention, control, or reduction of solid waste, hazardous waste, or to recycling or appropriately disposing of used oil.

#### **Percentage** Criteria

ORS 468.190(1) The following factors establish the portion of costs properly allocable to material recovery or recycling for facilities that cost more than \$50,000.

- a. The extent to which the applicant uses the facility to recover and convert waste products into a salable or usable commodity;
- b. The estimated annual percent return on the investment in the facility;
- c. Any alternative methods, equipment, and costs for achieving the same pollution control objective;
- d. Any related savings or increase in costs that occur or may occur as a result of the installation of the facility; and
- e. Any other relevant factors.

#### Applied to this Application

The Department did not verify the applicant's claim that 100% of the claimed facility cost is allocable to pollution control because the facility does not have an exclusive pollution control purpose.

***Compliance***ORS 468.180(1) Criteria

The Environmental Quality Commission may not issue a certificate unless the applicant constructed or installed the claimed facility in accordance with the applicable provisions of ORS 454.010 to 454.040, 454.205 to 454.255, 454.505 to 454.535, 454.605 to 454.755, ORS chapters 459, 459A, 465, 466 and 467 and ORS chapters 468, 468A and 468B. This includes the rules and standards adopted to implement these provisions.

Applied to this Application

The applicant states the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: Maggie Vandehey, DEQ

## **Attachment D**

### **Certificate Correction**

On December 5, 2003, the Commission approved Cloudburst Recycling, Inc.'s tax credit application 6562 for a Maximum Credit of 35% according to the Department's erroneous recommendation. The taxpayer actually qualifies for the 50% maximum as shown on the corrected Review Report.

The Commission's approval of this correction would increase the tax credit available to the taxpayer by \$864. The approval would also revoke certificate number 10532, also attached, and reissue a new certificate.





State of Oregon  
Department of  
Environmental  
Quality

## Tax Credit Review Report

### **Pollution Control Facility: Material Recovery**

#### **Final Certification**

ORS 468.150 -- 468.190  
OAR 340-016-0005 -- 340-016-0080

#### ***Applicant Identification***

843 North Knott  
PO Box 12106  
Portland, OR 97212

Organized as: **S Corporation**  
Taxpayer ID: **93-1125177**

#### ***Technical Information***

Cloudburst Recycling, Inc. is a commercial and residential collection company serving 5,000 customers in Portland. The company claims a factory reconditioned Philadelphia Tramrail Baler, Model 34000HR 460 Volt, Serial # 01K548R. The equipment bales cardboard shipping cartons at Rejuvenation, Inc.'s site in NW Portland.

Rejuvenation, Inc. stored cardboard in the parking lot before it used the baler. The unprotected cardboard degraded in the sun and wet weather conditions. The applicant frequently discarded the degraded cardboard as trash rather than recycling it.

### ***Director's Recommendation***

**Approve Application No. 6562**

**Applicant: Cloudburst Recycling, Inc.**

#### **Certification of:**

Facility Cost		\$5,755
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		<u>\$2,878</u>

**Certificate Period: 5 years**

#### ***Facility Identification***

Rejuvenation, Inc.  
2550 NW Nicolai  
Portland, OR 97210

The certificate will identify the facility as:

**One - Used/Factory Reconditioned  
Philadelphia Tramrail Downstroke  
Baler, Model 3400HD, Serial #  
01K548R**

### ***Taxpayer Allowed Credit***

ORS 315.304(4) Criteria

The taxpayer who is allowed the credit is the:

- a. **Owner**, including a contract purchaser, of the trade or **business** that uses the Oregon property requiring a pollution control facility to prevent or minimize pollution; or
- b. Person who, as a lessee or pursuant to an agreement, conducts the trade or business that operates or utilizes such property; or
- c. Person who, as an owner, including a contract purchaser, or lessee, owns or leases a pollution control facility that is used for recycling, material recovery or energy recovery as defined in ORS 459.005.

#### Applied to this Application

The applicant is the **owner of the baler** that the lessee uses in a material recovery process.

### ***Eligibility***

**Timely Filing** Criteria

1999 Edition  
ORS 468.173(1)  
OAR 340-016-0007

The applicant must file the application within two years after the date that they completed construction of the facility. The final application, however, is not valid if the applicant submits the application before they complete construction or before they place the facility into operation.

#### Applied to this Application

The applicant **filed** the application **within** the two-year **filing requirement** because they completed construction on 11/27/2001 and filed the application on 7/31/2003. They did not file the application before they completed construction or before they placed the facility into operation on 12/18/2001.

**Purpose: Voluntary** Criteria

ORS 468.155  
(1)(a)(B)  
OAR 340-016-  
0010(7)(a)(b)

The sole purpose, meaning the 'exclusive' purpose, of the claimed facility must be to prevent, control, or reduce a substantial quantity of solid waste, hazardous waste: or used oil.

“Solid waste” as defined by ORS 459.005: All useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid materials, dead animals and infectious waste as defined by ORS 459.386.

Applied to this Application

Used old corrugated cardboard **meets the definition of** solid waste as defined in ORS 459.005, because it is discarded non-putrescible material.

- |   |  |
|---|--|
| <b>Method</b><br>ORS 468.155<br>(1)(b)(D) | <u>Criteria</u><br>The prevention, control, or reduction must be accomplished by the use of a material recovery process which obtains useful material from material that would otherwise be solid waste below: |
|---|--|

"Material Recovery" means any process, such as pre-segregation, for obtaining materials from solid waste, hazardous waste or used oil. The recovered material shall still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purpose. The recovered material shall have useful physical or chemical properties that yield a competitive end-product of real economic value. The material recovery process does not include processes:

- a. In which the major purpose is the production of fuel from solid waste, hazardous waste or used oil which can be utilized for heat content or other forms of energy; or
- b. That burns waste to produce energy or to reduce the amount of waste. However, it does not eliminate from eligibility a pollution control device associated with a process which burns waste if such device is otherwise eligible for pollution control tax credit under these rules.

Applied to this Application

The used baler reduces a substantial quantity of solid waste because it diverts approximately 35 to 40 tons of cardboard from the landfill every year. Cloudburst Recycling collects and ships the baled old corrugated cardboard to the appropriate recycle mill for use as secondary fiber.

- |   |   |
|---|---|
| OAR 340-016-0010(7)<br>OAR 340-016-0060(4)(e) | <u>Criteria</u><br>The facility produces an end product of utilization that is an item of real economic value and is competitive with an end product produced in another state. The facility produces the end product by mechanical processing, chemical processing; or through the production, processing, pre-segregation, or use of materials which: |
|---|---|

- a. Have useful chemical or physical properties and which may be used for the same or other purposes; or
- b. May be used in the same kind of application as its prior use without change in identity.

Applied to this Application

The baled old corrugated cardboard is a competitive product that the applicant sells to the paper products industry for use as secondary fiber.



**Exclusions** Criteria

ORS 468.155(3) The regulations provide a list of over 40 items excluded from the definition of  
 OAR 340-016-0070(3) a Pollution Control Facility. Items that do not meet the definition are ineligible for certification.

Applied to this Application

There are **no exclusions**.

**Replacement** Criteria

ORS 468.155(3)(e) The replacement or reconstruction of all or part of a facility that the State of Oregon previously certified as a pollution control facility under ORS 468.170 is not eligible for the tax credit with two exceptions:

1. The applicant replaced the facility because DEQ or EPA imposed a different requirement than the requirement to construct the original facility;  
or
2. The applicant replaced the facility before the end of its useful life.

Applied to this Application

The State of Oregon has not issued any Pollution Control Facilities Tax Credit (PCTC) certificates to Cloudburst Recycling, Inc.

The State has issued one Pollution Prevention Tax Credit Certificate and one PCTC certificate to Rejuvenation, Inc. at this location. The PCTC certificate was for installing a water pollution control. The claimed facility or any of its distinguishable parts **do not replace** one of these previously certified facilities.

**Maximum Credit** Criteria

ORS 468.170(1) The maximum tax credit is 50% if the applicant submitted the application on  
 OAR 340-016-0007 or before December 31, 2001 and filed the application within two years after the date that the applicant completed construction of the claimed facility.

Applied to this Application

The **maximum tax credit is 50%** because the applicant completed installing the baler on 11/27/01 and filed the application on 7/31/2003.

***Facility Cost***

Copies of invoices substantiated the claimed facility cost. The applicant subtracted the trade-in value of an older baler before claiming the facility cost.

Referenced Section	Description of Ineligible Portion	Claimed
	Claimed	\$5,755
	Ineligible costs	0
	<b>Certified</b>	<b>\$5,755</b>

### ***Facility Cost Allocable to Pollution Control***

#### Criteria

ORS 468.190(3) If the cost of the facility does not exceed \$50,000, the portion of the actual costs properly allocable shall be in the proportion that the ratio of the time the facility is used for prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or appropriately disposing of used oil bears to the entire time the facility is used for any purpose.

#### Applied to this Application

The certified facility cost is **\$5,755** and the applicant uses the facility **100%** of the time for pollution control.

### ***Compliance***

The applicant states that the facility and site are in compliance with Department rules and statutes, and with EQC orders. DEQ has not issued any permits to the site.

Reviewers: Jeannette Freeman, DEQ  
Maggie Vandehey, DEQ



State of Oregon  
Department of  
Environmental  
Quality

811 SW Sixth Ave.  
Portland, OR 97204  
1 (800) 452-4011  
www.deq.state.or.us

## Pollution Control Facility Certificate No. 10532

**Certificate  
Holder**

Cloudburst Recycling, Inc.  
843 North Knott  
PO Box 12106  
Portland, OR 97212

Operating as: S Corp  
Taxpayer ID No: 93-1125177

**Facility Location**

Rejuvenation Workshop (Leasee)  
2550 NW Nicolai  
Portland, OR 97210

**Certified Cost &  
Percentages**

Facility Cost		\$5,755
Percentage Allocable	X	100%
Maximum Percentage	X	35%
Tax Credit		\$2,014

**Facility Description**

One - Used/Factory Reconditioned Philadelphia Tramrail Downstroke Baler, Model 3400HD, Serial # 01K548R

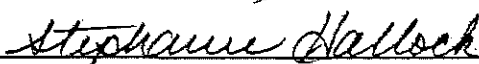
The Environmental Quality Commission (EQC) certifies the facility described herein based upon information contained in application number 6562.

**The EQC certifies that:**

- The facility was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165; and
- The facility was designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing **Material Recovery** pollution; and
- The facility is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, the EQC issues this Pollution Control Facility Certificate on this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality, and the following special conditions.

1. The certificate holder shall:
  - Continuously operate the facility at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above;
  - Immediately notify the Department of Environmental Quality of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose; and
  - Promptly provide any reports or monitoring data that the Department of Environmental Quality may request.
2. Any portion of the facility described herein is not eligible to receive tax credit certification as an energy conservation facility or a reclaimed plastic facility. [ORS 315.324(12) and ORS 315.356(3) and (4)]

  
Stephanie Hallock, Director Issued on 12/5/2003  
Department of Environmental Quality

*Please use the worksheet on the reverse side to calculate your yearly allowable credit.*



# Attachment E

## Certificate Revocations

The Department recommends that the Environmental Quality Commission revoke **three** Pollution Control Facilities Tax Credit Certificates according to ORS 468.185(1)(b).

### Certificate 4312 - The Ridge Company

The Ridge Company ceased operating the cyclonic filter on February 27, 2004 as shown on Exhibit B.

### Certificate 4515 - Hawk Oil Co.

Hawk Oil Co. removed the certified pollution control facility from service on April 15, 2003 as shown in Exhibit A.

### Certificate # 10073 - William F. Rasmussen

Mr. Rasmussen sold the wood chipper on May 3, 2003 as shown in Exhibit C.

The Department recommends that the Environmental Quality Commission revoke **one** Pollution Control Facilities Tax Credit Certificate for misrepresentation under ORS 468.185(1)(a).

### Certificate # 10083 - Thomas N. Hanson

During an audit of all wood chipper certificates, the Department found that it had certified the same Morbark wood chipper (serial number 22100) to two different taxpayers:

- On March 5, 2002, Sugar Kat, Inc. submitted application number 6083 (Exhibit D) claiming a wood chipper they had purchased from a third party. They provided an invoice and cancelled checks showing the payments for the wood chipper from May 14, 2001 to November 3, 2001.
- On May 28, 2002, Mr. Hanson submitted application number 6176 (Exhibit E) claiming the wood chipper. He provided the attached invoice number 0849 from an equipment vendor and the Department verified payment.

Upon finding its error, the Department contacted both parties. Mr. Hanson did not provide additional information but Sugar Kat, Inc. provided the attached documents stating that Mr. Hanson loaned them the money to buy the wood chipper. The Department contacted Mr. Hansen on three occasions but with no response.

### Statutory Provision for Revoking Certification

ORS 468.185 (1) Pursuant to the procedures for a contested case under ORS 183.310 to 183.550, the Environmental Quality Commission may order the revocation of the certification issued under ORS 468.170 of any pollution control or solid waste, hazardous wastes or used oil facility, if it finds that:

- (a) The certification was obtained by fraud or misrepresentation; or
  - (b) The holder of the certificate has failed substantially to operate the facility for the purpose of, and to the extent necessary for, preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil as specified in such certificate.
- (2) As soon as the order of revocation under this section has become final, the commission shall notify the Department of Revenue and the county assessor of the county in which the facility is located of such order.

(3) If the certification of a pollution control or solid waste, hazardous wastes or used oil facility is ordered revoked pursuant to subsection (1)(a) of this section, all prior tax relief provided to the holder of such certificate by virtue of such certificate shall be forfeited and the Department of Revenue or the proper county officers shall proceed to collect those taxes not paid by the certificate holder as a result of the tax relief provided to the holder under any provision of ORS 307.405 and 315.304.

...

TO Barbara Anderson  
Oregon DEQ  
811 S.W. 6th Avenue  
Portland, OR 97204

FROM MIKE HAWKINS **SPEED LETTER®**  
HAWK OIL COMPANY  
PO Box 1388  
MEDFORD, OR 97501  
(541) 772-5275

SUBJECT

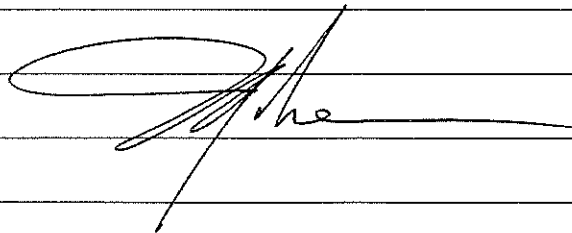
— FOLD NO. 9 or 10  
MESSAGE

As you may have heard, Hawk Oil is no longer in the fuel business. We still own a few stations that are leased to others, but we aren't paying much attention to price signs any more.

Anyway, in reviewing files, I realized something may have fallen through a crack. While we notified DEQ of the tank removal, I don't think we notified your department. We did pull the diesel tanks at facility #2424, on 4/15/03. Attached are copies of that certificate #4515, and the related Tax Credit Review Report. DATE 9/29/03 SIGNED

REPLY

Once again, thanks so much for all your help over the years. Trust all is going well for you.



Attachment F – Exhibit A, Page 1

SIGNED



STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
**POLLUTION CONTROL FACILITY CERTIFICATE**

Certificate No: **4515**  
Date of Issue: 6/22/2001  
Application No: 5562

ISSUED TO:

**Hawk Oil Company**

PO Box 1388  
Medford, 97501-0103

LOCATION OF POLLUTION CONTROL FACILITY:

E & F Exxon  
840 NE F St.  
Grants Pass, OR 97526

ATTENTION: Mike Hawkins, President

The applicant is the Owner/Operator of the facility. The C. Corp is identified as 93-0670619.

DESCRIPTION OF POLLUTION CONTROL FACILITY: **Epoxy lining and impressed current cathodic protection on one steel underground storage tank, doublewall flexible plastic piping, spill containment basin, automatic tank gauge connection, line leak detector, sump and automatic shutoff valves.**

TYPE OF POLLUTION CONTROL FACILITY: UST/AST

DATE FACILITY COMPLETED: 5/25/1999 PLACED INTO OPERATION: 5/26/1999

ACTUAL COST OF POLLUTION CONTROL FACILITY: **\$33,219.00**

PERCENT OF ACTUAL COST PROPERLY ALLOCABLE TO POLLUTION CONTROL: **100%**

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: Any portion of the facility described herein is not eligible to receive tax credit certification as an energy conservation facility or a reclaimed plastic facility [ORS 315.324(12) and ORS 315.356(4) and (5)].

Signed: Melinda S. Eden (Melinda S. Eden, Chair)

Approved by the Environmental Quality Commission on 6/22/2001.

Lin,

The Environmental Quality Commission will revoke the certificate as of February 27, 2004. I will notify the Department of Revenue.

I wish you the best in your new endeavors.

Maggie

-----Original Message-----

From: Lin Coker [mailto:lincoker2001@yahoo.com]

Sent: Tuesday, March 02, 2004 1:06 PM

To: VANDEHEY Maggie

Subject: The Ridge Company Blower Certificate #4312

Maggie

Per our phone conversation this morning, this letter is to formally notify you that The Ridge Company ceased operation of the Blower as of February 27, 2004.

Please revoke certificate #4312.

If you have any questions, please do not hesitate to call.

Sincerely,

Lin Coker  
V. President  
541.554.6832

---

Do you Yahoo!?

Yahoo! Search - Find what you're looking for faster  
<http://search.yahoo.com>

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
**POLLUTION CONTROL FACILITY CERTIFICATE**

Certificate No: **4312**  
Date of Issue: 5/17/00  
Application No: 5303

ISSUED TO:

**The Ridge Company**

PO Box 1-A  
Eugene, OR 97440

ATTENTION: Lin Coker, Vice President

Operating as the owner of the facility. A S corporation.

LOCATION OF POLLUTION CONTROL FACILITY:

83624 N Pacific Hwy.  
Creswell, OR 97426

DESCRIPTION OF POLLUTION CONTROL FACILITY: **Western Pneumatics Model #200 Primary Cyclonic Filter**

TYPE OF POLLUTION CONTROL FACILITY: Air

DATE FACILITY COMPLETED: 6/22/98

PLACED INTO OPERATION: 7/1/98

ACTUAL COST OF POLLUTION CONTROL FACILITY: **\$107,099.00**

PERCENT OF ACTUAL COST PROPERLY ALLOCABLE TO POLLUTION CONTROL: **100%**

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: Any portion of the facility described herein is not eligible to receive tax credit certification as an energy conservation facility or a reclaimed plastic facility [ORS 315.324(12) and ORS 315.356(4) and (5)].

Signed:  (Melinda S. Eden, Chair)

Approved by the Environmental Quality Commission on 5/17/00.



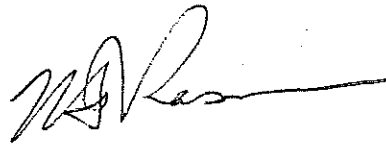
BILL RASMUSSEN

DEQ

Maggie Vandebey -

The enclosed wood chipper  
was sold on 3 May 2003 -

Thank ~



**W. F. Rasmussen**  
23550 SW Newland Rd.  
Wilsonville, OR 97070-6702



State of Oregon  
Department of  
Environmental  
Quality

811 SW Sixth Ave.  
Portland, OR 97204  
1 (800) 452-4011  
www.deq.state.or.us

# Pollution Control Facility Certificate No. 10073

Certificate  
Holder

William F. Rasmussen  
23550 SW Newland Road  
Wilsonville, OR 97070

Operating as: Individual  
Taxpayer ID No: 542-46-7740

## Certified Cost & Percentages

### Facility Location

23550 SW Newland Road  
Wilsonville, OR 97070

Facility Cost		\$2,900
Percentage Allocable	X	100%
Maximum Percentage	X	50%
Tax Credit		\$1,450

### Facility Description

GME Model 18G, PTO 4", 16-40hp Woodchipper, Serial # 70066

The Environmental Quality Commission (EQC) certifies the facility described herein based upon information contained in application number 6142.

The EQC certifies that:

- The facility was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165; and
- The facility was designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing NPS pollution; and
- The facility is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality, and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.
4. Any portion of the facility described herein is not eligible to receive tax credit certification as an energy conservation facility or a reclaimed plastic facility [ORS 315.324(12) and ORS 315.356(3) and (4)].

  
Holly Schroeder, MSD Administrator      Certified on 11/22/2002  
Department of Environmental Quality

*Please use the worksheet on the reverse side to calculate your yearly allowable credit.*



State of Oregon  
Department of  
Environmental  
Quality

**Wood Chipper  
Tax Credit Application**

Final Certification  
For wood chippers that do not cost more than \$50,000.00.

Pollution Control Facilities Tax Credit  
ORS 468.155 & OAR Chapter 340 Division 16

FOR DEQ USE ONLY
DATE REC'D MAR 05 2002
AMT. REC'D \$134,000
CHECK # 4332

**1. Legal Name of Applicant**

Sugar Kat, Inc.

Name

17527 Elk Creek Rd.

Division

Trail OR 97541

Address

City,

State

Zip

**2. Contact**

Jamie McWhorter

Name

Title

541-878-4328

Telephone

E-mail

**3. Primary Location of Wood Chipper**

17527 Elk Creek Rd

Address

Trail, OR 97541 Jackson

City

State

Zip

County

**4. Is the Wood Chipper used 100% of the time in Oregon?** ☒ yes ☐ no

If not, please explain and provide the percentage of time it is used in locations outside of Oregon.      %

**5. Names of General Partners or Principals**

Donald McWhorter, Sec. Treas.

Name

Title

Steven Ragsdale, Pres

Name

Title

**6. ID # (SSN, EIN)** 93-0989896

**7. SIC code** 234900

**8. Tax-year end** December

**9. Check only one**

☐ C Corporation

☐ Limited Liability Corp.

☐ Partnership

☐ Sole Proprietor

☐ Individual

☒ S Corporation

☐ Limited Partnership

☐ Joint Venture

☐ Cooperative

☐ Non-profit



10. What is the functional useful life of the wood chipper: 5 years

11. Complete the following cost information for the wood chipper:

Invoiced Cost	\$13,400.00	
Trade-In	(\$ -0-	)
Government Grants	(\$ -0-	)
Ineligible Costs	(\$ -0-	)
Eligible Cost	\$13,400.00	

12. Signature of Applicant

I hereby certify that I have completed this application, and that the information provided herein and in all the attachments is true and correct to the best of my knowledge. I certify that the equipment described in this application was purchased and will be operated to a substantial extent for the purpose of preventing, controlling or reducing nonpoint source air pollution as indicated in this application. I certify that if this wood chipper ceases to operate as indicated in this application I will provide written notice to the Department of Environmental Quality.

Don Merhorts      Sec/Treas      2-26-02  
Signature (Applicant)      Title      Date

- ☒ Submit appropriate fee (\$134<sup>92</sup>)
- ☒ Sign the application
- ☒ Enclose an invoice with model and serial number
- ☒ Enclose a brochure or specification sheet describing the wood chipper

Send to:  
DEQ Tax Credit Program  
811 SW Sixth Avenue  
Portland, OR 97204

Contacts:  
Programs: Tax Credits [www.deq.state.or.us](http://www.deq.state.or.us)  
(503) 229-6878 or (503) 229-6270  
Fax (503) 229-6730

## VANDEHEY Maggie

---

From: Sugar Kat Inc [sugarkatinc@grrtech.com]  
Sent: Tuesday, October 28, 2003 2:48 PM  
To: VANDEHEY Maggie  
Subject: FW: 6083



Chipper  
payments.doc (900 KI)

To: Maggie Vandehey  
Subject: 1996 Enviro Chipper

I am attaching a list of payments that were made to Tom Hanson for the chipper that he financed for us. I will be coping the front and backs of the checks listed as soon as I find them and faxing them to you.

When we bought the chipper, our company had no real credit line or resources to get one at the time and Tom Hanson agreed to loan us the money to buy the chipper and make monthly installments to pay it off during the following year. We received the notice on the DEQ tax credit directly from the company from which the chipper was purchased so we had no way of knowing that Tom Hanson would also apply for the same credit as it was to be our chipper once the payments were made.

Please feel free to contact me at any time regarding this matter and I will try to get the rest of the paper work to you by the first of next week.

Thank you,

Jamie McWhorter  
Office Manager  
Sugar Kat, Inc.

**ENVIRO "CHIPPER" IND., INC.**

9100 HWY. 234  
GOLD HILL, OR. 97525  
visit us at [www.envirochipper.com](http://www.envirochipper.com)

**INVOICE**

DATE	INVOICE NO.
4/25/2001	2892

BILL TO
HANSON'S INVESTMENT P.O. BOX 3968 CENTRAL POINT, ORE 97502

SHIP TO
SUGAR KAT INC. 17527 ELK CREEK ROAD TRAIL, ORE. 97541-9764 DON MC WORTET

AUTHORIZATION	TERMS	DUE DATE	REP	SHIP DATE	SHIP VIA	IN HOUSE P.O.#
		4/25/2001		4/25/2001	WILL CALL	
ITEM	DESCRIPTION	QTY	EACH	AMOUNT	<i>Janet Crawford of Enviro... Verify @ Invoice was Paid in full. Don</i>	
SN 22100	USED 1996 MORBARK MODEL 13 CHIPPER SN# 22100 110 HP JOHN DEERE  AUTO FEED ELECTRIC BRAKES  SOLD IN AS-IS CONDITION  INCLUDES; OPERATIONS AND SAFETY MANUAL	1	13,400.00	13,400.00		
KNIVES	CHIPPER KNIVES LIST \$ 43.00 EACH @ NO CHARGE		0.00	0.00		

Attachment F – Exhibit D, Page 4

1-800-287-2048  
541-855-0255  
FAX 541-855-0254

*Pd in full  
Sugar Kat's bill from Tom Hanson.*

**Total Due** \$13,400.00



10:22 AM

10/27/03

Accrual Basis

**Sugar Kat, Inc.**  
**Account QuickReport**  
**All Transactions**

Date	Num	Name	Memo	Amount	Balance
Tom Hanson-3					
5/1/2001		Tom Hanson		14,640.00	14,640.00
5/14/2001	3988	Tom Hanson	Chipper Pmt	-946.79	13,693.21
5/21/2001	3990	Tom Hanson	Chipper Pmt	-195.00	13,498.21
6/14/2001	4031	Tom Hanson	chipper	-1,075.77	12,422.44
7/13/2001	4065	Tom Hanson	Chipper pmt	-1,091.69	11,330.75
8/10/2001	4113	Tom Hanson	chipper	-1,107.00	10,223.75
9/12/2001	4164	Tom Hanson	Chipper pmt	-1,110.76	9,112.99
10/5/2001	4207	Tom Hanson	Chipper pmt	-1,122.63	7,990.36
11/1/2001	4229	Tom Hanson	chipper Pmt	-8,500.00	1,490.36
11/3/2001	4238	Tom Hanson	chipper Pmt/F...	-469.00	1,021.36
11/3/2001		Tom Hanson	Pay off adj.	-1,021.36	0.00
Total Tom Hanson-3				0.00	0.00
TOTAL				0.00	0.00



State of Oregon  
Department of  
Environmental  
Quality

**Wood Chipper  
Tax Credit Application**

6176

FOR DEQ USE ONLY
DATE REC'D MAY 28 2002
AMT. REC'D \$134.00
CHECK # 3181

Final Certification  
For wood chippers that do not cost more than \$50,000.00.

Pollution Control Facilities Tax Credit  
ORS 468.155 & OAR Chapter 340 Division 16

**1. Legal Name of Applicant**

THOMAS N HANSON

Name

INDIVIDUAL

Division

P O BOX 3968

Address

CENTRAL POINT, OR 97502

City,

State

Zip

**2. Contact**

THOMAS HANSON - OWNER

Name

Title

541-664-4643

Telephone

E-mail

**3. Primary Location of Wood Chipper**

5461 UPTON ROAD

Address

CENTRAL POINT, OR 97502 JACKSON

City

State

Zip

County

**4. Is the Wood Chipper used 100% of the time in Oregon?** ☒ yes ☐ no

If not, please explain and provide the percentage of time it is used in locations outside of Oregon. \_\_\_\_%

**5. Names of General Partners or Principals**

Name

Title

Name

Title

**6. ID # (SSN, EIN)**

528-14-7734

**7. SIC code**

233110

**8. Tax-year end**

DECEMBER 31

**9. Check only one**

☐ C Corporation

☐ Limited Liability Corp.

☐ Partnership

☒ Sole Proprietor

☐ Individual

☐ S Corporation

☐ Limited Partnership

☐ Joint Venture

☐ Cooperative

☐ Non-profit

10. Complete the following cost information for the wood chipper:

Invoiced Cost	\$	13,400	
Trade-In	(\$		)
Government Grants	(\$		)
Ineligible Costs	(\$		)
Eligible Cost	\$	13,400	

11. Provide the make, model, serial number and horsepower of the wood chipper.

<u>MORBARK</u>	<u>1997 #13</u>	<u>22100</u>	<u>110 HP</u>
Make	Model	Serial Number	Horsepower/Size

12. Signature of Applicant

I hereby certify that I have completed this application, and that the information provided herein and in all the attachments is true and correct to the best of my knowledge. I certify that the equipment described in this application was purchased and will be operated to a substantial extent for the purpose of preventing, controlling or reducing nonpoint source air pollution as indicated in this application. I certify that if this wood chipper ceases to operate as indicated in this application I will provide written notice to the Department of Environmental Quality.

<u>Thomas B. Anderson</u>	<u>owner</u>	<u>5/14/02</u>
Signature (Applicant)	Title	Date

- ☒ Submit appropriate fee (Min. \$50; Max. 1% of Cost)
- ☒ Sign the application
- ☒ Enclose a copy of the invoice
- ☐ Enclose a brochure or specification sheet describing the wood chipper

Send to:  
DEQ Tax Credit Program  
811 SW Sixth Avenue  
Portland, OR 97204

Contacts:  
Programs: Tax Credits [www.deq.state.or.us](http://www.deq.state.or.us)  
(503) 229-6878  
Fax (503) 229-6730



**ENVIRO "CHIPPER" INDUSTRIES, INC.™**

9100 Hwy. 234 • Gold Hill, OR • 97525  
(541) 855-2048 • (800) 287-2048

INVOICE DATE	INVOICE NO.
4-29-01	0849
CUSTOMER NO.	

WE WILL CONSIDER THIS INVOICE TO BE  
CORRECT UNLESS WE ARE NOTIFIED OF AN  
ERROR WITHIN 30 DAYS OF THE SHIP DATE.

PRICES ARE SUBJECT TO  
CHANGE WITHOUT NOTICE

SPECIAL TERMS		SHIP VIA	DATE SHIPPED	TERMS	CODES	PAGE
		Will Call	4-24-01			

SOLD  
 TO:

SHIP  
TO:

SOLD TO: HANSON'S Invest,  
P.O. Box 3968,  
Central Point, OR. 97502

[illegible]

CK 5824

X Donna & Norman

DATE April 24 - 2001 -



# Oregon

Theodore R. Kulongoski, Governor

## Department of Environmental Quality

811 SW Sixth Avenue  
Portland, OR 97204-1390  
503-229-5696  
TTY 503-229-6993

March 25, 2003

Thomas N. Hanson  
PO Box 3968  
Central Point, OR 97502

RE: Tax Credit for Wood Chipper

Mr. Hanson:

The Department of Environmental Quality (Department) plans to recommend that the Environmental Quality Commission (EQC) revoke Pollution Control Facilities Certificate number 10083 on May 21, 2004. The Department issued the certificate to you on November 11, 2002 for a 1997 Morbark wood chipper with serial number 22100.

As you know from my October 27, 2003 telephone message and my letter dated January 7, 2004, the Department's audit showed that it issued two certificates for the same wood chipper, one to you and one to Sugar Kat, Inc. Sugar Kat, Inc. has provided a letter stating that you agreed to loan them money to buy the chipper. They also provided proof that they began making payments to you on May 14, 2001 and made the final payment on November 3, 2001.

Please provide any additional information that you would like the Department to consider. I have attached a copy of the law for revoking a certificate to this letter. My telephone number is (503) 229-6878 if you would like to talk with me.

Sincerely,

Maggie Vandehey  
Tax Credit Program Manager

Enclosure



**SENDER: COMPLETE THIS SECTION**

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Thomas N. Hanson  
P.O. Box 3968  
Central Point, OR  
97502

2. Article Number 7002 3150 0004 8588 2001  
(Transfer from service label)

PS Form 3811, August 2001

Domestic Return Receipt

102595-02-M-15

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

*[Signature]* ☐ Agent ☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes ☒ No  
If YES, enter delivery address below

3. Service Type

- ☒ Certified Mail ☐ Express Mail
- ☐ Registered ☒ Return Receipt for Merchandise
- ☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

UNITED STATES POSTAL SERVICE



First-Class Mail  
Postage & Fees Paid  
USPS  
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Department of Environmental Quality  
Tax Credit Program  
811 SW Sixth Avenue  
Portland, OR 97204-1390





# **Attachment F**

## **Tax Expenditure Liability Report**

When the Environmental Quality Commission issues a Pollution Control Facilities Tax Credit Certificate, the State of Oregon incurs a tax expenditure liability. The table in this attachment shows the maximum potential fiscal impact associated with the Commission's decision to certify the facilities presented in this staff report and for the current biennium.

This report shows the maximum amount of credit that each applicant may use to reduce their Oregon taxes in any one year if the Commission certifies their facility. The annual limitation is equal to the tax credit divided by the "remaining useful life" of the facility but no more than ten years. The remaining useful life is the useful life of the facility less the expired period between the date the applicant placed the facility into operation and the date the Commission approved certification.

**Attachment F**  
**Tax Expenditure Liability Report**  
**03-05 Biennium**

App #	Tax Credit	Placed in Operation	UL	Remaining UL	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6420	\$41,222	2000	10	6	6,870	6,870	6,870	6,870	6,870	6,870				
6608	\$1,103,461	2002	10	8	137,933	137,933	137,933	137,933	137,933	137,933	137,933	137,933		
6609	\$8,486	2003	7	6	1,414	1,414	1,414	1,414	1,414	1,414				
6617	\$54,316	2001	7	4	13,579	13,579	13,579	13,579						
6618	\$85,070	2001	10	7	12,153	12,153	12,153	12,153	12,153	12,153	12,153			
6627	\$295,490	2003	10	9	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	32,832	
6642	\$62,429	2003	10	9	6,937	6,937	6,937	6,937	6,937	6,937	6,937	6,937	6,937	
6643	\$225,568	2001	10	7	32,224	32,224	32,224	32,224	32,224	32,224	32,224			
6656	\$59,347	2003	10	9	6,594	6,594	6,594	6,594	6,594	6,594	6,594	6,594	6,594	
6660	\$37,611	2001	7	4	9,403	9,403	9,403	9,403						
6661	\$53,063	2003	10	9	5,896	5,896	5,896	5,896	5,896	5,896	5,896	5,896	5,896	
6670	\$12,874	2004	7	7	1,839	1,839	1,839	1,839	1,839	1,839	1,839			
6671	\$43,365	2003	10	9	4,818	4,818	4,818	4,818	4,818	4,818	4,818	4,818	4,818	
6681	\$103,613	2003	10	9	11,513	11,513	11,513	11,513	11,513	11,513	11,513	11,513	11,513	
6682	\$17,824	2003	10	9	1,980	1,980	1,980	1,980	1,980	1,980	1,980	1,980	1,980	
6699	\$61,250	2003	5	4	15,313	15,313	15,313	15,313						
6704	\$53,219	2003	7	6	8,870	8,870	8,870	8,870	8,870	8,870				

May '04	\$2,318,208				310,167	310,167	310,167	310,167	271,873	271,873	254,719	208,503	70,570	0
Dec '03	4,815,472				598,243	598,243	589,384	583,236	556,927	522,324	522,077	224,379	22,420	
Oct '03	8,982,220				1,559,805	1,355,567	1,332,976	947,174	759,224	720,219	358,126	96,070	30,757	
Total	13,797,692				2,468,215	2,263,977	2,232,527	1,840,577	1,588,024	1,514,416	1,134,921	528,952	123,747	0

# **Attachment G**

## **Certified Wood Chipper Report**

### **10/28/03 – 3/31/04**

On October 4, 2002, the Commission adopted OAR 340-016-0009. The rule delegates the Commission's authority to certify wood chippers for tax credit purposes to the Department. The Commission requested that the Department periodically provide a listing of the wood chipper certifications.

The Department presented the last Certified Wood Chipper Report on December 5, 2003 for wood chippers certified through October 27, 2003. The Department certified the **75** wood chippers presented in this attachment between October 10, 2003 and March 31, 2004. The certification could reduce taxes paid to the State of Oregon by a maximum of **\$126,545**.

#### **OAR 340-016-0009 Certification of wood chippers**

For the purpose of subdelegating authority to approve and issue final certification of pollution control facilities under OAR 340-016-0080(2):

- 1) The Environmental Quality Commission authorizes the Director of the Department of Environmental Quality or the Director's delegate to certify wood chippers as provided in OAR 340-016-0060(4)(h)(C) if:
  - a) The Department determines the facility is otherwise eligible under OAR 340-016-0060; and
  - b) The claimed facility cost does not exceed \$50,000 as set forth in OAR 340-016-0075(1).
- 2) The Department may elect to defer certification of any facility to the Environmental Quality Commission.
- 3) If the Department determines the facility cost, the percentage of the facility cost allocable to pollution control, or the applicable percentage under ORS 468.173 is less than the applicant claimed on the application then the Department shall:
  - a) Notify the applicant in writing; and
  - b) Include a concise statement of the reasons for the proposed certification of a lesser amount or percentage; and
  - c) Include a statement advising the applicant of their rights under section (4).
- 4) Applicants that receive a notification under section (3) may elect to defer certification to the Environmental Quality Commission by notifying the Department within 30 days of the notification date.
- 5) The Department shall defer certification to the Environmental Quality Commission according to sections (2) and (4).
- 6) The Director or the Director's delegate shall certify facilities that otherwise qualify under this rule and have not been deferred according to sections (2) or (4).

Adopted 10-4-02; effective 11-01-02



**Certified Wood Chippers**  
**10/28/03 - 3/31/04**

Action Date	App #	Applicant	Claimed	Certified	Difference	% Allocable	Maximum Percent	GF Liability
31-Dec-03	6546	Timothy Hunt	\$ 11,500	\$ 11,500	\$ -	100%	35%	\$ 4,025
31-Dec-03	6611	Scott DeSalle	\$ 580	\$ 580	\$ -	100%	35%	\$ 203
31-Dec-03	6612	Paul G. Brown	\$ 5,710	\$ 5,710	\$ -	100%	35%	\$ 1,999
31-Dec-03	6613	Robert Thompson	\$ 630	\$ 630	\$ -	100%	35%	\$ 221
31-Dec-03	6614	Theresa Julnes Rapida	\$ 580	\$ 580	\$ -	100%	35%	\$ 203
31-Dec-03	6616	Gary Buford	\$ 10,398	\$ 10,398	\$ -	100%	35%	\$ 3,639
31-Dec-03	6621	Stan Tamiyasu	\$ 1,600	\$ 1,600	\$ -	100%	35%	\$ 560
31-Dec-03	6622	John L. Oberg	\$ 1,600	\$ 1,600	\$ -	100%	35%	\$ 560
31-Dec-03	6623	Kenneth Lund	\$ 400	\$ 400	\$ -	100%	35%	\$ 140
31-Dec-03	6624	Raymond O'Driscoll	\$ 1,700	\$ 1,700	\$ -	100%	35%	\$ 595
31-Dec-03	6625	Zorza Incorporated	\$ 17,500	\$ 17,500	\$ -	100%	35%	\$ 6,125
31-Dec-03	6628	John Donovan	\$ 899	\$ 899	\$ -	100%	35%	\$ 315
31-Dec-03	6629	Clifford J. Burgess	\$ 2,699	\$ 2,699	\$ -	100%	35%	\$ 945
31-Dec-03	6630	William J. Block	\$ 1,500	\$ 1,500	\$ -	100%	35%	\$ 525
31-Dec-03	6631	Ronald J. Willing	\$ 1,200	\$ 1,200	\$ -	100%	35%	\$ 420
31-Dec-03	6632	William O. Newton	\$ 617	\$ 617	\$ -	100%	35%	\$ 216
31-Dec-03	6633	Floyd L. Humphrey	\$ 800	\$ 800	\$ -	100%	35%	\$ 280
31-Dec-03	6634	Edward S. McMillan	\$ 450	\$ 450	\$ -	100%	35%	\$ 158
31-Dec-03	6635	Michael A. Jones	\$ 1,600	\$ 1,600	\$ -	100%	35%	\$ 560
31-Dec-03	6636	Sean Curry	\$ 3,196	\$ 3,196	\$ -	100%	35%	\$ 1,119
31-Dec-03	6637	Joe Kittel	\$ 23,700	\$ 23,700	\$ -	100%	35%	\$ 8,295
31-Dec-03	6638	Talmage E. Kaylor	\$ 8,800	\$ 8,800	\$ -	100%	35%	\$ 3,080
31-Dec-03	6639	Dana L. Andrews	\$ 1,000	\$ 1,000	\$ -	100%	35%	\$ 350
31-Dec-03	6640	Roger Drake	\$ 6,338	\$ 6,338	\$ -	100%	35%	\$ 2,218
31-Dec-03	6644	Kevin Cassidy	\$ 1,800	\$ 1,800	\$ -	100%	35%	\$ 630
31-Dec-03	6645	Pamela Johnston	\$ 969	\$ 969	\$ -	100%	35%	\$ 339
31-Dec-03	6646	Stephen and Katherine Kohl	\$ 6,150	\$ 6,150	\$ -	100%	35%	\$ 2,153
31-Dec-03	6647	Tamiyasu Orchards, Inc.	\$ 1,600	\$ 1,600	\$ -	100%	35%	\$ 560
31-Dec-03	6648	Greer Brothers, Inc.	\$ 38,500	\$ 38,320	\$ (180)	100%	35%	\$ 13,412
31-Dec-03	6649	Peter I. Reece	\$ 1,839	\$ 1,839	\$ -	100%	35%	\$ 644
31-Dec-03	6650	Theodore J. & Diane S. Hickel	\$ 1,300	\$ 1,300	\$ -	100%	35%	\$ 455
31-Dec-03	6651	Audra Ruyle	\$ 617	\$ 617	\$ -	100%	35%	\$ 216
31-Dec-03	6652	George E. & Rosalee J. Sullivan	\$ 2,528	\$ 2,528	\$ -	100%	35%	\$ 885
31-Dec-03	6653	Ronald J. Koetje & David A.	\$ 33,670	\$ 33,670	\$ -	100%	35%	\$ 11,785
31-Dec-03	6654	William Rauch	\$ 1,559	\$ 1,559	\$ -	100%	35%	\$ 546

**Certified Wood Chippers**  
**10/28/03 - 3/31/04**

Action Date	App #	Applicant	Claimed	Certified	Difference	% Allocable	Maximum Percent	GF Liability
31-Dec-03	6655	James Ashley Bloomer	\$ 3,090	\$ 3,090	\$ -	100%	35%	\$ 1,082
10-Feb-04	6663	Brent J. Dickerson	\$ 2,599	\$ 2,599	\$ -	100%	35%	\$ 910
10-Feb-04	6664	Allen D. Risenhoover	\$ 580	\$ 580	\$ -	100%	35%	\$ 203
10-Feb-04	6665	Halliday Orchards, Inc.	\$ 5,500	\$ 5,500	\$ -	100%	35%	\$ 1,925
10-Feb-04	6666	Janice Leah Peterson	\$ 660	\$ 660	\$ -	100%	35%	\$ 231
10-Feb-04	6667	Multnomah Tree Experts, Ltd	\$ 17,308	\$ 17,308	\$ -	100%	35%	\$ 6,058
10-Feb-04	6669	Galen J. Kelm	\$ 1,137	\$ 999	\$ (138)	100%	35%	\$ 350
10-Feb-04	6672	Gene McCormick & Eric Werner	\$ 47,940	\$ 47,940	\$ -	100%	35%	\$ 16,779
10-Feb-04	6673	William C. Sharp	\$ 3,095	\$ 3,095	\$ -	100%	35%	\$ 1,083
10-Feb-04	6674	Bill Atherton	\$ 3,500	\$ 3,500	\$ -	100%	35%	\$ 1,225
04-Mar-04	6675	William B. Bondioli	\$ 3,000	\$ 3,000	\$ -	100%	35%	\$ 1,050
04-Mar-04	6676	William J. Hoffman	\$ 5,374	\$ 5,374	\$ -	100%	35%	\$ 1,881
10-Feb-04	6680	Ronald J. Sieber	\$ 799	\$ 799	\$ -	100%	35%	\$ 280
04-Mar-04	6683	Pitchfork Ranch, Inc.	\$ 1,699	\$ 1,699	\$ -	100%	35%	\$ 595
04-Mar-04	6685	Mike Stutesman	\$ 3,474	\$ 3,474	\$ -	100%	35%	\$ 1,216
04-Mar-04	6686	Michael H. Malmros	\$ 1,499	\$ 1,499	\$ -	100%	35%	\$ 525
04-Mar-04	6687	Loren Hatfield	\$ 6,100	\$ 6,100	\$ -	100%	35%	\$ 2,135
04-Mar-04	6688	Keith L. Marshall	\$ 1,429	\$ 1,429	\$ -	100%	35%	\$ 500
04-Mar-04	6689	Joseph M. Torgerson	\$ 3,300	\$ 3,300	\$ -	100%	35%	\$ 1,155
04-Mar-04	6690	Bruce A. Powell	\$ 2,495	\$ 2,495	\$ -	100%	35%	\$ 873
04-Mar-04	6691	Glen Thommen	\$ 3,399	\$ 3,399	\$ -	100%	35%	\$ 1,190
04-Mar-04	6692	Greggory W. Colwell	\$ 620	\$ 620	\$ -	100%	35%	\$ 217
04-Mar-04	6693	H. Brian Chamberlain	\$ 3,399	\$ 3,399	\$ -	100%	35%	\$ 1,190
04-Mar-04	6694	Ralph L. Witt	\$ 800	\$ 800	\$ -	100%	35%	\$ 280
04-Mar-04	6695	Richard E. Parker	\$ 1,439	\$ 1,439	\$ -	100%	35%	\$ 504
04-Mar-04	6696	Douglas M. Bilheimer	\$ 6,000	\$ 6,000	\$ -	100%	35%	\$ 2,100
04-Mar-04	6697	Stephen Brummer	\$ 1,699	\$ 1,699	\$ -	100%	35%	\$ 595
04-Mar-04	6698	Whitetail Tree Farm, LLC	\$ 10,400	\$ 10,400	\$ -	100%	35%	\$ 3,640
29-Mar-04	6700	Ken Schumm	\$ 1,550	\$ 1,550	\$ -	100%	35%	\$ 543
29-Mar-04	6701	Thomas C. Gunn	\$ 980	\$ 980	\$ -	100%	35%	\$ 343
29-Mar-04	6703	Norman Dodge	\$ 300	\$ 300	\$ -	100%	35%	\$ 105
29-Mar-04	6706	Cheryl Neu	\$ 2,899	\$ 2,899	\$ -	100%	35%	\$ 1,015
29-Mar-04	6707	Norman Wilmot Horton	\$ 4,000	\$ 4,000	\$ -	100%	35%	\$ 1,400
29-Mar-04	6708	James C. Rasmusan	\$ 2,599	\$ 2,599	\$ -	100%	35%	\$ 910
29-Mar-04	6709	Sabrina Marie Frolov	\$ 1,400	\$ 1,400	\$ -	100%	35%	\$ 490

**Certified Wood Chippers**  
**10/28/03 - 3/31/04**

Action Date	App #	Applicant	Claimed	Certified	Difference	% Allocable	Maximum Percent	GF Liability
29-Mar-04	6710	Wesley Christenson	\$ 585	\$ 585	\$ -	100%	35%	\$ 205
29-Mar-04	6715	James P. Bobzien	\$ 699	\$ 699	\$ -	100%	35%	\$ 245
29-Mar-04	6716	Commercial Services	\$ 3,000	\$ 3,000	\$ -	100%	35%	\$ 1,050
29-Mar-04	6717	Dick Kobayashi	\$ 3,000	\$ 3,000	\$ -	100%	35%	\$ 1,050
29-Mar-04	6720	W Scott Overton	\$ 3,000	\$ 3,000	\$ -	100%	35%	\$ 1,050
<b>Apps</b>		<b>Sum</b>	<b>\$ 361,875</b>	<b>\$ 361,557</b>				<b>\$ 126,545</b>
<b>75</b>		Average	\$ 4,825	\$ 4,821				\$ 1,687
		Minimum	\$ 203	\$ 300				\$ 105
		Maximum	\$ 47,940	\$ 47,940				\$ 16,779



# **Attachment H**

## **Wood Chipper Survey Results**

In 2003, the Commission asked the Department to determine how certificate holders were using their wood chippers certified according to ORS 468.155(2)(b). The Department mailed 523 surveys to wood chipper certificate holders on July 30, 2003. This attachment provides the survey results.

# Wood Chipper Tax Credit Survey Executive Summary and Report

David Collier  
Air Quality Division  
March 25, 2004

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## Executive Summary

For many years, the Department has worked with citizens and local officials to reduce the burning of woody debris piles (i.e. open burning) through state rules, local ordinances, and public outreach. These efforts have had a modest effect in reducing open burning; however the practice remains prevalent across Oregon. Open burning smoke can pose a health risk, especially to citizens sensitive to smoke, such as those with asthma, as well as heart or respiratory disease. The Department's open burning strategy is an important part of its overall effort to reduce all forms of smoke emissions across Oregon. In addition to protecting citizens at a "neighbor-to-neighbor" level, smoke reduction strategies will be an important part of maintaining compliance with air quality health standards (both PM<sub>10</sub> and PM<sub>2.5</sub>), and in providing visibility protection for Oregon under the Regional Haze program.

There is only a limited amount of reduction in open burning that can be expected from public outreach, and regulatory approaches are often difficult to develop, implement, and enforce. The wood chipper tax credit provides an incentive program that supplements enforcement and outreach efforts, and creates a more comprehensive and effective strategy for reducing open burning smoke.

In 2001, the Environmental Quality Commission (Commission) adopted rules to provide the Pollution Control Tax Credit (PCTC) to Oregon taxpayers that purchased wood chippers. The Department made two assumptions in its recommendation to the Commission to approve the credit. The expectations were that the tax credit would:

- Provide an incentive to Oregonians to purchase wood chippers and reduce the amount of woody-debris they burned, and
- Be a cost effective way to reduce open burning smoke.

The Department has conducted a survey to see if these initial expectations are correct. It mailed 523 surveys to those who have received the chipper tax credit. Approximately 70% of the surveys were returned. Not all respondents answered the questions completely. So, various subsets of responses were used to develop the results for each survey question. A copy of the survey questions and responses is included as Exhibit A.

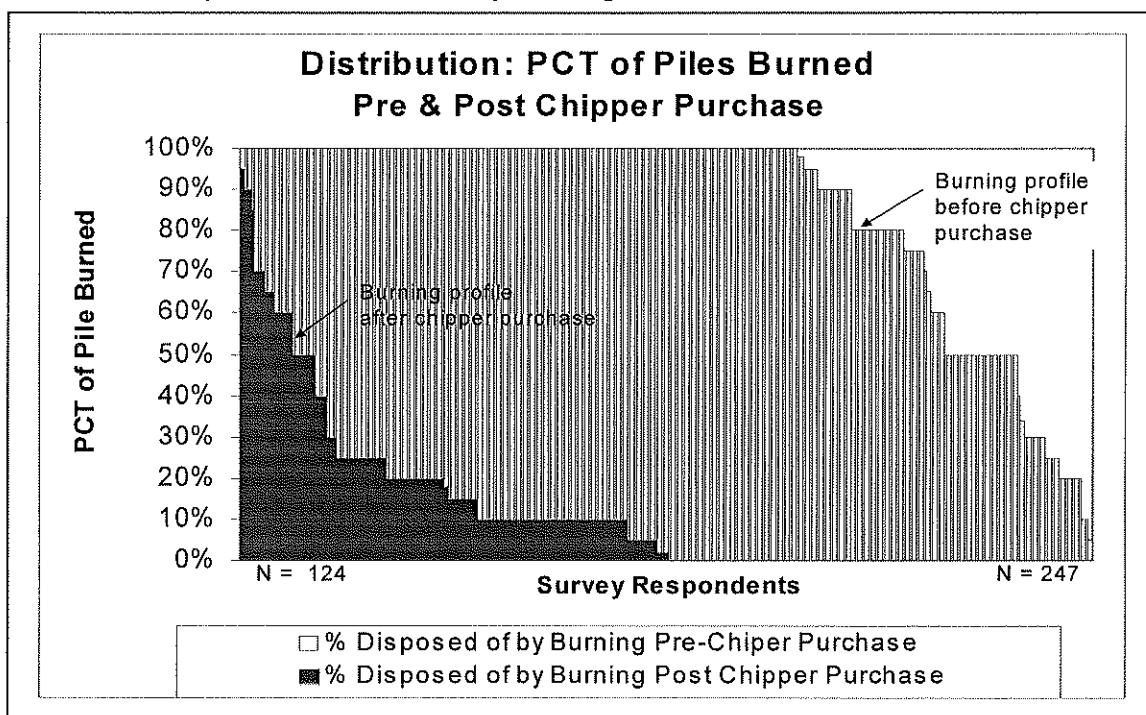
The survey results show that the wood chipper tax credit does produce a significant net air quality benefit, and that tax credit funds are being spent cost effectively.

### Key findings of the survey are:

- Eighty-eight percent of the respondents were first-time chipper owners. Seventy-nine percent of the respondents use their wood chippers in residential applications while 13% used their chippers in both residential and commercial applications.
- The survey confirms a significant decrease in pile burning as a result of the chipper purchase. The survey also indicates a reduction in the amount of woody

debris taken to a land fill or disposed of as garbage. Figure 1 shows the amount of reported pile burning for the survey group before and after a chipper purchase. Each burn “profile” reflects the percentage of each woody-debris pile disposed of by burning (before and after chipper purchase). The difference between the profiles is the approximate “net” reduction in burning (and resulting smoke emissions). Figure 1 shows both a significant reduction in the use of burning as a disposal method and in the amount (percent) of each pile burned.

Figure 1: Change in the use of burning as a disposal method.



- On average, each person using their chipper in lieu of burning is now preventing about 300 lbs each year of particulate pollution, about 1,470 lbs each year of carbon monoxide, and about 230 lbs each year of hazardous air pollutants (air toxics).
- For the respondent group as a whole, chipping now prevents about 47,000 lbs/year of particulate pollution, about 223,000 lbs/year of carbon monoxide, and about 35,000 lbs/year of hazardous air pollutants. This net emission reduction takes into account the amount of pile burning conducted before and after the chipper purchase, and also includes the emissions added by the chipper engine.
- The survey shows the average chipper tax credit to be about \$1,760, with the most frequently occurring credit being approximately \$300<sup>1</sup>. The cost-benefit values (in dollars per ton of pollution reduced) range from about \$250 per ton of emissions reduced to about \$3,000 per ton, depending on whether pollutant

<sup>1</sup> This is the cost of the tax credit, not the cost of the chipper.

reductions are considered individually (i.e. particulate only) or collectively (i.e. particulate + carbon monoxide + air toxics).

- By comparison, acceptable cost-benefit values used for major industrial air pollution control generally range from \$2,000/ton to \$10,000/ton. Typical industrial control costs generally range from \$2,000 to \$4,000/ton. This comparison suggests that the chipper tax credit is a cost effective way to reduce the variety of air pollutants from open burning.

**Table 1: Average air pollution prevented and average cost-benefit**

Air Pollutant	Average pollution prevented per person, per year (pounds/year)	Average pollution prevented per year for the entire response group <sup>2</sup> .	Cost/Benefit Range (\$ per ton of pollution reduced)
Particulate (PM10)	308 lbs/year	46,700 lbs/year	If pollutants are considered separately (\$344/ton - \$3,000/ton)
Carbon Monoxide	1,466 lbs/year	222,800 lbs/year	
Hazardous Air Pollutants (Air Toxics)	229 lbs/year	34,700 lbs/year	If pollutants are considered together (\$250/ton - \$352/ton)

### Conclusions

The wood chipper tax credit provides Oregon taxpayers with an incentive to reduce open pile burning, and therefore helps create a more comprehensive and effective strategy for reducing the public's exposure to hazardous smoke. Wood chippers can significantly reduce the amount of woody debris burned, and can also reduce the amount of material taken to a landfill or disposed of with household garbage. The wood chipper tax credit is a cost effective way to reduce multiple pollutants from open burning over many years for a one-time cost.

The chipper tax credit program also supports several of the agency's strategic directions, including, encouraging Oregonians to take personal responsibility to protect the environment, and protecting human health and the environment from toxics.

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<sup>2</sup> Not all survey respondents provided sufficient information to estimate burning emissions. A subset of 152 respondents were used to calculate the net emission reduction and cost-benefit estimates.



## Wood Chipper Tax Credit Survey

### **Background: Wood Chipper Tax Credit**

Smoke from open burning can pose a health risk to many Oregonians<sup>3</sup>. Each open burn pile can create an intense smoke plume that impacts nearby citizens. Open burning is also one of several important emission sources contributing to past exceedances of air quality standards in many Oregon communities. It will continue to be a concern in the future because of its role as a source of toxic air emissions, and its potential impact on the new fine particulate standards (PM<sub>2.5</sub>).

Over the years, the Department has worked with citizens and local officials statewide to reduce open burning through state rules, local ordinances, and public outreach programs. These efforts have had a modest effect in reducing open burning; however open burning remains prevalent across Oregon. There is only a limited amount of reduction in open burning that can be expected from public outreach, and regulatory approaches are often difficult to develop, implement, and enforce.

State and local air quality staff agree that an incentive program for open burning is useful to augment existing enforcement and outreach efforts; especially given the limited staff resources, both state and local, currently available for field investigations, enforcement, and community outreach. Staff resources needed to respond to complaints are extremely limited, and neighbors are often reluctant to complain to state or local officials about open burning impacts. Many citizens suffer routine smoke impacts as the price of being a “good neighbor”. Reducing open burning across the state requires a variety of approaches, including public outreach and education, regulation, and incentives where necessary.

In 1999, the Oregon legislature added “non-point source pollution control facilities” to the list of activities eligible for the pollution control tax credit (House Bill 2181). This made a variety of activities (including wood chippers) eligible for the pollution control tax credit. In January 2001, the Commission approved implementing rules making the purchase of wood chippers eligible for the 50% pollution control tax credit<sup>4</sup>. By 2001 legislative action, the pollution control tax credit was reduced from 50% to 35%.

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<sup>3</sup> Asthma is on the rise across Oregon and the nation. Brief but intense smoke impacts from activities like open burning can help trigger an asthma attack. Exposure to smoke can also cause distress to those with existing respiratory, heart, or other medical conditions. Air pollutants from open burning include fine particulate, carbon monoxide, and an array of hazardous air pollutants (i.e. air toxics), that can have both localized impacts and also contribute to the overall air quality degradation statewide.

<sup>4</sup> The legislature has delegated authority to the EQC to determine the eligibility of “non-point source pollution control facilities”.

### **Program Goal/Target Populations**

The chipper program has two main goals. The first is to help prevent air quality degradation and exceedances of air quality standards in Oregon communities. This could include special emphasis on reducing open burning in past nonattainment areas and areas with above average growth potential. The second goal is to reduce “neighbor to neighbor” smoke impacts that can impair the health of individuals anywhere in the state.

The tax credit rule language (and authorizing statute) does not allow the Department to selectively target certain communities or populations. The program must be open to every qualifying applicant<sup>5</sup>. However if the need arises, the Department can focus the credit program on specific areas of concern by more aggressively promoting the program in that area.

### **Other Benefits:**

The most common methods for disposing of woody debris include burning or hauling to a nearby transfer station or landfill. In 2002, yard debris (leaves, small and large trimmings) represented between 1% and 6% of total landfill tonnage, although some of this material is likely composted at the landfill site. The benefit of the chipper program in reducing landfill waste should not be exaggerated; however, the program can help reduce the amount of material consuming valuable landfill space.

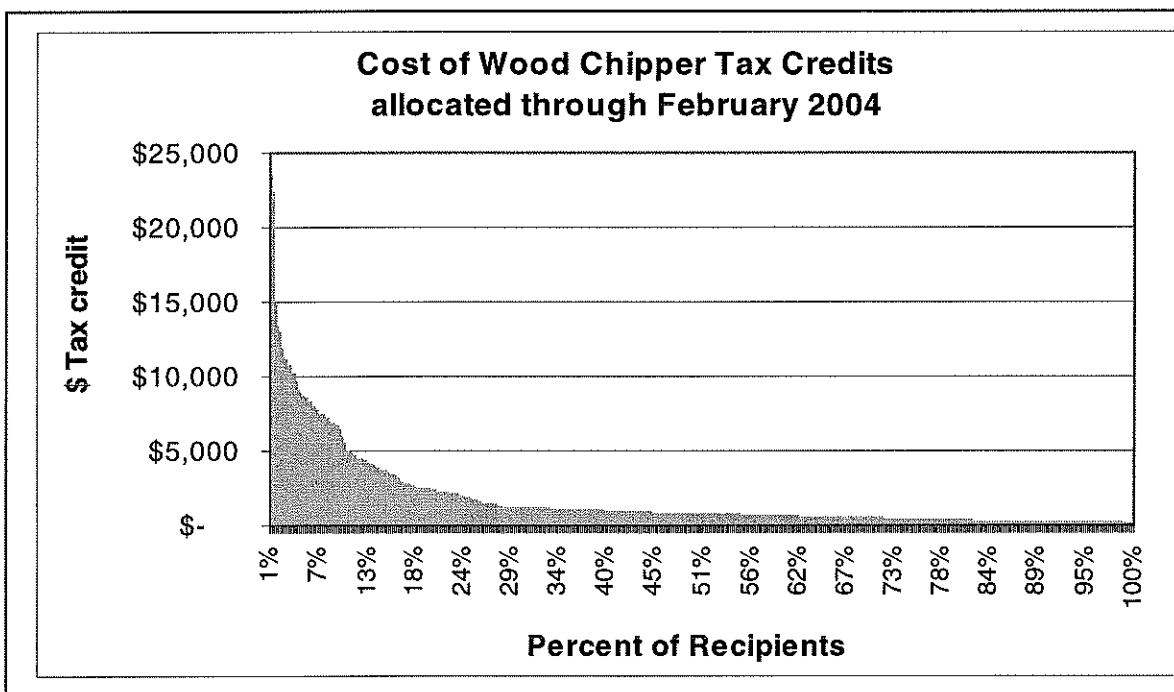
### **Tax Credit Costs**

Generally, a homeowner will require a chipper costing less than \$1,000. Some owners of larger properties may require a larger, more expensive machine, and some small commercial operations may require even larger equipment. The average chipper tax credit awarded to date is about \$1,760; however more expensive chippers (and therefore credits) can influence the average value. The median tax credit awarded to date is approximately \$750 per chipper (meaning that 50% of tax credit awards were higher than \$750, and 50% were less). The most frequently occurring cost for a chipper credit to date is \$298, suggesting the chipping of debris on a residential scale that would likely otherwise be burned or taken to a landfill. Figure 2 shows the cost distribution of chipper tax credits granted to date.

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<sup>5</sup> For example, the rules do not allow the Department to deny a chipper tax credit to residents living in geographic areas where open burning is banned. The rules also do not allow the Department to place a cap on the cost of a chipper eligible for a credit.

Figure 2: Distribution of chipper tax credits granted to date



It should be noted that many of the most expensive chipper applications were received during the time when the tax credit was 50%. Approximately 70% percent of credits granted for \$3,000 or more were granted at the 50% level. Reducing the credit to 35% in 2001 has significantly reduced the credit cost.

Since the start of the chipper program in September 2001, approximately \$1,031,000 has been awarded in wood chipper tax credits. This represents approximately 1.54 percent of all tax credits awarded during this period (Sept. 1 2001- March 2003), and represents approximately 0.15 percent of all tax credits granted since the inception of the pollution control tax credit program.

#### **Survey Results: Does the chipper tax credit produce an air quality benefit?**

In August of 2003, the Department mailed a survey questionnaire to the 523 people who had received the wood chipper tax credit at that time. The questionnaire was designed to document and estimate the reduction in debris pile burning (and air quality benefit) attributable to the purchase of the wood chipper. To help encourage a high return rate, survey respondents were kept anonymous. Individual survey responses can not be matched to specific tax credit applicants; however the survey results provide good information on the chipper credit applicants as a group, including their burning practices before and after the chipper purchase. Survey respondents are taken to generally represent the burning practices of the entire group receiving the chipper tax credit.



## **Results**

The response rate for the survey was quite good, about 70% overall. Not all respondents answered the questions completely. So, various subsets of usable answers were used to develop the results for each question.

As expected, the majority of those receiving the credit used the chipper for home (residential) use (79%). Residential open burning is the Department's preferred target audience for the chipper program, so these results are encouraging. We also recognize that there is an air quality benefit from chipping on a commercial scale.

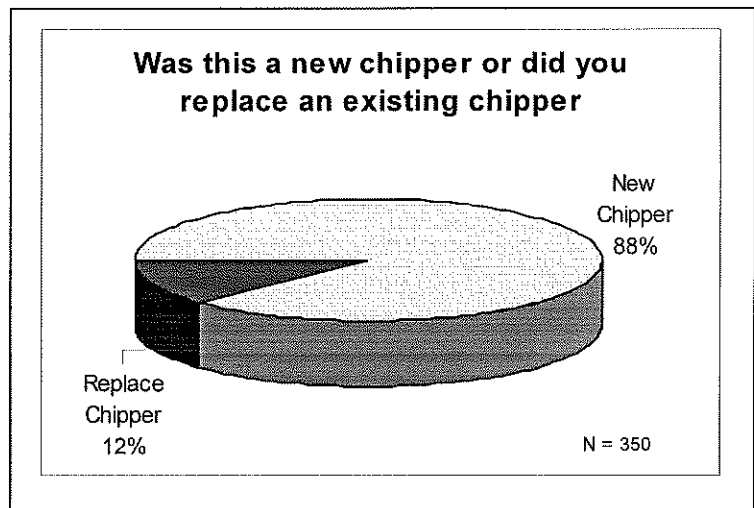
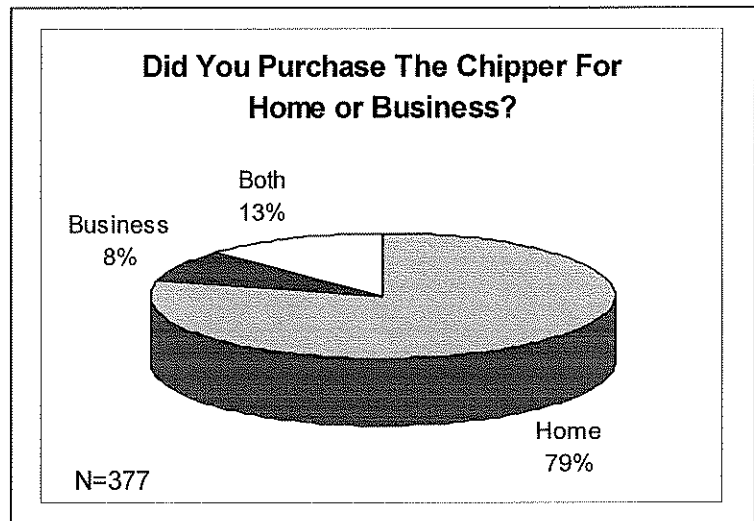
The Department also intended the program to target residents purchasing chippers for the first time (although there is a benefit to assisting the replacement of older chippers to prevent a possible return to burning). About 88% of respondents purchased a new chipper.

The results indicate that the primary users of the tax incentive are the Department's preferred target groups.

## **Reduced Burning**

The following section shows results related to reduced pile burning. Results for both residential and business disposal practices have been combined to estimate reductions for the survey group as a whole. However, as seen above, the majority of survey responses reflect residential scale activity. Several questions were asked about pile disposal habits with the main focus on how much wood-debris was burned before and after the chipper purchase.

Figure 5 shows a comparison of pile burning practices before and after purchase of the chipper. The chart shows the burn "profiles" for the respondent groups (before and after chipper purchase). These profiles reflect the reported amount (percent) of wood material



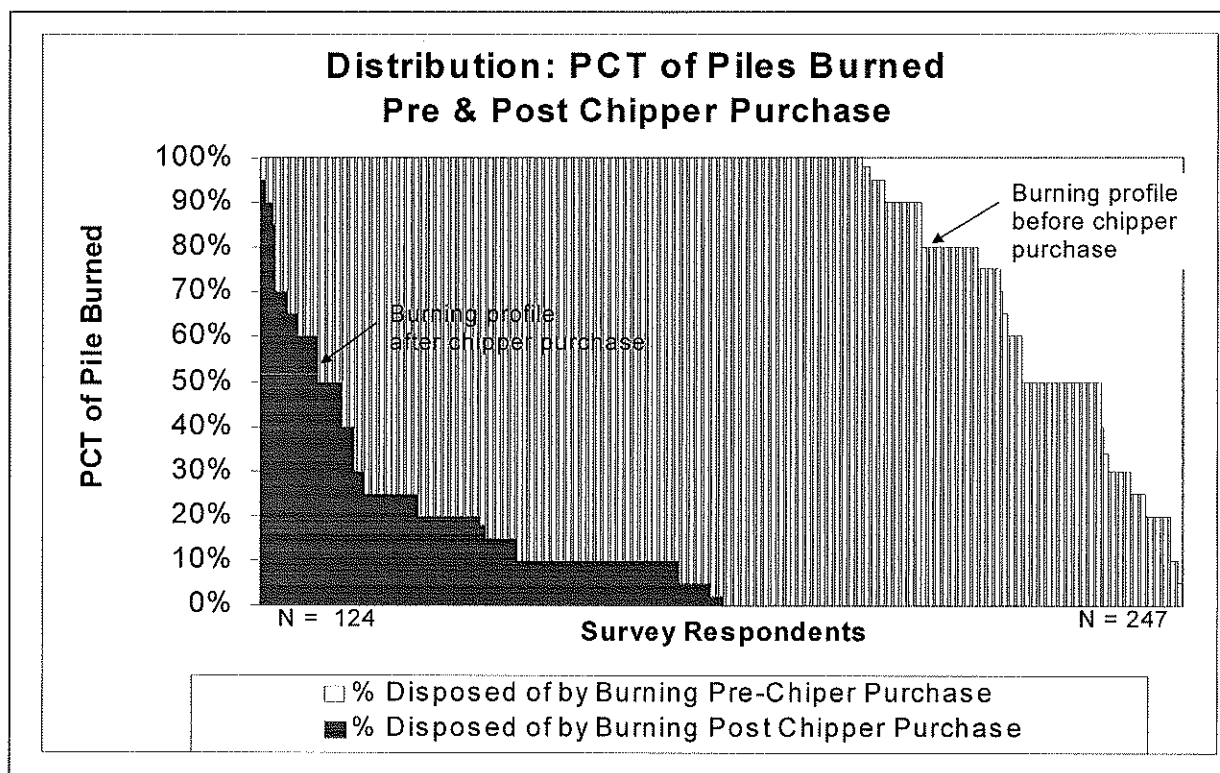
burned. The difference between the burning profiles is the net reduction in burning activity. The reduction in burning produces a significant net emissions reduction.

The burn profile before chipper purchase shows that a significant fraction of respondents burned 100% of their woody-debris. Additionally, there were large portions of the group burning in the ranges of 80%-90%, and 50%-80%. Only a relatively small fraction of the group burned in the ranges of 10%-20% or less.

The burn profile after chipper purchase shows a significant reduction in the number of respondents that report any burning of debris. Even though some burning still occurs after chipper purchase, there is a significant reduction in the amount of material burned (percent of pile burned).

The comparison of pre and post chipper burn profiles suggests a significant net reduction in material burned, and therefore a corresponding net emission reduction.

Figure 5: Comparison of pre-and post chipper purchase burning profiles

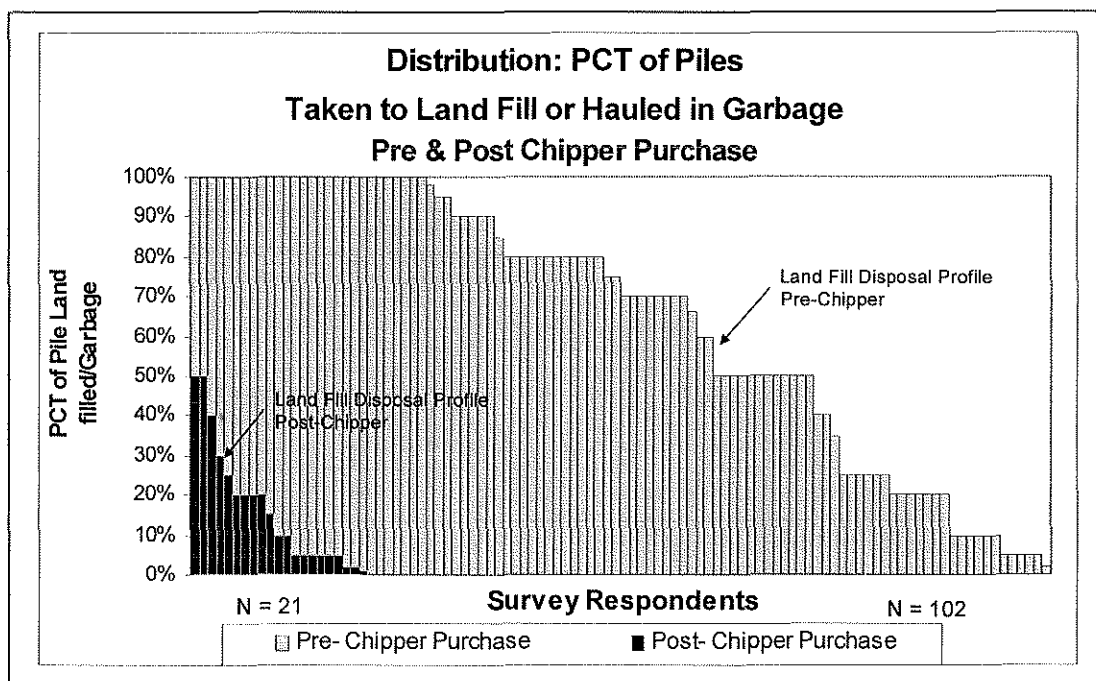


### Land Filling & Garbage Disposal

In addition to burning, a segment of the survey population disposed of all or some of their woody debris by land filling (or hauling as garbage). The survey suggests that the purchase of a chipper can significantly reduce the amount of material taken to the landfill or disposed of as garbage. Figure 6 shows the reported percent of wood-debris piles disposed of by land filling and garbage disposal (before and after the chipper purchase).

As the use of burning, land filling, and garbage disposal methods decrease, the use of alternative disposal methods naturally increase. These alternative disposal methods reported in the survey include increased chipping and using the chipped material on the land, composting, and recovering larger wood for use as firewood.

Figure 6: Profile of percent of pile taken to land fill.



### Emission Reduction: Cost Benefit

The cost-benefit evaluation presented here has been simplified to the extent that it looks at the average air quality benefits and average tax credit cost for the survey group as a whole. It assumes the tax credit is fully used in the tax year in which it was granted, and does not attempt to account for the medical cost savings to the public of preventing exposure to particulate and hazardous air emissions. The estimation of “net” emission reduction benefit also accounts for the emissions increase created by the chipper engine itself. The analysis is not intended to provide a definitive cost-benefit number, but simply to evaluate whether the range of cost-benefit values for the program seem cost effective.

Emission reduction estimates were developed for three pollutants: particulate matter (PM<sub>10</sub>), carbon monoxide, and a set of 21 hazardous air pollutants (HAP’s) or “air toxics”. Table 2 shows the cost-benefit estimates developed for each pollutant individually, and combined. Combining reductions for PM<sub>10</sub> and HAP emissions include some uncertainty, since PM<sub>10</sub> does contain many hazardous air pollutants (i.e. potentially some double counting of reduction). However, both PM<sub>10</sub> and HAP emissions have health effects unique to their pollutant type and adding the reductions together can give a better sense of the total air quality benefit possible from chipping instead of burning.



The average cost of the chipper tax credit to date is approximately \$1,760. By using a chipper, the average person within the survey group is now avoiding approximately 308 lbs/year of particulate pollution, 1,466 lbs/year of carbon monoxide, and 299 lbs/year of hazardous air pollutants (air toxics) that would otherwise have been generated from their pile burning. The “net” emissions benefit (reduction) from shifting from pile burning to chipping is shown below in Table 2. Again, the net emission reduction benefit has been discounted (reduced) to account for the effect of chipper engine emissions.

In this analysis, the average lifespan of a chipper is taken to be from 5 to 7 years. The “cost” is the cost to the state of the tax credit only (assumed to be taken in the tax year it is granted). Maintenance and operation costs of the chipper are not included, as these are not costs to the state. The survey asked respondents for their annual disposal activity, so the emission reductions are assumed to be achieved every year for the lifespan of the chipper. Average net emission reductions and cost-benefit values (\$/ton of emissions reduced) are as follows:

Table 2: Average Emission Reduction Cost-Benefit

	PM10 reduction	CO reduction	HAP reduction	PM10+ HAP	PM10 + HAP + CO
<b>Base Emissions Reduction Assumptions</b>					
Average net emission reduction per year, per respondent, achieved through chipping instead of burning debris.	308 lbs	1,466 lbs	229 lbs	537 lbs	2,003 lbs
<b>Cost-Benefit: Assuming chipper lifespan and emission reduction benefit over 5 years.</b>					
Average Cost-Benefit (average \$ per ton of emissions reduced)	\$2,293	\$481	\$3,086	\$1,397	\$352
<b>Cost-Benefit: Assuming chipper lifespan and emission reduction benefit over 7 years.</b>					
Average Cost-Benefit (average \$ per ton of emissions reduced)	\$1,638	\$344	\$2,204	\$998	\$252

By comparison, cost/benefit values for industrial air pollution control typically range from \$2,000 to \$4,000 per ton of pollution reduced. Generally, costs in the range of \$5,000/ton to \$10,000/ton are considered economically justifiable depending on the pollutant and circumstances. This comparison suggests that the chipper tax credit is a cost effective way to reduce the variety of air pollutants from open burning.

### **Conclusions**

The survey confirms that wood chipper tax credit funds are being spent cost effectively to reduce multiple air pollutants from open burning. The chipper credit provides a multi-year, multi-pollutant reduction benefit for a one time cost, and helps create a comprehensive strategy to reduce the public’s exposure to open burning smoke.

~###~

# Wood Chipper Tax Credit Survey Questions & Responses

Oregon Department of Environmental Quality  
Air Quality Division

Questionnaire  
Oregon Air Pollution Tax Credit Program  
Wood Chipper Tax Credit  
July 30, 2003

Recently you received a tax credit for the purchase of a wood chipper. We are evaluating the effectiveness of the tax credit program and would appreciate your help by answering the following questions. *Your name will not be reported with the results.*

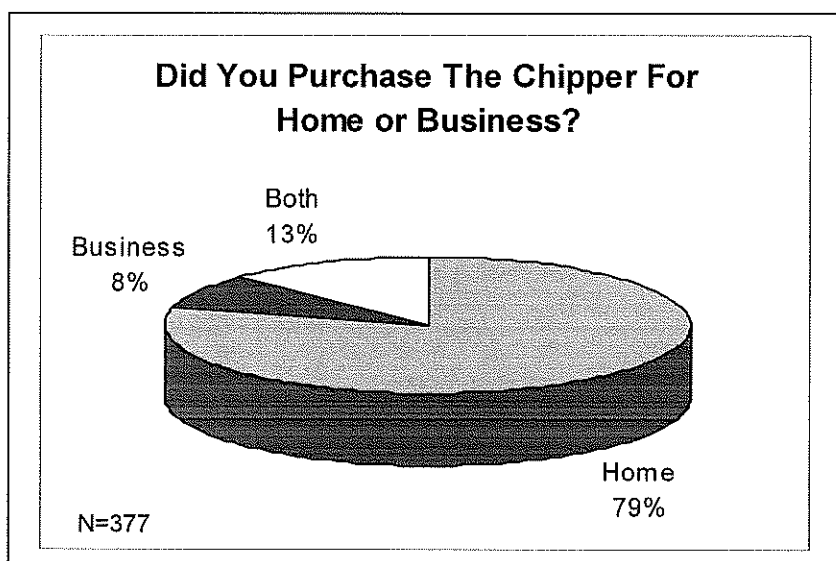
**Question 1: Did you purchase the wood chipper for home use, or for use in a business?**

\_\_\_\_\_ Home      \_\_\_\_\_ Business      \_\_\_\_\_ Both

If you use the chipper at Home, please answer the questions in Section I. If you use the chipper for Business, please answer the questions in Section II. If you use the chipper for both home and business, please answer both Sections I & II.

## ***Survey Response***

*Three hundred and seventy seven respondents answered this question.*



## Section I: Chipper Used At Home

**Question 2: What kind of material do you chip? Please use the table below to estimate the type and amount of wood-debris you chip. Please also list how often you think you'll chip (i.e. twice per year, once a year, once every two years, etc.)**

For example, a person could answer that they typically chip 2 piles of branches and brush; every year; and that each pile is an average of 6 feet wide, by 6 feet deep, by 4 feet high. Do your best to estimate the total amount of material you think you'll typically chip. Take more room on the back of this survey if you need it.

Type of Material	Typical Pile Size	Number of Piles	How Often

### *Survey Response*

*There were 223 respondents that answered this question. Each respondent had a different mix of woody-debris disposed of, as well as the reported pile volumes (cubic feet of wood burned), and disposal frequency. This information was used to estimate pile burning emissions before and after chipper purchase. For the entire response group, the average number of debris piles disposed of per year was 4.1. The average pile volume was 19 cubic yards, and the burning frequency typically ranged from once per year to once a month. These averages reflect a combination of small and large residential scale and commercial scale disposal activity.*

**Question 3: Before purchasing a chipper, how did you dispose of the material?**

Please estimate the percent of time you used different disposal options. For example, it could be that before you purchased your chipper, your garbage hauler typically collected 50% of your wood-debris, and that you had to pile-burn the other 50%.

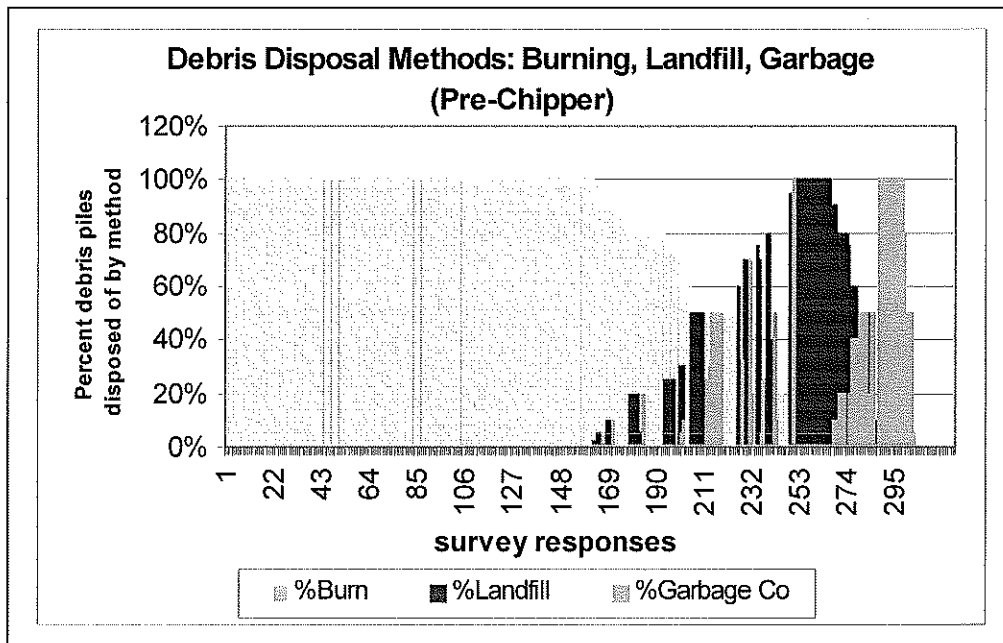
\_\_\_\_ (%) Burn    \_\_\_\_ (%) Take to Land Fill    \_\_\_\_ (%) Collected by Garbage Company

If Other, please describe \_\_\_\_\_ (%)

### *Survey Response*

*There were 320 respondents that answered this question. The graphic below shows the response profile for the percent of piles disposed of by burning, land filling, and garbage (before chipper purchase).*

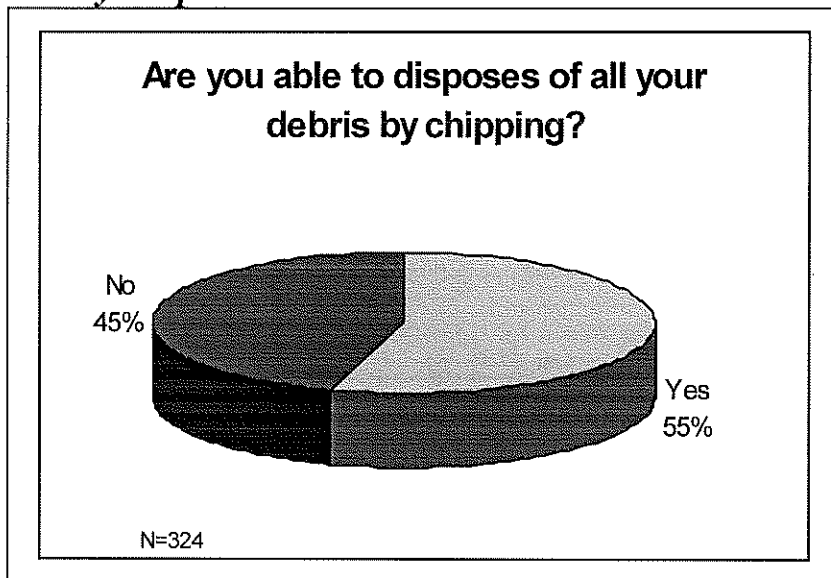




**Question 4: Now that you have a chipper, are you able to dispose of all your wood-debris by chipping?**

\_\_\_ Yes    \_\_\_ No

### *Survey Response*



**If you answered NO above, then what methods do you use to dispose of the wood-debris? Please estimate the percent of your debris disposed of by differed methods. For example, one person might chip 80% of their piles and burn 20%.**

\_\_\_\_ (%) Disposed of by Chipping.

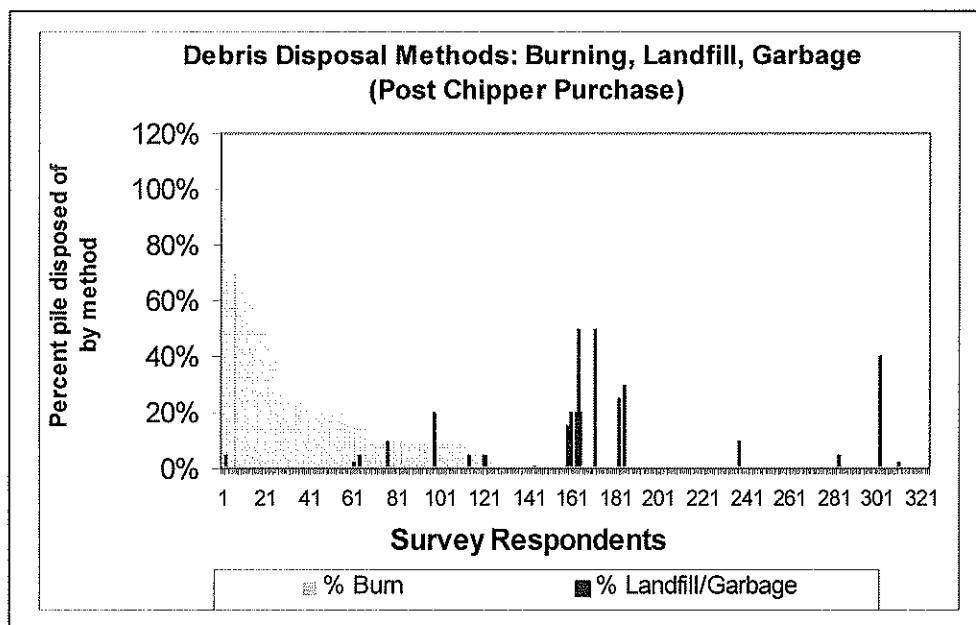
\_\_\_\_ (%) Disposed of by Burning

\_\_\_\_ (%) Disposed of by taking to land fill or garbage pick up.

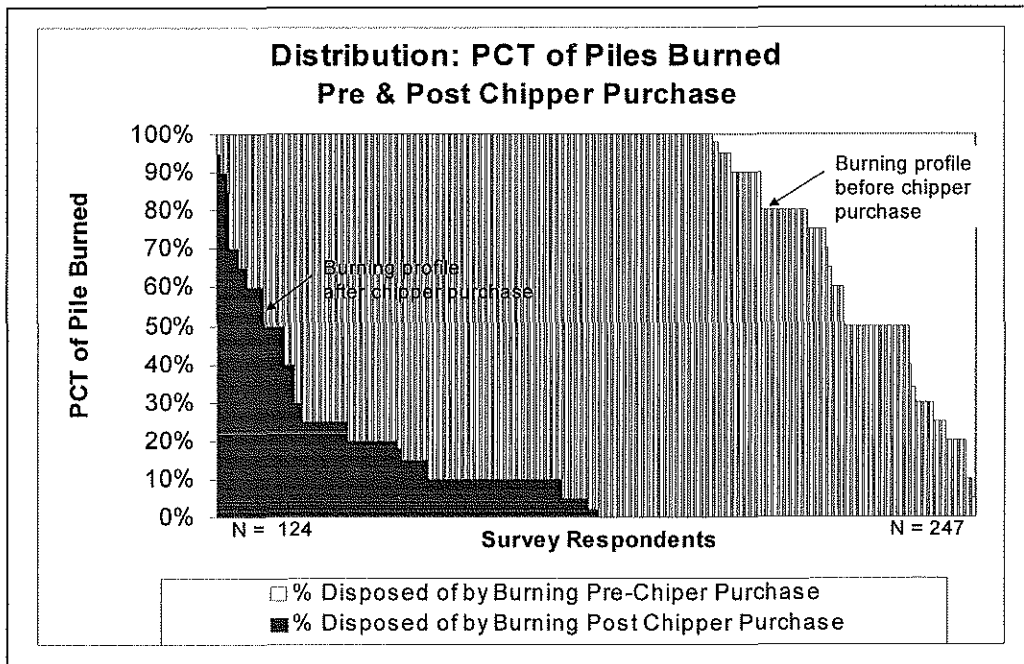
\_\_\_\_ (%) Other. If other, please explain.

### ***Survey Response***

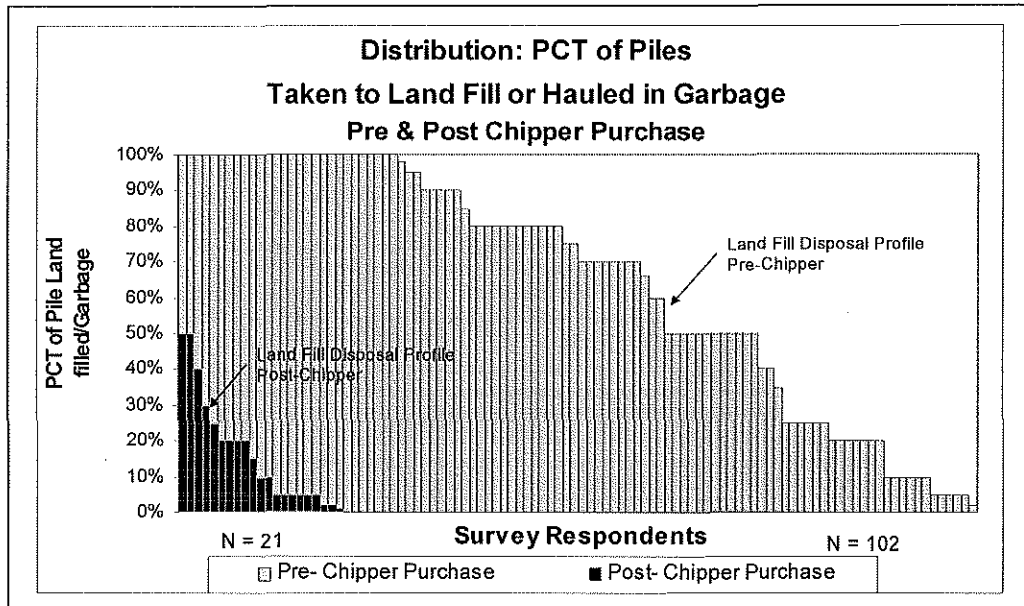
*There were 324 respondents that answered this question. The graphic below shows the response profile for the percent of piles disposed of by burning, land filling, and garbage (after the chipper purchase).*



*It is the comparison of the disposal profiles in questions 3 and 4 that help produce information on the net decrease in disposal by burning due to the chipper purchase.*



*The comparison of response profiles for disposal by land filling and garbage also suggest a significant decrease due to chipping; however the sample size for this group of responses is small. The survey suggests reduced land filling due to the chipper credit, but due to the small sample, results should not be exaggerated.*

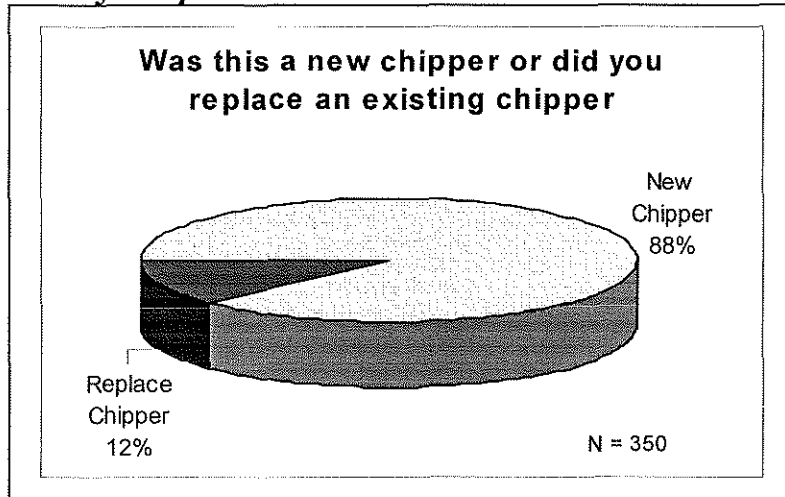


**Question 5: Was this your first chipper purchase, or did you replace an existing chipper?**

\_\_\_\_ New Chipper      \_\_\_\_ Replaced a Chipper



**Survey Response**



**Question 6: What role did the tax credit play in your decision to buy a chipper?  
Please check below:**

\_\_\_ I would not have purchased a chipper without the tax credit.

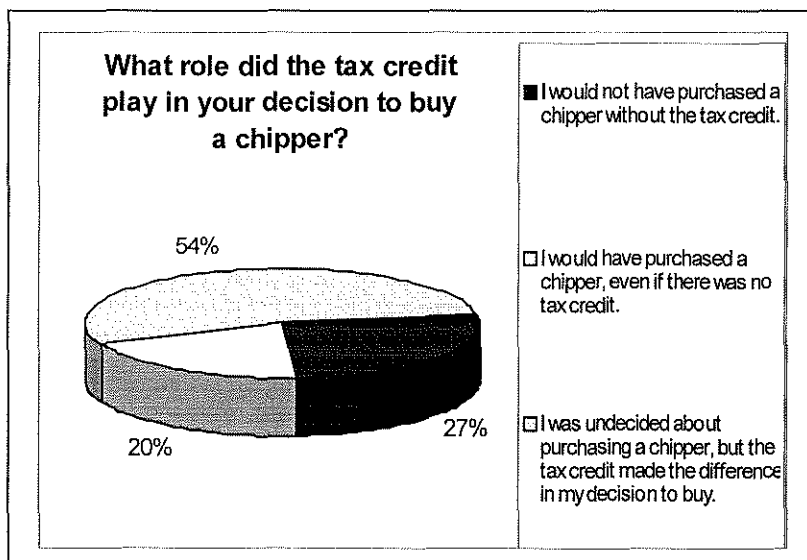
\_\_\_ I would have purchased a chipper, even if there was no tax credit.

\_\_\_ I was undecided about purchasing a chipper, but the tax credit made the difference in my decision to buy.

Other \_\_\_\_\_

**Survey Response**

*The response suggests that the chipper credit is an effective incentive to purchase a chipper for the first time and reduce burning.*



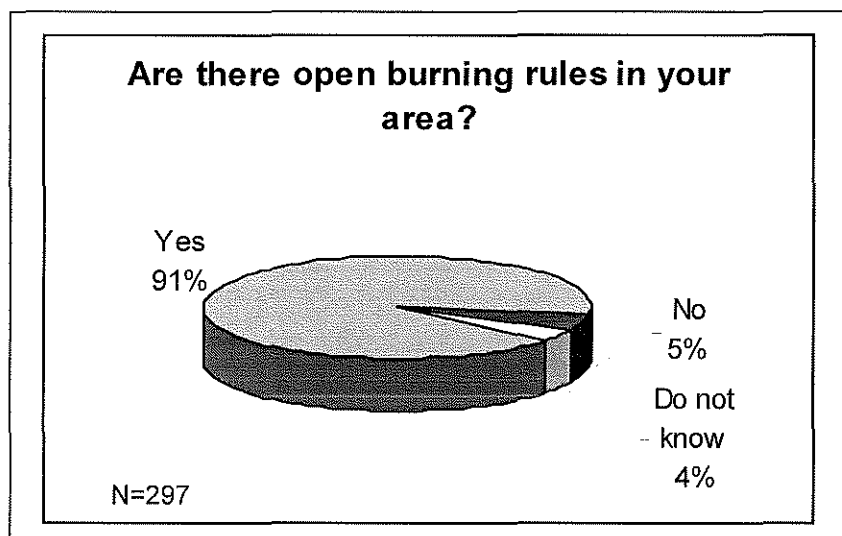
**Question 7: Are there any rules governing out door burning in your area?**

☐ Yes ☐ No ☐ Don't know

**Survey Response**

*The Department asked this question to get of sense of the public's awareness of open burning regulations and how that might inform the public outreach effort. Based on the results of this question, the public has a good awareness of open burning regulations. It is interesting to note that only a small percentage of respondents did not know whether regulations applied in their area or not.*

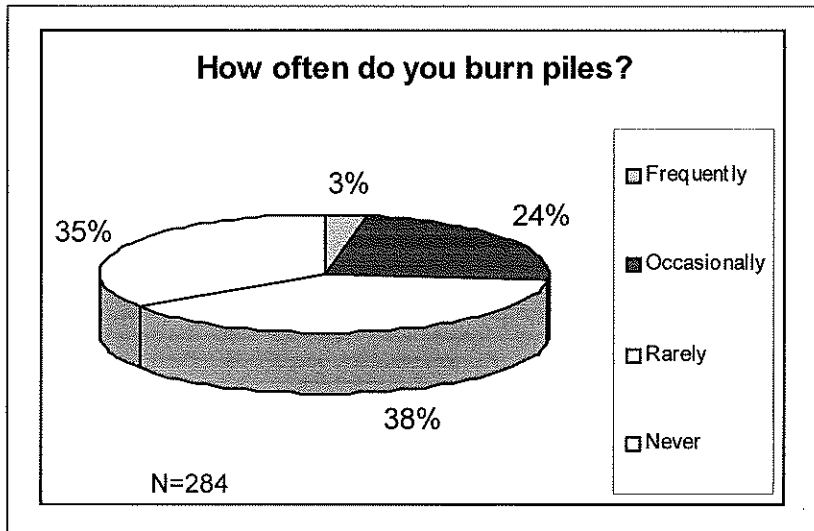
*Open burning rules typically do not prohibit burning all together, but only direct it to certain times of the year or favorable weather conditions. The chipper tax credit enhances any local open burning rules by preventing open burning smoke year-round.*

**Question 8: How often do you burn wood piles?**

☐ Frequently ☐ Occasionally ☐ Rarely ☐ Never

**Survey Response**

*The responses are qualitative only (i.e. the term "rarely" means different things to different people), but the responses seem generally reasonable given that the frequency of burning reported as part of questions 3 and 4 ranged from burning every month to burning only once a year. Burning frequency was used as part of the emissions estimates for pile burning.*



## Section II: Chipper Used for Business

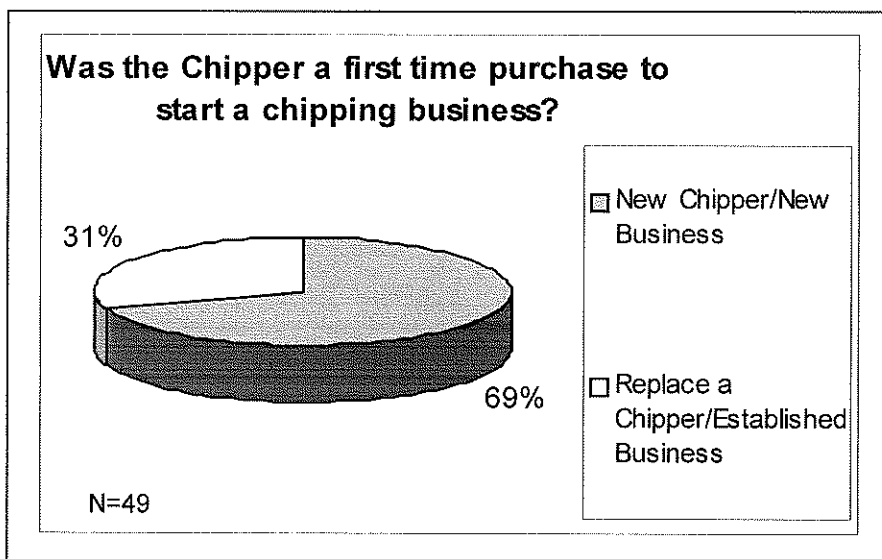
**Question 9: Was the chipper a first-time purchase to start a chipping business, or did you replace an existing chipper for your business?**

\_\_\_\_ New Chipper/New Business    \_\_\_\_ Replace a Chipper/Established Business

Other \_\_\_\_\_

### *Survey Response*

*The survey suggests that the tax credit is encouraging the creation of some new businesses to provide chipping services. This seems to be a relatively small portion of the overall group receiving the chipper tax credit.*





**Question 10: What role did the tax credit play in your decision to buy a chipper?**  
Please check below:

\_\_\_\_\_ I would not have purchased a chipper without the tax credit.

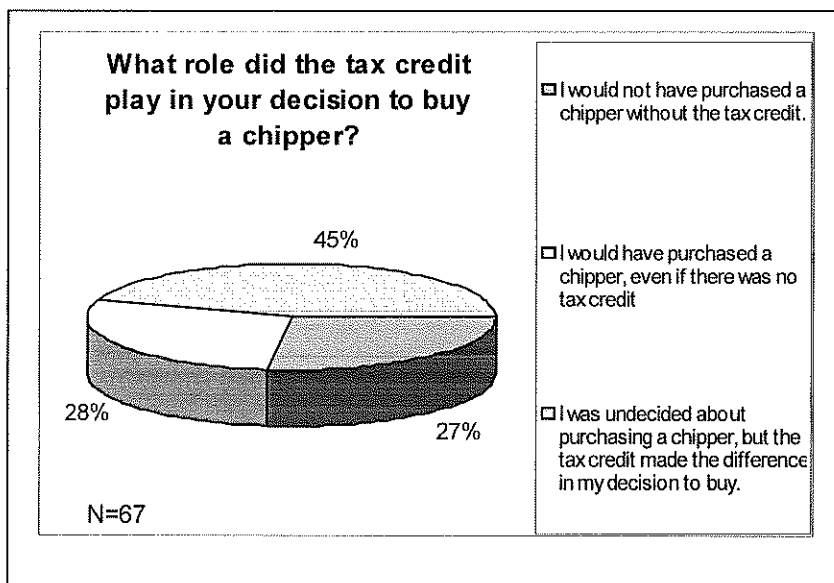
\_\_\_\_\_ I would have purchased a chipper, even if there was no tax credit.

\_\_\_\_\_ I was undecided about purchasing a chipper, but the tax credit made the difference in my decision to buy.

Other \_\_\_\_\_

### ***Survey Response***

*As with question 6, responses are taken at face value. The response suggests that the chipper credit is an incentive to begin a new chipping service business or upgrade an existing business.*



**Question 11: What types of jobs do you do that involve chipping? Please estimate the percentage of work you do with the chipper.**

Residential land clearing: \_\_\_\_\_ (percent)

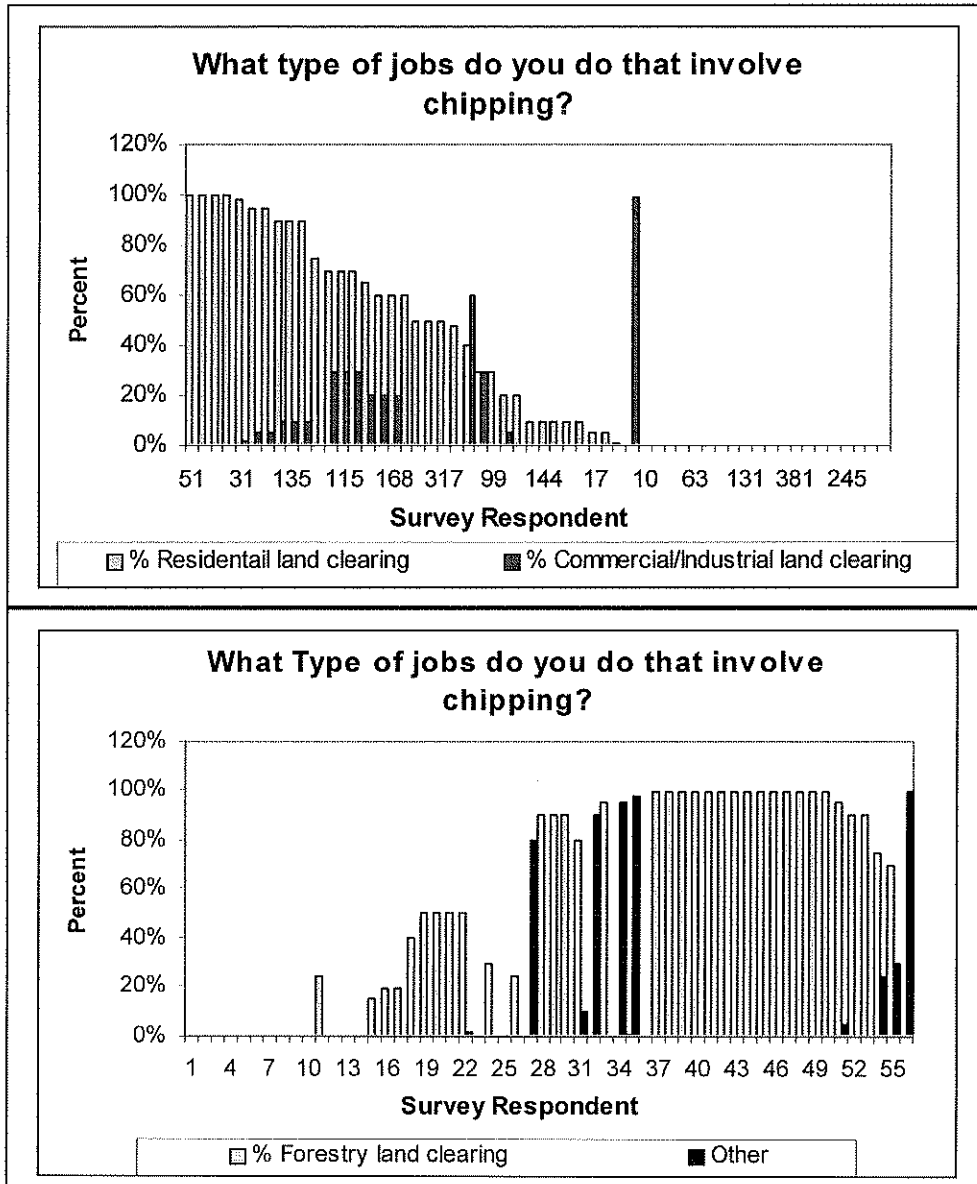
Commercial/Industrial land clearing: \_\_\_\_\_ (percent)

Forestry land clearing: \_\_\_\_\_ (percent)

Other (please describe) \_\_\_\_\_ (percent)

## Survey Response

There were 56 responses to this question. The charts below show the response profiles for different types of commercial chipping activity. The "Other" category includes activities such as tree & pruning disposal, and tree farm maintenance. The forest land clearing and "other" categories may also include efforts to clear wood-debris from the urban-forest interface areas to reduce the danger from wildfire.



**Question 12: Please use the table below to estimate the amount of materials that you typically chip each year, and describe the type of materials chipped.**

For example, a person could say that their company typically chips 50 piles a year of branches and brush; and that each pile is an average of 20 feet wide, by 10 feet deep, by 6 feet high. Please do your best to estimate the total amount of material you typically chip each year. Take more room on the back of this survey if you need it.

Type of Material	Typical Pile Size	# of Piles/Year

### Survey Response

*There were 66 respondents that answered this question. This information has not been summarized separately, but was included with the data from question 2, to estimate pile burning activity and emissions for the survey group as a whole.*

**Question 13: When you take on a job, do you use other methods of disposal in addition to chipping? Please estimate the percent of debris disposed of by differed methods. For example, one person might chip 80% of their piles and burn 20%.**

\_\_\_\_(%) Disposed of by Chipping.

\_\_\_\_(%) Disposed of by Burning.

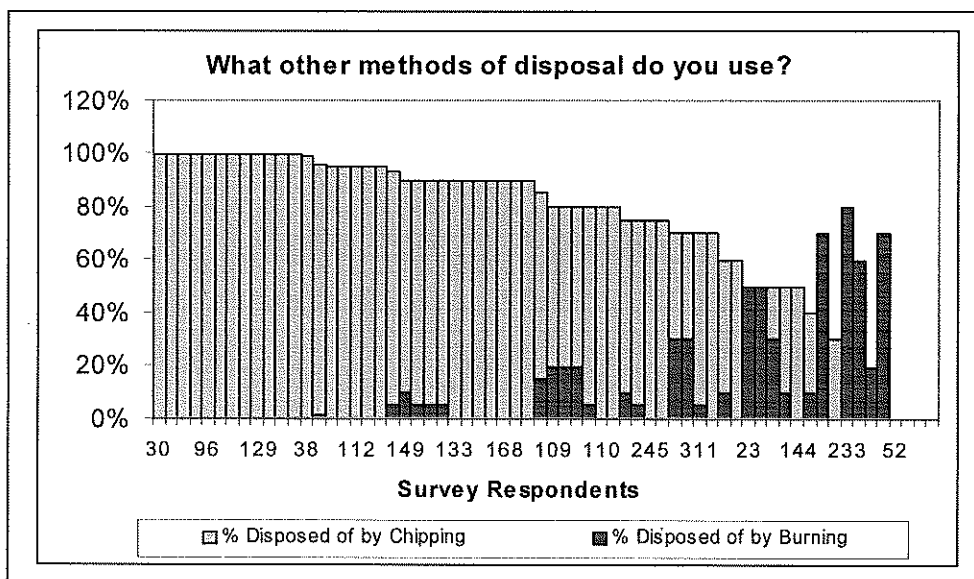
\_\_\_\_(%) Disposed of by taking to land fill or garbage pick up.

\_\_\_\_(%) Disposed of by taking to a commercial Biomass utilization facility.

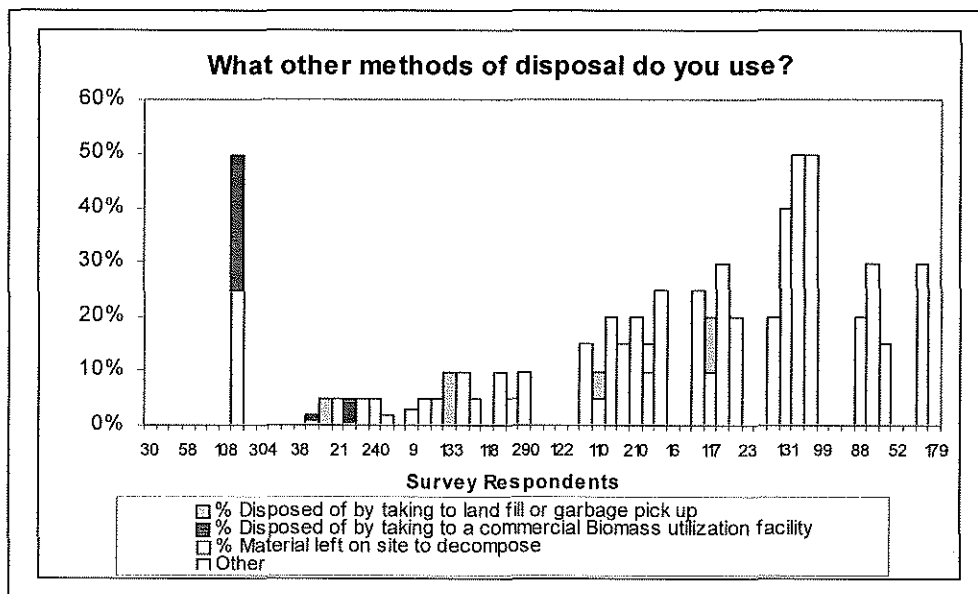
\_\_\_\_(%) Material left on site to decompose.

\_\_\_\_(5) Other. If other, please explain.

*The response profiles below show the main disposal methods for business related land clearing (percent of piles disposed of by various methods). The charts reflect the profiles for different disposal methods after the chipper purchase.*







**Thank you very much for participating in our survey.**

**Date:** April 29, 2004

**To:** Environmental Quality Commission

**From:** Stephanie Hallock, Director *SHallock*

**Subject:** Agenda Item L, Rule Adoption: Pollution Control Facilities Tax Credit  
Temporary Rule  
May 21, 2004 EQC Meeting

**Department Recommendation** The Department recommends that the Environmental Quality Commission amend the Pollution Control Facilities Tax Credit rules by temporary rule to address inconsistencies between the rule (OAR 340-016-0055) and state statute (ORS 468.165(6) and 468.170(4)).

**Background and Need for Rulemaking** The Environmental Quality Commission (EQC, Commission) is responsible for adopting rules and providing policy direction for the Pollution Control Facilities Tax Credit (PCTC) program. The Commission also has direct responsibility for certifying all pollution control investments before an Oregon taxpayer may use the credit to reduce their Oregon tax liability.

There is an inconsistency between the PCTC statute and the tax credit rules. The inconsistency has to do with filing deadlines and the sunset dates that changed in 2001. The 2001 law shortened the time for filing an application from two years to one year after construction of the facility is substantially completed. The law also extended the last date to file an application (sunset) to December 31, 2008. DEQ rules say that the taxpayer must file the application within two years after construction is substantially completed but no later than December 31, 2003.

If an applicant relies solely on DEQ's rules without reference to the statute, the website, or application documents, the applicant could mistakenly think they have two years after completion to file or that they missed the filing deadline (sunset) altogether.

<b>Effect of Rule</b>	<p>The proposed rule would align:</p> <ul style="list-style-type: none"><li>▪ OAR 340-016-0055(2) with ORS 468.170(4)(d) by changing the time for filing an application from two years to one year and changing the deadline for construction completion from December 31, 2003 to December 31, 2007.</li><li>▪ OAR 340-016-0055(6) with ORS 468.165(6) by changing the last date that the Commission can grant an extension of the filing deadline from December 31, 2003 to December 31, 2008.</li></ul>
<b>Commission Authority</b>	<p>The Commission has authority to take this action under ORS 468.020.</p>
<b>Stakeholder Involvement</b>	<p>There was no stakeholder involvement because the proposed rule would temporarily align DEQ rules with state statutes.</p>
<b>Public Comment</b>	<p>There was no public involvement. The proposed temporary rule would align PCTC rules with the filing deadlines in state statutes. DEQ will seek public comment during the permanent rulemaking process.</p>
<b>Key Issues</b>	<p>Failure to act promptly could result in prejudice to the interest of applicants for certification of pollution control facilities. This issue cannot be fully resolved without amending the rule.</p> <p>An applicant with an otherwise qualifying facility could miss the one year application deadline if they relied solely on DEQ's rules even though the one-year application deadline is in statute, in DEQ's application materials, and on DEQ's website. <i>See</i>, ORS 468.165(6) and OAR 340-016-0055(2)</p> <p>An applicant relying solely on DEQ's rules could mistakenly determine that it is ineligible for certification after December 31, 2003 and forego applying for a certification to which it might otherwise be entitled. The rule indicates that an application will be rejected if the applicant submits it after December 31, 2003. It also indicates that the Commission may not extend the application deadline beyond December 31, 2003. <i>See</i>, OAR 340-016-0055(2) and (6).</p>



**Next Steps**            The proposed effective date of the temporary rule is upon filing with the Secretary of State. There is no need for an implementation plan. The Department will proceed with permanent rulemaking.

**Attachments**        A.     Proposed Rule Revisions (redlined version)  
                             B.     Statement of Need and Justification

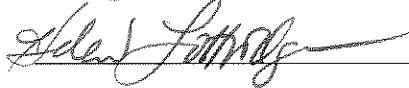
**Available Upon Request**    1.     ORS 468.150 to 468.190

Approved:

Section:



Division:



Report Prepared By: Maggie Vandehey  
Phone: (503) 229-6878

# **Attachment A**

## **DEPARTMENT OF ENVIRONMENTAL QUALITY**

### **DIVISION 16**

#### **POLLUTION CONTROL TAX CREDITS**

**340-016-0055**

#### **Application Procedures**

Any Oregon taxpayer may apply for the certification of a pollution control facility to take relief from their Oregon tax liability. The applicant and the facility shall be eligible under ORS 307.405, ORS 315.304, and ORS 468.150 to 468.190. The applicant shall submit the application to the Department on the application form provided by the Department.

(1) Application for Preliminary Certification. An applicant may apply for preliminary certification of a pollution control facility to determine if a future facility would meet the certification requirements as set forth in OAR 340-016-0060. The applicant may submit the optional preliminary application anytime before the construction of the pollution control facility is complete. If the Commission issues a preliminary certificate and if the applicant constructs the facility as represented on the preliminary application and the preliminary certificate then the facility shall meet the requirements as set forth in OAR 340-016-0060. The preliminary certification of a facility does not exempt the applicant from submitting a timely application for final certification as set forth in section (2) of this rule.

(2) Application for Final Certification. The applicant shall submit all information, exhibits and substantiating documents requested on the application for final certification. The Department shall reject the application for final certification if the applicant fails to submit the application:

(a) After the construction of the facility is substantially complete and the facility is placed in service;

(b) Within ~~two years~~ one year after construction of the facility is substantially completed; and

(c) On or before December 31, ~~2003~~ 2007.

(3) Complete Application. The applicant shall submit to the Department an application as set forth in section (1) or section (2) that is complete and ready to process. For an application to be complete and ready to process, the applicant shall:

(a) Complete all required application fields;

(b) Provide all appropriate exhibits;

(c) Explain how the facility is eligible for a pollution control tax credit as set forth in OAR 340-016-0060. The applicant shall include supporting documentation if the facility is eligible for certification based upon orders or permit limitations;

- (d) Include the appropriate fees established in OAR 340-016-0065;
- (e) Provide documentation that substantiates the facility cost as claimed on the application for final certification and as set forth in OAR 340-016-0070;
- (f) Contain a statement that the facility is in compliance with Department statutes, rules and standards, and any documentation regarding non-compliance;
- (g) Sign the application certifying that all claims made on the application are true and accurate;
- (h) Provide a copy of a written agreement between the lessor and lessee designating the party to receive the tax credit if the applicant is claiming a tax credit for a leased facility. The applicant shall provide a copy of the cover, first and signature pages of the complete and current lease agreement for the facility. The Department may request a copy of the complete agreement; and
- (i) Provide a copy of a written and signed agreement between the owners designating the party or parties to receive the tax credit certificate if the applicant is claiming the tax credit for a facility with more than one owner.

(4) Department Notification. The Department shall notify the applicant in writing when:

(a) Rejecting an application for the applicant's failure to file a timely application as set forth in sections (1) and (2) of this rule or rejecting an application for failure to provide a timely response as set forth in subsection (5)(a) of this rule.

(b) Requiring additional information from the applicant. The Department shall request additional information within 60 days from the date the Department received the application if the Department is unable to complete the review;

(c) Requiring additional information, for applications for final certification only, if the Department is unable to determine the actual cost of the facility or the portion of the actual cost of the facility properly allocable to pollution control;

(d) Notifying the applicant of the date, time and place of the Commission meeting where the Commission shall take action on the application; and

(e) Notifying the applicant of the action taken by the Commission. If the Commission rejects an application for certification; certifies a lesser actual cost of the facility; or certifies a lesser portion of the actual cost properly allocable to pollution control, material recovery or recycling than the applicant claimed in the application for certification, the Commission shall cause written notice of its action, and a concise statement of the findings and reasons therefore, to be sent by registered or certified mail to the applicant.

(5) Applicant Response to Notification. The applicant:

(a) Shall respond to the Department within 60 days of receipt of the Department's written notification when the Department requests additional information as set forth in section (4) of this rule. The applicant shall respond by providing the additional information requested or by submitting a written estimate of the time needed to provide the information necessary to complete the application.



(b) May appeal from the rejection or reduction as provided in ORS 468.170(3) and ORS 468.110.

(6) Extension of Time. The Commission may grant an extension of time to submit an application for final certification. An extension of time:

(a) Shall only be considered for applications that may exceed the time limits set forth in section (2) of this rule;

(b) Shall not extend the period for filing an application beyond December 31, ~~2003~~2008; and

(c) Shall only be granted for circumstances beyond the control of the applicant that would make filing a timely application unreasonable.

[ED. NOTE: The Application referenced in this rule is available from the agency.]

Stat. Auth.: ORS 468.150

Stats. Implemented: ORS 468.150 - ORS 468.190

Hist.: DEQ 5-1998, f. 4-24-98, cert. ef. 5-1-98

# Attachment B

## DEPARTMENT OF ENVIRONMENTAL QUALITY STATEMENT OF NEED AND JUSTIFICATION

A Certificate and Order for Filing Temporary Administrative Rules accompanies this form.

**Department of Environmental Quality, MSD**

Agency and Division  
Number

**OAR Chapter 340**

Administrative Rules Chapter

**In the Matter of:** Pollution Control Tax Credit Rules – OAR 340-016-0055

**Statutory Authority:** ORS 468.020

**Other Authority:** Not applicable

**Statutes Implemented:** ORS 468.165

**Need for the Temporary Rule(s):** During the 2001 session, the legislature amended ORS 468.165(6) in two respects: (1) the time for filing an application for certification of a pollution control facility was shortened from two years to one year after construction of the facility is substantially completed, and (2) the date to which the Commission can grant an extension of the filing deadline was changed from December 31, 2003 to December 31, 2008. 2001 c. 928 § 1.

DEQ's pollution control tax credit rules were not amended to reflect these changes, however. OAR 340-016-0055(2) still provides that the applicant must submit the application within two years after construction of the facility is substantially completed and on or before December 31, 2003. OAR 340-016-0055(6) still provides that an extension granted by the Commission may not extend the period for filing an application beyond December 31, 2003. The temporary rule would update OAR 340-016-0055 to address the inconsistencies between the rule and ORS 468.165(6).

**Documents Relied Upon:** ORS 468.165(6)

**Justification of Temporary Rule(s):** The Commission finds that failure to act promptly could result in prejudice to the applicants for certification of pollution control facilities for the following reasons:

- The timelines in ORS 468.165(6) are already in effect. The inconsistency between OAR 340-016-0055 and ORS 468.165(6) already has the potential to confuse applicants for certification. This issue cannot be fully resolved without amending the rule.
- Although the one-year application deadline is found not only in ORS 468.165(6), but also in DEQ's application materials and on DEQ's website, the two-year application deadline in OAR 340-016-0055(2) could be confusing to applicants for certification who rely solely on DEQ's rules without reference to the tax credit statutes, tax credit application, or DEQ's website. An applicant with an otherwise qualifying facility could miss the one year application deadline if relying solely on DEQ's rules.
- The current version of OAR 340-016-0055 indicates that an application will be rejected if submitted after December 31, 2003 and that the Commission may not extend the application deadline beyond December 31, 2003. See, OAR 340-016-0055(2) and (6). An applicant relying solely on DEQ's rules could mistakenly determine that it is ineligible for certification after December 31, 2003 and forego applying for a certification to which it might otherwise be entitled.

- Amendment of OAR 340-016-0055 is in the public interest. "[W]hen an agency discovers that its adopted rules are inconsistent with legislative directives, the agency may, and in fact must, amend, repeal, or otherwise modify those rules properly to implement legislative policy. When the mismatch between legislative and agency policy actually exists, it is in the public interest and the interest of the parties concerned immediately to clarify the agency's position and advise all those affected through the adoption of a temporary rule." *Vier v. SOSCF*, 159 Or App 369, 375 (1999).

**Housing Cost Impacts:**

The Department has determined that this proposed rulemaking will have no effect on the cost of development of a 6,000 square foot parcel and the construction of a 1,200 square foot detached single family dwelling on that parcel.

---

Mark Reeve, Chair  
Environmental Quality Commission  
or Director on Behalf of the Commission


---

Date Signed



State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004  
**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Director   
**Subject:** Agenda Item M, Informational Item: DEQ's 2005-07 Budget Request  
May 20-21, 2004, EQC Meeting

**Purpose of Item** The purpose is to inform the Commission about DEQ's 2005-07 budget request, and solicit policy guidance from the Commission regarding key budget issues and priorities. Paul Siebert with the Legislative Fiscal Office will brief the Commission about statewide budget issues and the budget climate his office predicts for the 2005-07 session. Lauri Aunan, Manager of DEQ's Budget and Legislative Office, will brief the Commission on the Governor's priorities for the 2005 Legislative session, and DEQ's key budget issues and priorities.

**Background** DEQ's work is funded through legislative adoption of the agency's budget. Oregon agencies operate under two-year, or "biennial," budgets. DEQ's budget for July 2003 through June 2005 was adopted by the Legislature in August 2003. We have begun to develop our budget request for July 2005 through June 2007.

There are three major stages of budget development:

1. State agencies submit their agency request budgets to the Department of Administrative Services and the Governor by September 2004.
2. The Governor reviews agency request budgets and compiles the Governor's Recommended Budget to reflect the Governor's priorities and policies set in statute. The Governor may make changes to the agency request budget. The Governor's Budget is presented to the Legislature by January 2005. State law requires the Governor to present a balanced budget – that is, proposed expenditures must balance to projected revenues.
3. The Legislature debates the Governor's Recommended Budget through the Ways & Means Committee process, modifies the budget, and passes a bill authorizing the budget, by June/August 2005.

DEQ's total budget includes three main categories:

1. Our "operating budget," which funds our day to day work.

DEQ's 2003-05 operating budget is approximately \$170.8 million.

2. Our "debt service" budget, which includes expenditures for principal and interest payments for debt incurred by the sale of bonds to:
  - (a) provide the State match for the Clean Water State Revolving Fund (capitalized by ongoing federal grants); and
  - (b) provide funding for environmental cleanup of high priority contaminated orphan sites (properties where the parties responsible for contamination are unknown, unable or unwilling to clean up the contamination).
3. Our "non-limited" budget, which is mainly loans from the Clean Water State Revolving Fund to local communities for wastewater treatment facilities.

Our 2003-05 operating budget is based on funding from these sources:

- 65% fees from permittees and cost recovery for environmental cleanup work
- 23% federal funds (primarily grants from the Environmental Protection Agency)
- 10% State General Funds (primarily state income taxes)
- 2% lottery funds (from Ballot Measure 66 "Parks and Salmon Operations Funds" )

DEQ's total budget includes about \$26 million in State General Funds and lottery funds, budgeted as follows

- 43% for Water Quality
- 21.5% for Debt Service
- 15.2% for Air Quality
- 12.3% for Water Quality (lottery funds)
- 4.5% for Land Quality
- 2.6% for Economic Revitalization Team
- 0.9% for Agency Management

To develop our agency request budget, DEQ must:

- Estimate the cost to continue current legislatively approved programs into 2005-07, by adjusting the 2003-05 budget by projected costs of inflation, salary increases, benefit and medical packages, and other changes that affect costs.
- Estimate the revenues that will be available under current law to pay for the estimated 2005-07 costs of current legislatively approved programs. If revenues are projected to be lower than what's needed, we must propose ways to increase revenue, or

show how we will reduce work to live within projected revenues.

If we are proposing to increase existing work or start new programs, we must propose "policy packages" to increase revenues to pay for that work. The sources of "policy package" revenue could be State General Funds, federal funds, fees, or lottery funds.

In addition, state law requires the Governor to propose an alternative budget at 90% of the level of his Recommended Budget. To meet this requirement, agencies must develop a list of options to reduce State General Funds by 10%. The Department of Administrative Services has indicated that agencies should be prepared to develop a General Funds reduction list up to 20% for 2005-07 because of revenue shortfalls.

#### **Key Issues**

- Oregon's economy will continue to be a primary focus in the 2005 legislative session. The Governor's priorities will play a strong role in shaping agency budgets. Those priorities are: 1) economy and jobs; 2) education; 3) environment, with a particular focus on cleaning up the Willamette River from its headwaters to the Columbia River.
- The 2005-07 State budget is projected to have a \$450 million - \$1 billion State General Fund shortfall. Since two income tax ballot measures have failed in two years, it appears that general tax increases won't be viable.
- DEQ is planning to approach the 2005 Legislature with a lean agenda and a minimal number of requests that show we have been fiscally responsible about how we allocate our resources and have looked at creative ways to do existing work with fewer resources.
- Given the projected State revenue shortfalls, the 2005 session is expected to be just as long as 2003 (which set a record for the longest session ever), and probably more difficult for deciding the state budget. Despite this climate, it is important to present the Governor with a budget request that clearly describes our priorities and explains what funding those priorities will mean to Oregon's economy and environment and to the state budget of the future.

The Executive Management Team and I will be discussing DEQ's budget issues and priorities over the next few months. We encourage



the Commission to provide policy guidance as we consider how to prioritize our budget request and for what areas, if any, we should request increased resources. Key budget issues identified to date are listed below. DEQ's goal is to work closely with legislators and stakeholders to develop support for its legislative and budget proposals.

#### Effective Wastewater Program

In early 2003, DEQ formed the Blue Ribbon Wastewater Committee to comprehensively review the state's wastewater program and make recommendations for improving program effectiveness. The committee's work is expected to be completed by June. The Committee is looking into the need for statutory, rule or policy revisions, mechanisms to ensure stable program funding, and program performance measures. Regardless of whether DEQ proposes legislation arising out of the Committee's work, we will have a budget proposal to maintain and enhance our wastewater program to ensure we can protect Oregon's waters and provide excellent customer service.

#### Cleaning up the Willamette River

Governor Kulongoski has made cleaning up the Willamette River his top environmental priority. DEQ has long had a focus on restoring and protecting the Willamette River, as outlined in the fact sheet provided in Attachment D. To support the Governor's leadership on the Willamette River, we are considering potential proposals that would meet the Governor's goals of "repair, restore and recreate" outlined in the Governor's recent tour of the River (see Attachment E).

#### Oregon Plan/Total Maximum Daily Load (TMDL) funding

In 2003, \$4.755 million in State General Funds was shifted out of DEQ's 2003-05 Water Quality Budget, and replaced with:

- \$1.38 million in federal Pacific Coast Salmon Recovery Funds for DEQ's work under the Oregon Plan for Salmon and Watersheds, including biomonitoring, steelhead protection, volunteer monitoring coordination, and development of the Willamette TMDL, and
- \$3.375 million of Ballot Measure 66 "Operating Funds" (lottery funds) for statewide development of TMDLs, nonpoint source pollution reduction and monitoring work.

This shift was to be one-time only, with funding for this work to be returned to General Fund support in 2005-07. To date, we have not received clear instructions about how this should be addressed in the 2005-07 budget.

Maintaining the Title V Federal Air Quality Permit Program

Title V of the federal Clean Air Act regulates air emissions from large industrial sources through permits, and DEQ implements this permitting program in Oregon. Federal law requires states to establish Title V fees sufficient to fully fund program costs. In Oregon, Title V fees are authorized by state law (ORS 468A.315) and fees may be adjusted each year for inflation based on the Consumer Price Index (CPI). Since the early 1990s when our Title V program began, DEQ has funded Title V under this mechanism, but actual costs are now more than revenue generated by CPI increases, requiring us to use balances to keep the program operating at the same level. We have conducted extensive workload analyses and explored whether we can maintain the program without a fee increase above CPI. We have started to discuss this issue with stakeholders.

Maintain Underground Storage Tank Assistance and Oversight

To respond to leaking underground tanks that store gasoline, both the U.S. Congress and Oregon passed laws in the late 1980s requiring tanks to be upgraded and maintained. Oregon law also required a "per tank" fee to pay for DEQ's underground storage tank (UST) work. The 2001 Legislature modified the UST law and set the annual UST fee at \$85 until December 31, 2005, when the fee is repealed. The Legislature also directed DEQ to gain UST program delegation from EPA. We have now started discussions with fee payers about the UST fee and 2005 repeal in anticipation of the 2005 legislative session. A legislative change is needed to continue the UST fee, or much of DEQ's UST work will end and we will not be able to gain delegation to implement the federal UST law in Oregon.

Relocation of the DEQ and Public Health laboratories

Last session, the Legislature approved most of our request to fund a rent increase required by Portland State University for the DEQ laboratory space on its campus. The Legislature also approved \$6 million "other funds capital construction limitation" for purchase of a building suitable for retrofitting as a laboratory for DEQ and the Department of Human Services (DHS) Public Health. Funds will be derived from the sale of "Certificates of Participation" by the Department of Administrative Services (DAS), and DAS must request limitation to complete the project from the legislative Emergency Board. DEQ and DHS are pursuing all possible federal sources of funding for the project. We expect that the laboratory move, and the rent increase that will pay DAS for the Certificates of Participation debt service, will occur sometime during 2006. Without federal funds or some other source of funding to pay for this increased cost of Laboratory services to our program work, Water Quality, Air Quality

and Land Quality program work will have to be reduced to cover the increased costs.

Administrative savings/infrastructure and central services

Agencies are expected to find savings in administrative cost areas such as travel, information technology, contracts, furniture purchases, printing, and managing vacant positions. In addition, we expect there may be interest in reducing, not adding to, budgets for infrastructure and central services work.

**Next Steps** DEQ will brief the Commission on our 2005-07 budget request again at your July 15-16 meeting, and we welcome your input on key budget issues at both meetings. In August 2004, we will ask the Commission Chair to certify DEQ's budget request before submittal as required by DAS (see Attachment F).

**Attachments**

- A. DEQ 2003-05 Legislatively Adopted Budget, General Fund & Lottery Comparison
- B. DEQ 2003-05 Legislatively Adopted Budget, Program Comparison
- C. Willamette Fact Sheet
- D. The Willamette River: Oregon's Legacy
- E. DAS Budget Certification Form

Approved:

Division:



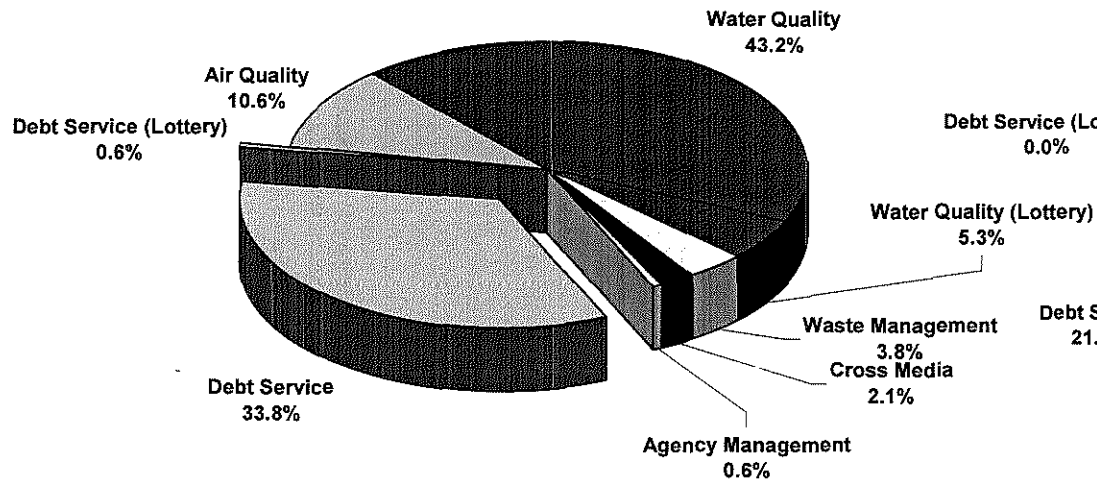
Report Prepared By: Lauri Aunan

Phone: 503-229-5327

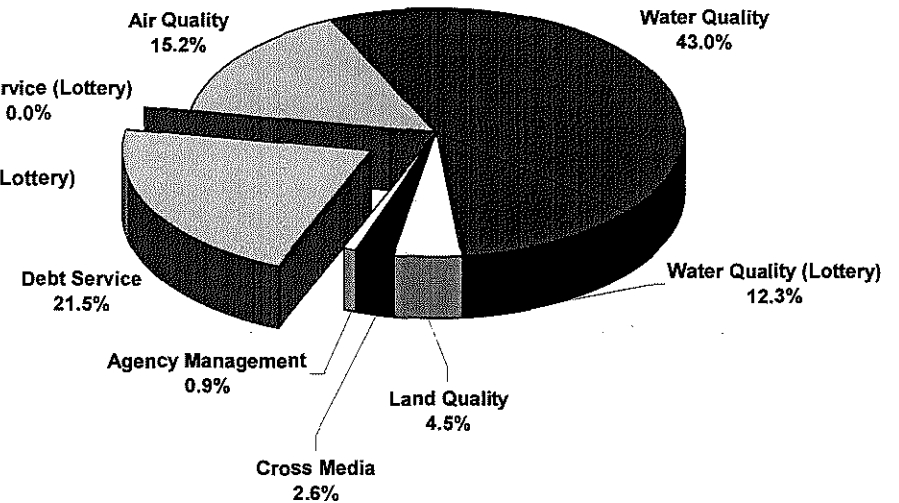


# DEQ 2003-05 LAB Budget General Fund & Lottery Comparison

2001-2003 General Fund And Lottery Budget  
\$41,171,390

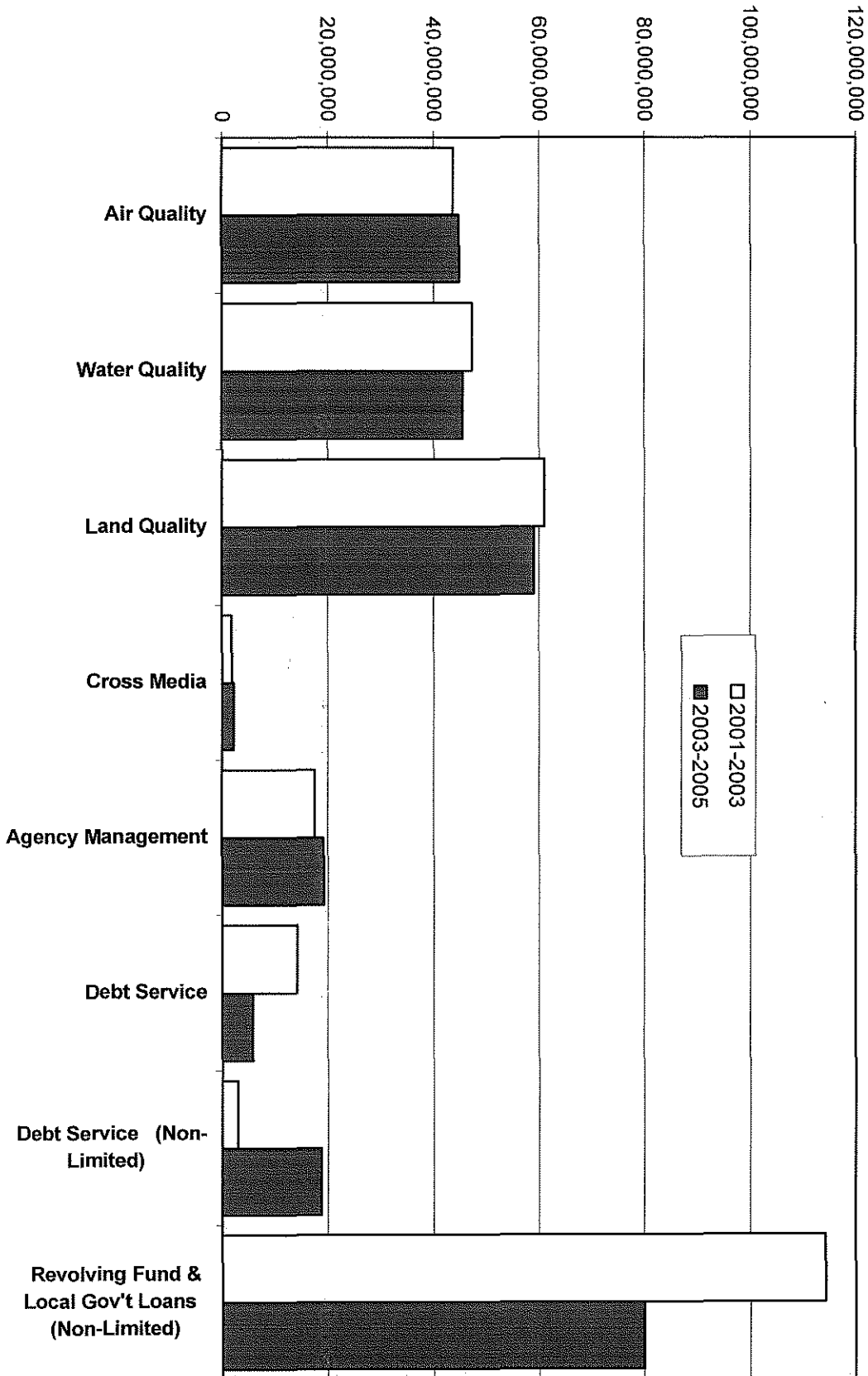


2003-2005 Legislative Adopted Budget  
General Fund And Lottery - \$26,671,256



# DEQ 2003-05 LAB Budget Program Comparison

2001-2003 Approved vs 2003-2005 Legislative Adopted Budget



## Cleaning Up the Willamette

The Willamette River basin is home to 70% of Oregon's population and supports nearly three-quarters of Oregon's economic output. The central feature of this basin – the river itself – is both a symbol and a vital element of the environmental and economic wellbeing of the state. Every citizen in the basin shares responsibility for keeping the river healthy.



### Historic Problems

In the early 1900s, rivers were used as open sewers, and the Willamette River was no exception. Cities discharged untreated sewage, and industries such as slaughterhouses, paper mills and food processors discharged untreated process water into the river. As a result, by the 1930s workers refused to work on riverside construction projects because of the stench and risk of illness. People could not swim in the river, and they built homes facing away from it. Communities could not use the river for drinking water. Many fish could not survive in the river. In tests conducted during this time, most fish suffocated within minutes after being exposed to the water.

### First Steps Toward Restoration

Decades of work and millions of dollars of investment by the state, industry, and cities reversed some of the worst damage to the Willamette River. Cities and industries began treating wastewater in the 1950s, and treatment has improved steadily since. Flood control reservoirs built by the federal government have increased summer flow, providing waste dilution during this critical period.

In 1972, the National Geographic magazine reported that what was "the most polluted river in the Pacific Northwest" only a decade earlier was now free of 90% of industrial wastes and sewage that had polluted it. The river is cleaner and healthier today than it once was for people and fish.

### So why are we still cleaning up the Willamette?

There are two key reasons why the Willamette River continues to require attention, relating to the *volume* and *types* of pollutants.

- The *volume* of discharges to the river increase as more people and businesses come into the Willamette Valley. Even if we reduce the *concentration* of pollutants in wastewater discharges, as the *volume* increase, so does the amount of pollutants getting into the river. At some point, the level of pollutants in the river becomes too high for it to be safe for fishing, swimming, drinking, etc.
- Earlier cleanup efforts focused on the immediate and visible problems, such as raw sewage, dead fish, and the stench. We are now aware other problems that are more invisible and can have long term effects. For example, little attention had been paid to toxic substances and other chemicals in wastewater discharges and urban and rural runoff. This may be a reason why some fish are unsafe to eat and others have deformed skeletons, or why pharmaceuticals and toxic chemicals are showing up in river water and sediments. In many cases, we know little about the risks they pose. For example, how are they affecting fish or the ability to use the Willamette as a drinking water source?

### How does this affect Oregon's economy?

Investment in the restoration of the Willamette River has both immediate and long term links to Oregon's economic health.

Oregon's natural environment and quality of life are a big factor in drawing new businesses and investments into the state. DEQ's Willamette Initiative will help ensure that we can still claim those features in the Willamette Valley.

Industries need the information that will result from completing the Willamette TMDLs in order to have certainty about their water quality permits. Many of the industries that will spur Oregon's economy will require water quality permits. Until the Willamette TMDLs are completed, obtaining new or expanded permits is difficult due to Clean Water Act restrictions on additional discharges into "water quality limited" streams.

People and businesses need water, and having cleaner water to begin with reduces the costs of treating the water before it can be used.



State of Oregon  
Department of  
Environmental  
Quality

**Water Quality**  
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[www.deq.state.or.us](http://www.deq.state.or.us)

**For more information contact:**  
Mike Llewelyn  
503-229-5324



## **What is DEQ doing about it?**

DEQ is working on many levels to clean up the Willamette, including:

Permits: Every industry or municipal sewage treatment plant that discharges into the Willamette or a tributary is required to have a permit to ensure that the discharges will not violate clean water standards.

Storm Water Permits: DEQ issues storm water permits to cities and for industrial and construction sites that require actions to reduce the amount of pollutants and sediments entering waterways from these sites.

Total Maximum Daily Loads (TMDLs): DEQ is working with the Willamette TMDL Council and others to complete TMDLs in 9 of the 12 Willamette subbasins by the end of 2003. These will provide the "road map" for engaging stakeholders and citizens throughout the basin in resolving water quality problems, and set guidelines for future growth.

Financial Support: DEQ administers a low-interest loan fund for financing upgrades of sewage treatment works and other water quality projects undertaken by local governments. DEQ also provides grants to watershed councils and other organizations for watershed restoration projects.

Portland Harbor: DEQ is working with EPA, the Tribes, other state and federal agencies, land owners and others to address the contamination that led to the Superfund listing. In addition, DEQ's Cleanup program is working various other sites throughout the basin to clean up problematic sources of contaminants.

Combined Sewer Overflows: Some cities have had to modify their sewage systems to reduce the number of sewage overflows that can occur during heavy rain events. The largest of these systems in Oregon, the City of Portland, is implementing an aggressive plan to address this situation by 2011.

Abandoned Mines: Mercury is a problem in the Willamette River, and abandoned mines are a contributing source. DEQ is evaluating discharges from mines and recently added the Black Butte mine near Cottage Grove to the Orphan Site List so cleanup can be initiated.

Public Outreach: DEQ is initiating a Willamette Basin effort to engage citizens in activities in and around their homes that will reduce their impacts on the Willamette and other waterways.

## **Chronology**

1938 Citizens pass Water Purification and Prevention of Pollution Bill by initiative, establishing the State Sanitary Authority (predecessor of DEQ) to clean up pollution in the Willamette River.

1941 The Corps of Engineers builds Fern Ridge Dam, the first of its 13 dams in the Willamette Basin.

1944 State agencies analyze pollution and undertake fish surveys in the Willamette. Continuous sampling, monitoring and analyses of pollution over the years led to new treatment requirements, as analyses showed whether initial requirements were achieving the goals of improving river quality.

1949 First sewage treatment plants on the Willamette River completed at Junction City and Newberg. Primary treatment is required by the Sanitary Authority.

1950 Sanitary Authority orders pulp and paper mills to treat wastewater discharges.

1958 Sanitary Authority orders secondary treatment of sewage for some cities and orders Portland to speed construction of its treatment system. Pulp and paper mills are ordered to further reduce pollution loads. Starting in 1958, river flow during low-flow periods doubles due to release of water stored by dams on the river. Increased flows help improve water quality.

1960 Sanitary Authority orders all cities from Salem downstream to install secondary sewage treatment.

1964 Sanitary Authority requires industry to remove 85% of specified pollutant loads from discharges to river.

1968 First year that Willamette River, above Newberg, met all water quality standards in place at that time. State wastewater discharge permit program for industries begins implementation.

1969 The Corps of Engineers builds Blue River Dam, the last of its 13 dams in the Willamette Basin.

1969 The Department of Environmental Quality and Environmental Quality Commission are created. The Sanitary Authority is incorporated into the DEQ.

1972 Congress passes federal Clean Water Act, establishing national goal that waters should be fishable and swimmable by 1985. Permit program is established for municipal and

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Attachment D

OREGON

Business

Education

Human Services

Public Safety

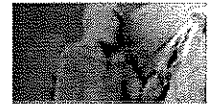
Recreation

Transportation

McCall

## Governor Ted Kulongoski

Offices



## The Willamette River: Oregon's Legacy

April 15, 2004

As I announced in my 2004 State of the State speech, my top environmental priority is to clean up and restore the Willamette River, from the headwaters east of Eugene to the mouth of the river as it enters the Columbia.

The Willamette River is the perfect example of what I call the "Oregon Equation," or  $O = C + E2$ . The Oregon Equation means that Oregon's future equals a sum of its children, its economy and its environment - and the Willamette River plays an important role in all three areas. It is a key environmental resource, providing fish and wildlife habitat. As a "working river," the Willamette is also the lifeblood of our economy in the Valley, supporting businesses, industries and communities. Finally, the Willamette contributes to the quality of life that Oregonians enjoy and it is part of the legacy we will leave for our children.

## Governor Kulongoski's Plan for The Willamette River Legacy



REPAIR • RESTORE • RECREATE

Before and during his governorship, Tom McCall had a legendary vision for this river and its importance to our state and our communities. We must continue the work that Tom McCall started back in the 60's and 70's, cleaning up and restoring the river so that our children will be able to fish without worry and swim in the river without a second thought.

My two-day trip along the length of the Willamette River on April 14 and 15 is only the first step in this long-term effort. No one group can accomplish this critical goal alone - it's going to take all of us working together to restore the health of the Willamette. Everyone who lives, recreates and does business in the Willamette Basin has a role to play, as do Oregon's private sector and our federal partners.

As we move forward, I intend to involve all the stakeholders in this process to make sure we are developing and implementing an effective, comprehensive strategy.

## Repair, Restore, Recreate

My plan for the Willamette Legacy focuses on three themes: "Repair, Restore, Recreate."

The first theme - REPAIR - means we must clean up the industrial pollutants and toxins that have contaminated the river.

The second theme - RESTORE - means we must return the river to its natural state, restoring its abundant wildlife and pristine riverbanks.

The final theme - RECREATE - addresses the incredible role that the Willamette River plays in Oregon's quality of life. We must make it possible for Oregonians to enjoy the many activities the river offers - and to do so responsibly so that it will be here for future generations.

Below are some of the initial efforts I am undertaking with local, state and federal partners as the first steps in this important effort.



Attachment D p. 2**REPAIR**

- I am working with Oregon's Congressional delegation to secure \$6.2 million in additional federal funding for temperature control structures for the Cougar Dam Reservoir on the McKenzie River. I will work with the Corps of Engineers to build similar structures on several dams on other Willamette tributaries.
- I am asking the Corps of Engineers for \$8 million dollars to help the state cleanup the abandoned Black Butte mine site that is currently leaching mercury into the river.
- I am working with the U.S. Attorney's Office to better coordinate our combined capacity to investigate and prosecute environmental crimes. My office, the state's natural resource agencies and the Oregon Attorney General are all committed to working with the U.S. Attorney to coordinate our environmental enforcement actions.

**RESTORE**

- I will work to increase citizen participation in volunteer river clean-up activities such as SOLV's "Down by the River" program. I will also reach out to educate Oregonians about the impact people have on water quality and simple ways they can prevent household pollution from entering the Willamette.
- I have asked state natural resource agencies to come together as they did for the Oregon Salmon Plan to help me develop a plan to select the highest priority actions to clean and restore the river. The plan must include specific actions to restore critical fish and wildlife habitat.

**RECREATE**

- The state will work with cities, counties, and citizens to establish the Willamette River Water Trail, a trail for paddlers following the river from Corvallis to Newberg. Investments will include improving access to the river and providing support facilities for river users such as parking, restrooms, waste disposal, signage, and protection of adjoining private lands from trespass. I have directed the parks department to use existing Parks and Natural Resource Funds for local grants, capital improvements and trail infrastructure. I will also ask the Oregon State Parks Trust to make the Willamette River Trail one of their signature projects.

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[Oregon Administrative Rules](#) | [Oregon Revised Statutes](#) | [Website Feedback](#)

Attachment E

CERTIFICATION

I hereby certify that the accompanying summary and detailed statements are true and correct to the best of my knowledge and belief and that the arithmetic accuracy of all numerical information has been verified.

\_\_\_\_\_  
AGENCY NAME

\_\_\_\_\_  
AGENCY ADDRESS

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TITLE

Notice: Requests of those agencies headed by a board or commission must be approved by those bodies of official action and signed by the board or commission chairperson. The requests of other agencies must be approved and signed by the agency director or administrator.

☐ Agency Request      ☐ Governor's Recommended      ☐ Legislatively Adopted      Budget Page \_\_\_\_\_

## Department of Environmental Quality Budget History

Fund Type	1989-91 Actual	1991-93 Actual	1993-95 Actual	1995-97 Actual	1997-99 Actual	1999-01 Actual	2001-03 Leg Approved	2003-05 Leg Adopted
General Fund	24,927,350	22,140,540	18,751,206	16,511,798	29,222,602	38,688,564	35,919,721	23,384,838
Lottery Funds			5,602,828	5,462,661	7,434,771	456,155	2,455,623	3,286,418
Other Funds	72,603,592	129,404,659	179,604,288	138,733,017	186,117,831	237,234,430	229,716,924	210,238,429
Federal Funds	17,725,442	15,080,428	16,522,917	19,564,019	31,443,339	25,940,544	38,488,520	38,346,912
<b>Total</b>	<b>115,256,384</b>	<b>166,625,627</b>	<b>220,481,239</b>	<b>180,271,495</b>	<b>254,218,543</b>	<b>302,319,693</b>	<b>306,580,788</b>	<b>275,256,597</b>
FTE	452.56	611.49	652.25	711.07	741.11	783.55	835.59	812.95

5/21/04 EOL Meeting Item M Handout




State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** April 29, 2004

**To:** Environmental Quality Commission

**From:** Stephanie Hallock, Director 

**Subject:** Agenda Item N, Informational Item: Update on Performance Partnership Agreement with EPA. May 21, 2004 EQC Meeting

**Purpose of Item** DEQ is negotiating a Performance Partnership Agreement and Grant (PPA/PPG) with the U.S. Environmental Protection Agency (EPA) Region 10 that covers State Fiscal Years 2005 and 2006. The PPA serves as the workplan for many of the federal grants that support the air quality, water quality and hazardous waste programs. It describes how DEQ and EPA will work together to protect Oregon's environment.

The purposes of this item are:

- 1) to describe how a national initiative involving EPA and the states provides DEQ with more opportunity to get EPA's support in addressing Oregon's environmental priorities through the PPA/PPG.
- 2) to describe how my role in ECOS leadership contributes to our progress in the PPA/PPG.
- 3) to inform the Environmental Quality Commission (EQC) about the highlights and priorities outlined in the draft PPA/PPG before EPA Regional Administrator John Iani and I sign the agreement.

**EPA-ECOS  
Initiative**

EPA and the Environmental Council of the States (ECOS, the association of state environmental directors) have developed ways to enhance environmental protection by improving the way EPA works with states to address states' environmental priorities. There are two parts to this initiative.

First, EPA changed how it does national and regional strategic planning in order to include states' priorities in EPA plans. Prior to this year, EPA's planning process was very "top-down." EPA's National Program Managers developed goals for the Regions, and the Regions sought commitments from the states to meet their national goals. The EPA-ECOS initiative reverses the process. EPA now asks about state priorities, and negotiates accordingly when developing national and regional plans. These changes allow more collaborative goal-setting

within regions, and will align and integrate EPA and state strategic goals.

Second, EPA and ECOS are promoting more effective use of PPAs and PPGs. EPA introduced PPAs in the mid 1990s to shift their relationship from strictly oversight to more partnering and joint responsibility for environmental actions. Ideally, EPA and the states work together to identify environmental priorities and set joint goals. To help achieve this objective, EPA and ECOS strongly encourage states and EPA regions to engage “early and often” in joint strategic planning. This supports the goal of getting states’ priorities incorporated into EPA plans, and also means that states and EPA Regions are much better prepared to negotiate meaningful PPAs when the time comes to do so. In the past, these kinds of conversations may have never happened, or if they did, it would only be during the few months that a state and EPA were negotiating their PPA. Typically, the EPA regional and state relationships continued the predominately oversight role. Now, with an increased investment in joint planning, we are able to negotiate more meaningful workplans that reflect our intent to work as together as partners to the extent that our resources and authorities allow.

**DEQ Director’s  
Leadership  
Role with  
ECOS**

Through my role as Co-Chair of the ECOS Planning Committee, I am able to move these changes forward at the national and regional levels. I have also been making sure that DEQ takes full advantage of these changes during our own PPA negotiations that will be completed over the next few weeks. I believe that our draft 2004-06 PPA (attached) demonstrates the strides we’ve made as a result.

**Draft 2004-06  
Performance  
Partnership  
Agreement and  
Grant  
(PPA/PPG)**

While DEQ has been negotiating PPAs with EPA for several years, there are two distinct differences with this PPA. First, as described above, we took a stronger stance in promoting Oregon’s environmental priorities in the agreement and, as a result, have created a two-year workplan that clearly reflects our Strategic Directions, includes more cross-program work than ever before, and describes work expectations and deliverables from *both* EPA and DEQ.

Second, this PPA serves as the workplan for a Performance Partnership Grant (PPG). A PPG allows two or more eligible EPA grants to be combined in a single merged package, much like a block grant. This is the first time DEQ has requested a PPG. In the past, we applied

individually for each federal grant (i.e., separate grants for air quality, water quality and hazardous waste program work). The advantages of a PPG include streamlined administrative requirements and more ability to support cross-program work such as our toxic reduction efforts. One of the more intriguing attributes of a PPG is that it creates the potential for funding to be shifted between programs if necessary to effectively address environmental priorities. This is possible because, when pooled in a PPG, the grant funds can be used to carry out *any* activity that would be authorized under at least one of the program grants. Of course, EPA would need to agree to both the new work being supported by the shift and the work that would not get done as a result. In addition, DEQ may need legislative approval if the shift would result in a substantial change in the work the agency does.

My priorities for this round of PPA/PPG negotiations were to ensure that (1) the PPA/PPG strongly reflects DEQ's Strategic Directions, (2) DEQ gets EPA's support for increased flexibility in how we approach permitting and enforcement, and (3) that we increase our support for more holistic, cross-program approaches to addressing environmental problems. I believe we have achieved all these goals.

We have clearly enunciated our thinking about why an **integrated approach to compliance and enforcement** is essential to our success in Oregon. The small communities and businesses that dominate Oregon's landscape require tailored approaches that recognize their limited financial and administrative resources. We have successfully used creative approaches in the past, such as Environmental Partnerships for Oregon Communities (EPOC), which provided assistance to small communities to help them develop prioritized plans for addressing multiple compliance problems on a realistic schedule; and the Air Quality "Fresh Start Agreement" under which we offer a small business "amnesty" from environmental enforcement actions if minor compliance problems are discovered during an inspection or other visit and are corrected within a certain period of time. In the current PPA/PPG, DEQ and EPA commit to pursuing more of these types of creative and tailored approaches in the future so that environmental regulation will "work" for Oregon's businesses and communities.

The PPA/PPG includes specific commitments that advance our efforts in addressing the Water and Cross Program priorities in DEQ's



**Strategic Directions.** The Water Quality Program will be implementing the watershed approach in five basins by the end of the PPA/PPG cycle. In one of those basins, we will implement a holistic watershed approach by integrating Water Quality, Air Quality and Land Quality environmental actions throughout the watershed. In addition, we will move ahead with our Toxics Reduction Strategy by compiling the agency's toxics information and using this as a basis for developing a prioritized workplan. Several pilot projects addressing cross-program toxics issues are planned as well.

As you review the draft document you will see that we sometimes needed to get EPA's agreement to **stop doing lower priority work**. For example, the Water Quality Program is postponing development of a water quality standard for nutrients in order to develop guidance for implementing standards that have recently been (or soon will be) revised.

We've also gotten **EPA's commitment to help us address our high priority work** by undertaking certain work tasks. They will assist us in developing a less resource-intensive method for developing TMDLs for temperature. Region 10, in a partnership with Oregon, Washington and Idaho, will develop and maintain a jointly-designed information access tool.

**Next Steps**      The PPA and grant application for the PPG will be submitted to EPA Region 10 in June so that the grant award can be made by July 1, 2004. DEQ and EPA will periodically review progress to ensure we are successfully implementing the agreement and to continue with our joint planning activities.

**Attachment**      2004 – 2006 Performance Partnership Agreement: Public Review Draft  
<http://www.deq.state.or.us/programs/workinprogress/ppa/index.htm>

Approved:

Division:



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**PERFORMANCE PARTNERSHIP AGREEMENT**

**between the**

**OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY**

**and the**

**U.S. ENVIRONMENTAL PROTECTION AGENCY – REGION 10**

**for**

**July 1, 2004 – June 30, 2006**

**DRAFT 4/19/04**

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## **EXECUTIVE SUMMARY**

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*[To be developed]*

## **PURPOSE AND SCOPE**

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This Performance Partnership Agreement (PPA) describes how the Oregon Department of Environmental Quality (DEQ) and the U.S. EPA Region 10 (EPA) will work together to protect Oregon's environment.

A PPA is part of a wider effort called the National Environmental Performance Partnership System (NEPPS), an initiative between the EPA and the Environmental Council of the States (ECOS, i.e., the association of state environmental directors). The goal of NEPPS, and of PPAs, is to introduce more flexibility, accountability, and environmental outcomes into the state/federal relationship. PPAs are intended to strengthen protection of public health and the environment by focusing attention on the overall environmental protection goals and the actual results of efforts to achieve them, not on government programs and the number of actions they take.

More recently, EPA has been working with the ECOS to build upon the NEPPS effort by promoting *joint* planning and priority setting processes between the states and EPA regional offices. The intent is for states and EPA to regularly engage in joint planning to achieve better alignment in the work EPA and states do in order to more efficiently and effectively address environmental priorities. By providing a forum for developing Region-specific priorities and strategies, this "bottom-up" information flow would also allow the Regions to convey states' strategic thinking and priorities when discussing national program guidance and developing annual commitments with EPA Headquarters.

This PPA serves as the workplan for the Performance Partnership Grant (PPG) covering State Fiscal Years 2005 and 2006. This is the first time DEQ is entering into a PPG with EPA. A PPG allows for a number of grants to be combined into one more flexible grant package. PPGs are intended to reduce the administrative burden by consolidating several grants into one and increase flexibility by enabling state agencies to direct resources to the highest environmental priorities. DEQ's interest in a PPG was also fueled by the agency's desire to invest more into cross-program activities, which is easier to accomplish with a PPG than with categorical program grants.

EPA program grants included within the PPG include:

- Clean Air Act, Section 105
- Clean Water Act, Section 319 (partial grant) and Section 106
- Resource Conservation and Recovery Act, Section 3011
- Safe Drinking Water Act – Underground Injection Control, Section 1443(b)(1)

In order to present a comprehensive overview of DEQ's efforts to protect the environment, and since a PPA is intended to amplify other strategic planning documents, this PPA also includes other DEQ programs and activities funded by other federal or non-federal funds.

## **STRATEGIC PRIORITIES**

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EPA and DEQ were guided in these PPA negotiations by their respective strategic priorities. Many of these priorities are shared by both agencies. In the future, DEQ and EPA will continue to work on integrating our strategic planning efforts so that the environmental priorities of each agency are most closely aligned with the environmental priorities in Oregon.

## **EPA's Strategic Priorities**

Region 10 strives to integrate state and regional priorities with EPA's national strategic planning objectives. The Region 10 strategic plan was developed through discussions with states and tribes. EPA's national and regional strategic plans are available at <http://www.epa.gov/ocfo/>

The Oregon PPA incorporates EPA's national and regional objectives in ways that fit with Oregon's priorities and objectives. We share the goals of clean air, clean water, clean land, healthy communities and compliance with our laws. In this PPA we describe how we work together on specific activities that help achieve our goals. Region 10 priorities in Oregon include reducing diesel engine emissions, improving water quality in the Columbia River basin, improving water quality monitoring and assessment, implementing effective nonpoint source practices on a watershed basis, strengthening the NPDES program, cleaning up contaminated sites and preventing releases from hazardous waste facilities, improving community health – especially on tribal lands, and ensuring compliance with environmental laws through assistance and enforcement.

## **DEQ's Strategic Directions**

DEQ's mission is to be a leader in restoring, maintaining and enhancing the quality of Oregon's land, water and air. Our vision is to work with all Oregonians for a healthy, sustainable environment.

DEQ's negotiations in this PPA were guided by its *Strategic Directions* document. *Strategic Directions* identifies agency-wide priorities and is not intended to represent all of the work that DEQ does. Program planning efforts and the PPA serve to link these priorities to the broader scope of work of DEQ. *Strategic Directions* also guides the development of budget requests, grant applications, employee workplans, and environmental reporting.

<b>DEQ's Strategic Directions 2004</b>	
<b>Priority 1:</b> Deliver Excellence in Performance and Product	<ol style="list-style-type: none"><li>1. Deliver Outstanding Customer Service</li><li>2. Provide a Work Climate that Supports Excellence</li><li>3. Address All Types of Pollution Sources When Solving Environmental Problems</li><li>4. Ensure Understandable and Equitable Compliance and Enforcement</li></ol>
<b>Priority 2:</b> Protect Oregon's Water	<ol style="list-style-type: none"><li>1. Address Multiple Environmental Impacts on Watersheds</li><li>2. Clean Up the Willamette River System</li><li>3. Issue Timely and Environmentally Protective Permits</li><li>4. Encourage Broader Reuse of Wastewater</li></ol>
<b>Priority 3:</b> Protect Human Health and the Environment from Toxics	<ol style="list-style-type: none"><li>1. Prepare for and Minimize Danger from a Catastrophic Release of Harmful Chemicals</li><li>2. Reduce and Prevent Toxic Releases to Air, Water and Land</li><li>3. Clean Up and Reduce Risks From Toxic Contaminants Already in Our Environment</li></ol>
<b>Priority 4:</b> Involve Oregonians in Solving Environmental Problems	<ol style="list-style-type: none"><li>1. Encourage Personal Actions by Oregonians to Protect the Environment</li><li>2. Provide Oregonians with Better Access to Electronic Information on Local Environmental Conditions and Issues</li><li>3. Support Communities in Solving Environmental and Economic Problems</li></ol>



## **ADDRESSING OREGON'S ENVIRONMENTAL PRIORITIES**

This PPA demonstrates the ways DEQ and EPA are working together to address Oregon's environmental priorities, with approaches tailored to work best in Oregon. DEQ's experience in Oregon shows that *how* we do our environmental work is just as important as *what* environmental work we do. The following four principles, described below, guide the way DEQ approaches its work in Oregon:

1. Tailor approaches to Oregon's unique needs
2. Take a holistic approach to resolving environmental problems
3. Identify and address priorities, shifting additional resources from lower priority work if needed
4. Work in partnership with EPA and obtain EPA's support for Oregon's high priority work

### ***1. Tailor approaches to Oregon's unique needs***

DEQ is a regulatory agency whose job is to ensure compliance with environmental standards. DEQ's success in this area is directly related to its ability to identify and apply the most effective tools and approaches to achieving compliance within the regulated community. In Oregon, the regulated community looks quite different from many other states in the country.

While the entities that DEQ regulates can range from homeowners to citizens, from small to large municipalities and from small businesses to large industries, the fact is that 87 percent of businesses in Oregon are very small (under 20 employees) and the majority of municipalities are small as well. Not only do these smaller entities often have little financial means, they have less environmental knowledge than larger organizations. In addition, many of Oregon's toughest environmental problems stem from non-point or area source pollution problems. This is a vastly different landscape when compared with many other states, especially eastern states where the major pollution concerns are linked to large industrial point sources.

Without jeopardizing the environment or public health, DEQ has been steadily expanding its tool box of innovative and collaborative problem-solving approaches to compliance assurance. In many cases, these approaches can achieve environmental protection more quickly than traditional means, provide greater opportunities for the regulated community to learn about compliance needs and result in process improvements that often go beyond compliance. These approaches are balanced by the fact that when situations call for formal enforcement, DEQ's action is swift and strong to provide a future deterrent. All of DEQ's compliance efforts aspire to equity, consistency and understandability.

Both DEQ and EPA have been active participants in this *integrated* approach to compliance and enforcement, i.e., the ability to choose among a variety of innovative and traditional tools (from financial, educational, and technical assistance to permitting, inspections and enforcement) to achieve the greatest success. The following examples represent a small subset of approaches that DEQ has used to meet Oregon's unique needs:

- A community with multiple compliance problems must often interact with a number of state agencies that may not readily communicate with each other about their individual requirements for the community. Oregon developed and utilized a flexible compliance program (Environmental Partnerships for Oregon Communities/EPOC) which helped communication and coordination of multiple agency requirements and helped to identify funding options.
- DEQ's Air Quality program utilizes a "Fresh Start Agreement." Under a written and voluntary agreement, if DEQ discovers a violation during an inspection or technical assistance visit at a small business, the Department will provide a period of "amnesty" from enforcement. As long as the issues

are corrected during that timeframe, the compliance issues are excused and the business receives a “fresh start” to operate in a compliant manner. Situations involving a clear and present danger to human health or the environment are not given an enforcement amnesty.

- The UST program is piloting an enforcement citation program whereby penalties and corrective action schedules are given “on the spot.” The permittee has a month to opt in or out of the expedited enforcement program for field penalties of \$300 or less. These field citations should simplify the enforcement process for both permittees and DEQ, and should result in quicker corrective action by the permittee.
- Small municipalities are often given mutual agreements and orders instead of penalties in order to facilitate coming into compliance with burdensome and costly environmental requirements involving major infrastructure upgrades.

EPA maintains a strong commitment to working with states to find new and innovative ways to make its work more effective. Across EPA, there are numerous efforts underway to pilot new ways of doing business. Examples of current work in Region 10 include:

- Efforts to measure the effectiveness of compliance assistance in the construction sector for storm water run off requirements.
- Piloting the use of expedited settlement opportunities in EPA’s Underground Storage Tank and Storm Water programs to resolve cases more quickly and expedite environmental improvements.
- Piloting effluent trading programs to provide facilities the opportunity to meet their pollutant reduction obligations more efficiently and to leverage non-point source pollution reductions.

DEQ and EPA are committed to continuing to invest in an integrated strategy for compliance and enforcement. This regulatory philosophy is well aligned with several of the Enlibra principles that EPA subscribes to; namely, to focus on outcomes and solve problems through approaches that lead to less resistance, more rapid compliance, promote economic health and encourage innovation, and increase trust among all stakeholders. Further, EPA’s 2003-2008 strategic plan states that “recognizing that environmental issues and concerns are diverse, EPA will develop a range of PPAs tailored to state needs.”

During this PPA period, EPA and Oregon will work together to assess and document the successes of some of the innovative approaches already underway, to expand successful programs and to embark on new approaches. Specifically, the following are commitments toward this end. These commitments plant the seed for collaboration between EPA and DEQ and provide the compass heading as we continue to collectively advance toward more innovative and integrated compliance and enforcement strategies.

- In future evaluations of DEQ’s compliance program, DEQ and EPA will consider broadening the suite of compliance effectiveness measures to include less traditional measures (e.g., assessing how the development of productive business relationships can better support compliance with environmental regulations).
- DEQ will select one source sector that is subject to numerous environmental regulations and will develop an integrated approach for permitting, assisting and inspecting these facilities. DEQ’s focus will be on environmental protection and excellent customer service.
- DEQ, EPA and EPA’s contractor have been evaluating the effectiveness of DEQ’s Toxic Use and Hazardous Waste Reduction Assistance Program (TUWRAP) in helping businesses reduce waste and achieve compliance. DEQ and EPA will continue their joint commitment to acknowledge and to

incorporate the results of technical assistance and its important role into Oregon's integrated compliance strategy. Over the course of this PPA, the agencies aim to jointly define this role and the flexibility of the State in using both technical assistance and compliance enforcement approaches to achieve compliance objectives and measurable environmental results. The study may also identify some data gaps that DEQ can help fill in order to fully evaluate whether inspections or technical assistance are more cost-effective. To the extent field staff are needed to help fill in these data gaps, EPA and DEQ's Hazardous Waste Program will come to a mutual understanding of the impact on the inspection program.

## ***2. Take a holistic approach to resolving environmental problems***

DEQ recognizes that the most effective and sustainable solutions to environmental problems are achieved by looking at all sources of pollution within a geographic area and taking a coordinated, cross-program approach to addressing those problems. DEQ is moving aggressively to make this work within the agency and chose to enter into a PPG with EPA to use federal resources to support cross-program work.

DEQ's commitment to a holistic approach is demonstrated in the initiatives described below. These projects exemplify the types of environmental problems that are most suited to a cross-program approach. The experience the agency gains from carrying out these efforts will be instrumental in setting the foundation for further expansion of DEQ's cross-program work.

### Coordinated Watershed Approach for All Media Programs

Clean water and healthy watersheds are priorities for DEQ and EPA. DEQ is shifting to an integrated approach to watershed protection in order to more efficiently and effectively implement its regulatory programs and resolve environmental problems.

During the period of this PPA, DEQ will take a major step forward to implement the watershed approach in its Water Quality Program. This approach recognizes five sequential tasks – (1) scoping, (2) monitoring, (3) TMDL development/issuance/update, (4) TMDL implementation and permit modification, and (5) assessing for compliance - followed by another scoping phase. DEQ envisions tying most water quality programs into this cycle, and expects to be in different phases in different watersheds throughout the state at any one time. Demand-driven work (e.g., new permits) and other high priority issues (e.g., significant compliance issues) will be addressed on an as needed basis outside of the five year watershed cycle. By the end of the PPA period, the Water Quality Program expects to be implementing the watershed approach in 5 basins.

DEQ will also determine how the Land Quality and Air Quality Programs will be integrated into the watershed approach. The three Programs will work together in selected basins to scope out the environmental priorities across all media and determine how the programs' various resources could be directed, in a coordinated, cross-program manner, to address those priorities. This is the first step toward achieving the goal of implementing the watershed approach agency wide.

DEQ will need EPA's support and flexibility in order for this approach to succeed, as this phased geographic approach is likely to raise some issues for EPA related to the ways priorities are set and compliance is carried out.

### Protect Human Health and the Environment from Toxics

In 2003, DEQ developed a vision for addressing toxics via a cross-program approach. During this PPA period, DEQ will undertake several initiatives to begin to realize that vision. DEQ will compile and analyze the agency's toxics information, including stakeholders in the process, to identify the highest priority work and craft the agency's toxics strategy. DEQ's programs will also work together on several key toxics concerns, including:



1. a collaborative effort to get orchardists to voluntarily change management practices to reduce the amount of pesticides getting into waterways;
2. developing a strategy for keeping toxics in urban storm water from recontaminating the Portland Harbor Superfund clean up site; and
3. developing an assessment and remediation plan for an abandoned or inactive mine that is contributing to mercury problems in the Willamette River.

Putting a greater emphasis on controlling toxics will require DEQ to shift resources from lower priority program activities because of the magnitude and complexity of problems associated with toxics and the costs of monitoring and analysis. DEQ will need EPA's support when it is necessary to reduce, delay or discontinue other program activities in order to shift resources to higher priority toxics problems.

### ***3. Identify and address priorities, shifting additional resources from lower priority work if needed***

In recent years, doing more with less has been an ever present theme in the field of environmental protection. DEQ responds to this challenge by directing its resources to high priority environmental problems in order to achieve the greatest environmental gain. The agency also looks for opportunities to streamline procedures and organize its programs in ways that reduce the cost of doing business. These strategies are evident in each of the Programs' workplans. Here are several examples:

#### Air Quality Program

To free resources to work on the toxics and diesel strategies, the Air Quality Program is:

- providing less support to EPA in their lead role of addressing air quality on tribal lands and supporting tribal air quality programs
- seeking ways of doing less ambient monitoring in order to do more mercury and other toxics monitoring
- pursuing a simplified approach for redesignating Salem to attainment for ozone

#### Water Quality Program

To free resources to work on the toxics strategy and participate in cross-program initiatives, the Water Quality program is:

- seeking EPA's approval to delay adoption of a nutrient standard, in order to focus on the implementation strategy for the new toxics and other water quality standards
- devoting some of our Industrial Pretreatment Program resources to a joint project with the Hazardous Waste Program to assess how the Hazardous Generator Wastewater Exemption may relate to the discharge of hazardous waste via wastewater discharges

#### Hazardous Waste Program

To free resources for cross-program initiatives and make more of a shift to a watershed approach, the Hazardous Waste Program is:

- postponing rulemaking activities during the first year of the PPA in order to shift resources to the Wastewater Treatment Unit study (rulemaking needs will be reassessed midcourse for the second year)
- focusing technical assistance and inspection resources in priority watersheds, integrating large quantity generator inspections as well as small business needs in an integrated strategy to address all problem sources in each watershed plan.

### ***4. Work in partnership with EPA and obtain EPA's support for Oregon's high priority work***

EPA supports DEQ's efforts to address priority work in Oregon in many ways. In addition to providing funding for many program activities and special projects, EPA has committed to undertaking certain work tasks. For example, in this PPA:

- EPA will work with the Water Quality Program to develop a simplified method for developing nonpoint source temperature TMDLs
- EPA will assist the Air Quality Program with the Clean Diesel initiative by seeking funding for diesel tank and supporting public education efforts

EPA also supports DEQ's high priority work through its endorsement of non-traditional approaches that are designed to result in better environmental outcomes and/or improved rates of compliance. Examples of this within this PPA include:

- Agreeing to a "prioritized" approach to addressing Underground Injection Control facilities rather than pushing for the statewide inventory that is promoted in EPA's National Program Manager guidance.
- Agreeing to allow DEQ to replace large quantity generator inspections for complaint investigations that result in enforcement, recognizing that resources are limited and it is appropriate to allocate inspection resources to high priority complaints.

## **REGIONAL PILOT PROJECTS**

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In the fall of 2003, Region 10's Regional Administrator and Deputy Regional Administrator met with the State Directors of Oregon, Washington and Idaho to discuss topics of regional importance and joint interest. As a pilot project for the national EPA-ECOS alignment effort, the States of Idaho, Oregon and Washington agreed to work with Region 10 on four jointly developed projects. These projects are described below, followed by examples of DEQ's and Region 10's commitments in support of the projects. Over the next year, Region 10 and the three states will continue to work together to further develop, refine and implement these joint pilot projects.

### ***Regional Pilot Project #1. Clean Diesel Project***

Objective: Implement the Oregon Clean Diesel Initiative with a focus on making ultra low sulfur diesel and biodiesel available in Oregon; encouraging transition to new, effective diesel control technologies; encouraging anti-idling at I-5 truck stops, electrification at ports and other measures undertaken in coordination with California, Washington and British Columbia to reduce commercial marine ship emissions.

DEQ's Air Quality Program will work together with Region 10 and the State of Washington to implement this strategy. Specific commitments are described in the Air Quality Program section of the PPA.

### ***Regional Pilot Project #2. Information Technology***

Objective: Increase our capacity to access and share environmental information among Region 10 states and EPA for the purpose of better decision making.

This initiative builds upon work already underway, funded by the Pacific Northwest Challenge Grant that is focused on making water quality information compatible and accessible throughout the region. DEQ will continue to carry out its responsibilities under the Challenge Grant project and is committed to an increased level of communication and coordination with Region 10, Washington and Idaho to push this initiative forward. DEQ and the other states are also seeking EPA's commitment to work with the states

to design a web-based tool to access, display and analyze data, and an additional commitment of resources to build, implement and maintain the system.

During this PPA cycle, DEQ will also be designing and planning for an Environmental Science and Information Center. The center would greatly expand DEQ's capacity for using environmental information and analyses in environmental decision making. DEQ is seeking support from EPA for an additional Information Technology (IT) manager to manage DEQ's activities for all of these IT projects.

### ***Regional Pilot Project #3. Regional Agricultural Issues***

Objective: Identify and address environmental issues associated with agricultural practices and processes that might benefit from a coordinated regional approach. The agency directors from Oregon, Washington and Idaho have asked EPA to convene a regional forum involving State and Federal agency representatives (agricultural and environmental) to decide whether there is agreement to pursue joint initiatives such as:

1. Identifying successful and innovative approaches for improving environmental quality in agricultural areas.
2. Developing regional approaches for pollutant cross boundary transport.
3. Identifying emerging issues and developing innovative approaches for addressing them before they become major problems.
4. Developing systems for communicating environmental information to decision makers in other governmental agencies.

Region 10 has agreed to convene a forum of directors from state environmental and agricultural agencies to discuss these ideas. DEQ's Director has agreed to participate in the forum, as has the Director of the Oregon Department of Agriculture.

### ***Regional Pilot Project #4. Innovations in Permitting and Compliance***

Objective: Explore and implement new and creative ways of achieving improved environmental results.

EPA and the states are committed to using a variety of tools in their compliance and permitting programs ranging from traditional to new approaches designed to improve environmental benefit. Discussions about potential projects are still underway. Approaches being considered include:

Sector or Pollutant-Based Approach to Improve Results: Expand sector and/or pollutant-based approaches for improving environmental performance and compliance. The goal is to improve environmental results at either targeted industry sectors or by pollutant (for instance, mercury). The states and EPA will explore if this approach could be done on a broader scale, either geographically or for the region. The priority focus is on compliance and environmental results instead of enforcement numbers.

Permit Streamlining to Improve Clarity and Timeliness: Improve the clarity and timeliness of the permit processes and permit decisions. Roles and responsibilities between EPA and the state agency will be clarified for permit applicants.

Alternatives to Improve Environmental Results: Explore alternative approaches to improve environmental results through economic and non-regulatory incentives to communities and regulated entities. In addition, EPA and the states will work at creating at least one state-selected priority area in which traditional compliance (the numbers of inspection) will be approached and measured differently (through actual compliance rates or actual environmental outcome data).



Tailor Enforcement Approaches to Inherent Differences Between Small Municipal and Industrial Sources: When municipalities find themselves in non-compliance, it is often due to limited resources and staff. Municipalities are inherently different than industrial sources in that they are not profit making ventures and they don't have the option of closing down and moving elsewhere. Assessing large civil penalties against small municipalities can be counter-productive when those resources are sorely needed to complete facility upgrades, hire staff, etc. EPA and the states will 1) highlight work that has already been done, and 2) capitalize on that work to develop an overarching enforcement approach to treating small municipalities differently. Options to evaluate will include:

- Reduced penalties and use of mutual agreements and orders.
- Compliance teams dedicated to providing technical assistance and on-going technical support.

Priority Setting for Core Work: EPA will dedicate a portion of its resources to support the states in priority work areas. Support could involve either conducting the priority work as partners with the states, work-share, or working on lower priority work that the states are not able to address.

Integration of Enforcement with Program Planning and Evaluation Cycles: EPA will work with the Region 10 states to become a national model for integration of the enforcement and planning cycles.

DEQ's Integrated Compliance and Enforcement Strategy, described previously in this document, embodies many the objectives contained within this regional pilot project. DEQ also has several efforts planned or underway that align with this strategy, including the Toxic Use Waste Reduction Assistance Program Evaluation (Hazardous Waste Program), and the Comprehensive Approach to Managing Wet Weather Issues (Water Quality Program). These initiatives are described in the respective program's section of the PPA.

## **OUTSTANDING ISSUES**

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DEQ is projecting a \$1 million shortfall during the second year of the PPA due to the increased costs of environmental data collection and analysis that will result from the required relocation of the DEQ Environmental Laboratory. DEQ has been seeking assistance from EPA Headquarters and Region 10, but no commitments have been made. If it is not possible to secure new federal funding to cover this deficit, DEQ will need to renegotiate the PPA to reduce the amount of work commitments in order to shift federal funds to pay for laboratory work.

## **MODIFYING THE AGREEMENT**

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This PPA is intended to be a "living," iterative document. Although DEQ and EPA developed this agreement based upon current and projected information, it is possible that either partner may want to revise the agreement based upon new information or changes that occur during the timeframe of the agreement.

DEQ and EPA expect that, in most instances, negotiating changes will be a fluid process that both agencies can readily agree to, or that changes will be interpreted to be within the scope of the existing agreement, and that these agreements will be captured through written or verbal side agreements. When major changes are needed, the PPA can be re-opened and renegotiated under the direction of the DEQ Director and EPA Regional Administrator.

When either agency believes that changes are needed, the agencies will need to reach agreement on the following:

- The level of resources necessary to do the work

- Any specific disinvestments from existing work that will be required to accomplish this new work
- The roles and responsibilities of each agency to support identified projects.

# **PROGRAM NARRATIVES:**

## **CROSS-PROGRAM PRIORITIES**

### **OFFICE OF COMPLIANCE AND ENFORCEMENT**

#### **LABORATORY**

#### **AIR QUALITY PROGRAM**

#### **HAZARDOUS WASTE PROGRAM**

#### **WATER QUALITY PROGRAM**



## **CROSS-PROGRAM PRIORITIES**

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DEQ is committed to increasing its capacity to address environmental issues holistically. In many cases, this means engaging two or more programs (Land Quality, Air Quality and Water Quality) in coordinated efforts for more effective environmental protection.

Cross-program efforts are solidly endorsed in DEQ's *Strategic Directions*. A Key Action under Priority #1: Deliver Excellence in Performance and Product, instructs DEQ to "address all types of pollution sources when solving environmental problems." A Key Action under Priority #2: Protect Oregon's Water, directs the agency to "address multiple environmental impacts on watersheds."

DEQ is aggressively pursuing significant environmental improvements by using a holistic, cross-media, information-based approach to address both water quality and toxics issues. These initiatives are described below. The specific work commitments for each initiative are captured in the media programs' individual workplans.

### ***Protect Oregon's Water***

Clean water and healthy watersheds are priorities for DEQ and EPA. DEQ is shifting to an integrated approach to watershed protection in order to more efficiently and effectively implement its regulatory programs and resolve environmental problems. DEQ's goal is to involve all media offices in collaboratively developing and implementing comprehensive watershed plans, which may include the development and implementation of TMDLs, prioritized water quality permitting, safe management of hazardous wastes, cleanup of contaminated sites, removal of underground storage tanks, protection of groundwater, and minimizing airborne pollution. Incentives, as well as regulation, are needed to encourage action to protect and improve Oregon's watersheds. Incentives might include technical assistance, education, and financial assistance (grants or low interest loans).

DEQ will be needing EPA's support and flexibility in order for this approach to succeed, as the geographic focus of the watershed approach is likely to raise some issues related to the ways priorities are set and compliance is carried out. These issues will become evident as DEQ migrates to the watershed approach over the next few years, and may require PPA revisions from time to time. For example, the environmental priorities in a particular basin may not align with EPA's priorities for the state. Or, the watershed-based vs. statewide focus of the watershed approach may conflict with EPA's expectations that states approach certain issues on a statewide basis.

To protect Oregon's watersheds, DEQ will promote the following priorities through the PPA and secure funding for them through the PPG:

#### **1. Transition to the Watershed Approach in the Water Quality Program**

DEQ's Water Quality Program is transitioning to an integrated approach to watershed protection that is based on a five year cycle. This approach recognizes five sequential tasks – (1) scoping, (2) monitoring, (3) TMDL development/issuance/update, (4) TMDL implementation and permit modification, and (5) assessing for compliance - followed by another scoping phase. DEQ envisions tying most water quality programs (e.g., nonpoint source/319, monitoring, TMDLs, permits, 401 hydro certifications, etc.) into this cycle, and expects to be in different phases in different watersheds throughout the state at any one time. Demand-driven work (e.g., new permits) and other high priority issues (e.g., significant compliance issues) will be addressed on an as needed basis outside of the five year watershed cycle.

DEQ will need EPA's support and flexibility in order for this approach to succeed, as this phased geographic approach is likely to raise some issues related to the ways priorities are set and compliance is carried out.

*Objective:* By the end of the PPA period, DEQ will be implementing the watershed approach in 5 basins.

*Outcome:* Clear statement of each watershed's water quality priorities and a plan for deployment of resources to efficiently address those priorities.

## 2. Expand the Watershed Approach to Include Land Quality and Air Quality

DEQ's vision for a watershed approach entails a strategic deployment of resources from all three program offices (Air Quality, Water Quality, and Land Quality) to comprehensively address each watershed's environmental priorities in the most effective way. To achieve this, DEQ will integrate the Land Quality and Air Quality Programs into the framework for the watershed approach that the Water Quality Program is beginning to implement. During this PPA cycle, the programs will work together in a selected watershed to scope out the environmental priorities across all media and determine how the programs' various resources could be directed, in a coordinated, cross-program manner, to address those priorities.

Simultaneously, the Air Quality Program will assess the feasibility of changing Clean Air Act PSD planning area boundaries to match watershed boundaries. Under the Clean Air Act, DEQ is required to prevent air quality from significantly deteriorating in each planning area. Changing the boundaries to watersheds may improve the Air Quality Program's ability to integrate this effort into the watershed approach. EPA would need to work with DEQ to evaluate this concept and decide whether to switch to this approach.

*Objective:* Determine how the watershed approach will be implemented in the Air Quality and Land Quality Programs in order to achieve the agency's vision of an integrated and strategic deployment of resources to address the highest priority environmental problems throughout the state.

*Outcome:* An expanded model of the watershed approach that shows how all three programs will coordinate efforts to implement a cross-program watershed approach.

## 3. Implement the Willamette River Mercury TMDL

DEQ is nearing the completion of "Phase I" of the Willamette mercury TMDL and has started planning for "Phase II." The phased approach is being used in recognition of the need to get a better understanding of the fate and transport of mercury within the Willamette Basin. DEQ and stakeholders have agreed that further analysis and monitoring would be beneficial prior to setting wasteload allocations for mercury that would be incorporated into wastewater permits.

To move us into Phase II of the mercury TMDL, the Water Quality, Air Quality and Hazardous Waste Programs will collaborate on gathering and interpreting technical and scientific information to further our understanding of the mercury mass balance for the Willamette Basin. This effort will include extensive discussion and collaboration with external stakeholders. The programs will also continue to implement the Mercury Reduction Strategy developed as part of the agency's overall toxics strategy in December 2003.

DEQ will need EPA's support to help mitigate the expense of mercury data collection and analysis by providing laboratory services and grant funding. DEQ also seeks EPA's support in promoting voluntary mercury reduction efforts (e.g., Hg traps in dental offices, Hg recovery by placer miners) and coordinating efforts by Region 10 agencies to conduct voluntary mercury reduction strategies for sectors where multi-state efforts would be more effective.

*Objective:* Development of a shared understanding of Willamette Basin mercury sources and reduction needs with agreement to move forward with Phase II of the mercury TMDL. Once a shared understanding is in place, a study plan for moving forward on Phase II of the mercury TMDL will be developed, DEQ will begin implementation during the later part of the PPA period. The study plan may or may not include additional monitoring and data analysis.

*Outcome:* Development and initial implementation of a study plan for completion of Phase II of mercury TMDL.

### ***Protect Human Health and the Environment from Toxics***

Human exposure to toxic chemicals is of increasing concern in Oregon. On a daily basis, Oregonians are exposed to toxics through many sources such as urban, agricultural and forest runoff, chemical emissions from cars and trucks, air emissions or water discharges from industrial and municipal treatment plants, global and area-wide air fallout, and through the food chain where persistent toxics can accumulate. DEQ already has a number of efforts underway to help Oregonians reduce the use of toxic chemicals and the amount of hazardous waste generated. The important next step is to develop and implement a consolidated, agency-wide strategy to ensure we are addressing these problems in the most effective and efficient way. In addition, we will initiate or continue work on several high priority projects that seek to resolve toxics problems and enhance our understanding of successful ways to address toxics in the environment.

Putting a greater emphasis on controlling toxics will require DEQ to shift resources from lower priority program activities because of the magnitude and complexity of problems associated with toxics and the costs of monitoring and analysis. DEQ asks that EPA recognize the importance of this work - for today's Oregonians as well as for future generations - and support DEQ's efforts in this area.

The following are high priority activities that DEQ will seek funding for through the PPG.

#### **1. Finalize the Cross-Program Toxic Reduction Strategy**

In 2003 DEQ developed a vision for addressing toxics via a cross-program approach. One of the main issues identified in that plan was the lack of a comprehensive understanding of DEQ's current data on toxic chemicals and how this data might direct our work priorities – particularly as we move to a cross-program watershed approach for protecting Oregon's water. Therefore, the primary task would be to compile and analyze the agency's toxics data. The agency would then work cross-program and with stakeholders to interpret this information in order to scope out the agency's toxics workplan for the near and long term.

At times, DEQ will need EPA's support when it is necessary to reduce, delay or discontinue certain program activities in order to shift resources to address toxics issues when it can be determined that those activities are addressing higher priority environmental problems in Oregon.

*Objective:* Ensure that DEQ is addressing the most important toxics problems in the most efficient way.

*Outcome:* A prioritized workplan to guide DEQ's efforts to address toxics and a comprehensive inventory of DEQ's toxics data to support this work.

#### **2. Cross-Program Pilot Projects**

Concurrent with the work described above, DEQ plans to undertake several pilot projects that will inform DEQ on how best to identify and successfully implement cross-program toxics work. The projects will give DEQ the opportunity to learn how to effectively apply the information compiled from the agency's data to solve toxics problems. Four pilot projects are currently envisioned:

##### ***(a) Preventing Recontamination of Portland Harbor from Urban Storm Water***

Urban storm water has been identified as a possible source of toxics that could recontaminate sediments in the Portland Harbor clean up site. This pilot project would use existing information to identify the types of toxics that are likely to be the most problematic in storm water runoff and evaluate potential methods for preventing the toxics from reaching the receiving water body. Examples might include



focused Hazardous Waste technical assistance and compliance inspections or development of specific storm water control mechanisms

*Objective:* Evaluate potential methods for preventing toxics in urban storm water from reaching the clean up site.

*Outcome:* Strategy for controlling toxics in storm water so that they do not contribute to the recontamination of the Portland Harbor clean up site.

*(b) Assessing Discharges of Hazardous Wastes via the Hazardous Waste Wastewater Exemption*

Over 98% of all hazardous waste generated and reported to DEQ is disposed of in wastewater. Since 1995, DEQ has seen a 300% increase in reported quantities of hazardous waste disposed through wastewater treatment units (WWTUs), with 65 sources generating over 8.5 million metric tons in 2002. The data reflect only self reported wastewaters under Oregon's hazardous waste reporting requirements; the actual volume of hazardous wastewaters discharged directly or through publicly owned treatment works (POTWs) to Oregon waters could be higher. DEQ is concerned not only about impacts on ambient water quality due to pass-through of certain toxic pollutants, but also the impact of these hazardous wastes on biosolids generated in the waste treatment process and later applied to land for beneficial use. The agency is also concerned that facilities claiming the WWTU exemption pay no hazardous waste fees and, through this low cost management option, have no financial incentive to reduce the use of toxic chemicals or the generation of hazardous waste. This is a clear contradiction to DEQ's toxics reduction goals.

Consistent with DEQ's priorities of protecting Oregon's water and addressing multiple environmental impacts on watersheds, DEQ's Industrial Pretreatment Program and Hazardous Waste Program will evaluate the potential impacts of these discharges on Oregon waters and the environment. This effort will begin with identifying gaps between facilities claiming the Wastewater Treatment Unit (WWTU) exemption and the requirements established by local wastewater treatment facilities to control and limit the discharge of hazardous wastes to municipal pretreatment systems. The analysis will also identify gaps between specific hazardous wastes discharged through WWTUs and the constituents regulated under pretreatment permits. DEQ will develop a specific study methodology and upon conclusion of the study will be able to better quantify the environmental impact of current practices and identify alternative policy approaches to resolve any environmental concerns discovered in relation to the study.

DEQ will be seeking EPA's assistance to:

- identify potential hazardous waste constituents that may be present in wastewaters managed within certain industry sectors;
- conduct wastewater sampling analysis;
- identify any work being done by other states or at the federal level on this issue; and
- identify grant opportunities that would enable DEQ to increase resources on this project or to fund follow-up work.

*Objective:* To better understand how hazardous wastes discharged through WWTUs may contribute to environmental impacts in Oregon waters and the environment in order to address those impacts.

*Outcome:* Documentation of gaps between Water Quality and Hazardous Waste Program requirements that may adversely impact DEQ's goals for water quality and toxics reduction, and identification of specific approaches DEQ may take to address environmental concerns.

*(c) Clean Up of Abandoned and Inactive Mines*

DEQ's Land Quality Division has long been involved with cleaning up toxic materials associated with abandoned and inactive mines. This pilot project would give focus to that work by combining the work of the Land Quality Division with the TMDL work in the Water Quality Program. The two programs will select an abandoned or inactive mine with both land quality and water quality concerns and jointly develop an assessment and remediation plan to address the contaminants of interest. Because of lack of

state funds for this type of work, the programs will seek federal funding to undertake assessment and remediation of the site.

*Objective:* The long term goal of this effort is to reduce the amount of toxic materials leaving an abandoned mine site in order to prevent environmental impacts.

*Outcome:* Development of an assessment and remediation plan for the selected mine.

*(d) Reducing Water Quality Impacts from the Use of Pesticides in Orchards*

DEQ would like to apply a successful approach for reducing pesticide inputs to surface waters to an agricultural basin in the state. This approach was developed in the Hood River Basin as a collaborative effort between the local orchardists and watershed council, DEQ, Oregon State University Extension, and the Oregon Departments of Agriculture (ODA) and Fish and Wildlife (ODFW). For this project, DEQ collected and analyzed water quality samples to identify which types of currently-used pesticides are present, and then worked with the other partners in assisting orchardists to implement Best Management Practices (BMPs) to reduce their contributions of these pollutants.

In the Hood River Basin, all of the changes in pesticide application have been done on a voluntary basis and have resulted in a significant decrease in pesticides in the water as well as an improvement in the biological components of the stream. DEQ would like to apply this model to another orchard area where similar pesticides are applied to continue the use of this collaborative, voluntary approach to decreasing pesticide inputs into waters of the state. In the first year of the PPA, DEQ would work with the other agency partners to identify an appropriate basin and establish a relationship with the local orchardists and watershed council. The second year would be dedicated to base-line monitoring and working with the orchardists on improved management practices have been identified as effective in reducing pesticide releases.

DEQ will be seeking grant funding from EPA to cover the cost of water quality monitoring and analysis (~\$125,000). Implementation of this pilot project is dependent on DEQ's ability to procure grant funding to cover these costs.

*Objective:* Get orchardists to voluntarily change management practices to reduce water pollution.

*Outcome:* DEQ will produce a set of baseline water quality data which will help guide the outreach efforts that result in the having a significant number of orchardists in a basin voluntarily adopt more effective BMPs. The long term goal would be to implement these BMPs to reduce pesticide releases (both air-borne and via runoff).

## **OFFICE OF COMPLIANCE AND ENFORCEMENT**

Oregon's Office of Compliance and Enforcement is responsible for issuing formal enforcement actions, including civil penalties and orders, against persons who violate environmental laws, rules, and permits. DEQ participates in a broad array of compliance issues and agency-wide decisions relating to compliance and enforcement. DEQ and EPA work together to implement the compliance and enforcement program according to the Region 10/DEQ Compliance Assurance Principles.

EPA Region 10 recently completed a reorganization that consolidates most of its compliance and enforcement resources into one office – the Office of Compliance & Enforcement. This new office has a senior level director with line authority over enforcement staff and resources to create a dedicated team, processes and support systems for an effective and accountable compliance and enforcement program. An initial priority in the new office is to establish a formal strategic planning and priority setting framework that reinforces cross-media communication and coordination, and effective targeting for the Region's compliance and enforcement work. As state programs do the majority of inspection and compliance work in Region 10, the new office is committed to working closely with our states to maximize the collective efforts of our limited resources

### ***Where OCE is Going in 2004-2006***

DEQ will conduct inspections to ensure high rates of compliance with regulations and permits. DEQ will issue formal enforcement actions against violators of Oregon environmental laws. DEQ will continue to improve the timeliness of these actions.

DEQ will continue to broaden its involvement in compliance issues and decision-making processes, including participation in rulemaking, policy and guidance development with the Programs and other agencies. DEQ will work together with the Programs and EPA to determine the appropriate compliance and enforcement mechanisms to enhance the effectiveness of general and specific deterrence in the regulated community, including small and large businesses, municipalities, and homeowners. In partnership with the Programs and EPA, DEQ will evaluate and implement innovative compliance and enforcement approaches. DEQ will continue to participate in cross media enforcement and compliance issues.

DEQ will participate in defining and setting compliance and enforcement priorities for the Programs, including ensuring the Programs and EPA maintain coverage of the following EPA OECA Priorities: (1) Wet Weather (CSO/SSO, Stormwater, and CAFOs), (2) Air Toxics, (3) Air (New Source Review and PSD), (4) Tribal Lands, (5) Mineral Processing, and (6) Financial Responsibility for RCRA TSDs. The Department's compliance and enforcement priorities may overlap, where possible, with EPA's OECA Priorities. Please refer to the specific program sections of this PPA and to the attached workplans for further discussion of these efforts.

### ***Division 12 Enforcement Regulation Implementation***

DEQ expects to present new enforcement regulations (Division 12) for consideration by the Oregon Environmental Quality Commission and to revise its Compliance and Enforcement Guidance Manual by late 2004. The proposed rules and guidance are more specific and understandable, and are intended to promote greater statewide consistency in enforcing program requirements. The Department will update or finalize policies regarding Supplemental Environmental Projects, Economic Benefit Calculations,



Ability to Pay Issues, Managing Bankrupt Respondents, Mitigation for Self-Reporting, and Multiple-Day and Multiple Civil Penalties.

Once the rules are promulgated, DEQ, in conjunction with the Programs, will conduct state-wide training in the regions on how to implement the new enforcement rules and guidance. Included in this training will be updated information on what inspectors will need to collect in order to establish that a violation of a certain classification or selected magnitude has occurred, and to determine the economic benefit gained by the alleged violator. DEQ will provide templates for the Warning Letters and Pre-Enforcement Notices (PENs) that are proposed to replace the current Notices of Noncompliance. The templates will clearly articulate to an alleged violator where they are in the enforcement process and what he or she needs to do to come into compliance. Improved tracking of Warning Letters and PENs will be available through database upgrades. In addition, the revised Enforcement Guidance Manual will be organized so that it can be more quickly updated to reflect changing enforcement priorities.

Implementation of the new Division 12 and the revised Enforcement Guidance Manual will further the State's Strategic Direction to provide effective, understandable and equitable compliance and enforcement actions by the agency.

EPA will provide input to the policy development and Division 12 implementation activities Oregon will be undertaking in this PPA cycle.

### ***Joint Collaboration between EPA and OCE***

EPA and DEQ will continue to work together and improve coordination on the following compliance and enforcement issues:

- Policy development, oversight mechanisms, inspections, innovative compliance approaches, and enforcement actions. The agencies will discuss these issues on a semi-annual basis.
- Effective and innovative approaches to solve compliance and enforcement issues. A more detailed discussion of this partnership is provided earlier in this document under the header "Tailor approaches to Oregon's unique needs."
- Administrative, criminal and civil investigations and enforcement. Each agency will retain separate authorities to take individual actions based on the respective laws of each jurisdiction. The details of these compliance agreements are incorporated into the program-specific portions of the PPA document.

EPA has recently conducted or is in the process of conducting a number of specific program reviews (NPDES, Title V and RCRA). Each of the specific programs has maintained a placeholder for Program reviews and follow-up work that may need to be negotiated after EPA and DEQ discuss each Program Review's findings. Specific implications for Oregon's Office of Compliance and Enforcement will also need to be negotiated in follow-up to those reviews.

EPA Headquarters, in conjunction with the EPA Regions and the States, is in the process of developing an oversight protocol for evaluating state-level compliance and enforcement programs. It is currently anticipated that most of these state reviews will take place within the next two years. The timeframe for such a review in Oregon has not been determined and will need to be jointly negotiated between EPA and DEQ. In addition, any follow-up from the review will also need to be negotiated, given the extremely limited resources available beyond addressing DEQ's core enforcement activities.

In each of the specific programs, compliance data issues will be highlighted to the extent they need to be addressed in this PPA cycle. In general, DEQ will provide timely and accurate information into EPA's national databases. DEQ will provide accurate information regarding significant non-compliers or high priority violators and will respond in a timely manner to issues raised by EPA's Watch List management tool.

## **DEQ LABORATORY**

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The goal of the Laboratory Division is to provide data, information, and scientific and technical expertise for knowledgeable decision making by environmental professionals inside and outside DEQ.

The Laboratory supports DEQ's Air, Land, and Water Quality Programs, as well as the work of the Office of Compliance and Enforcement. DEQ's Laboratory staff monitor, sample, and analyze air, water, soil, sediment, tissue, hazardous and solid waste. From this data, the Laboratory performs data analysis and interpretation used for a variety of decision and policy making work. In addition to general policy development support, this data and information are used for determining compliance with environmental rules and regulations; development of environmental models and permits; describing current environmental conditions in air, water, and land; investigating credible terrorist threats and events involving unknown chemicals; and, supporting civil and criminal environmental investigations. The Laboratory Division provides this scientific and technical assistance in the areas of environmental chemistry, biological assessments, air and water measurement, analytical methods, and quality assurance.

### ***Support for Strategic Directions***

The scientific and technical assistance provided by the Laboratory assists the media programs in achieving DEQ's strategic direction goals. The Laboratory, by providing data, information, scientific and technical expertise, assists all the Agency's Strategic Direction goals but is most directly related to those of 1) protecting Oregon's water and 2) protecting human health and the environment from toxics,

#### **Protect Oregon's Water**

Clean water and healthy watersheds are priorities for Oregon and DEQ. DEQ's priority projects for achieving this goal are: transition to the watershed approach in the Water Quality Program; expand the watershed approach to include Land Quality and Air Quality; and, implement the Willamette River mercury TMDL.

The transition to implementation of the watershed approach in five basins over the course of this PPA will require five sequential tasks in each basin – scoping, monitoring, TMDL development/issuance/update, TMDL implementation and permit modification, and compliance. The Laboratory would assist in this effort by providing data and information that can be used in all five tasks.

Expanding the watershed approach to include Land and Air Quality work requires DEQ's programs to comprehensively address each watershed's environmental priorities. Air, land, and water monitoring and data analysis is a core part of this effort and the Laboratory will be a key contributor to this monitoring and analysis with the goal of effectively and efficiently identifying the environmental priorities in a given basin. The Laboratory has historically performed cross media analysis and therefore can support the cross-program data analysis critical for scoping of the issues.

The Willamette River mercury TMDL project for understanding the Willamette Basin mercury sources and reduction needs may require additional monitoring and data analysis. The Laboratory would continue to participate in the mercury TMDL development by assisting in moving forward Phase II of the TMDL.

#### **Protect Human Health and the Environment from Toxics**

DEQ's next efforts to protect human health and the environment from toxics are to develop and implement a consolidated, agency-wide strategy to ensure toxic chemical problems are effectively and efficiently addressed. The Laboratory will start this effort by compiling and analyzing DEQ's toxic chemical data so it can be more readily used to develop a prioritized workplan. The Laboratory will seek input from the programs and stakeholders in developing a report that the media programs can use for



development of their toxics workplans. Because cross media analysis has been a core function, the Laboratory has the expertise for working on cross-program projects.

The Laboratory will also be engaged in several cross-program pilot projects addressing toxics in the environment. These pilot projects include preventing recontamination of Portland Harbor from urban storm water toxics; assessing discharges of hazardous wastes via the Hazardous Waste Wastewater Exemption; clean up of abandoned and inactive mines; and reducing water quality effects from the use of pesticides in orchards. The Laboratory would be able to provide monitoring, sample analysis, and scientific and technical expertise for accomplishing the objectives these pilot projects.

### ***Homeland Security***

Oregon remains concerned about homeland security issues related to potential terrorists threats. Since September 11, 2001, DEQ has identified the need for a 24/7-response capability that could go beyond the traditional spill program and mobilize the agency for action in a wide variety of activities. The responses will be multi-agency, multi-jurisdictional, and more complex, than traditional emergency response events. Oregon has also recognized the threat posed by unidentified chemical compounds that might be used in terrorist events. For such incidents, the DEQ's Laboratory has been identified in the state emergency response plan as the official laboratory in the state for unidentified chemical agent identification. DEQ is continuing to seek additional funding to deal with laboratory capacity issues associated with chemical terrorism, but has found limited receptivity for such funding requests at the national level.

### ***Increased Costs of Data Collection and Analysis***

The Laboratory has outgrown the space available at its current location on the Portland State University (PSU) campus and the leasor (PSU) wants the Laboratory's current space for other purposes. Therefore, the Laboratory is actively searching for a new laboratory location within the Portland metro area. In addition, until last year, the rental agreement was based on 25 year old prices so last year PSU started increasing the rental rate for the current space. As a result of moving to a new facility and increased rent in the interim, the cost of monitoring and analysis will increase at the Laboratory and consequently the DEQ's media programs will see increased costs for laboratory services. The level of increased costs is not known at this time; however, DEQ anticipates it will need \$1 million in additional funding to cover the increased costs that will result from the required Laboratory relocation. These costs will need to be accounted for in future grants and operating budgets.

## **AIR QUALITY PROGRAM**

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The goal of DEQ's Air Quality Program is to keep Oregon's air healthy to breathe and ensure visibility is clear. DEQ uses the following indicators to determine how well this goal is being met:

- Percent of time that the air is healthy to breathe for all Oregonians. (Oregon Benchmark – criteria air pollutants only)
- Trends in emissions of toxic air pollutants. (EPA/ECOS Core Performance Measures)
- Percentage of Oregonians living in areas where the health risk is very low from exposure to individual air toxics. (DEQ Executive Measure)
- Trends in criteria air pollutants (EPA/ECOS Core Performance Measures)

Today, 100% of Oregonians live in areas that meet the National Ambient Air Quality Standards (NAAQS) for criteria pollutants, which represents a tremendous improvement from a period of routine violations in the 1980's and early 1990's. Nonetheless, some pollutants are near or temporarily exceed the NAAQS, population growth presents an ongoing challenge in continuing to meet the NAAQS, and exposure to toxic air pollutants is a growing concern. During the PPA period, the Oregon Air Program will continue efforts to prevent air quality deterioration from criteria pollutants. Air toxics will be the other focus of the Air Quality Program. A recent EPA study estimated that concentrations of 16 toxic air pollutants in Oregon exceed generally acceptable health risk levels. In 2003, DEQ adopted a comprehensive air toxics program which provides a process to identify health risk concentration thresholds – or benchmarks – identify and prioritize geographic areas of concern and create local plans to reduce emissions. During the PPA period, the Oregon Air Program will determine benchmarks for toxic air pollutants and will begin prioritizing geographic areas of concern.

### ***Air Program Joint Priorities***

DEQ and EPA worked together to develop the workplan for this PPA. The objective was to come up with a plan that targets Oregon's most important air quality issues within the constraint of limited resources. As described below, both agencies came to the table guided by priorities established by the Northwest Collaborative Air Priorities Project (NW CAPP). In addition, both agencies came to the table guided by their own agency's priorities and the resulting joint priorities may be primarily driven by one agency more than the other. But through this partnership agreement, both agencies have agreed to support each other's efforts in the following important work:

Clean Diesel: Diesel emissions are the number one air toxic in Oregon and efforts to reduce emissions are one of the key actions in DEQ's Strategic Direction to, "Protect Human Health and the Environment from Toxics". Governor Kulongoski, in his executive order on sustainability, highlighted the need to reduce diesel emissions. He tasked DEQ with developing a strategy to promote clean diesel technology along with evaluating options for reducing diesel engine idling, emissions testing of diesel-powered vehicles and converting school bus fleets to cleaner alternatives. In 2003, the Governors of California, Oregon and Washington issued a statement on regional actions to address global warming and called for actions to reduce diesel emissions in west coast ports and along the I-5 corridor. EPA Region 10 is committed to partnering with DEQ to reduce diesel emissions. Implementing the Oregon Clean Diesel Initiative is one of the four regional pilot projects (see page 7). In the Air Quality workplan under Objective 3, the diesel outputs call for specific actions from both agencies to bring about emission reductions. For example, it's a priority for both agencies to make ultra low sulfur fuel and biodiesel available in Oregon by finding appropriate funding for a storage tank.

Air Toxics: DEQ will move forward with its air toxics program and also participate in the agency-wide toxics and mercury reduction strategies and the Willamette River mercury TMDL. Again, all of the work supports DEQ's Strategic Direction to, "Protect Human Health and the Environment from Toxics". EPA agrees to work with DEQ to obtain stable funding for toxics monitoring work and participate in toxics monitoring network design.

State Implementation Plans (SIPs): While Oregon's air currently meets existing criteria pollutant health-based standards, several areas still need to be formally designated as attainment areas through the SIP process. Without the formal attainment designation under a maintenance plan, communities may experience barriers to economic development opportunities and air quality violations could recur in some cases due to growth. Supporting communities in solving environmental and economic problems is one of the key actions in DEQ's *Strategic Directions*, i.e., "Involve Oregonians in Solving Environmental Problems." DEQ has committed to work on SIPs for several communities during the PPA period. EPA agrees to review and act on SIP submittals within statutory deadlines and coordinate their efforts consistent with Oregon's priorities.

Smoke and Air Quality: One of EPA's air quality priorities is to reduce the health and welfare impacts of agricultural and prescribed forestry burning. DEQ's involvement in this effort is limited to tracking EPA's work due to limited financial resources.

Indian Country: EPA places a priority on efforts to implement the Federal Air rules on Reservations (FARR) and issue air permits on reservations. DEQ's involvement is limited to providing input on a communication strategy.

### ***Northwest Collaborative Air Priorities Project***

As noted above in the introduction to the Air Program Joint Priorities, both agencies are committed to furthering the priorities of the Northwest Collaborative Air Priorities Project (NW CAPP). Organized by the Region 10 Air Program, NW CAPP brought together over 150 representatives from government, industry, communities and nongovernmental organizations in the Pacific Northwest and Alaska during a 3-day air summit in June, 2003. The summit participants reviewed data on air quality and established consensus priorities for reducing risk to human health and the environment from air pollution in the Northwest. The Oregon Air Program actively participated in the summit and supports the resulting eight priorities identified below. NW CAPP participants agreed to incorporate the priorities as appropriate in their strategic plans, and the activities that the Oregon Air Program will undertake during this PPA period to help address NW CAPP priorities are identified in the Air Program workplan.

1. **Transportation emissions** – Reduce emissions from transportation especially diesel and carbon dioxide, and support land use planning and alternate transportation as tools.
2. **Combustion emissions** – Reduce emissions from combustion.
3. **Indoor air** – Reduce risks from air pollution indoors.
4. **Public education** – Increase support for education and other means of encouraging the public to take actions to reduce air pollution.
5. **Air toxics** – Reduce health risks from outdoor toxic air pollutants, including identification of hot spots and primary contributing sources of toxic emissions.
6. **Greenhouse Gas** – Reduce greenhouse gas emissions causing climate change.
7. **Environmental justice** – Reduce health risks from toxic and other air pollution where people live, especially in minority, low income, rural, and other under-represented communities.
8. **Tribes** – Reduce risks to ecosystems, tribal communities, and their cultural resources from toxic and other air pollution sources.



### ***Aligning Resources to Address Environmental Priorities***

As noted in the agency narrative, DEQ is committed to addressing environmental issues holistically through coordinated efforts that involve one or more programs. Air Quality will participate in several of the cross-program efforts including the watershed approach, the Willamette River Mercury TMDL, and the toxic reduction strategy. We estimate a resource shift of approximately 2 FTE from current air quality work to support these agency priorities. As a result, we reduced or eliminated work in the following areas:

- Eliminated the requirement to update the Title V program agreement;
- Reduced DEQ's role in supporting EPA's outreach on the Federal Air Rules on Reservations (FARR);
- Eliminated new cumulative impact technical work requests from EPA.

In this PPA we've also enlisted EPA's support to look to the future for innovative, streamlined ways of doing business that would save scarce resources and not adversely impact the quality of our air. For example:

- Explore options to redesignate Salem to attainment for ozone without a maintenance plan or with a greatly simplified plan;
- Seek to reduce existing air quality monitoring requirements to meet new monitoring requirements for mercury and other toxics efforts;
- Explore the options for aligning Clean Air Act PSD planning areas with watershed boundaries and decide if the Air Program should switch to this approach by the end of the PPA period.

### ***Evaluation Process***

To insure that EPA and DEQ maintain open communications during this PPA, the two air quality programs have agreed to check-in every six months and have meetings as needed. In addition, grant update reports will be submitted every six months as part of the check-in. This evaluation process will also insure that the necessary grant monitoring requirements will be met. Check-ins may be conducted via e-mail or telephone or both.

## **HAZARDOUS WASTE PROGRAM**

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The primary objectives of DEQ's Hazardous Waste Program are to reduce toxics use and hazardous waste generation and to promote the safe management of hazardous waste. The Hazardous Waste Program influences the actions of hundreds of Oregon businesses and organizations, promoting hazardous waste compliance and, beyond compliance, best practices for managing hazardous waste and alternatives that reduce toxics use. DEQ implements an integrated strategy to achieve hazardous waste compliance and beyond compliance environmental results, employing compliance training, education and on-site technical assistance in addition to compliance inspections.

The role and contribution of DEQ's Hazardous Waste Program to the agency goals of reducing and preventing toxic releases and improving Oregon waters is significant. While DEQ acknowledges the importance of enforcement approaches to deter non-compliance, and continues to implement a strong inspection enforcement program for this purpose, the Hazardous Waste Program emphasizes the value of forming collaborative partnerships with Oregon businesses and communities in gaining environmental results.

### ***Achieving Environmental Results***

This PPA reflects a philosophical approach that emphasizes environmental results, acknowledging that the Program is evolving in its capacity to align Program resources with environmental priorities and to measure the environmental outcomes of our efforts. In recognition of the key role DEQ's Hazardous Waste Program has in contributing to DEQ's environmental priorities, and in an effort to align program efforts with the agency's Strategic Directions, the Hazardous Waste Program prioritizes its resources to implement the following objectives which guide program work reflected in this PPA:

- Promote reduction in toxics use and hazardous waste generation.
- Ensure safe management of hazardous waste.
- Employ an integrated strategy to achieve compliance and environmental results.
- Support agency efforts to reduce pollutant discharges through compliance assistance and inspection tools.
- Employ alternative approaches to solving environmental problems.

The Hazardous Waste workplan included in the Appendix highlights key activities DEQ and EPA commit to in implementing these objectives. The following elaborates on the collaborative approaches that will be employed to achieve program objectives.

#### **Promote Reduction in Toxics Use and Hazardous Waste Generation and Ensure Safe Management of Hazardous Waste**

These are the fundamental objectives of DEQ's Hazardous Waste Program: to reduce toxics use and hazardous waste generation and to promote the safe management of hazardous waste. DEQ achieves these objectives through its integrated compliance strategy and employs Program resources consistent with State environmental priorities.

EPA and DEQ collaborate in efforts to promote safe management and protect human health and the environment. The agencies will achieve the national goals for preventing releases from hazardous waste management facilities through effective controls and will update those controls with current standards when permits expire.

EPA and DEQ also collaborate to ensure the cleanup of high priority RCRA corrective action sites to prevent human exposures and control ground water releases at all eleven Oregon sites by the end of 2005. Beyond that, EPA and DEQ will manage completion of cleanup projects at 30% of the high priority sites on the revised 2005 baseline by the end of 2008.

#### Employ an Integrated Strategy to Achieve Compliance and Environmental Results

DEQ's integrated compliance strategy, which includes compliance enforcement and technical assistance activities, focuses on achieving results, both in environmental protection and rates of compliance. Rather than focusing on the specific "tools" employed to achieve those results, or the number of actions taken, DEQ advocates for greater flexibility in employing an array of Program tools to achieve measurable environmental outcomes. This approach allows DEQ to use the most effective tools for achieving compliance, rather than employing a one-size-fits-all approach.

DEQ and EPA agree that technical assistance is an effective tool in achieving compliance and, beyond compliance, promoting pollution prevention. The agencies have not yet reached agreement on the role of technical assistance in a State's integrated compliance strategy, particularly when that role is defined in relation to the agency's compliance inspection and enforcement tools. To work toward agreement on this issue, EPA hired a consultant to review the State's technical assistance program for purposes of gaining a mutual understanding of how technical assistance contributes to core program environmental goals. The agencies have agreed to use this study and other information to continue to explore greater flexibility in implementing the State's integrated compliance strategy, and specifically on how to allocate, reflect and give due credit to the role of TA in the delegated program and corresponding PPA expectations. During the first year of the PPA the agencies will work towards a mutual understanding characterizing State flexibility in the use of all Program tools (e.g., inspection, enforcement, and technical assistance) to achieve Program objectives.

DEQ and EPA will develop and employ an integrated strategy of compliance assistance and enforcement efforts to most effectively allocate our resources to achieve compliance and environmental results. The agencies coordinate efforts to contribute to the national environmental objective for improving compliance. EPA set goals of achieving a 5% increase in the pounds of pollution reduced, treated, or eliminated and a 5% increase in the number of regulated entities making improvements in environmental management practices from 2005 to 2008.

EPA and DEQ will also identify, correct and deter noncompliance and reduce environmental risks through compliance monitoring and enforcement to contribute toward a national goal of a 5% increase in complying actions facilities take after being inspected.

#### Support Agency Efforts to Reduce Pollutant Discharges through Compliance Assistance and Inspection Tools

DEQ is committed to addressing environmental problems more holistically. To accomplish this, DEQ's media programs (Air, Water and Land Quality) are putting more emphasis on working together to address problems that cross-program boundaries, and to focus on environmental priorities on a watershed basis.

The Hazardous Waste Program supports this approach by directing technical assistance and inspection resources to address these environmental priorities; specifically to reduce pollutant discharges to priority watersheds. DEQ's NWR will be focusing field efforts on several initiatives to reduce pollutant discharges and support the mercury TMDL in the Willamette River. Additional watershed efforts will be identified once the agency has selected other priority watersheds.

Also during this PPA cycle, DEQ's Hazardous Waste and Water Quality Programs will conduct an evaluation of potential environmental and watershed impacts associated with the RCRA exemption for hazardous wastes managed in wastewater treatment units (WWTUs). The agency has witnessed a three hundred fold increase in hazardous wastes discharged as wastewaters in Oregon since 1995. As the



agency focuses on improving Oregon waters and reducing toxic pollutants it is appropriate to evaluate the potential impact of these discharges. In addition to the field activities that focus on reducing pollutant discharges, DEQ's Hazardous Waste and Water Quality Programs will collaborate in a study of the gap between toxic discharges regulated under the Clean Water Act through state pretreatment programs and hazardous waste discharges exempt under RCRA under the federal wastewater treatment unit exemption.

#### Employ Alternative Approaches to Solving Environmental Problems

In its ongoing effort to improve Program efficiency and effectiveness, DEQ will continue to evaluate alternative approaches to solving environmental problems. The Hazardous Waste Program will be following the results of an expedited enforcement effort being piloted by the Tanks Program to evaluate whether there are opportunities for Hazardous Waste enforcement. The Hazardous Waste Program may also assess opportunities for streamlining DEQ's TSD permit process.

DEQ believes that compliance monitoring activities should reflect the environmental and industry sector priorities of the State and region, such as non-notifiers and smaller businesses that often do not have the resources to retain environmental staff. DEQ acknowledges the inherent difficulties in assessing compliance priorities in the absence of good data on the nature and extent of environmental compliance problems; nevertheless, the agency is moving towards greater integration of scientific data to support informed decisions on how the agency allocates its program resources. As the agency evolves in its efforts to identify and characterize the State's environmental priorities, and to employ scientific and environmental data as the basis for program implementation decisions, DEQ anticipates that agency inspection strategies will increasingly align with those environmental priorities. For the Hazardous Waste Program, this may mean a shift away from historic inspection expectations to allocating inspection resources to anticipated environmental problems.

#### ***Aligning Resources to Address Environmental Priorities***

This PPA reflects the priorities and environmental objectives of the Hazardous Waste Program in contributing to environmental results, particularly in compliance, toxics reduction and watershed improvement. While continuing to implement the core program elements reflected in this PPA, the Hazardous Waste Program has increased its commitments for addressing agency-wide priorities such as DEQ's toxics reduction efforts and the implementation of collaborative watershed approaches. In order to contribute to these priorities and initiatives, efforts in other Program areas must be reduced. The following areas will be impacted from shifting Program resources to agency environmental priorities.

#### Large Quantity Generator Inspections

The Hazardous Waste Program will allocate both technical assistance and inspection resources in three priority areas:

1. DEQ's watershed improvement field activities;
2. Follow-up to the TA evaluation; and
3. Field inspection and sampling associated with the WWTU study.

The integrated strategy developed for these priority efforts will first consider putting resources toward LQG inspections when working to address the environmental problems specific to each area. If LQGs are not the problem in a given area, then resources will be redirected to address other priority environmental problems.

DEQ will also continue to conduct high priority complaint investigations, some of which will likely result in enforcement actions. DEQ will substitute on a one-for-one basis complaint investigations that result in enforcement for LQG inspections. While it is not possible to project a specific reduction at this time, DEQ believes that such offsets are an appropriate strategy for addressing priority environmental

problems. EPA and DEQ will monitor such offsets midcourse and assess this strategy for addressing priority environmental problems.

#### Rules and Authorization

DEQ will not allocate resources to new rulemaking or authorization during the first year of the PPA, outside of state rule changes to address the Toxics Use and Hazardous Waste Reduction Act.

#### National Enforcement Priorities

DEQ will make an effort to contribute to OECA national sector priorities that may reasonably represent State concerns, however, resources will be allocated to implementing State environmental priorities first. EPA will focus on national sector priorities in coordination with DEQ program implementation. EPA will provide support for ensuring compliance with financial assurance requirements with national and regional training and policy development.

#### ***Program Measures: Program Outputs and Environmental Outcomes***

DEQ efforts to allocate Program resources to environmental compliance priorities and to achieving environmental results are evolving, as is our ability to measure and track the success of our efforts. Measures incorporated in the PPA aim to move away from specific “outputs” to actual environmental outcomes. DEQ has established three key environmental outcome measures of our work (the amount of hazardous waste not managed in compliance with regulations that is diverted to safe and compliant management, the quantity of hazardous waste reduced and the quantity of toxic chemical products reduced) and is committed to collecting and tracking data to support these measures Statewide. However, output measures are included to reflect program work for which environmental outcomes are difficult to measure.

#### ***Joint Agreements on Agency Communication and Coordination***

DEQ and EPA have established a number of agreements on information sharing, communication and reporting. The following specific agreements are incorporated by reference:

- EPA RCRA Inspections in Oregon: Definitions and Agency Roles
- Issue Resolution Process Guidelines
- Corrective Action Communication Strategy
- 2003 RCRAInfo MOU

#### ***Evaluation Process***

The agencies will continue to hold quarterly meetings to share our progress, plan work efforts and resolve issues. At the end of the first fiscal year DEQ and EPA will check in on progress and negotiate any shifts in resources to reflect priority activities for the following year. At the end of the biennium each agency will provide a report summarizing key accomplishments.

## **WATER QUALITY PROGRAM**

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Clean Water is essential for drinking, supporting industrial, agricultural and recreational activities, healthy ecosystems and wildlife habitat. DEQ is committed to doing its part to ensure that Oregon's oceans, rivers, lakes, streams and groundwater are clean enough to support these uses, as evidenced by making "Protect Oregon's Water" one of the agency's four priorities in its *Strategic Directions* document.

### ***Key Actions for Protecting Oregon's Waters***

While all three media programs – Air, Land and Water Quality – are actively engaged in protecting Oregon's water and watersheds, the Water Quality Program plays a lead role. The following examples highlight the important work the Water Quality Program is doing to implement DEQ's "key actions" for protecting Oregon's water.

#### **1. Address Multiple Environmental Impacts on Watersheds**

DEQ's Water Quality Program is transitioning to an integrated approach to watershed management that is based on a five year cycle consistent with NPDES permit terms. This approach recognizes five sequential tasks – (1) scoping, (2) monitoring, (3) TMDL development, issuance or update, (4) TMDL implementation and permit modification, and (5) assessment of compliance - followed by another scoping phase. DEQ envisions integrating most water quality programs (e.g., nonpoint source/319, monitoring, TMDLs, permits, 401 hydro certifications, etc.) into this cycle, and expects to be in different phases in different watersheds throughout the state at any one time. Demand-driven work (e.g., new permits) and other high priority issues (e.g., significant compliance issues) will be addressed on an as needed basis outside of the five year watershed cycle.

The fundamental objectives of the watershed approach are to clearly identify each watershed's environmental priorities and develop/implement a plan to efficiently address those priorities. By the end of this PPA cycle, the Water Quality Program expects to be implementing the watershed approach in 5 basins. In addition, DEQ will also be exploring how the Land Quality and Air Quality Programs can be integrated into the watershed approach.

DEQ will need EPA's support and flexibility in order for this approach to succeed, as this phased geographic approach is likely to raise some issues related to the ways priorities are set and compliance is carried out. For example, issues may arise where environmental priorities in a particular basin may align with state priorities but not with EPA's national or regional priorities, or the watershed focus may conflict with EPA's expectations that states approach certain issues on a statewide basis.

#### **2. Clean Up the Willamette River System**

DEQ has many efforts underway that are helping to improve water quality in the Willamette River. At this time, the Water Quality Program is heavily focused on completing and beginning to implement Willamette River TMDLs for mercury, temperature and bacteria. These TMDLs are expected to go out for public comment in June 2004 and will hopefully be issued by the end of 2004. The Water Quality Program's efforts on the mercury TMDL are described in the Cross-Program section of the PPA. For the temperature TMDL, in addition to revising wastewater permits as needed, DEQ will be focusing on working with the Corps of Engineers to minimize the impact of the federal dams on water quality, and working together with other Designated Management Agencies to encourage land owners/managers to reestablish streamside vegetation to minimize solar heating of the river. For the bacteria TMDL, the emphasis will be on reducing bacteria loading coming from urban and agricultural sources.

#### **3. Issue Timely and Environmentally Protective Permits**



DEQ's wastewater program permits over 4000 facilities, including domestic sewage, industrial and commercial wastes and urban stormwater runoff. Most of these permits are for a five-year term and may be renewed.

Due to the increasing complexity of the wastewater permit requirements and the expanding universe of permits, Oregon's wastewater permits are often processed months or years after they expire. In 2003, DEQ's wastewater permitting program suffered from a 45% backlog in individual permits, was being audited by EPA and was subject to several lawsuits by interest groups. To address long-standing systemic problems in the wastewater permitting program, DEQ formed the Blue Ribbon Committee on Wastewater Permitting in 2003 to comprehensively review the wastewater program and make recommendations for improving program effectiveness. The Committee is looking into the need for statutory, rule or policy revisions, mechanisms to ensure stable program funding and program performance measures. The committee's work is expected to be completed by June of 2004. DEQ will be implementing many of the Committee's recommendations during this PPA cycle.

#### 4. Encourage Broader Reuse of Wastewater

The term "wastewater reuse" generally refers to treated domestic effluent from municipal wastewater treatment facilities that has been cleaned to such a high level it can be used safely and effectively for non-drinking water uses such as industrial processing, toilet flushing, wash water, landscape and agricultural irrigation, and steam production for power generation. Treated effluent may also include the recycling of treated gray water (i.e. domestic wastewater from homes excluding toilet water), domestic effluent from residential septic systems, treated effluent from industrial processes (e.g. food processors), and the recycling of urban storm water run-off. Wastewater reuse can be an effective means of conserving potable water and achieving water quality objectives.

In 2002, DEQ started evaluating existing rules and policies to determine the regulatory barriers that may impede the practice of wastewater reuse. In 2003, the Oregon Legislature passed Senate Bill 820 which directed the Department of Environmental Quality (DEQ) to foster and encourage wastewater reuse in urban areas. DEQ is convening an advisory committee of interested stakeholders during the course of this PPA to assist DEQ in its evaluation of wastewater reuse policy and efforts regarding SB 820. DEQ is also completing a cooperative effort with the Oregon Association of Clean Water Agencies (ACWA) to evaluate sub-discharge options of treated wastewater which may be a component of reuse. Lastly, DEQ expects to revise existing and develop improved policy to address regulatory hurdles to wastewater reuse.

#### ***Focus on Core Work, Priorities and Innovations***

Overall, the Water Quality workplan for this PPA demonstrates a sharpened focus on core work and environmental priorities. DEQ is focusing resources on developing implementation plans and guidance for recently (or soon to be) adopted water quality standards. The wastewater permitting program will be undergoing a number of changes and enhancements as recommended by the Blue Ribbon Committee and by EPA's review of the program. Focus on reducing the backlog (tying back to core programs) and working on improving policy, guidance and infrastructure. And the program as a whole will be making aggressive steps toward implementing the watershed approach in order to gain the efficiencies and improved outcomes that such an approach can deliver.

EPA's priorities include the Columbia-Snake Mainstem Temperature TMDL. EPA will continue to work with DEQ to complete this effort, in coordination with Washington and Idaho,

One good example of the sharpened focus on environmental priorities can be seen in the Underground Injection Control (UIC) program. DEQ and EPA have agreed to focus the very limited resources for the UIC program on facilities that pose the greatest environmental risk rather than expending them on a statewide inventory of UICs. This approach ensures that the agencies are able to devote resources to addressing any compliance problems that are discovered.

The Water Quality workplan also includes commitments to undertake important new work and innovations. For example, with the new Temperature standard now in place, the agencies expect to see a surge in requests for Use Attainability Assessments and site specific water quality standards. DEQ and EPA will work together to develop protocols that will be approvable by EPA and also satisfy NOAA Fisheries and the U.S. Fish and Wildlife Service when a consultation is required.

In 2004, DEQ will finalize its statewide water quality monitoring strategy that addresses the 10 elements required by EPA. This strategy will be designed to ensure that monitoring resources are being used effectively to support DEQ's Strategic Directions and meet the needs of the Water Quality Program.

In collaboration with EPA Headquarters and Region 10, DEQ's Water Quality Program will be working on developing an alternative approach to regulating Sanitary Sewer Overflows (SSOs). This innovative effort arose out of discussions between DEQ and EPA that identified a conflict in the approach used by each agency for regulating sewer system overflows. Oregon and EPA have agreed to collaborate on resolution of this important water quality issue, beginning by developing a state Internal Management Directive on SSO controls that will address and memorialize how SSOs are to be regulated.

### ***Aligning Resources to Address Environmental Priorities***

In order to address all of these priorities and initiatives, EPA has agreed to allow DEQ to delay or disinvest in other work, or come up with other strategies to free up resources. For example, EPA has agreed to work with DEQ to develop a streamlined approach for developing nonpoint source TMDLs. It is hoped that this will reduce the workload for these TMDLs so that staff will be able to work on other TMDLs and help DEQ meet its court-ordered schedule for completing TMDLs statewide. EPA has also agreed to let DEQ postpone development of a nutrient standard in recognition of the critical need to focus on developing guidance to implement other newly adopted (or soon to be adopted) water quality standards.

### ***Evaluation Process***

*[Describe joint evaluation process/check-ins/reporting, etc. Also describe steps for continuing to build up our "joint" and comprehensive planning/priority setting efforts.]*

## **APPENDICES**

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*For the Review Draft – the Program Workplans will be sent as separate documents. They will be incorporated into the final version of the PPA.*

***Air Quality Program Workplan***

***Hazardous Waste Program Workplan***

***Water Quality Program Workplan***